Fiscal Year 2025
Guide to Programs

National Natural Science Foundation of China

National Natural Science Fund Guide to Programs 2025

National Natural Science

Foundation of China

Brief Introduction

The National Natural Science Foundation of China publishes the *National Natural Science Fund Guide to Programs 2024 (the Guide)*, in accordance with the *National Natural Science Foundation Regulations* and relevant documents on program management, to provide applicants with useful guidance on seeking support from the National Natural Science Fund. The *Guide* details NSFC's latest reform measures, application requirements, funding policies and funding priorities, and introduces different program types and their respective requirements. It is an important basis for the allocation of the National Natural Science Fund, and also a must-read reference for applicants.

This book can be used as a reference for researchers in universities and colleges of higher education and research institutions, and for people working in areas of S&T management and policy research.

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Foreword

The Third Plenary Session of the 20th CPC Central Committee drew a blueprint for further comprehensively deepening reform, opened a new chapter in promoting Chinese-style modernization in the new era, and made systematic arrangements for building a system and mechanism to support comprehensive innovation. President Xi Jinping highlighted at the National Science and Technology Conference that one of the essential elements of building an S&T power is to "have strong basic research and original innovation capabilities, and continuously produce major original and disruptive scientific and technological achievements" and encouraged us work hard, and step by step to turn the strategic goal of building an S&T power into reality[1].

In the year of 2025, under the guidance of Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era, the National Natural Science Foundation of China (hereinafter referred to as NSFC) will comprehensively implement the spirits of the 20th CPC National Congress and its Second and Third Plenary Sessions, thoroughly implement President Xi's important speech on science, technology and innovation, especially on basic research and the spirits of the National S&T Conference. In accordance with the decisions and arrangements of the CPC Central Committee and the State Council, under the leadership of the Science and Technology Commission of the CPC Central Committee, NSFC will firmly grasp the strategic positioning in the new era, adhere to the "four aspects", earnestly implement the newly revised Regulations on the National Natural Science Foundation, coordinate the deployment of basic research, applied basic research and personnel training, and strengthen support for original innovation and disruptive scientific and technological innovation. NSFC will strengthen the forward-looking, strategic and systematic layout of basic research, continue to improve the effectiveness of science funding, better leverage the unique role of science fund in the national innovation system, and strongly support the realization of self-reliance in high-level science and technology.

NSFC will strengthen the basic research system layout and strengthen China's original innovation capability. The key to enhancing China's original innovation ability is to strengthen basic research, establish a scientific and

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technological innovation system that is original innovation-oriented and an efficient and coordinated scientific research organization model, and change from the defense of “reinforcing weak boards” to the competition of “building long boards”. It is necessary to encourage free exploration, maintain the overall stability of the proportion of funding for self-selected topics, and stabilize the “bedrock” of funding for basic research. NSFC will continue to optimize the layout of disciplines and promote interdisciplinary integration and research. NSFC will highlight originality, establish and improve the evaluation mechanism to support original research, explore to establish the funding mechanism for non-consensual proposals for major types of programs, and select and fund original and disruptive research with innovative, controversial and high-risk characteristics. NSFC will improve the basic conditions for scientific research and support the systematic development of scientific instruments and means.

NSFC will build a systematic platform for cultivating talents for basic research, and cultivate high-level talents for scientific and technological innovation. The key to high-level basic research is talent, with an emphasis on distributing limited state funding to support China's most dynamic front-line scientists. It is necessary to continue to carry out the pilot program of subsidizing outstanding undergraduate students and doctoral students, strengthen the training of reserve forces for basic research, and provide a “source of fresh water” for building a pool of high-level basic research talents. NSFC will increase support for young researchers and actively attract outstanding young talents to participate in peer review. NSFC will continue the evaluation and continued funding for the concluded projects of the National Science Fund for Distinguished Young Scholars, and strengthen the training of high-level scientific and technological talents. NSFC will strengthen support for young talents in the Science Fund for Creative Research Groups and Science Fund for Excellent Research Groups, and strive to build a highly innovative talent echelon.

NSFC will strengthen the management of funding for applied basic research, and improve the capability of basic research to support national strategic goals. Summarizing the major research needs in basic, cutting-edge and cross-cutting fields is an important responsibility and task of NSFC to implement the deployment of central science and technology work and excel in applied basic research in the new era. It is necessary to fulfill the responsibilities of the main responsible units, continue to do a good job in the preparation of annual guidelines for National Key Research and Development Plans, and organize the implementation of major national science and technology projects of “brain science and brain-like research”. We will strengthen the role of NSFC’s Advisory Committee, put forward high-quality proposals for selecting major national science and technology projects in the field of basic research for the 15th Five-Year Plan, and carry out high-standard research on the development strategy

of science funds and the formulation of plans. NSFC will continue to strengthen the overall coordination of major types of NSFC programs and national science and technology major programs, clearly define their positioning, systematically plan the deployment of science fund guidelines and guidance projects, and form a reasonably structured and efficient collaborative project system. NSFC will continue to improve the mechanism for diversified investment in basic research, steadily expand the scope of joint fund cooperation, optimize cooperation models, strengthen guidance, make better use of the leverage of central fiscal investment, and improve the funding performance of the Joint Funds.

NSFC will enhance the management of scientific research integrity and academic ethics, and cultivate a healthy and positive scientific research environment. The fair evaluation of NSFC projects is related to whether outstanding talents can get timely and effective support, the overall development of the national scientific research cause, and the actual results of the construction of a S&T power and a talents power. NSFC will work with the discipline inspection and supervision team of the Ministry of Science and Technology to further strengthen the supervision and restriction of the whole process of project review, and consolidate and expand the special rectification work results of "string-pulling". NSFC will thoroughly implement the action plan to improve the academic ethics of its funds through education, encouragement, standardization, supervision, and punishment systems, promote the construction of science and technology ethics in its funds in an orderly manner, strengthen publicity and education on the integrity of scientific research, seriously investigate and punish cases of misconduct in scientific research, and guide researchers to seek truth and carry out responsible scientific research. NSFC will explore to establish a reputation evaluation mechanism for host institutions, improve the main responsibility awareness and management service level of host institutions, and effectively reduce the burden and relieve the constraints of researchers, ensuring that researchers are fully engaged in research work.

NSFC will promote international exchanges and cooperation in basic research and support the building of an open innovation ecosystem with global competitiveness. Scientific and technological progress is a worldwide and contemporary issue, and basic research is an important bridge to promote international scientific and technological cooperation. It is necessary to give full play to the institutional advantages of the internationally accepted academic rules and operating mechanisms of NSFC, and further strengthen the opening-up. NSFC will improve the operation and management mechanism of the Department of International Programs, expand and deepen international joint research, support global talents to conduct basic research in China, and deeply integrate into the global scientific and technological innovation network. NSFC will expand and deepen inter-organizational strategic

partnerships, strengthen dialogue, exchange and joint funding with overseas research funding institutions, international organizations and the scientific community, and foster an open, trusting and cooperative research environment. NSFC will continue to promote the development of the Sustainable Development International Cooperation Program, deeply participate in international negotiations on climate change, and continue to promote bilateral and multilateral cooperation on climate change.

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2025 NSFC Reform Measures

The NSFC thoroughly implements the spirit of the Third Plenary Session of the 20th CPC Central Committee and the National Science and Technology Conference, focuses on improving the funding performance of the National Natural Science Fund, and launches the following reform measures in 2025.

I. Optimize and improve the funding mechanism for team programs

The Science Fund for Creative Research Groups and the Basic Science Center Program are important channels for the growth of the leading talents in basic research to reach higher level as strategic scientists. On the basis of the reform measures such as setting a separate track for young teams in the previous Basic Science Center Program, the Basic Science Center Program will be renamed as Science Fund for Excellent Research Groups, and a separate track will be set for young teams under the age of 40 in the Science Fund for Creative Research Groups, giving them more opportunities to take the lead and shoulder greater responsibilities. It is encouraged to carry out cross-cutting research on scientific issues targeting at the world's scientific frontiers and major national needs, and train a group of excellent teams that can earn a place in the international scientific arena as soon as possible, so as to provide a solid foundation for cultivating more high-level talents with the potential of becoming strategic scientists.

II. Steadily promote the management reform of major types of programs

NSFC will prudently and orderly implement the reform of Special Fund for Research on National Major Research Instruments and Major Program. In the reform of Special Fund for Research on National Major Research Instruments, it will explore to establish the open research projects for major scientific research instrument, supporting scientific researchers nationwide to use instruments developed by the Special Fund for Research on National Major Research Instruments (recommended by the department), to carry out high-level and original innovative research, promote the open sharing of instruments and the output of high-level results. In terms of Major Program reforms, the management process should be rationally adjusted to extend the time window between the issuance of guidelines and the application deadline, so as to give applicants more time to build application teams and improve research proposals, thereby improving the quality and competitiveness of project applications.

III. Improve the application requirements for Programs of Joint Funds

NSFC will continue the pilot operation that the Joint Fund for Corporate Innovation and Development and "Ye Qisun" Science Fund are not counted in the total number of applications and undertaken projects during application stage, while counted in after the formal receipt of the application. For the Joint Fund for Corporate Innovation and Development and the "Ye Qisun" Science Fund, the total number of projects applied (including as applicant and major participant) and undertaken (including as PI and major participant) by researchers and under the joint fund of the same agreement is limited to 1. In view of the research directions proposed by 9 regions including Inner Mongolia Autonomous Region, Jiangxi Province, Guangxi Zhuang Autonomous Region, Hainan Province, Guizhou Province, Yunnan Province, Gansu Province, Ningxia Hui Autonomous Region, and Xinjiang Uygur Autonomous Region that have joined the Joint Fund for Regional Innovation and Development, applicants from the host institutions in their respective regions are encouraged to actively apply. Applicants from host institutions outside the region shall jointly apply with institutions of universities, research institutions or enterprises with certain research strength and research conditions in the region.

IV. Continue to promote international S&T cooperation and exchanges

In accordance with the strategic plan of establishing a global scientific research fund, NSFC will make greater efforts to promote open cooperation of the science fund. NSFC will further explore channels, tap the potential of bilateral and multilateral cooperation, and steadily carry out joint funding for global science and technology innovation cooperation; continue to deepen policy dialogue with overseas partners, and actively participate in global science and technology governance; strengthen support for Key International (Regional) Joint Research Program and Research Fund for International Scientists; thoroughly implement the "four majors and one organization" international scientific cooperation research program; continue to carry out pilot programs to support outstanding international doctoral students. NSFC will strengthen cooperation and exchanges across the Taiwan Straits and with its partners in Hong Kong and Macao to better integrate Hong Kong and Macao into the overall development of the country.

V. Strengthen the management of host institutions

NSFC will improve the standardized, refined and scientific registration management of host institutions, explore the construction of scientific and feasible systematic evaluation indicators of registration, further improve the access and exit

mechanism, and strengthen the dynamic management of host institutions. NSFC will establish and improve the host institution management system, further strengthen the supervision of the project management process, continue to promote record keeping of the project management provisions of lump-sum funding, conduct in-depth research and improve the mechanism to evaluate credibility and punish misconduct, accelerate the construction of the credit rating mechanism of the host institutions, regularly carry out random inspection on the use of National Natural Science Fund of the host institutions, and consolidate the main responsibility of host institutions to perform management and supervision. NSFC will implement the requirements of the reform of National Natural Science Fund and effectively improve the project management capabilities of host institutions.

VI. Strictly enforce the review discipline, further implement the special rectification of “string-pulling” in the process of peer review

Following the principle of "positive guidance, extreme defense, and serious punishment", NSFC will strengthen publicity and guidance, strictly enforce the review discipline, and resolutely rectify the deep-rooted problem of “string-pulling”. Through systematically summarizing experience, NSFC will thoroughly sort out risks and hidden dangers, strictly plug up risk loopholes, and continue to improve the review mechanism, and optimize the review process, to further improve the working mechanism and system to prevent and rectify “string-pulling” that covers the whole process from correspondence review to panel review, to effectively strengthen supervision and implementation, and to create a healthy culture and wholesome atmosphere for scientific research.

Information on Application

When applying for NSFC funds in 2025, applicants and their host institutions shall first read carefully the following documents: *the National Natural Science Foundation Regulations* (hereinafter referred to as the *Regulations*), this *Guide*, relevant guidelines for program management, *Regulations on National Natural Science Fund Management*, and notifications and announcements pertaining to application. Should there be any conflicts between guidelines for program management and *Regulations* and this *Guide*, *Regulations* and this *Guide* shall prevail. Information on Application includes eligibility of applicants and requirements for applications, application limits, requirements for budgeting, requirements for scientific integrity and science and technology ethics, responsibilities and accountability of host institutions, etc.

I. Eligibility of applicants and requirements for applications

i. Eligibility of applicants

1. As the principal investigator (PI), the applicant should comply with Article 11 Clause 1 of the *Regulations*, i.e., the applicant shall have (1) the experience of undertaking basic research program(s) or other basic research activities; (2) a senior academic rank (title) or a doctoral degree, or recommendation from two researchers who are in the same research field and have a senior academic rank (title). Besides, those who apply for certain types of programs shall meet other specific requirements. (For more information, please refer to the text of this *Guide*.)

When an applicant not employed as a full-time staff member at his or her host institution submits an application, he or she shall state his or her position, term of employment and annual working duration at the host institution in the application.

2. When a researcher conducting basic research satisfies the requirements as prescribed in the preceding paragraph but has no employer or whose employer is not a registered host institution, on the condition that he or she has obtained the consent from a registered host institution, he or she is eligible to apply for the General Programs and Young Scientists Fund, but is not eligible to apply for other programs.

Under this circumstance, the applicant shall fill in personal information in the basic information page of the proposal and research experiences in CV, and sign the

agreement in written form with the host institution(for more information please refer to the *Guideline on Management of National Natural Science Fund Host Institutions*). **The hard copy of the agreement shall be archived at the host institution for future reference instead of being submitted to NSFC.**

Researchers with overseas identity who are not employed in any host institution shall not apply for NSFC programs as researchers with no employer or whose employer is not a registered host institution.

3. NSFC's funding opportunities, namely, Young Scientists Fund, Excellent Young Scientists Fund and National Science Fund for Distinguished Young Scholars are open to applicants whose host institution is one of the following universities, i.e. Hong Kong University, Chinese University of Hong Kong, Hong Kong University of Science and Technology, Hong Kong Polytechnic University, City University of Hong Kong, Hong Kong Baptist University, Lingnan University, Hong Kong Institute of Science & Innovation, Chinese Academy of Sciences, University of Macau, Macau University of Science and Technology and City University of Macau. The same funding pattern and peer review criteria will be adopted. And no specific funding quota will be allocated to applications from Hong Kong and Macau. Please refer to Young Scientists Fund, Excellent Young Scientists Fund and National Science Fund for Distinguished Young Scholars sections in this *Guide* for details.

4. Students pursuing the postgraduate degree (not obtained by the deadline for NSFC submission) cannot apply for any fund as the PI. However, with the supervisor's consent, in-service personnel can apply for certain categories of programs through the host institution. The applicant should submit a scanned copy of a signed certification of the supervisor's consent, which explains the connection between the dissertation and the proposal and guarantees the working hours and conditions after the project starts, as an attachment to the application. In-service postgraduate students whose employer is not a registered host institution is not eligible to apply for any type of programs.

5. Postdoctoral fellows can apply for the following programs only: General Programs, Young Scientists Fund, Fund for Less Developed Regions, and others to be determined by the corresponding solicitations. However, postdoctoral fellows are not allowed to apply for Young Scientists Fund from any host institution in Hong Kong or Macau.

6. The applicants for the Fund for Less Developed Regions should be full-time employees in the specified host institutions (for more information, please refer to the chapter on Fund for Less Developed Regions in this *Guide*), or the technical personnel following national policy and sent by the Organization Department on the 3-year or longer aiding mission in Xinjiang and Tibet, who should provide the supporting materials of the aiding mission issued by organization or personnel department of the aided institutions. If the unit that a researcher is working at for the aiding mission in Xinjiang or Tibet is not a registered host institution, they are allowed to apply for Fund for Less Developed Regions through the eligible host institutions in the aided

autonomous regions. Part-time employees in the specified host institutions, technical personnel from the specified host institutions affiliated to Chinese central government or the People‘s Liberation Army or host institutions outside the regions are not qualified to apply for the Fund for Less Developed Regions.

7. Any overseas researcher employed by a registered host institution shall not apply for projects as both domestic applicant and overseas collaborator (referring to overseas collaborators in international (regional) joint research projects).

The overseas collaborator of the International (Regional) Joint Research project (including Key International (Regional) Joint Research Program and International (Regional) Joint Research Program under Agreements/MoUs) shall not apply for other types of program (except for the Research Fund for International Scientists) as PI before the end date of their projects.

Domestic PI who has an ongoing project shall not participate in the application for International (Regional) Joint Research Program (including Key International (Regional) Joint Research Program and International (Regional) Joint Research Program under Agreements/MoUs) as an overseas collaborator before the end date of the ongoing project.

To avoid duplication of funding, NSFC‘s Department of Management Sciences and National Social Science Fund jointly limit applications. Please refer to the Funding Areas and Precautions under Department of Management Sciences section of this *Guide* for specific requirements.

ii. Requirements for applications

1. The proposal shall be prepared by the applicant in person and in accordance with the outline. The applicant and the main participants should fill in their CVs accordingly. **Please note that any unlawful, confidential or sensitive information shall not appear in the proposal.** The applicant shall be responsible for the authenticity and legitimacy of the proposal submitted.

2. In accordance with program types, the applicant shall make accurate selection of the “funding category”, “subclass introduction” and “annotation”. For some programs, annotation should be selected strictly in accordance with this *Guide*. When there is no relevant requirement, the annotation should be left blank.

3. **Applicants shall choose either “free exploration basic research” or “goal-oriented basic research” based on the content of their proposal.** “Free exploration basic research” refers to those cutting-edge basic researches of original innovation derived from curiosity or innovative academic inspiration, and does not aim to meet the needs of current application. “Goal-oriented basic research” refers to those basic researches that are driven by the needs of national socioeconomic development.

For the General Program projects, Young Scientists Fund projects, and Key Program projects under the pilot categorized review, NSFC will organize experts to conduct categorized reviews based on the research attributes selected by the

applicants.

4. Applicants shall select the application code accurately based on the research directions or research areas of their proposals, in accordance with the "NSFC Application Code" in this *Guide*. Particular attention shall be paid to the following aspects:

(1) When selecting the application code, please make sure to include the secondary application code (four digits).

(2) Key Programs, Major Research Programs and Joint Funds Programs, etc., may have special requirements for the application codes. For details, please refer to the relevant sections in this *Guide*.

(3) Applicants shall accurately select "Application Code 1" and the corresponding "research direction" and "key word" when filling out the proposal form.

(4) For any questions regarding the application code, please contact relevant scientific departments.

5. The applicant does not need to list students as main participants, but only need to include them in the total number of participants. Main participants will complete their CV online the same way as the applicant. The applicant shall invite main participants to complete their CV via the ISIS system and upload the PDF version of their CV generated by the system. Applications that fail to include complete CV of main participants cannot be submitted.

For each representative paper listed in the CV, an e-copy of the full text of the published paper in PDF format should be uploaded. For each representative monograph, a scanned copy of the cover, abstract, table of contents, copyright page, etc., in PDF format should be uploaded.

When main participants do not work at the same host institution as the applicant (including graduate students), the employer of the main participants shall be regarded as a collaborative research institution; however, overseas institutions are not regarded as such. Applicants shall select online or accurately fill in the employer information of the main participants. **The information on collaborative research institution in the basic information section of the application form is automatically generated by the online application system.** The number of collaborative research institution for each application shall not exceed two (unless otherwise specified).

6. If the proposed research involves issues related to science and technology ethics and security (such as biosecurity, information security), the applicant and main participants shall carefully study the science and technology ethics, and strictly follow relevant national laws, regulations and codes of ethics, and provide corresponding materials as attachment in accordance with the requirements of relevant scientific departments (a scanned copy shall be attached to the electronic application).

7. Applicants and the main participants with a senior academic rank (title) shall indicate in the proposal if:

(1) They have more than one host institution when applying or participating in NSFC projects in one year;

(2) They have different host institutions for on-going NSFC projects.

8. **Researchers who apply for or participate in the application of science fund projects with different professional and technical positions (titles) in the same year shall specify the relevant situation in the "Other Situations to be Explained" section of the application form and elaborate on the reasons.**

9. If a research has been funded through other sources, the applicant shall specify the funding details and their difference and connection with the current proposal. Applying for funding from different funding agencies for the same research content should be avoided.

If an applicant applies for different types of NSFC programs during the same year, he or she should specify in the application the other NSFC program applications, their titles and information, and the connection and difference with the current application. **The above-mentioned projects that have already been returned without review or rejected for funding by NSFC do not need to be listed.**

10. The start date for research in proposal shall be January 1, 2026, and the end date December 31, 20xx, depending on the funding periods (unless otherwise specified in this *Guide*).

11. The applicant and the main participants shall use the same and only document of identity for application.

When filling in names of oneself and main participants, the applicant shall make sure the names are in standard characters and exactly the same as the ones on documents of identity. Those who have received funds as applicants or main participants using other identifications shall declare and provide details in the proposal. Host institutions are accountable for verification.

12. **Host institutions should download the "2025 NSFC Host Institution Letter of Commitment for Project Application" from the NSFC Grants system in advance, and then upload the scanned electronic copy after it is signed by the legal representative and stamped with the official seal of the host institution to the system (only once a year). The host institution can submit the proposals only after completing the above-mentioned commitment procedures.**

13. All the applications for NSFC programs are paperless. **The applicant shall seek consent of main participants and collaborative research institutions regarding all the content of the proposal before submission. The host institution shall confirm the online applications and attachments in the Grants system before the deadline, and submit the list of applications within 24 hours after the deadline. Host institutions do not need to mail hard copies of applications.**

After a grant is awarded, the applicant and the main participants shall provide their personal signatures on the signature and seal page of the application form. Overseas participants who cannot sign the page shall send a signed paper document by

letter, fax, etc., stating their consent to participate and perform the related responsibilities in the application and the research work, which will be submitted together with the signature and seal page. The collaborative research institution shall stamp the official seal on the signature and seal page, and ensure the name on the official seal is consistent with the name of the institution in the application. A collaborative research institution that has been registered as a host institution with NSFC shall stamp the official seal of the host institution; a collaborative research institution that is not registered shall stamp the official seal of the legal entity. **The host institution should stamp the official seal on the signature and seal page of the application form and submit it together with the Project Plan.** The signature and seal information shall be consistent with that of the electronic application. NSFC will handle the cases where the signed and sealed documents are not provided according to the requirements above based on relevant rules and regulations.

iii. Explanation on the situations of non-acceptance

According to the *Regulations*, the application for NSFC funds shall not be accepted under any of the following circumstances:

1. The applicant and main participants do not meet requirements stated in the *Regulations,* this *Guide* and relevant management methods.

2. The applicant and main participants are banned from undertaking or participating in any S&T activities supported by national fiscal funding due to breach of research integrity and scientific and technological ethics.

3. The application materials do not comply with conditions in this *Guide*.

4. The number of proposals does not comply with conditions the Application Limit's.

II. Application limit

i. General requirements

1. Applicants shall only apply for one type of program[2] once in a year, excluding Integrated Program and Strategic Research Program in the Major Research Plan, Scientific Activity Program in Special Program and International (Regional) Exchange Program.

2. Applicants cannot apply for the same type of program if they received funding

[2]Type of Program: For Program of Joint Funds, those under the same agreement are considered as one type of program. For Science Fund for Creative Research Groups, Type A and B are considered as one type of program. For Science Fund for Excellent Research Groups (including the former Basic Science Center Program), Type A, B, and continued grants are considered as one type of program.

Unless otherwise specified, National Science Fund for Distinguished Young Scholars in this *Guide* includes newly approved and continued grants; Science Fund for Creative Research Groups includes Type A and B; Science Fund for Excellent Research Groups includes Type A, B, and continued grants.

for General Program, Key Program, Major Program, Major Research Plan Program (excluding Integrated Program and Strategic Research Program), Program of Joint Funds (referring to the Joint Fund with the same name), and Fund for Less Developed Regions as the PI in the previous year.

ii. Restriction on the total number of projects applied for and undertaken

Unless specified otherwise, projects whose funding period terminates in the year of application are not included in the total number for applying and undertaking. Proposals that fail to pass the compliance check will not be subjected to the restriction on the total number for applying and undertaking.

1. Limit on the total number of projects applied and undertaken

For researchers with a senior academic rank (title), the total number of the following programs he or she applies for (including as applicant and main participant) and undertakes (including as applicant and main participant) shall not exceed **two**: General Program, Key Program, Major Program, Major Research Plan (excluding the Fostering Program and Strategic Research Program), Program of Joint Funds, Young Scientists Fund, Fund for Less Developed Regions, Excellent Young Scientists Fund, National Science Fund for Distinguished Young Scholars, Key International (Regional) Joint Research Program, International (Regional) Joint Research Program under Agreements/MoUs with direct cost of more than 2 million yuan per project (only the PI are counted, main participants are not counted), National R&D Program for Major Research Instruments (including Special Fund for Major Research Instruments and Special Program of National Major Research Instruments), Basic Science Center Program, Original Exploratory Program, and Emergency Program and Special Program with funding period of over one year (unless otherwise specified, and except for the scientific activities projects under Special Program). **For researchers without senior academic rank (title),** the total number of the above programs that he or she applies for and undertakes as PI shall not exceed **one, and the number shall not exceed two when he or she applies for and undertakes the projects as a main participant.**

The grants that were awarded in 2019 or before and are undertaken by **researchers with a senior academic rank (title)** as main participants are not counted in the total number. However, the projects that researchers apply for as applicants and main participants and those awarded to researchers as PI and main participants in 2020 and beyond are counted in the total number.

The grants that were awarded in 2022 or before and are undertaken by **researchers without a senior academic rank (title)** as main participants are not counted in the total number. However, the projects that researchers apply for as applicants and main participants and those awarded to researchers as PI and main participants in 2023 and beyond are counted in the total number. In case a researcher receives the senior academic rank (title), the projects he or she undertakes as the PI

shall be counted into the total number whereas those a researcher undertakes as the major participant shall not.

2. Programs not subject to the total number limit

There is no number limit for Tianyuan Fund for Mathematics, International (Regional) Joint Research Program under Agreements/MoUs with direct cost of no more than 2 million yuan per project, International (Regional) Exchange Program, Integration Program and Strategic Research Program of the Major Research Plan, Research Fund for International Scientists, Science Fund for Joint Creative Research Group, scientific activity projects under Special Program, other types of program with funding period of no more than 1 year, and other programs specified in this *Guide*.

iii. Special requirements for some types of programs

1. International (Regional) Cooperation and Exchange Program

The PI of an International (Regional) Joint Research Project shall not apply as an applicant for the same type of program.

For International (Regional) Exchange Program, each researcher shall apply for as applicant and undertake as PI only one project under the same Agreement/MoU.

2. Special Fund for Research on National Major Research Instruments

Researchers with senior academic rank (title) shall apply (as applicant and main participant) for Special Fund for Research on National Major Research Instruments only once in the same year.

The PI and main participants of a project of Special Fund for Research on National Major Research Instruments are not allowed to apply for or participate in the application for the same program before the ongoing one concludes.

The PI of a project of Special Fund for Research on National Major Research Instruments (department's recommendation) is not allowed to apply for any type of NSFC program except for National Science Fund for Distinguished Young Scholars, Strategic Research Program of the Major Research Plan, and scientific activity projects under Special Program.

3. Programs of Joint Funds

At the stage of application, proposals for Joint Fund for Corporate Innovation and Development and Ye Qisun Science Fund are not counted, but are counted after submission confirmed by NSFC. For the Joint Fund for Corporate Innovation and Development and the "Ye Qisun" Science Fund, the total number of project that a researcher can apply for (as the applicant and major participant) and undertake (as the PI and major participant) under the same agreement is limited to 1.

4. Excellent Young Scientists Fund Program and National Science Fund for Distinguished Young Scholars

At the stage of application, Excellent Young Scientists Fund and National Science Fund for Distinguished Young Scholars are not counted, but are counted after submission confirmed by NSFC.

5. Science Fund for Excellent Research Groups (including the former Basic Science Center Program), Science Fund for Creative Research Groups and Continued Funding for National Science Fund for Distinguished Young Scholars

At the stage of application, proposals for Science Fund for Creative Research Groups and Science Fund for Excellent Research Groups are not counted, but are counted between submission and receiving NSFC's formal funding decision and after approval. Proposals for Science Fund for Excellent Research Groups that do not enter the site inspection procedure will not be counted.

Applicants and main participants shall only apply for and participate in one project for Science Fund for Creative Research Groups, Science Fund for Excellent Research Groups, Continued Funding for National Science Fund for Distinguished Young Scholars or Science Fund for Joint Creative Research Groups in the same year.

The PI and main participants with senior academic rank (title) who is funded by Science Fund for Creative Research Groups shall not apply for Science Fund for Excellent Research Groups; however, application is allowed in the year of conclusion.

The PI and main participants (key members) shall not apply for any NSFC grants before the awarded project concludes except for National Science Fund for Distinguished Young Scholars and Excellent Young Scientists Fund, Strategic Research Program of Major Research Plan, and Scientific Activities Projects under Special Program.

Participants who withdraw from Fund for Creative Research Groups or Basic Science Center Program shall not apply for or participate in the applications for those two types of programs within 2 years.

The PI who is undertaking the project of Continued Funding for National Science Fund for Distinguished Young Scholars shall not apply for or participate in the application for Fund for Creative Research Group.

6. Science Fund for Excellent Research Groups and Special Fund for Research on National Major Research Instruments (department's recommendation)

The applications for Science Fund for Excellent Research Groups and Special Fund for Research on National Major Research Instruments (department's recommendation) are mutually exclusive in the same year.

7. Original Exploratory Program

The Original Exploratory Program is not included in the scope of the total number of applications and grants at the time of application, but will be included in the scope of the total number of applications and grants after the grant is awarded (except for projects with funding period of no longer than 1 year).

Researchers can only apply for one project under Original Exploratory Program (including pre-application) in the same year.

8.Research Fund for International Scientist and Science Fund for Joint

Creative Research Groups

For Research Fund for International Scientist and Science Fund for Joint Creative Research Groups, the total number of project that a researcher can apply for as the applicant and undertake as the PI is limited to 1.

iv. The limit on the PI for accumulated number of funding

1. For Young Scientists Fund, Excellent Young Scientists Fund, National Science Fund for Distinguished Young Scholars, Science Fund for Creative Research Groups, and Science Fund for Excellent Research Groups, the applicant can receive the funding only once. Continued Funding for both National Science Fund for Distinguished Young Scholars and Science Fund for Excellent Research Groups are not subject to this limitation. Awardees for National Science Fund for Distinguished Young Scholars and Science Fund for Excellent Research Groups can apply for Continued Funding upon the conclusion of their projects.

2. An applicant can only be awarded once for each of the three tiers of the Research Fund for International Scientists, i.e. Research Fund for International Young Scientists, Research Fund for International Excellent Young Scientists and Research Fund for International Senior Scientists.

3. Beginning from 2016, for Fund for Less Developed Regions, the applicant's accumulated number of funding cannot exceed three. Projects approved in and before 2015 are not counted.

v. Joint Limit with National Science and Technology Program

In accordance with *the Notice of the General Office of the Ministry of Science and Technology, the General Office of the Ministry of Finance and the Office of the National Natural Science Foundation of China on Further Strengthening the Project Approval Management of National Science and Technology Plan*, a joint limit is imposed on NSFC Major Program (only for PI and co-PIs of grants), Basic Science Center Program (only for academic leaders and key members), National R&D Program for Major Research Instruments (only for PIs and main participants with senior academic rank (title) of the department recommended projects) and National Key R&D Program (only for PIs and co-PIs, and excluding Young Scientist Program, Small and Medium-sized S&T-based Enterprise Program, and International Cooperation Program), and S&T Innovation 2030—Major Program (only for PIs and co-PIs, and excluding Young Scientist Program). The number of projects (subjects) that a researcher applies for and undertakes in the same period shall not exceed two in principle. Applications in the year when the above projects (subjects) are concluded are not counted in the number limit.

For researchers with senior academic rank (title), the total number of Special Fund for Research on National Major Research Instruments and the National Major Instrument R&D Program and the Key Special Program for Basic Scientific Research

Infrastructure and Major Research Instrument R&D (Scientific Equipment direction) one may apply for (including as applicant and main participant) and undertake (including as PI and main participant) shall not exceed one.

vi. Special notice

1. During the evaluation period (prior to NSFC's final decision), the application shall be counted in the total number, except for those under Original Exploratory Program. Applications that are not subject to the restriction on the total number of projects include: applications for Basic Science Center Program that do not enter the site inspection procedure, applications for Special Fund for Research on National Major Research Instruments (Bottom-up application) that do not enter the budget review procedure, applications for Special Fund for Research on National Major Research Instruments (department's recommendation) that do not enter the budget review or site inspection procedure.

2. In the case that applicants engaged in multiple host institutions apply for or undertake through different host institutions, the Limit is still applicable.

3. In case of an inconsistency between other management regulations and this Limit in terms of total project numbers, the latter shall prevail.

III. Budget Preparation

i. General requirements

The applicants shall make and submit the project budget in accordance with the guidelines of relevant official documents of the Central Government and the State Council and *the Measures for Fund Management of NSFC-Awarded Projects* and *the Specification of Budget Table Preparation for NSFC-Awarded Projects*, following the principle of ―policy compliance, target relevance and economic rationality. The proposed budget shall reflect the actual needs of the proposed research. The host institution shall carry out a careful review and approval of the proposed budget in line with relevant regulations.

ii. Contents

There are two categories of financial management system for NSFC-funded projects, i.e., the lump-sum payment system and the budget-based system.

1. **Lump-sum projects**

Applicants of lump-sum projects shall apply for the funding amount in a scientific and reasonable way to ensure well-organized and effective use of funding, while without the need to make a project budget.

2. **Budget-based projects**

Applicants of budget-based projects shall fill in the *Budget Table of the NSFC-funded Projects* (hereinafter referred to as Budget Table) and the *Budget Justification* in accordance with the actual needs of the proposed research and the average funding amount of a certain type of program.

(1) Budget Table

Only the amount of direct costs, fund to be allocated to collaborative institutions and fund from other sources are required to be filled in. There is no fixed proportion for each account of the direct costs. Applicants shall draft the budget based on the definition, scope and standards of each account and their actual needs. Indirect costs will be uniformly calculated by NSFC. The accounts of direct costs on the Budget Table are as follows：

Equipment expenses refer to the costs of purchase or trial– production of special instruments and equipment, the upgrading and modification of existing instruments and equipment, and the rent of instruments and equipment from other institutes during the implementation period of the project. Computing instruments and software tools can be included in the equipment expense. The purchase of new equipment should be strictly controlled to avoid duplicate purchases by encouraging open sharing, independent research and development, renting special instruments and equipment, and upgrading existing instruments and equipment.

Experimental and Operating expenses refer to the purchase, transportation, handling and arranging of low-value consumables such as materials and auxiliary materials consumed during the implementation period of the project, as well as test and processing costs, fuel and power costs, publication /documentation/ dissemination/IPR services costs, conference /travel/international cooperation and exchange costs, and other related expenses.

Labor costs refer to the labor fees paid to graduate students, postdoctoral students, visiting scholars, and researchers and research assistants employed for the project, as well as the consulting fees paid to the experts hired on a temporary basis during the implementation period of the project.

The expenditure standard of labor costs for the hired personnel should be level with the average salary of the employees of local research community and technical service industry, depending on the assignments they undertake in the project. The social insurance subsidies and housing provident funds paid by the host institution are included in the labor costs subject.

Fund to be allocated to cooperative research institutions: please fill in the total amount of fund that is to be transferred from the host institution to cooperative research institutions.

Fund from other sources: please fill in the funds obtained from the host

institution and other sources.

(2) Budget Justification

Applicants shall describe the budget of each account in the Budget Table, and funds to be allocated to collaborative institutions and from other sources in Budget Justification. The justification of each account shall include the object of expenditure based on the research tasks.

Equipment expenses: Applicants shall elaborate on the necessity and rationality of expenditures on equipment. Detailed explanations should be made for a single purchase of equipment totaling 500,000 yuan or above; and classified explanations should be made for the purchase of equipment totaling less than 500,000 yuan.

Experimental and Operating expenses: Applicants shall elaborate on material costs, testing and laboratory processing costs, fuel and power costs and other expenditure categories for basic calculation and explanation.

Labor costs: Applicants shall comprehensively consider the necessity of the research task undertaken by the object of labor expenses, the working hours dedicated to the project, the rationality of the cost standard and other factors, and make basic calculation and explanation according to the type of personnel.

Fund to be allocated to cooperative research institutions: Applicants shall provide necessary description on the research tasks that the cooperative research institutions undertake and whether the fund will be allocated externally. In case there are more than one cooperative research institution, they should be addressed respectively. In case the fund will be allocated externally, the amount should be particularly indicated.

Fund from other sources: Applicants shall briefly indicate the source of funding and the object of expenditure.

iii. Management of Fund allocated to cooperative research institutions

1. If the applicant and the main participant of a project are not from the same host institution, the main participant’ s host institution (based in China‘s mainland) is regarded as a cooperative research institution.

2. The applicant and the main participant shall negotiate on the matters related to collaborative research, which include the division of research tasks and the allocation of fund.

3. Both parties of the project shall sign a cooperative research agreement (or contract) before the submission of the Research Plan, with specification of the funding transferred to the cooperative research institution in the Budget Justification.

The cooperative research agreement (or contract) needs not to be submitted to NSFC, but rather kept by the host institutions for future reference.

4. The applicant and the main participant of the project shall prepare their respective budgets (hereinafter referred to as sub-budgets) according to their respective research tasks. Once the sub-budgets are reviewed and signed by the respective host

institutions, the applicant shall complete a total budget of the project and submit it to NSFC. The sub-budgets in the application submission stage needs to be signed by the main participants (in the blank of the Budget Table), and the sub-budgets at the Research Plan submission stage needs to be signed by the main participants with the seal of the cooperative research institutions (in the blank of the Budget Table). The sub -budgets need not to be submitted to NSFC, but shall be kept in the respective host institutions for future reference.

5. If the applicant and main participants have agreed not to make any funding transfers to the cooperative institutions, there will be no need to sign a cooperative research agreement, nor need to make sub-budgets, given that relevant specification be made in the Budget Justification.

6. During the implementation of the project, the host institution shall make funding transfers to respective cooperative research institutions according to the project Research Plan and the cooperative research agreement, and strengthen the supervision and management of the transferred funds.

iv. Responsibilities of Host Institutions and PIs

The host institution, bearing the responsibility of the project funding management, shall establish and improve the funding management mechanism following the principle of unified leadership, multi-level management, and individualized responsibility. With internal regulation, performance management and supervision and restraint mechanisms put in place, the host institution shall review and approve the project budget, expenditure, final account as well as the budget adjustment carefully, so as to achieve "consistency between real expenditure and final account", and ensure that all expenditures are "truthful, legitimate and effective". The PI in charge of the project is directly responsible for the use of the grant, and bears legal responsibility to ensure the compliance, rationality, authenticity and relevance of the use of the grant.

v. Management of unexpended funds

The NSFC-funded grants are earmarked for supporting scientific researchers to carry out basic research and explorations at frontiers of science, as well as strengthening personnel capability and team-building. The host institution shall enhance the management of the unexpended funds, maintain a dynamic supervision of the fund expenditure and provide real-time early reminder, revitalize the use of unexpended funds, speed up the progress of fund use, and improve the efficiency of fund expenditure. The PI in charge of the project shall arrange the expenditures reasonably according to the needs of scientific research activities, not only to avoid crash expenditure, but also to prevent excessive leftovers. When a project is concluded and approved by the NSFC, the host institution will be fully in charge of coordinating the use of the remaining funds, prioritizing the research needs of the team undertaking

the project. The host institution shall formulate regulations on the use of unexpended funds. If a project conclusion is not approved by the NSFC, the host institution shall return the remaining funds to NSFC within 30 days upon receiving the written notice from NSFC.

vi. Miscellaneous

1. In accordance with the guidelines of the Opinions of the General Office of the State Council on Reforming and Improving the Management of Scientific Research Funds Financed by the Central Government and The Regulation on the Funding Management of NSFC-funded Projects, the host institution shall fulfill its responsibility for the funding management, improve timely its internal administrative systems, enhance the relevant services for researchers, fully implement the financial assistant system for scientific research, improve the management of financial reimbursement, and thus establish an information-based reimbursement mechanism addressing actual needs of scientific research.

2. For Special Fund for Research on National Major Research Instruments, Major Program and Continued Funding for Science Fund for Excellent Research Groups, the applicant shall abide by the principles of relevant objectives, consistent policies, and economic rationality and prepare the project budget conscientiously, based on the actual needs of the instrument development. NSFC will organize budget review, and will not grant funds for projects that seriously exceed the actual needs.

3. Projects funded by NSFC under the Young Scientists Fund, Excellent Young Scientists Fund, National Science Fund for Distinguished Young Scholars and its Continued Funding, and the Pilot Program for Young Students Basic Research are subject to the lump-sum financial management system, and thus without the need to prepare project budgets. Other types of program will adopt budget-based system.

4. The figures on the budget table shall be measured in “ten thousand yuan” rounding up to 2 decimal places. The costs or prices of each item are measured in “yuan", accurate to single digit. Foreign currency must be converted into RMB at the spot exchange rate published by the People's Bank of China.

5. In the course of the implementation, when the project is terminated for some reason, the host institution shall be responsible for returning the balance funds to NSFC through the original channel. For projects revoked for some reason, the host institution shall be responsible for returning all the funds to NSFC through the original channel.

For the terminated and revoked projects of which the fund is not returned, NSFC will deduct the corresponding amount from the next year's indirect cost allocated to the host institution. Note: The responsibility of the PI shall not be transferred to other PIs in disguise. Host institutions shall ensure the handling of the project involved will not affect the use of indirect costs of other projects.

IV. Requirements for scientific integrity and S&T ethics

To enhance scientific research integrity and S&T ethics, prevent scientific misconduct in science fund application, NSFC proposes instructions and requirements for scientific integrity and S&T ethics to be followed.

The applicant shall inform the main participants of the content of the proposal and the requirements of scientific research integrity and science and technology ethics to ensure the main participants' full awareness. The applicant and the main participants shall be responsible for the authenticity, integrity and legality of the content of the proposal and supporting materials. The applicant shall strengthen the relevant education and training for members of the research group, especially the students participating in the research project.

i. About personal information

1. The NSFC project shall be applied for by the applicant personally. Applicants and main participants shall truthfully fill in the personal information and be responsible for its authenticity; at the same time, the applicant shall also be responsible for the authenticity of the personal information of all the main participants. It is strictly prohibited to forge or provide false information.

2. The academic degree information of applicants and main participants shall be consistent with that on the diploma. The time of degree acquisition shall be the same as on the diploma.

3. Applicants and main participants shall faithfully and accurately fill in the title information of their formal employment at host institutions (For titles appointed internally, host institutions shall have the qualification for evaluation of corresponding titles). Forgery or providing false title information is strictly prohibited.

4. Applicants who are unemployed or whose employer is not a registered host institution shall truthfully fill in the work unit and the employment information. Giving false information is strictly prohibited.

5. Applicants and main participants shall faithfully and accurately complete their curricula vitae, including a detailed list of academic titles and their corresponding periods. It is strictly prohibited to omit the middle academic title and only write the highest one, for example, "1986 to present, Professor". It is strictly prohibited to forge or alter relevant information.

6. Applicants shall accurately provide the information of their postgraduate and postdoctoral tutors, and shall not provide false information or omit any information in that regard. If the applicant is an on-the-job graduate degree candidate, he/she shall truthfully fill in the identity information, and provide relevant materials according to the requirements stated in the "Eligibility of applicants and requirements for applications" section. Concealing such information is prohibited.

ii. About research content and foundation

1. The applicant shall fill out the body part of the proposal in accordance with the *Guide*, instructions indicated in the online application system and requirements of the outline, and faithfully fill in relevant research work and research contents. Plagiarism or fraud is strictly prohibited. (including but not limited to plagiarism of others' academic viewpoints, research ideas, research schemes, and text expressions with complete semantics). Violation of law and regulations, codes of ethics and regulations regarding S&T security is also strictly prohibited.

2. When filling in the research achievements such as papers, the applicant and main participants shall truthfully list the names of all authors (inventors or participants) of the research results as they appeared when published, and shall not alter the order of authors (inventors or participants). The representative papers listed in the CV shall truthfully reflect the authors' names, and shall not falsely mark the first author or corresponding author, or change the meaning of author ranking.

3. "Research results" that are generated from scientific misconducts such as forgery, tampering, plagiarism, entrusting "third party" to compose or submit the proposal, and peer-review fraud as the basis of applying for science funds shall not be included as the foundation or results to apply for NSFC fund.

4. Applicants shall truthfully describe the peer reviews of research results, and shall not fabricate or exaggerate their academic contribution.

5. Applicants and main participants shall strictly abide by the academic norms and codes of conduct recognized by the scientific community. Research on humans, experimental animals and other research involving ethical risks in science and technology shall pass ethical review in accordance with the requirements of the state, department (industry) and institutions.

6. Proposals with same or similar research contents shall not be submitted by different applicants through different host institutions to apply for different types of programs simultaneously. Projects that have already been funded are not allowed to be proposed.

7. The research content of the proposal should not be the same as that of the proposal that has been submitted through another channel and is being reviewed. If the research content has been funded through other channels or programs, applicants shall state the funding situation and the difference and connection with the proposed project in the application. Applicants shall not submit the same research content once again to NSFC for funding.

iii. Other relevant requirements

1. Prior to submitting the proposals, applicants together with host institutions shall strictly comply with their commitments in the process of application and review.

2. It is strictly prohibited to engage in any activities that may affect the fairness of NSFC review.

V. Responsibilities of host institutions

1. Host institutions shall organize application work by strictly abiding by the *Regulations, Guide to Programs, Regulations on Fund Management of National Natural Science Fund Host Institutions*, other relevant notices and management methods and Funding Management Method, Budget Preparation Notes and Notes on National Natural Science Foundation of China Program Budget Form.

2. Host institutions shall implement *—Several Opinions of NSFC on Further Strengthening the Science Fund Management of Host Institutions*, seriously fulfill the responsibilities of management, and strengthen and standardize science fund management.

3. Host institutions shall establish a scientific research ethics review mechanism to prevent ethical and security risks. In accordance with relevant laws, regulations and codes of ethics, host institutions shall establish and improve scientific research ethics management systems; strengthen ethical review mechanism and process supervision; improve the sense of responsibility and legal awareness of scientific research personnel with regard to scientific research ethics through publicity, education and training.

4. Host institutions shall establish a scientific and technological security review mechanism to ensure no confidential or sensitive information appears in the proposals. In accordance with relevant laws and regulations, host institutions shall establish and improve scientific and technological security management systems; strengthen liability system for biosecurity, information security and other scientific and technological security; improve the sense of responsibility and legal awareness of scientific research personnel with regard to scientific and technological security, etc. through publicity, education and training.

5. Host institutions are held accountable for the eligibility of applicants, and shall examine and verify the authenticity and completeness of proposals. Host institutions that allow applicants without employer or whose employer is not a registered host institution as listed in Article 11 Clause 2 of *Regulations* to apply for funds via their institutions, shall bear the responsibilities listed in Article 13 of the *Regulations*, and sign the written contract. The written contract shall be archived at the host institution for further reference instead of being submitted to NSFC.

6. Host institutions should ensure that they themselves, collaborative institutions, applicants and main participants are not in the penalty period during which the application, undertaking and participation of S&T activities funded by governmental finance are restricted.

7. Host institutions should focus on the quality of the proposals, rather than the number of proposals attained by mass mobilization, setting rigid goal, and adopting

reward and punishment measures linked to proposal submissions, so as to gradually improve the overall level of basic research of the institution.

8. **Host institutions should upload the electronic scanned copy of the *2025 NSFC Host Institution Letter of Commitment for Project Application* that is signed by the legal representative and stamped with the official seal in a timely manner, to ensure applicants can finish and submit their proposals online on time; and confirm and submit each and every proposal and its attachments, and the list of proposals (proposals not submitted by the peak season deadline will be exempt from submitting the list) of the host institution within the set time frame, to ensure all the proposals will be accepted properly.**

VI. Accountability

1. Host institutions that neglect management and fail to perform the duties of examining the authenticity, completeness and compliance of the application materials, or host institutions and cooperative institutions violating commitments, shall be punished depending on the severity of the situation by NSFC in accordance with the *Regulations*,*Notice of NSFC and MoST on Further Consolidating the Primary Responsibility of Institutions Undertaking National Science and Technology Programs (Special Projects, Funds, etc.) in Upholding Academic Culture and Scientific Integrity", "Rules for the investigation and handling of scientific integrity cases (for trial implementation)","NSFC Measures for Investigation and Handling of Research Misconduct"*, "*Memorandum of Cooperation on Imposing Joint Disciplinary Measures on Discredited Entities in the Area of Scientific Research",* requirements stated in this *Guide* and the signed letter of commitment.

2. Applicants and main participants violating the requirements and commitments stated in this *Guide* or other scientific and technological activities, once discovered, shall be punished (such as termination of review) depending on the severity of the situation by NSFC in accordance with the provisions of the *Regulations* and the *Guide.*

3. Suspected violations of scientific research integrity requirements will be investigated, and verified cases will be handled with seriousness. Clues and whistle-blowing reports related to the violation of disciplines and laws will be transferred to relevant discipline inspection and supervision departments in accordance with management authority.

Funding Areas and Precautions for Scientific Departments

Department of Mathematical and Physical Sciences

Mathematical and physical sciences (including mathematics, mechanics, astronomy, physics I and physics II) are important foundations of natural science, and the precursor and basis for the development of contemporary science. In their own development, mathematical and physical sciences also provide theories, methods and means for other disciplines. Research findings in mathematics and physics play a key role in promoting the progress of both basic and applied scientific disciplines. Disciplines in mathematical and physical sciences are peculiar in characteristics, such as big differences between or among disciplines, and pure theoretical research (such as mathematics, theoretical physics, etc.) and experimental studies. Many disciplines feature "mega-science", such as high energy physics, nuclear physics, astronomical physics, high temperature plasma physics, etc.

Mathematical and physical sciences have extensive interactions with other sciences, for example, with information science, life science and management science, physics with materials science, life science, information science and chemistry, astronomy with earth science, and mechanics with engineering science, material science and earth science. Their interactions produce a series of interdisciplinary, cross-boundary disciplines and new research areas, and at the same time research objects and areas are also expanding.

The Department will continue to increase its support on basic research that takes as its primary goals advancing the disciplinary development, promoting original innovation and training talented researchers and meeting the needs of national long-term development, as well as interdisciplinary research within the Department and with other departments.

In 2024, the Department received 12,939 applications for General Programs, which is 4,236 more than 2023, increasing 48.67%, and 1,889 projects were funded, the funding rate was 14.60%, and the funding per project was 500,200 yuan on average. The funding per project was 435,100 yuan for mathematics, and 523,900 yuan for other disciplines.

In 2024, the Department received 8,795 applications for Young Scientists Fund programs, and funded 2,281 projects. The success rate was 25.94%. The development

Funding of programs in Department of Mathematical and Physical Sciences in 2024

Unit: 10,000 yuan

Divisions		General program			Young scientist program			Less developed region program		
		Projects	Direct cost	Success rate (%)	Projects	Direct cost	Success rate (%)	Projects	Direct cost	Success rate (%)
Mathematics	Mathematics I	243	10 574	14.82	322	9 660	22.84	48	1 301	15.95
	Mathematics II	263	11 444	14.40	381	11 430	22.72	56	1 518	16.28
Mechanics Mechanics	Dynamics and control	60	3 142.83	14.56	65	1 950	22.65	5	154.45	10.87
	Solid mechanics	158	8 277.12	14.64	185	5 550	22.70	14	434.05	15.56
	Fluid mechanics	82	4 299.72	14.62	99	2 970	22.00	9	278.25	24.32
	Bio-mechanics	31	1 624.31	14.49	33	990	23.24	2	61.90	13.33
	Aerospace mechanics	28	1 465.14	14.81	41	1 230	24.40	0	0	0
	Explosive and impact dynamics	41	2 148.20	14.44	57	1 710	22.98	1	30.95	14.29
	Environmental mechanics	16	838.68	14.16	15	450	22.39	6	185.40	22.22
Astronomy	Astrophysics	67	3 491	15.88	73	2 190	23.93	10	309	19.61
	Basic astronomy and technical methods	39	2 063	12.91	31	930	20.81	2	62	8.00
Physics I	Condensed matter physics	249	13 045	14.56	294	8 820	22.65	35	1 083	15.63
	Atomic and molecular physics	39	2 043	14.89	47	1 410	22.82	9	278	21.43
	Optics	147	7 702	14.73	161	4 830	22.49	14	442	13.59
	Acoustics	37	1 942	14.57	44	1 320	23.16	3	83	20.00
	Quantum regulations	29	1 517	14.57	36	1 080	23.23	3	94	27.27
Physics II	Fundamental physics and particle physics	114	5 904	15.66	131	3 930	25.14	18	554	21.95
	Nuclear physics, nuclear technology and its applications	135	7 091	13.75	150	4 500	21.96	7	219	18.42
	Accelerator, reactor and detectors	49	2 597	14.20	66	1 980	21.09	0	0	0
	Plasma physics	62	3 271	14.83	63	1 890	22.74	1	32	3.13
Total or average		**1 889**	**94 480**	**14.60**	**2 294**	**68 820**	**22.76**	**243**	**7 120**	**16.15**
Direct cost per project		50.02			30.00			29.30		

of young scientists is particularly important for the development of mathematical and physical sciences. The Department has always been paying attention to fostering and supporting young scientists, and the funding rate of the Young Scientists Fund has always been higher than that of General Program projects.

In 2024, the Department received 1,505 applications for Less Developed Region Programs, and funded 243 projects. The success rate was 16.15%. The funding per project was 293,000 yuan on average.

Division of Mathematics

Mathematics (A01-A06)

The Division encourages creative research on important issues in both the mainstream and frontier of mathematics, exploration of new ideas, new theories and methods in mathematics and interdisciplinary applications, interdisciplinary intersections between mathematics and other branches of science, and applied

mathematical research on practical issues. Applicants are required to have sound research background and capability. Proposal should be prepared based on a thorough understanding of the current status of the research involved, main issues and relevant research methods and available approaches. The Division encourages researchers to consolidate research team, foster talents and promote academic exchanges through the funded research projects. Research direction adjustment is allowable when needed.

For basic mathematics, the funding aims at maintaining stable development of research directions where China is traditionally strong and has comparatively large-scale research capability, promoting fast development of research areas that are within the mainstream of international mathematical research but relatively weak in China, and promoting interdisciplinary research among branches of mathematics. Focus is given to algorithm, grid theory and its algorithm, geometrical method in representation theory, comparative geometry and geometric analysis in non-smooth space, application of modern harmonic analysis in number theory, associate geometry and geometric measure, random analysis method and application, and mathematical problems in quantum field theory.

The funding for applied mathematics and computational mathematics aims at improving applications in solving practical problems, and gives more emphasis to basic theory and new methods with strong practical background and sound potentials for application. NSFC encourages mathematical modeling of practical problems, analysis and computation, and statistical methods and theory for big data, supports research on mathematical physical logic, algorithm complexity, discrete probability modeling, optimal algorithm, and combinational algorithm. Focus is given to applied researches such as mathematical modeling and theory of new materials, uncertainty theory in data processing, coding theory and information security, mathematical modeling and analysis in environmental and energy sciences, bio information and life system, pathogenesis and control of infectious disease, mathematical methods for complex bio process and development of diseases, statistical methods in industry and medical science, statistical and optimization method in deep learning and artificial intelligence, modeling and analysis in economic prediction and financial risk management, and mathematical theory and new method for industrial, medical imaging and image processing.

Division of Mechanics

Mechanics (A07-A13)

The Division mainly supports research on dynamics and control, solid mechanics, fluid mechanics, biomechanics, explosion and impact dynamics, and environmental mechanics. The Division supports projects with creative ideas in the frontiers of basic research on the one hand, and projects closely related to the sustainable development of economy, society and national security, and the

development of engineering and technology on the other hand. The Division supports interdisciplinary research and encourages experimental research using the available experimental facilities and key labs in China and advocates development of engineering analysis software in computational mechanics.

Applications for research in areas of dynamics and control should pay attention to the theory, methods and experimental studies on nonlinear dynamics and control of vibration and noise in frontiers of the discipline and major national needs, strengthen research on complex systems such as non-smooth system, uncertain system, random system, new structure and flexible system, multi body system, the coupling of solid, flexible bodies, and multi-field interactions. The Division encourages studies on flight mechanics and space environmental dynamics, and analytical mechanics, and key issues of dynamics and control problems in major engineering projects, and encourages experimental studies on dynamics and control.

Applications in the area of solid mechanics should focus on proposing and studying topics in major engineering applications, and encourage inter-crossing with physics, materials science, chemistry, information and biological sciences, expand basic theory of continuum mechanics, multi-scale mechanics and multi-field coupled mechanics, strengthen the constitutive theory of materials at macro, meso and micro scales, the theory of strength, crack, fatigue and failure mechanism; the mechanical behavior of new materials and structures; experimental measurement techniques and representation methods, new theory and method in computation mechanics, material and structure optimization, and completeness evaluations.

Applications in fluid mechanics should pay attention to studies on the laws and mechanisms governing complex flows. The Division encourages researches on micro-nano scale flow, rarefied gas flow, hypersonic flow, aerodynamic noise, measurement techniques in experimental fluid mechanics, flow control technique, new methods in CFD and high performance computational software, strengthen studies on on high temperature, high pressure and compressible turbulent flow, high speed hydrodynamics, multi-phase complex flow, non-Newtonian flow, and key fluid dynamic problems in aerospace, energy and ocean, and transportation areas.

Applications in biomechanics should pay attention to bio mechanical and mechanical biology problems related to human health and disease, life process, biomechanics and biology in sports, mechanism and transformation medicine related to diseases such as cardiovascular, bone joint and breath, rehabilitation, tissue repair and regeneration, bio-material and bionics, medical equipment, and human body damage in extreme conditions, and encourage experimental studies and software development on biomechanics.

Applications for aerospace mechanics should focus on basic problems related to important national need and future equipment of aerospace industry, and focus on issues in areas of aircraft aerodynamics and power design, structural design and performance evaluation, flight mechanics and control, and problems of aircraft in long

life service environment. We encourage basic research in key technologies in deep space explorations, hypersonic flow, flight across different media, and coordinated flight.

Applications for explosive and impact dynamics should pay attention to frontier areas and major national needs, focusing on studies of the dynamic mechanical behaviors of materials, structural response to explosive impacts and detonation mechanisms, dynamic loading and diagnosis, strengthen mechanism of explosive energy release and encourage studies on dynamic response of material and structure in multi field coupling under extreme dynamic loading environment, and protection of human bodies.

Applications for environmental mechanics should pay attention to basic theory of rock mechanics, environmental fluid mechanics, mechanics in extreme conditions and disaster damage, experimental method and numerical methods. The Division encourages studies on wind-sand and water-sand disasters, environmental pollution, energy related key mechanical problems and rock deformation, damage and mechanism of disaster formation.

The Division continues to support studies on instruments, new experimental methods and techniques with innovative ideas. The Division will keep supporting projects in computational software development, giving stress to the integration and standardization research on the development of the computational mechanics software which may produce independent or shared IPR.

Division of Astronomy

Astronomy (A14-A19)

The Division mainly supports researches on astrophysics, basic astronomy, astronomical instruments and technology. In accordance with the trend of astronomical development in the world and the present situation in China, the Division supports research proposals with emphasis on the development of technology and instrumentation. Studies based on existing observation apparatus or facilities to be built soon in China will be encouraged. The Division promotes the combination of innovative ideas, observation and theories, and studies on new technologies and methodologies for astronomy, especially those closely related to mega-science projects under construction in China. Interdisciplinary research is strongly encouraged so as to gradually build up research teams with special features and influence in international scientific communities. International cooperation and exchange will be given much attention.

In the General Program projects funded in recent years, a good balance has been achieved between astrophysics (including galaxies and cosmology, stellar and galaxy matters, solar and planetary system), basic astronomy (including astrometry, celestial mechanics and history of astronomy) and astronomical technology and methods.

Young researchers have become the main force in astronomical research and more than half of the awardees are under the age of 40.

In 2025, in addition to strengthening continuous support for projects integrating theory and observation and projects conducted by young scientists, the Division will emphasize on interdisciplinary research with physics, space science, earth science and information science, etc., maintain support on research on advantageous directions, promote research related to using large observatory facilities in China, and foster research topics that have the potential of making breakthroughs. The Division encourages research on basic physical process on celestial bodies, celestial chemical evolution, and celestial bodies in the solar system, extra solar system planetary system, infrared astronomy, space astronomical measurement, and astronomical research that addresses the national needs. The priority will be given continuously to researches in basic astronomy, astronomical technology and methods, and to relative small scaled astronomical research institutions.

In the next few years, the Division plans to give special support to pre-research around the research based on equipment that has already been built or being built, and conceptual studies on new technologies that are urgently needed for large-scale telescope and space exploration. For applicant in these research areas, please mark "Major S&T Basic Facilities Project" or "New Astronomical Technology" in the application forms.

Division I of Physics

Physics I (A20-A24)

The funding scope of the Division covers research on condensed matter physics, atomic and molecular physics, optics, acoustics and new research areas formed between these four disciplines and other disciplines.

According to the current status and requirements of disciplinary development, the Division pays attention to study on experimental methods and techniques motivated by creative ideas, encourages researches in new computational methods and simulation software closely related to experimental physics and exploratory types, key basic physical issues serving national needs, and new physical concepts and methods in interdisciplinary areas. The Division encourages especially in-depth and sustained studies on important physical problems and potential applications that have not become hot topics, and researches in basic physical problems on devices, and emphasizes on new areas and directions.

Condensed matter physics studies the structure, interaction, dynamic process of condensed matters and the relations between its macro properties. The Division pays attention to modeling and computation in electron related systems, macro quantum phenomenon, quantum phenomena and quantum effects in various low dimensional and small-scale systems, quantum information and solid state quantum computation,

superconducting physical properties, self-spinning and magnetism, poly ferric properties and magnetic electro coupling, topological state and topological order, condensed matter physics in extreme conditions, device physics and advanced technologies and methods of characterization, computer simulation method and software, surface and interface physics, semiconductor physics, and physical problems in energy transformation, transport, and storage, nonlinear response analysis, temporary physical phenomena in non-equilibrium conditions, Non-Hermitian physics, physics and application of advanced functional materials. Encouraged areas include physical issues and experimental methods related to soft matters, biophysics, and AI. The Division pays special attention to creative studies on material, device and physics having important application prospects.

Atomic and molecular physics studies structure, property, interaction and laws of motion of atoms and molecules, and their interactions with surrounding environment. The Division encourages researchers to pay attention to atomic, molecular structures, spectrum and regulations, complex interactions of atomic and molecular systems, cluster structure, physical property and assembly, atomic and molecular impact physics, atomic and molecular interactions with laser, atomic and molecular properties and regulation in external field, strong field atomic molecular dynamics, atomic and molecular physics in extreme conditions, cold atomic molecular physics, and their applications in quantum computation and quantum simulation, and precision measurement physics based on atoms and molecules. The Division encourages studies on frontier problems in atomic and molecular physics and interdisciplinary areas.

Optics studies generation, propagation of light and its interaction with matter. The Division supports research on generation and regulation of new optical field, super fast and strong light physics and interference regulation, physical problems of light in complex media and micro nano structures, new optical materials and device physics, precision spectrum and high resolution imaging, physical problems in new wave band optics and new light sources, photo quantum physics and quantum optics, topological and Non-Hermitian physics in optics and optical systems. The Division emphasizes on precision regulation on optical field phase and structure, ultra high spatial and temporal resolution, super strong and extreme weak optical field, novel optical materials, physics and applications, especially photoelectric integration and photon chip physics and application. The Division encourages optical problems in life sciences, health and energy and environment, and pay attention to applications in information, chemistry, and material sciences.

Acoustics studies the generation, propagation, reception of sound and its effects, including physical acoustic, hydro acoustics, ultrasonic, noise and vibration control, language acoustics, biological acoustics, atmospheric acoustics and earthquake sound, novel acoustic materials and devices, processing of acoustic information, etc. The Division pays attention to basic and applied basic studies with important application

potentials. The Division also pays attention to propagation and control of sound in complex structures, acoustic field and information process in sea, and acoustic sensing and devices in the coupling of multi physical field. The Division encourages interdisciplinary research in medicine, material science, and information science.

Quantum regulation is a new area funded in the Division, so as to promote research in related material and physics, new quantum structure, quantum effect and applications. The Division encourages exploratory studies on precision measurement physics, quantum computation and communication, and quantum simulation, and research on quantum device physics and new quantum techniques. Focus will be given to condensed matter physics, atomic molecular physics and optics, and interdisciplinary research on information science and material science.

Division II of Physics

Physics II (A25-A30)

The Division mainly supports research on fundamental physics, particle physics, nuclear physics, accelerator, reactor and detector, plasma physics, and nuclear techniques and applications.

For fundamental physics, funding will be focused on original, farsighted and leading studies, including mathematical physics, quantum physics, statistic physics and gravitation and cosmology. Special attention will be given to important theoretical physical issue arising from scientific experiments and applications.

For particle physics and nuclear physics, the Division will support creative theoretical and experimental research, in particular, the combination of theoretical and experimental studies related to selected large-scale experimental facilities that are in operation, upgrading or to be completed soon both in China and abroad. Funding will be used to guide research towards the understanding of important physical rules related to the latest experimental results, such as the theory and experiments of phenomenology in particle physics and interdisciplinary research of nuclear physics under extreme conditions with nuclear astrophysics and other disciplines.

For support to nuclear technology, accelerator, reactor and detector, low-temperature plasma and synchronized radiation method and technology, it is hoped that fundamental issues should be drawn from the disciplinary development, national demands and inter crossing with other disciplines, which may facilitate a deeper understanding of physical laws underlying the development of the disciplines and important applications at the same time. Emphasis will be laid on key technologies and innovative ideas in methodology and inter-crossing with other disciplines. In addition, the exploration of mechanisms and rules governing the interaction of matter with instantaneous, high energy, high power and strong field radiation (such as charged particles, X/γ, neutron and electromagnetic fields) are key areas for funding. Attention will be given to new acceleration principles, nanometre micro-beam, high

power ion beam, strong current accelerators, plasma radiation source in accelerator and detector and plasma research, and physics and key technologies of all other advanced radiation sources. The Division gives strong support to new types of nuclear detection technology and method such as large area, high counting rate, high temporal resolution, low cost and weak signals, etc., and relevant studies on nuclear electronics. The Division encourages studies on physics of advanced nuclear reactors, advanced nuclear fuel and smart control and simulation of reactors.

For nuclear fusion and plasma physics, more attention will be given to the exploration of new diagnostic means related to large facilities which are in operation at present or will be built soon. In particular, basic research on advanced magnetic confinement fusion and new approaches to inertial confinement fusion and related fundamental physical problems, and computer simulation and experimental studies of various kinds of plasma will be stressed.

In order to make more efficient use of limited funds, the Division encourages researchers across China to make full use of big science facilities, small and medium equipment to conduct research, so as to achieve sustainable development in the research. The Division encourages experimental studies with innovative methods of high resolution diagnosis and detection, and, as well as the development of experimental facilities, detection and diagnosis devices which are important for the development of accelerators, detectors and gravitational wave detection. Applicants may increase the funding request in applications in these areas according to the actual needs. Projects with more young scientists involved in the research team under the same condition will be preferred.

Department of Chemical Sciences

Chemistry is the science that explores the compositions, structures, reactions, transformations, properties, and functions of matters, which plays a central role in multidisciplinary integration. Chemical engineering, involved as the unique industrial characteristic of the fundamental science, aims to facilitate large-scale production by applying the principles of transfer and conversion of matters and energy, and ultimately to construct a substantial foundation for the essentials and sustainable development of human society.

The Department of Chemical Sciences is dedicated to raising the overall quality and international status of China’s fundamental research and nurturing innovative talents and teams with international impact in the fields of chemistry and chemical engineering. Specifically, the Department stimulates and funds research on the reactions, processes, and functions across multi-scales and multi-levels, from atoms and molecules to molecular aggregation and the condensed state. Studies on complex chemical systems are also encouraged to pursue the precise control and logical

understanding of chemical synthesis, processes, and functions. Moreover, the Department emphasizes expanding the knowledge of chemistry and chemical engineering in multiple research fields, such as biology, materials, energy, information, resources, environmental science and human health aiming to address the critical scientific issues confronting economy, society, national security and sustainable development. Accordingly, projects funded by the Department of Chemical Sciences particularly focus on the frontier research in chemistry and chemical engineering, employing various strategies, including the combination of micro and macro, statics and dynamics, theoretical chemistry empirical approach, precise analytical technologies, and fundamental experiments and process engineering. In addition, innovative and interdisciplinary research bringing in new theories, technologies and breakthroughs from other disciplines is highly encouraged to push the boundaries of chemistry and chemical engineering disciplines for sustainable development.

The Department will consistently promote innovative and high-quality research in the cutting-edge fields, with a focus on in-depth and systematic research, and a priority support to proposals on the basis of multidisciplinary integration. The Department supports creative projects by laying emphasis on the research diversity in ideas, methods, and contents, whereas research duplication is highly discouraged. Besides, the Department will take measures to support high-risk original research, to overcome bottlenecks that largely limited the rapid development of chemistry and chemical engineering in China, and ultimately to facilitate a shift from high-quantity to high-quality in research outcomes. In the review process, scientific significance is the core criterion for selection, and the contribution to the balance, coordination and sustainability of entire discipline will be comprehensively considered. Ultimately, the Department will promote the fundamental research of chemistry and chemical engineering in China to the international frontier.

For the General Program projects, the Department received 15,146 proposals in 2024, an increase of 5,452 proposals than in 2023, and a rise of 56.24%. After review, 2,024 proposals were funded with an average success rate of 13.36%, and an average direct cost of 499,800 yuan per project. The total funding amount of the General Program projects in the Department in 2024 remained almost the same as 2023, though the average success rate decreased by 7.43%.

For the Young Scientists Fund projects, the Department received 12,541 proposals in 2024, an increase of 1,398 proposals with a rise of 12.55% than in 2023. After review, 2,112 proposals were funded with an average success rate of 16.84%, which was 1.93% lower than 2023. The Department consistently gives priority to fostering and supporting young researchers to make outstanding achievements in the “golden age” of innovation. Adhering to the principle of people-oriented fostering of innovative talents, the Department gives full play to the stabilization and “seedling cultivation” functions of the Young Scientists Fund, and ensuring the funding for

Funding for General Program, Young Scientists Fund, and Fund for Less Developed Regions in the Department of Chemical Sciences in 2024

Unit: 10000 yuan

Disciplines	General Program			Young Scientists Fund			Fund for Less Developed Regions		
	No. of Projects	Direct cost	Success rate (%)	No. of Projects	Direct cost	Success rate (%)	No. of Projects	Direct cost	Success rate (%)
Synthetic Chemistry	302	15 094	13.35	299	8 970	16.86	51	1 632	13.86
Catalysis and Surface/ Interface Chemistry	205	10 244	13.36	236	7 080	16.79	34	1 088	13.65
Chemical Theory and Mechanism	118	5 899	13.36	109	3 270	16.87	13	416	13.54
Chemical Measurement Science	161	8 050	13.32	179	5 370	16.90	22	704	13.50
Materials Chemistry	246	12 300	13.33	301	9 030	16.83	35	1 120	13.67
Environmental Chemistry	223	11 150	13.35	211	6 330	16.83	40	1 280	13.84
Chemical Biology	150	7 500	13.36	147	4 410	16.80	25	800	13.66
Chemical Engineering and Industrial Chemistry	453	22 625	13.44	410	12 300	16.85	54	1 728	13.67
Energy Chemistry	166	8 300	13.31	220	6 600	16.83	25	800	13.81
Total or Average	**2 024**	**101 162**	**13.36**	**2 112**	**63 360**	**16.84**	**299**	**9 568**	**13.72**
Average direct cost (per project)	49.98			30.00			32.00		

* The average funding amount for direct cost applies to General Program and Fund for Less Developed Regions projects; the Young Scientists Fund projects implement a lump-sum funding system with a fixed amount.

outstanding young scientific researchers. Young researchers are encouraged to conduct innovative and independent research different from their advisors' topics. The review criteria will put less emphasis on previous publications, so as to facilitate the growth of young scientists.

For the Fund for Less Developed Regions projects, the Department received 2,180 proposals in 2024, an increase of 333 proposals by 18.03% compared with 2023. After review, 299 proposals were funded with an average success rate of 13.72% and an average direct budget of 320,000 yuan per project. The funding amount remained consistent with 2023, though the success rate decreased by 2.47%. On the premise of stabilizing the funding scale of the Fund for Less Developed Regions, the Department is committed to further promoting the research quality and the funding benefit, stabilizing a large number of talents engaged in basic scientific research, and continuously narrowing the gap with the developed regions. Applicants are encouraged to carry out research by taking advantage of the local resources, in order to promote the coordinated development of China's regional economy.

Matters for attention:

1. **Applicants are advised to review research funding priorities outlined by the divisions of the Department of Chemical Sciences.**

2. **Proposals with similar research contents must not be submitted by different applicants.**

3. **Requirements on research ethics and scientific securities (including biology and information security):**

(1) For proposals involving research ethics, applicants shall submit the approval certificate (upload a scanned copy in attachment) issued by ethics committee of the institution or higher authorities. Proposal without the proper ethics certificate will not be accepted or funded.

(2) For proposals involving scientific securities, applicants shall strictly comply with the relevant national laws and regulations; supporting institutions shall make a security commitment and submit a scanned copy in attachment. The proposal without the proper security commitment will not be accepted or funded.

(3) For funded proposals involving research ethics and scientific securities, if the research plan is changed during the implementation period, the applicant is required to resubmit the ethics certificate and scientific security commitment to the National Natural Science Foundation of China in accordance with the above requirements.

4. **To ensure the outcome of funded projects, applicants supported by high-level funding programs (including Key Program, International (Regional) Joint Research Program, Major Program, Major Research Plan, Key Program and Integrated Program of Joint Funds, and Special Fund for Research on National Major Research Instruments) during the recent two years, would in principle not be supported while applying for low-level funding programs this year. It also applies to the research proposals that have similar contents or used repeatedly in other applications for national science and technology projects.**

Division I of Chemistry

The Division I supports research in the field of synthetic chemistry.

Synthetic Chemistry (B01)

Synthetic Chemistry is a discipline that studies the synthesis and transformation of substances. It aims to precisely prepare substances with specific compositions, structures, properties and functions, through the selective control of the transformation and aggregation processes of inorganic, organic, polymer and other substances. Facing the needs of new substances, new materials, new devices and new processes in the fields of chemistry, physics, life science, materials science, information science, as well as energy and the environment, synthetic chemistry explores the mechanisms and laws of the synthesis and transformation processes of

substances, and develops new synthetic strategies, methods and theories.

Synthetic chemistry focuses on the rational design, structural control and transformation processes of function-oriented substances, and constructs substances with specific structures and functions through efficient and highly selective synthesis and assembly strategies. Aiming at greenness, safety, economy and convenience, synthetic chemistry realizes the precise synthesis of substances, and pays attention to human health, environmental friendliness, the effective utilization of resources and energy, and sustainable development.

Synthetic chemistry encourages the following research directions: synthesis driven by new reagents, new reactions, new structures, new strategies and new laws; synthesis based on big data and artificial intelligence; synthesis under extreme conditions; synthesis driven by non-equilibrium states or the synergy of multiple external fields; surface and interface synthesis; synthesis based on isotope labeling or isotope effects; the controllable synthesis of polymers, and their transformation towards high performance and high value; synthesis based on non-covalent interactions or the combination of covalent and non-covalent interactions; biosynthesis and biomimetic synthesis; the rational design and precise synthesis of function-oriented substances; in-situ and multi-element characterization techniques of substances structures and the structure-activity relationships; the mechanisms, laws and theories of substances synthesis; and the synthetic methodologies that are atomically economic, green, sustainable, precisely controllable, etc.

Synthetic chemistry is the foundation and core of the discipline of chemistry. It advocates the interdisciplinary integration of multiple disciplines, encourages original innovation and breakthroughs at the source with the creation and transformation of substances as the core, promotes the solution of major scientific problems in related fields, and contributes to the development of the national economy and society.

Division II of Chemistry

The Division II supports the research in the field of catalysis and surface/interface chemistry, as well as chemical theory and mechanism.

Catalysis and Surface/Interface Chemistry (B02)

Catalysis and Surface/Interface Chemistry focuses on understanding the structure and properties of surfaces and interfaces, as well as elucidating the fundamental principles governing physical and chemical transformations on surfaces and interfaces.

Catalysis and surface/interface chemistry exhibits obvious interdisciplinary scientific characteristics. These fields focus on precise construction, dynamic evolution and regulation of surfaces and interfaces, and paying attention to the core

scientific challenges in surface/interface physical chemistry. The fundamental theories and methodologies related to surfaces and interfaces are the key driving forces for the development of discipline. The funded research areas encompass catalytic chemistry, surface chemistry, colloid and interface chemistry, electrochemistry, as well as surface/interface-related studies in energy, environment, materials, and life sciences. These research areas span diverse interfaces, including surfaces, gas-solid interfaces, gas-liquid interfaces, liquid-liquid interfaces, liquid-solid interfaces, solid-solid interfaces, gas-liquid-solid multiphase interfaces, soft-matter interfaces, and biomimetic bio-interfaces.

Catalysis and surface/interface chemistry places strong emphasis on fundamental theoretical research and physicochemical characterization methodologies. The fields prioritize the development of novel theoretical and computational methods, tightly integrated with experimental sciences. Leveraging artificial intelligence technology and large-scale scientific facilities, it aims to develop in-situ characterization techniques and spectroscopic methods with time-space-energy resolution to reveal the physical-chemical processes and their evolutionary principles on surfaces and interfaces.

Catalytic chemistry prioritizes the development of novel catalytic concepts, theories, and methodologies, as well as the discovery of new catalytic reactions, systems, and processes. The field emphasizes investigations into catalytic mechanisms and kinetics to achieve the construction and regulation of the catalytic active region, establish the structure-activity relationship of catalysts, and develop innovative catalytic materials. The field also aims to develop new theoretical and experimental approaches for dynamic, multi-scale studies under operational conditions, and to explore the catalytic reaction processes and mechanisms under multi-field coupling. It encourages the research on the coupling and decoupling of the catalytic reaction process, sustainable energy and green carbon science, and interdisciplinary integration of heterogeneous, homogeneous, biocatalysis, and synthetic biology.

Surface chemistry supports research on atomic- and molecular-scale chemical and physical processes at surfaces and interfaces, with particular emphasis on controlling electronic states and tuning the properties of interfacial compositions and structures. The field is dedicated to developing novel theories and methods to investigate the charge and energy transfer across interfaces, molecular assembly and reaction dynamics at surfaces. It strengthens the intersection and integration with important fields such as energy conversion and utilization, the semiconductor industry, chip technology, friction and lubrication, low-dimensional functional materials, astrochemistry, health science, and environmental engineering.

Colloid and interface chemistry mainly focuses on advancing fundamental and applied research in novel principles, methods, technologies and materials, with particular emphasis on developing spatiotemporally resolved characterization

techniques for colloidal and interfacial systems. The field places strong importance on the design, synthesis of new surfactant molecules, macromolecules and micro/nano particles, and the investigation of their aggregation behavior; the development of novel colloidal dispersion systems; the development of functionalized molecular assembly system; the construction of soft-matter materials with biomimetic properties, self-healing capabilities, and external-field-responsive functionalities; the understanding of fundamental interfacial phenomena including adsorption, adhesion, and wetting behavior at complex interfaces and developing effective regulation strategies for biomimetic/biological interfaces. Furthermore, the field actively encourages both fundamental research and practical applications in areas such as high-end sensing interfaces, aerosols, soil science, pesticides/agrochemicals, petroleum, daily chemicals, food science, and biomedicine.

Electrochemistry mainly supports the research including the construction, characterization, and the theoretical and simulation methods of the electrochemical interface system; developing in-situ and operando characterization methods and multi-scale simulation approaches for electrochemical systems. It aims to deepen the understanding of the microscopic structure and dynamic evolution of electrochemical interfaces, establish novel models beyond classical double-layer theory; explore charge transfer, mass transport and conversion, energy storage and conversion processes under multi-field coupling, reveal fundamental structure-performance relationships of electrochemical interfaces, and develop new electrode materials and electrolyte systems. The research focuses on fundamental electrochemical processes and interfacial electrochemistry across key areas, including energy storage, hydrogen energy, carbon and nitrogen fixation, electrochemical synthesis, photoelectrocatalysis and electrochemical engineering. It also extends to high-end applications such as advanced electronic manufacturing, brain science and technology, biology and life processes, as well as sensing and recognition.

Interdisciplinary research pertaining to surfaces and interfaces is highly encouraged, with the objective of promoting a paradigm shift in the fundamental methodologies of interfacial chemistry

Chemical Theory and Mechanism (B03)

Chemical Theory and Mechanism aims to establish and develop new chemical theories and experimental methods, and reveal the mechanisms and basic laws of chemical reactions and related processes.

The research fields supported by chemical theory and mechanism mainly include chemical theory and methods, chemical simulation and application, chemical thermodynamics, chemical kinetics, structural chemistry, photochemistry and spectroscopy, chemical reaction mechanism, molecular electronics and molecular magnetism, polymer physics and polymer physical chemistry, chemoinformatics and artificial intelligence, as well as chemical programs and software.

Chemical theory and method focus on electronic structure, dynamics, and

statistical mechanics, and develop new methods of computational chemistry. Chemical simulation and application carry out rational design and computational simulation for complex systems in chemistry, materials, biology, medicine, etc., as well as in fields such as catalysis, energy, chemical engineering, environment, and information. Chemical thermodynamics encourages the development of chemical theories and experimental methods suitable for complex systems, reveals the internal connection between the thermodynamic properties and microscopic structures of the systems, and pays attention to the cross-applications in emerging directions such as nanomaterials, interfaces, high-entropy materials, and critical states. Chemical kinetics encourages the development and utilization of new experimental and theoretical methods to explore the essential characteristics and reaction processes of chemical reactions in the gas phase, on the surface, and in the condensed phase, as well as chemical kinetics under extreme conditions; it encourages research using large scientific facilities such as advanced coherent light sources; and it focuses on the research of ultrafast dynamics and microscopic structures and mechanisms. Structural chemistry focuses on the development of structural characterization methods and technologies for complex systems, controllable synthesis and molecular assembly, crystalline structures, dynamic bonding and transformation, and encourages the rational design of new structures, the research of structure-activity relationships, and the expansion of applications. Photochemistry and spectroscopy encourage the development of new technologies with spatial, temporal, and energy resolution and their combined new methods, explore the photochemical, photophysical, and photobiological mechanisms of new luminescent and photoconversion systems, and pay attention to the applications in fields such as photocatalysis, photovoltaics, and photo-functional materials. Chemical reaction mechanism focuses on applying theoretical chemistry, computational chemistry, artificial intelligence, and experimental methods to explore the microscopic mechanisms and basic laws of chemical reaction processes, and also pays attention to the applications in fields such as organic synthetic chemistry, polymer synthesis, enzyme chemistry, and catalysis. Molecular electronics and molecular magnetism encourage the development of new experimental and theoretical methods, pay attention to the construction of new structures and the proposal of new mechanisms, and their cross-applications in chemical reactions, environmental sensing, optoelectronic devices, etc. Polymer physics and polymer physical chemistry encourage the use of methods and means, such as theory and simulation, new experimental characterization technologies, etc., to study the chain behavior and interactions of biological macromolecules, the regulation and evolution mechanisms of structures at different scales, and the essence of the correlation between microscopic structures and macroscopic properties, and pay attention to the cross-applications in polymer rheology, polymer/supramolecular assembly, polymer materials, etc. Chemoinformatics and artificial intelligence encourage the

development of analysis, coding, storage, conversion methods, and standards for chemical objects and research processes, and pay attention to the development of methods, platform construction, and applications of big data and artificial intelligence technologies in fields such as chemistry, chemical engineering, materials, energy, life sciences, and medicine. Chemical programs and software highlight the importance to the development of programs and the creation of software with independent intellectual property rights.

Division III of Chemistry

The Division III supports research in the field of materials chemistry and energy chemistry.

Materials Chemistry (B05)

Materials Chemistry is a discipline that studies the design, preparation, structure, property and application of materials, which connects chemistry with other disciplines including materials science, life science, medical science and information science. Materials chemistry as a branch of application-oriented chemistry, is the molecular basis for new material systems. By employing chemical theory and methods, it designs new materials at the atomic and molecular levels, develops preparation methods and techniques, and reveals the structure-property relationships of materials. It aims to achieve materials' function transfer, integration and collaboration by modulating multi-scale and multi-level structures, and also develop new high-performance and multi-functional materials for targeted applications in the fields of energy, environment, health and information.

Materials chemistry focuses on precise preparation of new materials with specific function via tailoring the materials' structure and properties. It lays a strong emphasis on enabling research at the intersection between multidisciplines to facilitate interdisciplinary integration and unravel the structure-property relationships. A common feature of the research is to investigate the molecular basis and fundamental principles of the material systems using a combination of multiple characterization techniques. It strives to achieve full utilization of characteristic resources in China.

Materials chemistry intends to promote the discovery of functional materials, encouraging not only fundamental research on materials with electrical, optical, magnetic and other properties, but also interdisciplinary research related to biology, medicine and pharmacy. Exemplary key frontier directions include, but not limit to, structural design and preparation of advanced materials assisted by artificial intelligence, development of chemical methods and principles in advanced processing technologies. Energetic materials chemistry shall address basic sciences underlying the high-density storage, on-demand release and efficient utilization of chemical energy.

Energy Chemistry (B09)

Energy Chemistry focuses on the conversion, storage, transmission and utilization of energy at the atomic and molecular level. On the basis of chemical theory and methods, its primary mission is to achieve clean, low-carbon and highly-efficient utilization of energy by establishing mechanisms of energy conversion and storage, and developing new materials, methods, and devices.

Energy chemistry is committed to the efficient and clean utilization of fossil resources and renewable energy, particularly the carbon-based energy, solar energy, wind energy, hydrogen and biomass energy. Specifically, the related research area includes liquefaction and gasification of carbon-based energy, new photovoltaic/thermal materials and devices, chemical conversion of clean energy, electrochemical energy storage materials and devices, chemical energy storage materials. Besides, attention shall also be drawn to photoelectric, photochemical, electrochemical, photothermal, and thermoelectric energy and chemical processes.

Division IV of Chemistry

The Division IV supports research in the field of chemical measurement science, environmental chemistry and chemical biology.

Chemical Measurement Science (B04)

Chemical Measurement Science aims to develop the chemistry-related measurement principles, strategies, technologies, and methods, and to develop various analytical devices, instruments, components, and associated software, in order to accurately obtain the spatiotemporal dynamics of the composition, distribution, structure, and function of substances.

Chemical measurement science is oriented toward the scientific frontiers and national strategic needs, with an emphasis on methodological innovation, interdisciplinary integration, method integration, and intelligence systems. It places importance on the development of instruments based on novel principles and the performance enhancement of key components. The research supported by chemical measurement science covers the detection and analysis of complex systems from micro to macro, and from static to dynamic states. Key research areas include: separation analysis, electroanalytical chemistry, spectroscopic theories and methods, chemical and biosensing, chemical imaging, analysis of life sciences and public safety, instrumentation development, and applications of large-scale scientific facilities. The research scope covers chromatography, spectroscopy, electrochemistry, mass spectrometry, magnetic resonance, electron microscopy, scanning probe imaging, calorimetry, energy-dispersive analysis, and related emerging fields.

The priority funding areas of chemical measurement science include methods for processing, separating, and identifying complex samples; ultrafast and

spatiotemporally resolved spectroscopic techniques and chemical imaging; development and application of multidimensional spectroscopic principles and techniques; precision measurement at single-atom, single-molecule, single-cell, and single-particle levels; in-situ dynamic analysis of chemical and chemical engineering processes; in-vivo, real-time chemical detection and imaging; structural and functional analysis of biomacromolecules; molecular recognition and diagnosis of major diseases; early warning, identification, and tracing for public safety; development of instruments and devices; and chemical measurement based on large-scale scientific facilities.

Environmental Chemistry (B06)

Environmental Chemistry is a discipline that studies the presence, characteristics, behavior, effects of chemical substances in environmental media, as well as the principles and methods of pollution control. It is an important branch of chemical science and a core component of environmental science.

Facing the frontiers of the discipline and major national strategic needs, environmental chemistry adheres to a problem-oriented approach, highlighting foresight, innovation, interdisciplinary integration, and practicality. The main funding areas of environmental chemistry cover pollution characteristics and analysis, pollution processes and mechanisms, pollution prevention, control and remediation, environmental toxicology and health, environmental theory and calculation, radiochemistry and radiation, biosafety and chemical protection, etc.

This discipline encourages studies on the major problems in China's ecological and environmental protection, refining key scientific issues. Through the combination of laboratory research and field tests, theoretical simulation and environmental big data analysis, it develops new detection and monitoring technologies and methods, and studies the environmental chemical behavior, ecological and health effects, prevention and control principles and methods of pollutants, etc. The priority funding areas include analysis and characterization of pollutants in complex environmental media, the behavior and tracing of typical pollutants at multi-media interfaces, new principles and technologies of environmental catalysis, the formation mechanism and control of atmospheric complex pollution, the processes, control and remediation of water and soil pollution, the treatment, disposal and resource utilization of solid waste, the interaction mechanism between microorganisms and pollutants, new technologies and principles of green and low-carbon pollution control, the synergy mechanism of carbon reduction and pollution reduction and carbon cycle utilization, the environmental exposure and health effects of new pollutants, the environmental behavior and toxicology of micro-nano materials, environmental computational chemistry and big data, the prevention and control of radioactive pollution and the resource utilization of radionuclides, key chemical issues in hazardous chemicals and radiation protection, etc.

Chemical Biology (B07)

Chemical Biology uses exogenous chemical substances to precisely modify or

regulate the life system at the molecular level through an interventional chemical method or approach. Chemical biology creates new analytical, reaction technologies and molecular tools, providing new ideas and concepts for biological and medical research, and promoting the process of making the research on life processes (or functions) visible, controllable and creatable.

Chemical biology focuses on the processes and dynamic laws of important molecular events in life activities, and gives full play to the characteristics and creativity of chemical science. It mainly conducts the following research: ① Molecular probes in biological systems: through the construction and discovery of molecular probes, achieving real-time, in-situ, and quantitative detection or regulation of life activities; ②Chemical biology of biological molecules: developing new biocompatible reactions to achieve the construction, labeling, and modification of biological molecules and biological targets, and studying the biological functions of biological macromolecules such as proteins, nucleic acids, polysaccharides, lipids, as well as active small molecules, metabolites, ions, and other species; ③ Chemical biology of natural products: discovering new skeleton, new structure, and new active natural products guided by function or biogenesis, and revealing their action targets and mechanisms; ④ Chemical genetics: based on the principles of genetics, employing chemical molecules as tools to solve biological problems, or interfering/regulating normal physiological processes to understand the functions of biological macromolecules; ⑤Biosynthetic chemistry: analyzing the biosynthetic mechanisms of substances in life activities, using biological systems, biological components, etc. to complete specific chemical reactions, and synthesizing specific target molecules or new functional molecules; ⑥ Medicinal chemical biology: Through systematically establishing and optimizing compound libraries, developing new technologies such as screening methods and drug delivery, interfering and exploring life processes, revealing unknown life activity pathways and new interactions between biological molecules, and realizing the discovery and confirmation of drug targets, biomarkers, and lead compounds; ⑦ Theories, methods, and technologies of chemical biology: on the basis of creating and developing chemical tools, functional materials, and technical methods, conducting research on the chemical assembly and simulation of complex life systems, establishing new theories of chemical biology, revealing the chemical essence of life activities, and promoting the application of chemistry in biological science, medicine, and other research.

Facing the major national needs in the field of life and health, chemical biology encourages original innovation and breakthroughs in new concepts and theories. It gives priority to research on the molecular mechanisms and functional regulation of molecular probes in major biological events and major diseases; encourages research oriented towards using chemical means and methods to solve biological and medical

problems; strengthens the fundamental research on the reaction mechanisms and theories of chemical reactions in biological systems; explores the chemical origin of life and the chemical communication in life systems; and promotes the interdisciplinary integration of chemistry with biology, medicine, materials, etc.

Division V of Chemistry

The Division V supports research in the field of chemical engineering and industrial chemistry.

Chemical Engineering and Industrial Chemistry (B08)

Chemical Engineering and Industrial Chemistry studies the flow, transfer, reaction and their interrelationships in the process of substances transformation. It aims to understand the phenomena and laws of mixing, transfer and reaction in the process of substances transformation, and their regulatory mechanisms on the process efficiency and the structural properties of products. It innovates the theories, methods and technologies for the efficient substances transformation, and develops new methods, technologies, processes and equipment that are suitable for industrialization. Chemical engineering focuses on engineering science research, and integrates with disciplines such as chemistry, energy, environment, materials, biology and information, providing scientific foundations and technical supports for major national needs such as modern manufacturing, energy security, strategic emerging industries, as well as life and health.

This discipline focuses on the scientific research of process engineering, product engineering, system engineering, and their cross-scale aspects. In recent years, the research connotation has shown many new changes, mainly focusing on: ① The dynamic observation, simulation, regulation of micro-nano structures and interfaces, and the scientific laws of process intensification and scale-up; ② Unconventional and extreme processes with green and intelligent features; ③ In-depth integration and intersection with fields such as life and health, the ocean, electronic information, new materials and new energy.

Innovative research featured in chemical engineering would be rewarded with priority support, which includes but not limited to: mesoscale spatiotemporal dynamic structures, micro-nano scale process intensification, big data and intelligent processes of chemical engineering, systems engineering and the intrinsic safety of chemical engineering processes, thermodynamics, transfer, and reaction processes under unconventional conditions, green and low-carbon chemical engineering technologies, green media and industrial informatization materials, clean conversion and high-value utilization of resources, agricultural and marine chemical engineering, green biological manufacturing, core equipment for chemical engineering manufacturing, product engineering of high-end special chemicals, carbon footprint and ecological

and environmental chemical engineering, as well as the chemical engineering scientific foundations in cross-fields involving materials, energy, resources, environment, medicine, health, information devices, etc.

Department of Life Sciences

Life science research is one of the most active frontier fields of modern sciences to explore life phenomena and their basic rules. As a guarantee of national population health, grain security, food safety and ecological civilization, life sciences are important support for technological progress and industrial development. Life science research is closely related to national economic and social development, and plays pivotal dual roles in promoting scientific exploration and supporting of national strategic needs.

The Department of Life Sciences encourages researchers to carry out original studies with innovative academic ideas, and novel techniques and approaches, particularly for those playing a pivotal role in promoting the development of related disciplines with original ideas. The Department encourages applications that propose novel theories and novel hypotheses based on long-term researches. The Department will continue to pay attention to the cutting-edge frontiers and emerging fields in life sciences, focus on the scientific researches aimed at addressing the major national needs, and give priority to support the applicants with high-quality performance in their previous projects under equivalent conditions.

Since 2021, the application codes of all disciplines in the Department have been set as a two-level structure, with the first level application code and the second level application code. Numeral research directions have been set under the second level application code. Applicants should pay attentions to the research direction under the second level application code.

In 2024, the Department totally received 25,839 of General Program applications, 8834 more applications than in 2023, with an increasing rate of 51.95%. The Department finally supported 3218 proposals, with a supporting rate of 12.45% and an average funding of 500,000 RMB for each grant.

In 2024, the Department totally received 20,994 of Young Scientists Fund applications, 2678 more applications than in 2023, with an increasing rate of 14.62%. The Department finally supported 3094 proposals, with a supporting rate of 14.74% and an average funding of 300,000 RMB for each grant.

In 2024, the Department totally received 6,366 applications of Fund for Less Developed Regions, 939 more applications than the received applications in 2023, with an increasing rate of 17.30%. The Department finally supported 931 proposals, with a supporting rate of 14.62% and an average funding of 320,000 RMB for each grant.

Funding for General Program\Young Scientists Fund\the Fund for Less Developed Regions of Department of Life Sciences in 2024

Unit: 10,000 yuan

Divisions		General Program			Young Scientists Fund			Fund for Less Developed Regions		
		No. of Projects	Direct cost	Funding rate+ (%)	No. of Projects	Direct cost	Funding rate+ (%)	No. of Projects	Direct cost	Funding rate+ (%)
Division I of Biology	Microbiology	213	10 650	14.52	170	5 100	15.25	51	1 632	16.19
	Botany	222	11 100	15.02	170	5 100	15.76	67	2 143	14.32
	Zoology	134	6 700	16.22	85	2 550	16.87	25	800	14.12
Division II of Biology	Genetics and bioinformatics	153	7 650	17.06	130	3 900	16.09	18	576	16.82
	Cell biology	116	5 790	13.58	99	2 970	14.95	16	512	14.68
	Developmental biology and reproductive biology	77	3 850	17.42	60	1 800	16.57	6	192	10.53
Division of Biomedicine	Immunology	89	4 450	16.36	65	1 950	14.19	9	288	13.85
	Neurosciences and Psychology	149	7 450	15.52	160	4 800	15.12	22	704	15.94
	Physiology & integrative biology	90	4 500	15.93	55	1 650	15.36	9	288	15.25
Division of Interdisciplinary Research	Biophysics/ Biochemistry	118	5 900	18.88	87	2 610	18.43	9	288	12.50
	Biomaterials/ Imaging/tissue engineering	114	5 700	11.49	124	3 720	14.03	10	320	12.99
	Molecular biology/ Biotechnology	77	3 850	12.75	73	2 190	14.60	7	224	13.46
Division of Environment and Ecology	Ecology	201	10 050	13.52	189	5 670	17.81	89	2 847	14.29
	Forestry and grassland science	231	11 550	11.59	214	6 420	13.89	96	3 072	14.35
Division of Agriculture and Food Science	Agriculture and crop sciences	264	13 200	9.69	291	8 730	13.75	119	3 808	14.97
	Food science	246	12 300	9.18	328	9 840	13.28	86	2 752	14.98
Division of Agricultural Environment and Horticulture	Plant protection	165	8 250	11.04	176	5 280	15.25	77	2 464	14.53
	Horticulture and plant nutrition	188	9 400	10.30	223	6 690	13.74	95	3 040	13.89
Division of Agriculture Animal	Animal husbandry	131	6 550	11.31	137	4 110	13.78	54	1 728	14.79
	Veterinary medicine	148	7 400	11.25	146	4 380	14.47	49	1 568	15.56
	Aquaculture	92	4 600	10.12	112	3 360	14.64	17	544	14.78
Total or Average		**3 218**	**160 890**	**12.45**	**3 094**	**92 820**	**14.74**	**931**	**29 790**	**14.62**
Average direct cost (per project)		50			30			32		

Matters for attention

(1) Specific explanations on the scope of funding and the research contents that will not be accepted are provided in the section of each divisions of the Department in this Guide. Applicants should carefully read the project guidelines of the discipline

that they plan to submit an application, and ensure that the academic achievement information provided in the application is accurate.

(2) The application code 1 should be specified to the second level code for the applications of General Program, Young Scientists Fund and Fund for Less Developed Regions. Applications that just specify the first level code will not be accepted.

(3) Biomedical researches involving the manipulation of highly pathogenic pathogens must strictly abide by the national biosafety requirements, and applications can only be submitted with relevant biosafety conditions.

(4) Biomedical researches involving experimental animals must strictly abide by the provisions and requirements of national animal welfare and scientific ethics.

In addition, the Department has the following requirements for the ethics-related research associated applications in biomedical researches:

(1) Researchers must abide by the national laws and provisions for scientific research works. To carry out research in the field of biomedicine, researchers must abide by the relevant laws and provisions of the state, respect internationally recognized bioethical norms, and abide by the relevant requirements of the state for ethics research.

(2) Biomedical researches involving human tissues, organs, cells, *etc.* must provide the certification documents examined and approved by ethics committees from the supporting units or their superior departments in the application forms.

(3) Applications involving multi-unit participation in ethical researches should separately provide the certification documents examined and approved by ethics committee from each participating unit or their superior departments.

(4) When overseas institutions or individuals cooperate with domestic medical and health institutions to carry out research projects involving human ethics, they should provide certification documents examined and approved by ethics committees from the relevant domestic institutions.

(5) For research projects that need to sign informed consent, the signing procedures of the informed consent should be described in the application forms.

(6) If the ethics-related project is approved and the research plan is changed during the implementation period, the review approval of the ethics committee after the change of the research plan should be submitted to NSFC again in accordance with the above requirements.

Applicants should follow the requirements of this Guide and the application syllabus when writing their proposals. Otherwise, the proposals will not be accepted.

Division I of Biology

The funding scope of Division I covers three disciplines, namely microbiology,

botany and zoology.

Microbiology (C01)

The Microbiology discipline supports the fundamental research with microorganisms as the research objects, encourages researchers to carry out and give priority to support fundamental studies on resources, diversity and evolution, and biological characteristics in the field of microbial researches.

The Discipline encourages scientists to carry out in-depth and systematic research on virology and pathogenic microbiology, and promote the cutting-edge theory and technology of pathogen-host interaction research. The Discipline encourages scientists to carry out microbial classification research, reveal the systematic evolution and evolution rules of microbial groups with important classification status or application potential, and further strengthen the cultivation of taxonomic talents. The Discipline encourages the proposals aiming at study on mycoplasma, rickettsia, chlamydia, spiroplasma, prion and Oomycetes *etc*. The Discipline encourages researches on microbial single-cell, co-infection and drug resistance, population and epigenetics of microorganisms. The Discipline encourages researches on enrichment and isolation of microorganisms which are difficult to culture; researches on microbiome and its interaction with host and environment; fundamental researches on microorganisms in special environments; fundamental researches on microbiology aiming at the major environmental and health issues in China; encourages systematic and in-depth researches on frontier scientific and technological questions of life sciences using microorganisms as model materials..

In order to promote the development and application of novel theories, new technologies and methodology of Microbiology, gather multidisciplinary academic ideas, research methods and techniques, break through the barriers of traditional disciplines, and resolve complicated scientific questions, applicants are encouraged to carry out interdisciplinary research combining Microbiology with mathematics, physics, chemistry, ecology, electronics, information and engineering, especially the application of big data and artificial intelligence in Microbiology.

Botany (C02)

Focusing on the national needs and scientific frontiers, the discipline of Botany supports fundamental research projects using plants as the research objects. Research interests include plant taxonomy, plant phylogeny and evolution, plant photosynthesis and nitrogen fixation, transportation and metabolism of water and nutrients, interaction between plant and environment, plant hormones and growth regulators, plant reproduction and development, protection and utilization of plant resources, phytochemistry, new technologies and methods of botany research, etc.

Based on the applications received and funded in recent years, the development of each sub-branch within the Discipline is imbalanced. Proposal quality and funding rates are generally higher in research areas including plant phylogeny and evolution, photosynthesis and nitrogen fixation, water/nutrient transport and metabolism, plant-

environment interaction, plant reproduction and development, and phytohormones/ growth regulators. In contrast, proposals in fields such as plant taxonomy, plant resource conservation and utilization, and phytochemistry tend to demonstrate relatively lower quality and receive fewer grants.

The Discipline prioritizes funding for projects demonstrating innovative scholarly concepts. The Discipline encourages exploratory research on plant species at key evolutionary nodes and botanical phenomena in extreme environments. The Discipline encourages researches on plant systematics and evolution, evaluation and conservation of plant resources, plant introduction and domestication, structure and function of plant cells, molecular basis of plant important traits, metabolism and regulation of important active plant components, plant interactions with other organisms. The interdisciplinary studies of botany with other related fields will be strongly encouraged, especially with mathematics, physics, chemistry, engineering, material science, information, and the application of big data and artificial intelligence in plant scientific research.

In 2025, the Discipline will continue to give priority to support researches of plant taxonomy, especially strengthening the support on young taxonomists, encourage applicants to carry out researches on worldwide taxonomic revision of certain families and genus, plant resource researches in key areas and special environments, and application of novel technologies in plant taxonomy.

Special notice for applicants:

(1) The application code for plant-enticement interaction (C0205) does not accept applications related to crops and other economic crops.

(2) The application code for Phytochemistry (C0209) does not accept applications related to pharmacological research and synthesis research.

Zoology (C04)

Zoology is the science to study the life phenomena and principles in animal forms, taxonomy, physiology, behavior, development, genetics and evolution, and ecology etc. The effective application of modern scientific theory and techniques has greatly promoted the development of zoology. Animal evolution and development, animal phylogeny and classification, animal physiology and behavior are still the important fundamental theoretical research contents of this discipline. On this basis, the researches on marine zoology, animal resources and protection, wild animal diseases and transmission reflect the national needs. With the deepening and integration of various directions of zoology, the interdisciplinary and compatible development characteristics of zoology have been formed.

Applications accepted by this discipline in recent years demonstrated that researches in some fields have already formed their own features and achieved significant international impacts. The scientificity of the topic selection and rationality of design for the submitted proposals, especially the innovation of academic ideas and the forefront of research problems, have been significantly

improved compared to the past. However, some problems still exist, for example, the excessive pursuit of hotspots but lack of systematism and continuity of researches, too much attentions paid to the application of new technologies while ignoring the refinement of scientific issues, the insufficiency demonstration in the justification for proposed research part and feasibility of technical routes, the insufficient accumulation of preliminary work foundations.

In the future, the identification and description of unknown species of animals, and the classification and revision of known species of animals will still be the key funding areas by the branching field of taxonomy. The Discipline of zoology will continue to strength the researches of animal phylogeny, zoogeography, species interaction, life history strategy and formation mechanism of key traits centered on evolution; encourage the diversity research of marine animals, especially marine invertebrates; encourage researches on the morphology, physiology and behavior of wild animals; strengthen researches on the conservation and recovery of endangered animals, the sustainable utilization of important resource animals, harmful animal control, mechanisms of alien animal invasion, wild animal diseases and transmission; encourage integration and mining researches on the big data of animal diversity; continually encourage fundamental research of zoology for specific species in China and areas with weak foundations; continually attach great importance to the study of experimental animalization of wild animals and research on experimental animal models. In the future, the Discipline will pay more attention to fundamental research on zoology; encourage original studies and exploration based on animal resources and regional features in China using new theory and technologies; encourage macro-micro combined interdisciplinary research.

Special notice for applicants:

This discipline does not accept applications of medical research only using model animals as research materials, applications of research using livestock and poultry as research materials, and applications of agricultural pest related research.

Division II of Biology

The funding scope of Division II covers the following three disciplines: genetics and bioinformatics; cell biology; and developmental biology and reproductive biology.

Genetics and Bioinformatics (C06)

Genetics is to study the inheritance, variation and evolution of organisms on various levels of molecule, cell, individual and population etc. The genetics discipline will give priority support to the following research directions and key layout fields: structure, function and regulation of genetic materials; fundamental principles and

molecular mechanisms of gene expression regulation; the study of genetic and epigenetic mechanisms underlying complex biological traits; studies on fundamental principles and the molecular mechanisms of gene expression and regulation; studies on genetic and epigenetic mechanisms underlying complex biological traits; studies on biological evolution and population genetic; genetic and epigenetic basis of human diseases; development and application of novel theories and methodologies in genetics etc. The Discipline encourages the in-depth studies on the basic genetic rules and molecular mechanisms of gene expression and regulation using classic model organism(animals, plants, and microorganisms), supports the genetic mechanism studies of human inherited diseases and rare diseases based on clinical resources, and the genetic and evolution mechanism studies of pathogenic and non pathogenic microorganisms.

Bioinformatics is an interdisciplinary subject which studies the methods and applications of biological data acquisition, storage, sharing and analysis. The bioinformatics discipline will give priority support to the following research directions and key layout fields: fundamental research and innovative algorithms in bioinformatics; methods for integrating, standardizing and visualizing biological big data; research on artificial intelligence methods for biological big data study and application; analysis and mining of biological multi-omics data; modeling, prediction and design of biological macromolecular structure; analysis and modeling of biological network; dynamic analysis and simulation of living systems. The Discipline encourages the development of novel bioinformatics theories and algorithms addressing fundamental questions in genetics. The Discipline also encourages researches focused on the interdisciplinary research integrating bioinformatics analysis with experimental validation.

In 2024, the Dscipline of genetics and bioinformatics received a significant increase in the total number of project applications compared to previous years, but with unbalanced application proportion in each sub-discipline. There were relatively more applications under these secondary codes in C0602 (Gene expression and non coding sequence regulation), C0603 (Epigenetic regulation) and C0609 (Biological Big Data Analysis), while relatively fewer applications under these secondary codes in C0601 (Structure and function of genetic material), C0605 (Genetics and Evolution) and C0606 (Genetics and Evolution).

In 2025, the Discipline will continue to encourage the multidisciplinary researches focusing on: discovery and regulatory mechanisms of functional non-coding genomic elements and repetitive sequences, multidimensional epigenetic regulation in physiological and pathological processes, co-evolution between exogenous genetic material and host genomes, genetic basis and evolutionary patterns of complex traits, development of novel technologies and methods for spatial omics; the Discipline particularly encourages the research of in-depth mining of multidimensional omics data using AI large-scale models and other approaches,

investigation of fundamental biological principles through holistic perspectives.

Cell Biology (C07)

Cell biology is a fundamental and cutting-edge discipline to study the principles and mechanisms of cell life activities, mainly aiming at revealing the structure, function, phenotypes, interaction and regulation mechanisms at molecular, cellular, tissue and individual levels, as well as studies on the detailed cytological regulation and mesoscale networks of cellular activities using diverse technological approaches and model systems to clarify the mechanisms underlying phenotypic and functional abnormalities in organisms..

The researches on organelle and subcellular structures, interactions, and functions have always been the key areas financed by this discipline. The Discipline encourages the researches to focus on the in-situstructural assembly, dynamic changes and functional mechanisms of biological macromolecules in the process of cell life activities, organelle remodeling and organelle interaction, the relationship between abnormal cell function and the development of diseases, and the interactions between cells and the microenvironment. The Discipline also encourages applicants to address frontier challenges in cell biology and health-related demands, use cell models, organoids, model organisms and pathological samples, integrate multidisciplinary approaches and cutting-edge technologies, conduct systematic and innovative fundamental and applied basic research.

In 2024, among the applications accepted, there were fewer applications in the areas of cell polarity and cell movement, cellular variation and dysfunction, and cell variation and dysfunction, whereas these areas are pivotal in cell biology that will be given priority to support in the future. In 2025, the key areas of the Discipline lie in the following fields: characterization and function of novel subcellular structures, abnormalities in cellular structure/function and major disease pathogenesis, cell-cell communication and extracellular microenvironment, cell fate determination and organoid plasticity, etc.

Developmental Biology and Reproductive Biology (C12)

The funding scope of developmental and reproductive biology includes three fields: stem cells, development, and reproduction. This discipline is a fundamental and cutting-edge discipline that studies the basic biological laws of gametogenesis, embryonic development, organ formation, homeostasis, and aging in multicellular organisms. Its research objects include humans, animals, and plants. The Discipline focuses on the basic laws of biological processes including gametogenesis, fertilization, implantation, pregnancy establishment and maintenance, embryonic development, cell lineage establishment, tissue and organ formation, homeostasis maintenance, regeneration/repair, and aging etc., and also maintains its focus on stem cell identification, cell reprogramming, pluripotent stem cell induction, and organoid establishments and applications. Developmental and reproductive biology research emphasizes in vivo, continuity, and dynamics, emphasizing the use of model

organisms to explore the synergistic effects and regulatory mechanisms among multiple genes, cells, and organs during development and reproduction.

In 2024, the Discipline witnessed a substantial increase in the total number of applications received. Compared with the data in 2023, the number of applications for General Programs, Young Scientists Fund has increased and Fund for Less Developed Regions grew by 42.10%, 14.20%, and 72.70%, respectively. There were relatively more applications under these secondary codes in C1204 (Tissue and organ development and in vitro construction), C1203 (Early embryonic development and cell lineage establishment) and C1201 (Basic Research on stem cells), while relatively fewer applications under these secondary codes in C1207 (Fertilization, implantation, and maternal fetal interaction) and C1202 (Applied research on stem cell).

In 2025, the Discipline will continue to encourage applicants to addresses global scientific frontiers and national health needs. The Discipline specially encourages researches focused on the following fields: cellular fate determination, embryonic morphogenesis, tissue and organ formation, damage repair and regeneration, organism‘s functional homeostasis maintenance and aging during reproduction and development, as well as the regulatory effects of genetic, environmental, and metabolic factors on reproduction and development. The Discipline encourages research on Cross-species comparative studies using model organisms encourages fundamental research on developmental disorders and reproductive dysfunctions encourages fundamental and application research using Embryo-like and organoid models; encourages the development of new models, technologies, methodologies, and exploration of new biological phenomena and theoretical frameworks.

Division of Biomedicine

The Division of biomedicine covers the following three disciplines: immunology, neurosciences &psychology, and physiology & integrative biology.

Immunology (C08)

Immunology studies the composition and function of immune system. It is a pivotal discipline in life sciences and medicine, and also a frontier discipline leading the development of biomedical technologies.

This discipline mainly studies the relevant structures, functions, mechanisms, and interventions of immune responses and their regulation in the body at the molecular, cellular, tissue, organ and systemic levels, which mainly cover research areas such as innate immunity, adaptive immunity, autoimmune**,** immune tolerance, infectious and non infectious inflammation, reproductive immunity, transplant immunity, tumor immunity, vaccines, antibodies, and immune intervention. In 2024, applications were particularly active in innate immunity, tumor immune microenvironment, and vaccine/antibody development.

In 2025, the Discipline has implemented adjustments to its subject application codes, newly establishing two secondary codes: "C0803 Immune Evolution and Environmental Adaptation" and "C0807 Immunoinformatics and Big Data". The Discipline continues to encourage the applications with original academic ideas. The Discipline encourages researches in frontier areas including structural immunology, metabolic immunology, synthetic immunology, and digital immunology, as well as substantive interdisciplinary studies with other fields; encourages theoretical research on novel phenomena, concepts, and hypotheses addressing real-world health challenges; encourages research on new immune intervention strategies such as vaccines, antibodies, and engineered immune cells focusing on major chronic diseases and acute infectious diseases; encourages mechanistic studies on individual immune variations influenced by factors such as sex, age, and geographic region; encourages investigations into new pathways and mechanisms of multi-organ and immune system interactions, etc..

In 2025, applications involving research on human tissues, organs, or cells must submit ethics review approval documents issued by the host institution or its competent administrative authority, as required (refer to the General Requirements of the Department of Life Sciences for details).

Neuroscience and Psychology (C09)

The funding scope of this discipline includes neuroscience, psychology and cognitive science. The core scientific goal of neuroscience research is to analyze the essence of human nervous activity, from the primary sensation, movement and instinctive behavior to the advanced language, learning, memory, attention, consciousness, thinking and decision-making, etc. Psychology is the science of studying human psychology and behavior, aiming at clarifying rules and mechanisms of occurrence, development, characterization, and interaction of psychological phenomena including cognition, emotion, motivation, thinking, consciousness, personality. Cognitive science is the science that studies the nature and rule of cognition and intelligence, and its research scope contains the cognitive and intellectual activities at all levels and aspects including perception, memory, induction, reasoning, decision-making, calculation, etc.

The applications in 2024 clearly indicated that the development of neuroscience and psychology was imbalanced. There were a large number of applications focused on molecular and cellular neurobiology, behavior and emotional neurobiology, cognitive neurobiology, structure and function of nervous system, cognitive psychology, developmental and educational psychology, whereas there were fewer applications focused on the fields of novel technology and new paradigm of cognitive simulation, computing and artificial intelligence, neuroscience and psychology, whereas these areas are pivotal in this discipline that will be given priority to support in the future.

In 2025, the Discipline will continue to encourage the exploration of the

neurobiological basis of cognition and psychological processes, employing systems biology approaches to investigate nervous system function across the lifespan at multiple levels (molecular, synaptic, cellular, and neural circuits/networks);encourage interdisciplinary studies to clarify the occurrence, development rules and mechanisms of neural and psychiatric disorders; encourage cross-species neuroscience researches from an evolutionary perspective; encourage researches on the study and development of novel technologies and methods to solve bottleneck problems in neurosciences. Psychology and cognitive sciences will continue to support the dominant areas, and encourage interdisciplinary integration, using neuroimaging, multi-omics, neuroregulation, cognitive regulation, big data analysis, longitudinal tracking, computational models and artificial intelligence based strategies and techniques to promote the in-depth researches on neural and molecular mechanisms of psychological activities and cognitive processes; encourage applied psychology research focusing on "facing the people's life and health"; encourage the proposal and development of new theories, research paradigms and technologies;

Physiology and Integrative Biology (C11)

Physiology and integrative biology is the science to study phenomena, rules, functions and regulations of life activities, and also the basic discipline of life science and medicine. The funding scope of this discipline mainly focuses on the researches of morphological structures, physiological functions, homeostasis maintenance regulation and integration mechanisms from molecule, cell, organ, tissue, to body system levels; underlying mechanism researches on structural and functional abnormalities in the body during development, aging, disease occurrence and progression; researches on the effects of special environments and stress factors on physiological functions of the body, as well as the regulatory mechanisms of adaptation and injury.

The Discipline encourages applicants to conduct in-depth and systematic research focusing on signal perception, homeostasis maintenance, integrated responses, and their dysregulation mechanisms within and outside living organisms. The research will concentrate on key scientific questions including: sensory signal transduction; cellular communication and tissue-organ interactions; tissue remodeling and regenerative repair; metabolic regulation and metabolite analysis; stress response and adaptation; fertility maintenance; regulation and intervention of aging and major chronic diseases; biological rhythms and sleep; exercise and microbiome-mediated physiological regulation; effects of special environments (plateau, polar regions, space, deep-sea, etc.) on organisms; and cross-species comparative physiology.

In 2024, the submitted applications tended to be multidiscinplinary integrative researches, but the development of each sub-discipline was imbalanced. There were relatively fewer applications in respiratory and digestive physiology, sensory organ and motor physiology, extreme environmental physiology and comparative physiology, pathophysiology, whereas these areas are pivotal in the Discipline that

will be given priority to support in the future.

In 2025, the Discipline will continue to encourage the comprehensive and multi-level integrative researches using traditional, cutting-edge and original techniques; encourage mechanism study of physiology and pathophysiology using micro to entire and cross-scale integrated methods; encourage the use of China's unique geographical and resource advantages to carry out research on organism adaptation and evolution in extreme environments.

In 2025, applications involving human tissues, organs, cells, etc. must provide the review approvals from ethics committees of the supporting institutions or their superior departments. (Please refer to the overall requirements of Department of Life Sciences)

Please note that applications using wild animals (except comparative physiology), plants and algae as research objects, as well as the applications concerning traditional Chinese medicine will not be accepted in this discipline.

Division of Interdisciplinary Research

The Division of Interdisciplinary Research covers three disciplines as follows: biophysics and biochemistry; biomaterials, imaging and tissue engineering; and molecular biology and biotechnology.

Biophysics and Biochemistry (C05)

Biophysics and biochemistry is a cutting-edge interdiscipline combining and applying the theory and method of biology, physics and chemistry to investigate some important life science issues such as the association between structures and functions of muti-level biology, the responsive mechanism of organisms against environmental physicochemical signals, the chemical composition of living organisms as well as their generation processes, etc. The main research objects of this discipline are certain important macromolecules involved in various life activities, and the interaction relationships between various biomolecules to perform specific functions. By exploring the characteristics of bio-molecules and their interactions, the Discipline aims to gradually extend the overall understanding of life activity processes, showing a distinct progressive feature.

The funding scope of the Dscipline mainly includes: structural biology, molecular biophysics, cell sensing and environmental biophysics, physical biology, protein, peptide and enzyme biochemistry, sugar and lipid biochemistry, nucleic acid biochemistry, inorganic biochemistry and environmental monitoring, biological process and metabolism, etc.

Considering the contents of applications received in recent years, there were more applications and supported proposals in the following fields: structural analysis and function of biomolecules and complexes, interaction of biomacromolecule,

biochemistry of protein and polypeptide, biochemistry of enzyme, modification of biomacromolecule, etc., and the applications in these areas showed relative high quality. There were fewer applications focused on environmental biophysics, physical biology, systemic biology, environmental biochemistry, glucose and lipid metabolism and regulation, and the applications in these fields showed relative lower quality. The Discipline encourages applicants to submit research proposals focused on heavy environmental pollution, ionization and electromagnetic radiation, etc.

In 2025, the Discipline encourages cross-disciplinary researches on biophysics and biochemistry, especially the application of new theory, disruptive ideas as well as novel techniques to understand important scientific issues in life activities using a new perspectives and ideas.

Biomaterials, Imaging and Tissue Engineering (C10)

The discipline of biomaterials, imaging and tissue engineering is an interdisciplinary field of life science with other research areas, with clear features of demand orientation and cross disciplinary. The funding scope of the Discipline covers biomechanics and biorheology, biomaterials and biological effects, tissue engineering, tissue regeneration and artificial organs, biological imaging, electronics and probe, bionics and artificial intelligence, nano-biology, and new biomedical engineering methods and technologies, etc.

The received applications under the Discipline in 2024 indicated that the proposals in biomechanics and biorheology field mainly focused on studies in cellular mechanics and musculoskeletal system biomechanics, while there were fewer applications focused on hemodynamics and hemorheology, oral/maxillofacial soft tissue biomechanics, and other biomechanics topics; there were relatively more applications in the field of biomaterials, which mainly focused on biomaterials and microenvironment interactions, biological effects of materials, novel tissue regenerative materials, natural-source biomedical materials, and biocomposite materials; in the field of tissue engineering, most applications focused on bone, cartilage, peripheral nerve and trauma research, etc., but there were few applications on complex tissue and organ bionics construction, and artificial organs; the applications in the field of bioimaging, electronics and probes, most applications centered on theranostic probes/technologies, bioimaging probes/technologies and bio-optical imaging, with bioelectronics being comparatively underrepresented; there were relatively more applications in the field of nano biology, which mainly focused on nanocarrier design and efficacy, nanomaterial-cell/organism interactions and mechanisms, and nano-immunomodulation, while nanobiosensing, nanobiosecurity evaluation and other nanobiology/technology areas generated fewer submissions; Novel biomedical engineering technologies were mainly distributed across micro nano biological manufacturing and 3D printing, cellular and biomolecular engineering, organ chips; there were relatively fewer applications in artificial bionics and artificial intelligence.

This Discipline encourages applications to carry out original, systematic, and interdisciplinary basic research in the fields of biomechanics and biorheology, biomaterials and biological effects, tissue engineering, bioimaging, electronics, and probes, biomimetics and artificial intelligence, nanobiology, as well as new technologies and methods for biological and medical engineering. The Discipline will maintain focus on tissue/organ repair and regeneration, nano diagnosis and treatment, biosensing and monitoring, structural and functional imaging, cross-scale molecule-cell-tissue and organ biomechanics, interactions between biomaterial and body, and intelligence and biomimetic, brain-computer interfaces; the Discipline supports the researches of novel methods, new techniques and artificial intelligence in biomedicine, and supports fundamental researches using the principles and technologies of tissue engineering to explore the pathogenesis mechanisms and treatment of diseases.

Special notes for applicants:

This Discipline doesn't accept materials science and researches that are not associated with the biological and medical fields.

Molecular Biology and Biotechnology (C21)

Molecular biology is a discipline to understand and clarify the essence of life phenomena at molecular level. Biotechnology is a subject aiming at research, development and application of biological technology and methodologies, and can provide novel powerful techniques and tools for the development of life sciences. The prominent features of molecular biology and biotechnology is the interdisciplinary integration of biology, physics, chemistry, engineering and computer science, providing theoretical foundations and methodological innovations for technology breakthroughs and methodological innovations, and providing potential solutions to break through the related technology bottleneck by analyzing and processing, and systemically integrating the existing knowledge.

Funding scope of the Discipline includes: basic theories of cutting-edge technologies in life sciences, synthetic biology and biological transformation technology, life omics technology, generic biotechnology, cross fusion biotechnology, and applied biotechnology.

In the recent two years, most submitted proposals and funded proposals focused on synthetic biology, omics technology, gene editing and biomolecular manipulation, and application of biotechnology, while there were still fewer researches focusing on molecular biology, biomolecular detection technology, protein and vaccine engineering, single molecule and single cell and spatial omics technology, stem cell and tissue engineering, bioimaging technologies, big data and artificial intelligence biology, cutting-edge biotechnology, reagent development and new instrument theory studies.

In 2025, the Discipline will continue to support applications focused on interdisciplinary, cutting-edge and original studies, encourage applicants to carry out

systemic researches in the fields of synthetic biology, gene editing, molecule manipulation, in situ and in vivo analysis of biomolecules, single-molecule/single-cell and spatial omics technologies for complex systems, bioimaging technologies, and integration of biotechnology and information technology. It is important to note that sugar sequence and structure analysis is still the current technical bottleneck of sugar related researches. The Discipline will continue to encourage applicants to carry out principle exploration and technology research and development in this field, and will give appropriate preferences to applications focused on these fields.

Division of Environment and Ecology

The Division supports researches in areas of ecology, forestry, and grassland science.

Ecology (C03)

Ecology is a discipline that studies the interactions between organisms and environments as well as the interactions between organisms and other organisms. Ecology plays a pivotal role in solving the national ecological issues and promoting the construction of ecological civilization. The funding scope encompasses fundamental researches and applied fundamental researches in the fields of environmental and biological evolution, behavioral ecology, physiological ecology, population ecology, community ecology, ecosystem ecology, landscape and regional ecology, global change ecology, micro-ecology, pollution ecology and restoration ecology, soil ecology, conservation biology, sustainable ecology, etc.

In recent years, significant progresses have been achieved in ecological studies in China with some important progresses in the fields of ecosystem response to global change and protection of important biological species, etc. The applications received by the Discipline in 2024 indicated imbalance in the development of each subdiscipline: there were more project applications in the fields of ecosystem ecology, community ecology, ecosystem ecology, global change ecology, pollution ecology and restoration ecology, soil ecology, while there were fewer project applications in the fields of ecological theories and methods, sustainable ecology and behavioral ecology, behavioral ecology, landscape and regional ecology, environment and biological evolution, and sustainable ecology.

In 2025, frontier ecological research addressing China's environmental challenges and supporting ecological civilization development. The Discipline will further give priority to support field of observation/experimentation, novel technologies, application and interdisciplinary integration of new technologies, ecological big data, and artificial intelligence. The Discipline encourages researches in the fields of theoretical ecology, urban ecology, marine ecology, microbial ecology, disease ecology, sustainable ecology, fundamental ecological issues in major

engineering projects, and ecological product value realization pathways

Forestry (C16)

Forestry is to reveal the essence and mechanisms of the biological phenomena by taking forest as research objects. The funding scope of this discipline includes: grass germplasm resources and genetic breeding, grass cultivation, protection and utilization, wood physics, forest product chemistry, tree biology, forest soil science, forest cultivation, forest informatics and forest management, forest protection, forest genetic breeding, economic forestry, landscape architecture, desertification and soil and water conservation, bamboo science.

In recent years, forestry and grassland science have showed sound development tendency, especially for the rapid development of landscape architecture and economic forestry science. Whereas the projects of forest genetics and breeding, tree biology, and economic forestry science exhibit a predominance of follow-up studies, with insufficient investigation into the key scientific questions underlying major technological bottle necks. The studies of forest product chemistry and wood physics are lack of novel theories and methodology to promote industrial development. From the perspective of applications received in 2024, the development of each subdiscipline branch was imbalance: with higher application volumes in landscape architecture, economic forestry science, forest genetics and breeding, grass cultivation, protection and utilization and forest product chemistry, while there were fewer applications in the field of bamboo science, tree biology, forest soil science.

In 2025, the Discipline will keep focusing on the national major needs, continue to vigorously promote relevant fundamental researches on forest cultivation, protection and resource utilization; give priority to continuous long-term field research; give priority to support researches focused on conventional genetic breeding, the relationship between wood properties and genetic breeding, formation and maintenance mechanism of mixed forest, mechanism of yield and quality formation in economic forests, forest cultivation and quality improvement in arid and semi-arid areas, the process and mechanism of desertification prevention and control; the Discipline encourages researches on the construction of efficient genetic transformation system for important tree species, exploring/innovating forest germplasm resources; and also supports the research in the field of economic resources and utilization under the forest, prevention and control of major forest disasters.

The Discipline doesn’t accept the researches in the following fields : (1) proposals on pharmaceutical functional verification of effective components using animals as research objects (including anti-tumor researches); (2) proposals on the research and development of cutting tools, forest road and bridge design, forest engineering machinery and equipment, forest engineering and civil construction in forest areas, etc.(3)proposals on forest product chemistry researches not using forest biomass as research object.

Grassland Science (C22)

Grassland Science is a discipline focused on grasslands and grass plants as primary research subjects, investigating the fundamental biological phenomena and governing principles of these systems. The funding scope of this discipline includes: grass plant germplasm resources and genetic breeding, grass plant genomics and basic biology, grass plant cultivation science, forage processing and utilization, natural grassland restoration science, grassland protection and sustainable management, grassland agricultural systems science, turfgrass science, as well as grassland informatics and smart grassland industry.

In 2025, the Discipline will keep focusing on the national major needs, continue to vigorously promote relevant fundamental researches on directed grass resource cultivation, grass seed science, degraded grassland restoration and multifunctional improvement. Priority support will be given to continuous long-term field studies. The Discipline encourages research in the following directions: establishing efficient genetic transformation systems for China's important grass species, exploration and innovation of grass germplasm resources, forage cultivation and post-harvest processing/utilization technologies, prevention and control of major grassland disasters, and development of smart grassland industry.

Division of Agriculture and Food Sciences

The Division covers two disciplines: basic agriculture and crop sciences, and food sciences.

Basic agriculture and crop science (C13)

The discipline of basic agriculture and crop sciences mainly supports fundamental research on crops and their growing environment aiming at the major needs and frontier scientific developments of national agriculture. To implement the strategy of "storing grain in the ground and technology" and "Seed Industry Revitalization Action", while strengthen the fundamental research of crop seed systems, the Discipline focuses on research fields including: the excavation and innovative utilization of crop germplasm resources, formation, regulation laws and environmental adaptability of excellent crop germplasm traits, genetic regulatory network of important crop germplasm traits, the theory and method of molecular design breeding, agricultural informatics and smart agriculture, the cultivation physiological mechanism and regional cultivation system improvement for green and high yield, quality and efficiency enhancement of germplasm crops.

The received applications in 2024 indicated that there was a climbing number of proposals with basic issues on topics meeting the national demand of agriculture, an obvious increase in interdisciplinary studies around basic agricultural issues. However, some major problems remain as the following: (1) In agricultural

fundamentals, many projects fail to effectively integrate agricultural informatics, agronomy and agricultural machinery, agricultural biological system engineering and agricultural biology, and the scientific problems and application objectives were not clear; (2) Some works overemphasize trending international frontier, but inadequately align scientific questions of these fundamental researches were not performed in close combination with practical issues of our national agricultural production, which therefore couldn‘t provide potent support for the actual applications; (3) Homogeneous research content with limited innovation. There were lots of applications focused on the gene cloning and gene mining study for the main agronomic traits of crops, but the biological function analysis of genes and their application in crop breeding need to be further strengthened; Few proposals address innovative breeding technologies or methodologies. (4) Some projects were not systematic and sustainable, and often lack focused in-depth and long-term research on essential scientific issues; (5) Some proposals lack rigor and standardization in their preparation, especially the issues of high similarity and inaccuracies in attribution information for representative research achievements.

The Discipline encourages applicants to align with major national strategic needs, refine scientific issues from the reality of agricultural production in China, and select research directions targeting urgent and challenging scientific problems in agriculture, avoiding blind pursuit of trending topics while emphasizing original innovation and breakthroughs in fundamental theories and core technologies. The Discipline encourages the close combination of current biotechnology, information technology, intelligent equipment technology and crop production to carry out interdisciplinary research; encourages the development of germplasm resources mining and innovative research by using new technologies and methods, and focuses on the research of agronomic characters suitable for mechanized production; encourages research on crop genetic improvement and corresponding cultivation/ management systems addressing industrialization needs for resource efficiency, high yield and quality, and simplified mechanized production.

In the field of fundamental research of Agronomy (application code: C1301, C1302 and C1303), applications for interdisciplinary researches should focus on the organic integration with agricultural biology issues. Applications only focus on studying agricultural materials, agricultural machinery and facilities will not be accepted. Agricultural Biosystems Engineering (C1303) does not accept the application of taking livestock, poultry, aquatic products and other agricultural animals as the research object. In the field of crop science research (C1304 ~ C1313), applications using horticultural crops, trees, forages and lawn grasses, medicinal plants and traditional Chinese medicine, Arabidopsis, etc. as the research object will not be accepted.

Food Sciences (C20)

The discipline of food sciences mainly supports fundamental researches in food

biology, food chemistry, food physics, food safety and quality using food and its raw materials as the research objects. In recent years, the Discipline focuses on the following research fields: the selection, regulation and fermentation of food microbial strains with independent intellectual property rights; the preparation of food enzyme expression system and food enzyme engineering; the changing and precise regulation mechanisms of food nutrient components and their processing processes; the biological fundamental research of organic food processing and comprehensive utilization; the regulatory mechanism of food storage , transportation, and postharvest quality; formation mechanism, detection methods and proactive control of hazardous substances in food; food authenticity detection and traceability; separation, analysis and formation mechanism of food flavor substances, and exploration and creation of novel food resources.

In 2024, the number of applications focusing on the actual scientific problems of food processing and manufacturing in China increased, and the trend of carrying out interdisciplinary research on food production was obvious. Major problems existed in these proposals as following: (1) There were lack of projects with refined scientific problems from the bottleneck of food production in China; (2) Some projects focused on product development, with limited attentions to the scientific problems behind the industrial bottleneck; (3) many food inspection applications focused on detection methods, and ignored the impact of food matrix and practical application goals; (4) Some projects followed the international research hotspots unilaterally, especially the proposals focused on food nutrition and food detection, but without consideration of the actual needs of Food Science in China; (5) Some applications in food components and nutrition, food and gut microbiota, food raw materials science, fruit storage and preservation were not closely related to food and beyond the funding scope of food sciences; (6) Some proposals were not standardized rigorously, especially with inaccurate attribution of representative publications.

In 2025, the Discipline will continue to encourage projects facing major national strategic needs of China, and encourage projects with refined scientific issues from the actual food production based on the funding scope, especially the key technical issues that restrict the food processing and manufacturing in China; encourage applicants to adhere to the guidance of scientific issues, and attach importance to the research fields of food safety control, traditional Chinese food, special food, and novel food resources; encourage applicants to focus on interdisciplinary researches with food science as the main interest, integrate new theories, methods and technologies of other related disciplines, and analyze the key scientific issues of food science in China.

The Discipline does not accept the following applications: (1) researches on disease treatment and drug development, and clinical trials with human; (2) researches on product development of health products and medicines; (3) proposals with main research contents focused on the cultivation of animal and

plant.

Division of Agricultural Environment and Horticulture

The funding scope of the Division covers two disciplines: plant protection, horticulture and plant nutrition.

Plant Protection (C14)

Plant protection is a discipline that studies the biological characteristics, occurrence regularity and disaster mechanism of crop diseases, insect pests, weeds and rats to establish green prevention and control strategies and technologies against harmful organisms. Research on plant protection should meet the major national needs of agricultural production. The funding scope of the Discipline covers fundamental and applied researches in plant pathology, agricultural entomology, crop immunity and resistance, agricultural weeds, agricultural rats and other pest, plant chemical protection, biological prevention and cure, new techniques of plant protection, crop and biological factor interaction, and ecological regulation etc. Recently, the development trend of plant protection is the use of current biological theory, technology and big data to deeply reveal the occurrence, harm, and disaster patterns of crop pests, as well as the mechanisms of crop resistance to pests; the application of the principles and methods of plant protection and related disciplines to establish the theoretical and technical system to improve the capacity of agricultural production, protection of biological diversity, and realize green governance of harmful organisms.

Applications submitted to the Discipline in 2024 showed the following problems: (1) Some of the proposals failed to reflect both the international frontiers of plant protection science and practical production needs; (2) There was an overabundance of micro-level research projects compared to macro-level studies; (3) Some proposals didn‘t show accurately refined scientific questions, and some proposals didn‘t show prominent key points of research contents; (4) The writing of some proposals was not rigorous and standardized.

In 2025, the Discipline will continue to encourage the following research contents: microscopic or macroscopic combined researches to study the mechanisms of pest infestation and evolution in crops, molecular basis and regulation of harmful organisms in crops, interaction mechanisms between crops, harmful organisms, and the environment, exploration of molecular targets for the control and treatment of harmful organisms, creation and scientific use of green pesticides, green and sustainable comprehensive prevention and control of harmful organisms, and support for grass and rodent pests in farmland. Special attention should be paid to the factors of the national crop of ecological features of different regions, to study the new issues in plant protection caused by factors such as global climate change, food security

supply, and industrial restructuring. As for the research approaches, emphasis should be put on the combination of new theory and new technologies with traditional methods, as well as integration of laboratory work with field experiment. The Discipline will give priority to support research projects with strong innovation, continuity, and systematic work accumulation.

Application to the Discipline should focus on the research object of crop health and agricultural ecological security as fundamental principles, agricultural pests as the core research subject and taking the prevention and control of pest hazards as the scientific goals, otherwise it will not be accepted. Applications taking woods or model organisms (such as arabidopsis and drosophila, etc.) as main research objects will not be accepted.

Horticulture and Plant Nutrition (C15)

The funding scope of this discipline covers two research subjects, namely horticulture and plant nutrition.

Horticulture primarily involves germplasm resources and genetic breeding, growth-development and cultivation physiology, facility environmental response and regulation, postharvest quality maintenance of horticultural crops and other disciplinary directions. The funding scope of horticulture covers the fundamental and application researches in pomology, olericulture sciences, ornamental horticulture, tea science, edible mycology, horticultural facilities, post-harvest biology of garden crops. In recent years, there has been a rapid development of genome research in horticulture in China, and great achievements have been made in the study of gene mining and functional analysis of important agronomic traits, germplasm innovation and new variety cultivation, product organ development and maturity, quality formation control and regulation, response and adaptation mechanisms to adversity, and harvest quality maintenance of horticulture crops.

Plant nutrition is a discipline to study the migration, transformation, and utilization patterns of nutrient elements in the soil-plant system. The funding scope of plant nutrition covers fundamental researches and applied fundamental researches focused on the basis of plant nutrition, nutrient resources and recycling, manure and fertilizer science, nutrient management, etc. In recent years, plant nutrition discipline in China has made significant progress in the fields including genetic mechanism of plant nutrition, nitrogen and phosphorus recycling and efficient utilization of soil plant system, and the creation and application of new fertilizers.

In 2024, common problems were found in both horticulture and plant nutrition in the following aspects: (1) There were few scientific issues proposed and refined from the national actual production and industry development needs; (2) There were a large number of proposals pertaining to track researches lacking novelty and systematicity, and there was a lack of fundamental researches to support the high-quality development of industry; (3) There wasprominent homogenization in research topics. Major problems with the discipline of horticulture were as following: (1)

Molecular biology research inadequately integrates with practical horticultural industry challenges; (2) Quality researches fail to effectively support the improvement and regulation of horticultural crop quality; (3) Researches on the interaction between horticultural crops and the environment need to be strengthened. Major problems with the discipline of plant nutrition were as following: (1)There are insufficient researches on the synergy between nutrients, yield, and quality; (2) There are insufficient researches on green new fertilizer; (3) Theoretical and methodological research on efficient fertilization for economic crops needs enhancement; (4) Theoretical and methodological researches on efficient fertilization for economic crops needs enhancement.

In 2025, the Discipline will continue to encourage focus on the frontiers of discipline and the needs of national industry development, and give priority to support innovative, systematic, and distinctive fundamental and applied fundamental research that leads China's industrial development. The discipline of horticulture will continuously support applied fundamental researches aiming at mechanistic studies and cultivar development for efficient, high-quality, and green production of horticultural crops, cultivation technology innovation, and post-harvest quality maintenance; actively support applied fundamental researches focused on machinery-suitable and high-quality horticultural production; actively support the exploration and utilization of excellent germplasm resources with wild and local characteristics; pay attentions to the diversification and improvement of quality traits, as well as research on the interaction between horticultural crops and the environment;

Plant nutrition will continuously support fundamental and applied fundamental researches focused on nutrient efficiency in green production of food and economic crops; actively support projects in the fields of fertilizer/fertilization and nutrient management; encourage the applied fundamental researches that meet the industrial needs and focused on green new fertilizers, plant-soil-biological interactions, fertilization and pollution reduction, tropical crop nutrition and environmental interactions, etc., to promote the balanced and coordinated development of plant nutrition in all subdisciplines.

Applications using forest and Arabidopsis as research objects will not be accepted in the Discipline. Application of medical health research will not be accepted in the Discipline.

Division of Agriculture Animal

The funding scope of this division covers three disciplines: animal husbandry, veterinary sciences and aquatic sciences.

Animal Husbandry (C17)

Animal husbandry is a discipline that studies the germplasm resources, genetic

breeding and reproduction, nutrition, feedstuff and feeding, behavior and welfare, breeding environment and facilities of livestock and poultry (including special economic animals).

The applications received and funded in 2024 were mostly focused on animal genetics and breeding, animal reproduction, animal nutrition and feed science, while fewer applications were focused on animal husbandry foundation, animal germplasm resources, animal behavior and intelligent breeding, and beekeeping, etc., showing prominent imbalance issues of applications in some research fields under the secondary codes. Peer review and evaluation of these applications indicated that the innovation of academic ideas had been improved overall, the characteristics and advantages had been formed in animal genetics and breeding and animal nutrition, and the cross research field of livestock and poultry breeding facilities and intelligence showed relatively faster development speed. However, there were still some obvious shortcomings: insufficient accuracy in understanding scientific problem attributes, some proposals overly focused on various omics techniques but were lack of refined understanding of the core scientific issues; insufficient emphasis on the researches of national major needs, and some proposals were disconnected from the actual animal husbandry production; insufficient efforts had been made in the fundamental theoretical research on the "strangle" issues, and the applicants need to attach great importance to it.

In 2025, the applicants are expected to carry out original, systematic and continuous research guided by the national strategy and industrial needs. The Discipline will continue to encourage researches on the evaluation and utilization of germplasm resources in livestock, poultry, bees and silkworms, as well as the researches focused on important scientific issues related to the creation of new germplasm, the discovery and regulatory mechanisms of excellent characteristic genes. The Discipline will strengthen the fundamental researches on genetic breeding, reproduction, nutrition, feed and feeding of livestock and poultry, especially large animals. And the Discipline will give priority to support some research fields including fundamentals of animal husbandry, environment and health, behavior and welfare, breeding facilities and equipment, novel feed protein development & bio-manufacturing and interdisciplinary studies.

Special notes for applicants:

Applications submitted to the Discipline should use agricultural animals such as livestock, poultry, bees and silkworms, as well as companion animals, as research objects. Interdisciplinary studies with other disciplines are not allowed to deviate from the above research subjects, otherwise the proposals will be not accepted.

Veterinary Science (C18)

Veterinary science is to study the occurrence, development, diagnosis, prevention and treatment of animal diseases, which further derives many

interdisciplinary disciplines. The main research object of this discipline is animal diseases, and the Discipline supports fundamental researches related to animal diseases, zoonotic diseases, veterinary public health, and veterinary medicine.

In 2024, the applications submitted to the Discipline involved all fields in the Discipline, and there were a large number of applications in veterinary virology, veterinary pharmacology & toxicology, and veterinary internal medicine. Most of the proposals could aim at the international forefront and emphasize the selection of innovative topic. However, there were still some problems, for example, some proposals blindly tracked the research hotspots, but showed insufficient in the refinement of scientific issues. The Discipline of veterinary medicine should be established in ensuring animal health, food safety, public health, human health, and environmental and ecological safety. Facing the major national needs, the Discipline encourages researches in the epidemiology, pathogen biology, pathogenesis, and cross species transmission mechanisms of important animal diseases and zoonotic diseases. At the same time, the Discipline will strengthen related researches in veterinary pathology, veterinary public health, veterinary basic immunology, and traditional Chinese veterinary medicine.

In 2025, applications must aim to control animal diseases, safeguard animal health, and protect public health and biosecurity, with interdisciplinary proposals required to align with these core objectives. The Discipline encourages fundamental researches on important animal diseases, zoonotic diseases, new and recurrent animal diseases, important non infectious animal diseases, new animal vaccines, veterinary drug development, and interdisciplinary fields guided by industrial and national needs.

Special notice for applicants:

All studies involving high-pathogenicity pathogens must strictly adhere to national biosafety regulations, with applications permitted only when corresponding laboratory biosafety conditions are met. Projects requiring animal experimentation must comply with national animal welfare standards and research ethics requirements.

Aquatic Science (C19)

Aquatic science is a discipline to study basic rules of the genetics, development, breeding, growth, physiology, immunology and behavior of aquatic organisms and their variety cultivation, nutrition and feedstuff, disease prevention and control, aquaculture ecology, aquaculture engineering, resource protection and utilization, etc.

In 2024, applications received and funded were mostly in areas of aquatic organism immunology, aquatic pathogenetics and disease control, fundamental aquaculture sciences, aquatic animal nutrition and feed science, genetics and breeding of aquatic organisms, etc., whereas there were fewer applications in aquaculture engineering and fisheries resource conservation and utilization. From the actual situation of applications and peer reviews, the overall innovation were obviously

improved, showing research characteristics and advantages in some areas including genetic mechanisms of economically important traits in aquatic species, infection and immunity mechanisms of major aquatic pathogens, nutrient metabolism and regulation in aquatic animals, etc. However, research area balance and interdisciplinary integration needs to be improved.

In 2025, applicants should align with disciplinary frontiers and industry demands, grasp the latest research trends at home and abroad, combine the existing work foundations, to carry out innovative explorations. The interdisciplinary studies on aquaculture combining with other disciplines are encouraged. Applicants should avoid blindly emphasizing new technologies while neglecting the refinement of key scientific issues. Research using model organisms as experimental materials should be focused on solving scientific and technological challenges that constrain the development of the aquatic industry. The Discipline encourages the reinforcement of talent training by fully exerting the regional and resource advantages. The Discipline encourages the researches in genetic mechanisms for the formation and improvement of important economic traits in aquaculture, biological characteristics of reproduction and development, epidemic patterns and pathogenic mechanisms of important pathogens, explore host immunity and disease prevention strategies, analyze nutrient metabolism and regulatory mechanisms. The Discipline will give appropriate priority to support fundamental researches in aquaculture organism-environment interactions, protection and utilization of fishery resources, aquaculture engineering and innovative farming models, etc.

Department of Earth Sciences

Earth science is the discipline that seeks to understand the Earth and uncover the fundamental laws governing the influence of other celestial bodies on it. By exploring the evolution of the earth and celestial bodies, the origin of life and humans, and the interaction between natural and human processes, earth science provides theoretical foundation, frontier knowledge, and scientific basis for the sustainable utilization of resources, disaster prevention and mitigation, protection and optimization of the living environment. Earth science includes Geography, Geology, Geochemistry, Geophysics and Space Physics, Atmospheric Science, Marine Science, Environmental Geosciences, and other related interdisciplinary subjects.

Through the support of General Programs, the Department of Earth Sciences encourages original innovations, expands scientific frontiers, matches national demands, encourages interdisciplinary integration, and lays a comprehensive and solid foundation for the balanced, coordinated, and sustainable development of all earth sciences disciplines. In 2025, the selection of General Program proposals will follow the principles: (1) The innovativeness and academic value of the proposal; (2)

The research capability of the applicant; (3) The clarity and soundness of the scientific problem; (4) The research foundation and supporting conditions.

Program proposal selection attaches great importance to basic and traditional disciplines, and focuses on primary data accumulation; effectively enhances the research in weak and "endangered" disciplines, and promotes the development of fields that are relatively weak in China but crucial and fundamental; strengthens the research in frontier disciplines, and encourages disciplinary crossing, integration and infiltration, especially the intersection of earth sciences and other disciplines; maintains the international status of dominant disciplines and fields in China; supports the development of sub-disciplines closely related to experiment, observation, data integration and simulation. While advocating innovative research, emphasis is also placed on the accumulation of research efforts. For General Program proposals applying for continued support, those that have demonstrated solid accumulation and high-quality outcomes will be given preferential consideration under equal conditions. Applicants are required to address the relation between the proposed research work and their accomplished programs. Based on the exploratory, unpredictable, and long-term characteristics of basic research, general program encourages scientists to face the most challenging scientific issues and actively carry out exploratory research.

One of the most important goals of the NSFC is to nurture and support outstanding young scientists continuously and stably. The Young Scientists Fund mainly plays the role of “cultivation”, shifts the funding focus forward, and provides timely funding for early-career young scholars who are about to independently carry out basic scientific research. The Young Scientist Fund supports them in the critical

Funding of the General Program, Young Scientist Fund and Fund for Less Developed Regions of the Department of Earth Sciences in 2024

Unit：10,000 yuan

Division		General Program			Young Scientist Fund			Fund for Less Developed Regions		
		No. of Projects	Direct cost	Funding rate（%）	No. of Projects	Direct cost	Funding rate（%）	No. of Projects	Direct cost	Funding rate（%）
I	Geography	519	23 906	14.56	576	17 280	20.35	64	1 920	11.11
II	Geology	383	19 257	15.31	327	9 810	20.35	32	960	11.00
	Geochemistry	89	4 586	17.28	81	2 430	20.45	9	270	11.11
III	Geophysics and Space Physics	240	11 761	17.78	194	5 820	20.40	10	300	10.64
	Environmental Geoscience	530	24 851	13.32	658	19 740	20.38	67	2 010	11.17
IV	Marine Science	272	13 207	14.92	261	7 830	20.33	9	270	10.71
V	Atmospheric Science	208	10 000	17.20	203	6 090	20.40	12	360	11.11
Total or Average		**2 241**	**107 568**	**15.00**	**2 300**	**69 000**	**20.37**	**203**	**6 090**	**11.07**
Direct cost per project*		48			30			30		

*The General Program and Fund for Less Developed Regions are averaged direct costs, while the Young Scientists Fund implements a lump-sum funding mechanism with a fixed amount.

period of the individual development to support their rapid professional development.

In 2024, the Department received 14,940 General Program applications. Among these, 2,241 applications were funded, with an average funding rate of 15.00%. The total direct funding amount reached 1,075.68 million yuan, with an average direct funding of 480,000 yuan per project. Compared to 2023, the number of applications increased by 4,855, or 48.14%.

In 2024, the Department of Earth Sciences received 11,292 applications for the Young Scientists Fund. A total of 2,300 projects were funded, with a total funding amount of 690 million yuan and an average funding rate of 20.37%. Compared to 2023, the number of applications increased by 1,012, or 9.84%.

In 2024, the Department received 1,834 applications for the Fund for Less Developed Regions, of which 203 projects were funded, resulting in an average funding rate of 11.07%. The total direct funding amounted to 60.90 million yuan, with an average of 300,000 yuan per project. Compared to 2023, the number of applications increased by 272, or 17.41%.

Notes:

(1) Please carefully read the list of application codes and the instructions provided in this Guide, and select the code that best matches the content of your application. The selected application code should generally be specified down to the secondary level.

(2) Please carefully read and strictly comply with the requirements for scientific integrity stated in this Guide. Do not list academic papers at the submission stage in the application.

(3) All scientific research must comply with national laws and regulations. Research activities in the fields of biology and toxicology must additionally comply with relevant national regulations. Projects involving animal experiments must follow national regulations on animal ethics and welfare.

(4) For applications involving ethics-related research across multiple institutions, approval documents from the ethics committee of each participating institution or their superior management departments must be submitted. If the research plan involving ethical issues is changed after funding is granted, the revised plan must be re-evaluated and approved by the ethics committee, and the updated certificate must be resubmitted to NSFC in accordance with the aforementioned requirements.

Division I of Earth Sciences

Geography (D01)

Funding of this discipline is available for research on geography science. This mainly includes Physical Geography (i.e., D0101 Geomorphology, D0102 Hydrology

and Climatology, D0103 Biogeography and Soil Geography, D0104 Environmental Geography and Disaster Geography, D0105 Landscape Geography and Integrated Physical Geography, D0106 Cryospheric Science, D0107 Geographical Environmental Change and Civilization Evolution), Human Geography (i.e., D0108 Economic Geography, D0109 Urban Geography and Rural Geography, D0110 Human Geography, D0111 Land Science and Natural Resource Management, D0112 Regional Sustainable Development), Information Geography (i.e., D0113 Remote Sensing, D0114 Geographical Information Science, D0115 Geodesy and Cartography, D0116 Geographical Big Data and Spatial Intelligence), and approaches and tools for observations, simulation and analysis in Geographical Science (i.e., D0117 Geographical Observation and Simulation Technology).

The geography science focuses on the spatial distribution, temporal evolution and regional features of the physical and human elements, geographical information and geocomplex.

The object of the geography science research is the earth surface system, which is formed from the interactions and interpenetrations of the lithosphere, hydrosphere, atmosphere, biosphere, cryosphere, and anthroposphere. The earth surface system (also known as the "water-soil-air-biology-human" complex) should be considered in its entirety in the geography science research.

The core of the geography science is the interrelationships between human and nature, and their interaction mechanisms in the earth surface system. Owing to the comprehensive, intersectional, and regional characteristics, the geography science must be studied systematically and comprehensively from the spatio-temporal scale-dependent multi-dimensional and dynamic perspectives.

The Discipline encourages the applications of comprehensive, exploratory, and prospective projects, urges the earth surface process research using the theories, methods and technologies of mathematics, physics, chemistry, biology, and information science, and promotes interdisciplinary frontier research on national priorities such as "Ecological Civilization Construction", "The Belt and Road Initiative", "Land Spatial Planning" and "Rural Revitalization".

In response to the changes in the scientific research paradigm caused by the big data and artificial intelligence, the Discipline encourages the research on the geographical intelligence theories, methods and technologies combining big data, artificial intelligence and geographical issues, aiming to enhance our understanding and prediction capabilities of geographical issues and to establish the scientific paradigm and technology system for the spatio-temporal big data analysis.

In front of the frontier sciences such as comprehensive research on terrestrial surface system, global change and sustainable development, the Discipline encourages to focus on the development, reuse and integration of the geographical observation technologies and simulation methods, and promotes the construction of the scientific research facilities such as the comprehensive geographical modeling

and simulation systems, and the decision support system for sustainable development, realizing the integration of the geographical data, geographical mechanism, geographical pattern, and geographic decision-making.

Division of Earth Sciences II

Geology (D02)

Funding of this discipline is available for research on geology.

As an important subject of natural science, geology is the study of composition, structure, tectonics, evolution, geological process and evolutionary history of the Earth (Planet). It is not only about illustrating the structure and material composition of the Earth (Planet), the mechanisms that control the matter cycles, but also to unveil various geological processes, the evolution of life, the interaction and coupling mechanisms of different layers of our planet based on geological records. In addition, based on the geology theory and model, to prospect minerals, mineral resources, energy resources, water resource and etc., reveal the relationship between the significant geological engineering and human activities, and protect the global environment and human development, prevent (alarm) and mitigate geo-hazards.

With the development of the fundamental theories and technical advances of multiple disciplines, the discipline of geology has got rapid developments in recent years. The exploration of the earth tectonic system and internal continental dynamical processes brought revolutionary leap on understanding the earth, which become the important direction of deepening and developing plate tectonics theory. With the spring up of earth system science, the exploration of the earth's internal operation process and the superficial response mechanism has become a frontier field of geology. The applying of new technologies and new methods have greatly promoted the development of geological sciences. The improvement of analytical methods on high-precision, in-situ and real-time constituent structure and geochronology strengthened the constraint on the composition and evolutionary history of the earth. The development of geophysical probing, space-to-earth observation and geological drilling techniques help people precisely understand the structure and tectonics of the Earth. The application of high technology such as information systems, the internet of things and photoelectron realized the goal of real-time monitoring of crustal movements, earthquakes and volcanic activities. The reproduction and prediction of important geological processes can be achieved based on the developments of high temperature and pressure tests and techniques of computational simulation. The development of big data and artificial intelligence techniques promoted the changing of research paradigms in geology.

Geology aligns with global frontiers of science and technology, as well as the major national needs, while committing to original innovation and talent cultivation.

Geological researches, which encourages to stand on solid field works, on-site and real-time observations, actively promotes the interdisciplinary integration of mathematics, physics, chemistry, biology and computational information science, and conducts researches on fundamental theory and applied research from a global perspective.

Geochemistry (D03)

Funding of this discipline is available for research on Geochemistry-related research.

Geochemistry is rooted in elemental geochemistry and isotope geochemistry. It employs modern analytical techniques, experimental simulations and theoretical calculations to investigate the composition, formation, and evolutionary processes of Earth and extraterrestrial materials, as well as the interactions and material cycling among different geospheres. It also focuses on understanding how human activities influence the distribution, state, transformation, migration, cycling, and ultimate fate of materials within Earth's surface systems.

The research objects of Geochemistry encompass rocks, minerals, sediments, soils, water bodies, atmosphere, orebodies, petroleum and natural gas, organisms and various volatile compounds. Emphasis is placed on quantitatively constraining the chemical compositions and variations within these media to clarify related chemical processes and evolutionary pathways, thus achieving a deeper understanding of the complex processes and mechanisms operating on Earth and extraterrestrial systems.

Geochemistry is not only fundamental to human understanding of the Earth and the exploration of the universe, but it also provides critical scientific support for addressing issues including natural resources, ecological environments and geological hazards relevant to human survival and sustainable development. Modern developments in geochemical research include: ① Innovations in analytical techniques and methodologies: Focusing on micro-scale, trace-level, high-resolution and high-precision analytical techniques, high-temperature and high-pressure experimental and numerical simulation methods, and the development and application of novel isotopic systems. In addition, integration with emerging technologies such as big data and artificial intelligence is encouraged to revolutionize geochemical research paradigms. ② Solid earth geochemistry: Expansion from studying the chemical composition, structure, and processes of Earth's deep interior toward investigations of interactions among Earth's various layers, along with their implications for resources and environmental effects. Increased attention is given to the relationships among inter-sphere interactions, plate tectonic evolution, and global change. Research objects are broadened from Earth to celestial bodies and other cosmic materials. ③ Surface geochemistry: Research focusing not only on reconstructing deep-time geological processes but also on characterizing modern physical, chemical, and biological processes, and simulating and predicting future environmental changes. ④ National energy and resource security: Development of

geochemical theories and methods related to the exploration and exploitation of mineral resources, fossil fuels, unconventional and emerging resources, addressing major national demands and economic priorities. ⑤ Ecological health and environmental safety: Research addressing the rational utilization of resources and energy, as well as the environmental geochemical changes induced by human activities, thereby supporting national strategies for pollution reduction, carbon reduction, and safeguarding public health. ⑥ Interdisciplinary research: Promoting integration between geochemistry and other related disciplines, utilizing geochemical theories and methods to address interdisciplinary scientific problems or adopting theories and methodologies from other disciplines to resolve problems within geochemistry itself. Modern Geochemistry encourages highly macroscopic, microscopic, extreme-condition, and comprehensively interdisciplinary research approaches, aiming to innovate and expand scientific frontiers.

Division III of Earth Sciences

Geophysics and Space Physics (D04)

Funding of this discipline is available for research on geophysics, space physics, and geodesy.

Geophysics, space physics and geodesy are disciplines that utilize the theories and methods of physics and related fields, By integrating observational and experimental approaches, they aim to: they aim to understand the laws of the structures, operation and evolution of the Earth, planets, and interplanetary space, explore the internal resources of the Earth and other planets, and reveal the variation characteristics and mechanisms of human livable residential environment.

Geophysics, through direct observations, laboratory experiments, and theoretical studies on the basic physical fields of the Earth and other planets, that aims to reveal their internal structures, material components, the variation of physical fields and the dynamic processes, explore the mechanism of earthquakes, geological disasters and mineralization and accumulation, develop the foundation of new theories, technologies and methods, and provide theoretical and technical support for the Earth system science.

Space physics is based on space borne or ground-based observations and experiments, theoretical studies, and numerical simulations, that aims to reveal physical processes and the variation laws of the middle and upper atmosphere, ionosphere, and magnetosphere of the Earth and other planets, and interactions of the solar atmosphere, interplanetary space, and heliosphere, to provide scientific support for astronautic activities, communication, navigation, and deep space exploration.

Geodesy, through the observation of geometry and physical quantity of the Earth and other planets, studies the geometric shape, the material movement, and the

response of space environment of the Earth and other planets, that aims to determine the spatial-temporal movement of materials and carriers, as well as the geometric shape and deformation of natural bodies and buildings (structures), to provide spatial-temporal datum and gravity datum guarantee for the national infrastructure and defense.

Geophysics and space physics attach great importance to the basic theoretical studies, observations, and experiments. According to the development trend of earth science and space science, encouragement will be focused on core scientific issues of the deep Earth, the deep ocean, the deep space, and the Earth system. To promote the development of earth and space science and technology, more efforts will be made to explore new growth and pioneering study, strengthen the cross integration, and develop new theories, technologies, methods, and detection instruments.

Environmental Geosciences (D07)

Funding of this discipline is available for research on environmental geoscience.

With the rapid development of society and economy, humanity is confronted with increasingly prominent environmental problems, such as shortages of water and land resources, frequent disasters, environmental pollution, and ecosystem degradation, which pose severe threats to human health, and constrain the sustainable socio-economic development and construction of ecological civilization. The historical mission of the development of environmental geosciences is to scientifically solve the problem of environmental pollution, disasters, and ecological and health risks.

Based on the theories, methods, and approaches of the geosciences, environmental geosciences take the earth's surface system as the object to study the physical, chemical, and biological processes and coupling mechanisms of the pedosphere, hydrosphere, surface lithosphere, atmosphere, biosphere, and their interfaces. This Discipline aims to reveal the occurrence and development laws of global environmental changes and geological disasters, and develop the risk assessment and prevention system for eco-environment and health. It also investigates the evolution behaviors of regional environmental quality and the prediction and response for environmental changes, and reveals the multi-medium and multi-interface environmental behavior, effects, and mechanism of pollutants. The final goal of the Discipline is to unravel the fundamental scientific problems of environmental remediation and ecosystem restoration.

In accordance with the philosophy of the reform and optimization of discipline layout for the NSFC, the Discipline proposes the optimization plan for the application code due to challenges of theory, technology, method, and discipline paradigm faced by the Discipline, and also establishes the Discipline’s framework of environmental geosciences, which includes: ①four basic subjects:soil science, environmental water science, environmental atmospheric science, and environmental biology; ②four interdisciplinary subjects: engineering geological environment and disasters,

environmental geology, environmental geochemistry, and ecotoxicology; and ③four frontier areas: environmental behavior and effects of pollutants, environment and health risk, quaternary environment and environmental archaeology, and environmental information and environmental prediction. New technologies and new methods of environmental geosciences serve as disciplinary foundations, and regional environmental quality and safety, environmental protection and sustainable development are the goals of the Discipline to serve the national major demands. In order to promote the development of soil science, according to its attributes, it is divided into three secondary application codes: environmental soil science, basic soil science, and soil erosion and soil fertility. Combined with the characteristics and advantages of environmental geosciences in serving national needs, the connotation of environmental geosciences is defined as "polluted environments, ecological environments, disaster environments, and health-related environments".

To meet national strategic needs, the Discipline encourages consolidating the condensation of basic scientific issues in original, interdisciplinary, and cutting-edge fields, and also inspires the innovative applications of new theories, new ideas, new methods, and new technologies in this discipline. Cultivating new growth points of discipline, leading major achievement breakthroughs, and promoting discipline development will provide scientific support for sustainable development and ecological civilization construction of a Habitable Earth.

Lunar and Planetary Science (D08)

Funding of this discipline is available for research on lunar and planetary sciences.

Lunar and planetary sciences focus on the study of the Moon, planets and their satellites, asteroids, and planetary rings in the solar system. This field is a cutting-edge interdisciplinary science, aiming to understand the formation and evolution, layered structures, material compositions, surface characteristics and processes, space environment, and resources of the solar system bodies.

Lunar and planetary sciences emphasize fundamental research and can be categorized into several sub-disciplines: planetary geology, planetary chemistry, physics and dynamics of planetary interiors, planetary space physics, planetary atmospheres and oceans, astrobiology, planetary remote sensing and geodesy; Emerging fields include planetary formation and evolution, Earth-Moon system, and planetary resources; Supporting technologies encompass planetary exploration and simulation.

Oriented towards the national strategies in lunar and deep space exploration, lunar and planetary sciences address fundamental scientific questions such as the origin and evolution of the solar system, planetary habitability, and the search for extraterrestrial life. These studies employ techniques and methods from Earth sciences, including in-situ and remote sensing exploration, material composition analysis, theoretical analysis and numerical modeling, as well as laboratory

simulations. Through multi-disciplinary, multi-angle, multi-level, and multi-approach methodologies, the Discipline seeks to reveal the mechanisms of fundamental processes on the solar system bodies, understand the primary characteristics and layer coupling properties of planets, and investigate the Earth's formation, operating mechanisms, and habitability evolution from the perspective of comparative planetology.

Division IV of Earth Sciences

Marine Science (D06)

Funding of this discipline is available for research on marine science and polar science.

Marine science is a knowledge system that studies the natural phenomena and changing rules of the ocean and its interaction with the atmosphere, lithosphere, biosphere, pedosphere, and cryosphere, as well as the exploitation, utilization, and protection of the ocean. It is a comprehensive discipline including the study of the Earth's natural processes and the study of marine social attributes. Meanwhile, marine science is becoming increasingly integrated with the technologies for ocean observation and detection, and the exploitation and utilization of marine resources. On the basis of comprehensive consideration of the development of the Discipline, future challenges and the realization of the coordinated development of the three dimensions of science-technology-society, a new version of the application code system for marine science is proposed, including three major directions, namely, "sub -disciplines", "supporting technologies" and "development areas". Sub-disciplines include physical oceanography, marine chemistry, marine geology and geophysics, biological oceanography and marine bioresources, marine ecology and environmental science, estuarine and coastal science; supporting technologies include ocean remote sensing, ocean physics and marine observation & detection technology, marine data science and information system; development areas include ocean system and global change, ocean engineering and the associated environmental effects, marine hazards and disasters prevention and mitigation, marine energy and resources, sea-land coordination and sustainable development, and polar science.

Oceans connect the poles. Polar science is the science that studies the various natural phenomena, processes and patterns of change unique to the polar regions and their interactions with units of the Earth system beyond the poles. It includes polar space, polar atmosphere, polar ocean, polar biosphere, polar pedosphere and lithosphere, polar cryosphere, polar observation and detection, polar engineering and environment, polar protection and utilization, and the association of the environmental changes of the north and south poles and the Qinghai-Tibet Plateau.

NSFC implements the Ship-time Sharing Project (SSP) to meet the demands of

ongoing research projects in ocean observation. For all kinds of funding projects that apply to participate in the research cruise supported by the SSP, it is necessary to describe the sea area to be surveyed, the needs of the ship (equipment) and the content of the observation, when writing the part of the application form entitled "research program to be undertaken", so as to prepare for the approval of and selection for the carrying of the SSP. The guidelines and the solicitation notice for investigation demands of the SSP are announced separately every year, so project leaders with needs for sea-going surveys are requested to pay close attention to the relevant notices from the Department of Earth Sciences, and submit the application form timely. Based on the data-sharing agreement among the projects implemented during the same cruise, the SSP expands the data-sharing platform for the observation data with different levels and classifications. Data users can log onto the website of the Ocean Data Center of NSFC (https://www.nsfcodc.cn/) to browse the catalogs of the shared data, and submit data usage applications as needed.

In order to promote the research level of marine and polar sciences in China and enhance our comprehensive knowledge of the oceans and polar spaces and the ability to protect and utilize them, researchers with different disciplinary backgrounds are especially encouraged to devote themselves to the marine and polar studies.

Division V of Earth Sciences

Atmospheric Science (D05)

Funding of this discipline is available for research on meteorology, atmospheric physics, atmospheric chemistry and the atmospheric environment, and other branch disciplines, as well as their corresponding supporting technologies and development fields.

Atmospheric science is the study of various phenomena and their changes in the atmosphere of the Earth and other planets, so as to serve the mankind. The atmosphere is one of the most active spheres of the Earth system. Its changes are affected and controlled by other spheres of the system and celestial bodies such as the Sun. At the same time, changes in the atmosphere can directly or indirectly impact oceans, the terrestrial surface, the cryosphere, as well as the ecosystem of the earth. The atmosphere plays an important role in the Earth system. The interactions with the other spheres regulate the functions of the Earth system. Besides studying dynamical, physical, chemical, and biological processes within the atmosphere, atmospheric science currently involves comprehensive investigations into the mechanisms underlying atmospheric variability and their interactions with the hydrosphere, lithosphere, cryosphere, biosphere, human activities, and global climate; the evolution of weather and the climate system, and theories of climate change and its prediction and projection methods; new techniques and methods in atmospheric observation,

numerical modeling and data fusion; technologies and measures interfering weather and climate; the impact of human activities on weather, climate, and environmental systems; and the impact of weather, climate, and environmental system changes on human society. Attention should also be paid to studying the occurrence, variation, mechanisms, and predictions of various disastrous events of weather, climate, and the environment; studying the issues of global climate and environmental changes and their impacts, adaptation, and mitigation; systematic observation, numerical simulation and comprehensive integration of various processes; and interdisciplinary fusion which could lay the scientific foundation for improving the quality of life and the sustainable development of society.

The Division will continue to solicit proposals for exploratory, original and frontier studies in the following areas: the various phenomena, processes, and mechanisms of the atmosphere, and physical, chemical, and biological processes taking place in the atmosphere, and exchanges and interactions of energy and momentum between the atmosphere and other spheres by applying novel ideas, methods, advanced technologies and equipment to study synoptic meteorology, climatology, paleoclimate, atmospheric dynamics, hydrometeorology, atmospheric physics, atmospheric chemistry, the atmospheric environment, the health and meteorology, atmospheric in situ observations and remote sensing, the boundary layer, troposphere, stratosphere, and mesosphere; extreme weather and major climate events; the impact and adaptation of climate change; new theories and methods for weather forecasting, climate prediction, assessment and impact of various complex weather and climate disasters; new theories and methods for numerical modeling and data assimilation; fundamental research on satellite and radar meteorology; analysis and applied studies on the data acquired from major scientific experiments and scientific initiatives that have been conducted and are ongoing, as well as from large observation networks established in China and around the world; the principles and methods of meteorological observation, development of meteorological instruments, data analysis, and applications; interdisciplinary studies of key national interests such as defense, aviation, agriculture, forestry, hydrology, ecology, environment, energy, transportation, health, economy, among others, as well as national strategic needs such as the Belt and Road Initiatives and support of major engineering projects, serving the livelihood and sustainable development of society.

“D0508 Atmospheric Observation, Remote Sensing and Detection Technology and Methods”, “D0509 Atmospheric Data and Information Techniques”, “D0510 Atmospheric Numerical Model Development”, and “D0511 Earth System Model Development” are suitable for the research of new technologies and methods in the field of atmospheric science. Theoretical and applied research based on existing technologies and/or theories is not suitable for selecting such application codes.

Department of Engneering and Material Sciences

Engineering and material science provides scientific and technical support to guarantee national security, promote social progress and sustainable economic growth, and improve people's living standards. By striving to remain at the frontiers of disciplines, meeting the national strategic demands of social and economic development, and harmoniously combining national objectives with frontier explorations, the Department actively encourages the integration of fundamental research with engineering applications, strengthen self-dependent and original innovation, and enhance the sustainable development of interdisciplinary integration.

The ultimate goal is to elevate China's standing in engineering and material science to a higher level of scientific and technological advancement, with a more extensive global influence.

Funding of the General Program, Young Scientist Fund and Fund for Less Developed Regions of the Department in 2024

Unit: 10000 yuan

Divisions	General Program			Young Scientist Fund			Fund for Less Developed Regions		
	Funded Projects	Direct Cost	Funding Rate (%)	Funded Projects	Direct Cost	Funding Rate (%)	Funded Projects	Direct Cost	Funding Rate (%)
Metallic Materials	266	12 793	11.43	311	9 330	16.74	43	1 374	12.01
Inorganic Nonmetallic Materials	310	14 908	11.21	370	11 100	16.93	43	1 376	12.04
Organic Polymer Materials	225	10 820	11.54	288	8 640	16.99	23	736	12.64
Mining and Metallurgy Engineering	447	21 485	11.25	433	12 990	16.85	57	1 824	11.90
Mechanics Design and Manufacturing	611	29 365	11.30	636	19 080	16.56	67	2 144	12.43
Engineering Thermophysics and Energy Utilization	235	11 293	11.19	284	8 520	17.41	20	640	11.63
Electrical Science and Engineering	237	11 403	11.47	264	7 920	16.59	26	832	11.82
Architecture and Civil Engineering	575	27 616	11.31	568	17 040	16.11	76	2 432	11.82
Hydraulic Engineering	137	6 607	11.86	182	5 460	16.22	25	800	12.56
Environmental Engineering	224	10 785	10.98	255	7 650	16.55	30	951	12.55
Ocean Engineering	121	5 819	11.44	114	3 420	16.89	4	128	14.29
Traffic and Transportation Engineering	155	7 471	10.92	154	4 620	16.47	13	416	11.71
New Conceptual Materials and Common Science of Materials	115	5 526	10.76	119	3 570	15.24	11	352	12.09
Total or Average	**3 658**	**175 891**	**11.29**	**3 978**	**119 340**	**16.61**	**438**	**14 005**	**12.11**
Average Funding*	48.08			30.00			31.97		

* General Program and Fund for Less Developed Regions projects adopt the average funding strength of direct costs, while Young Scientist Fund projects implement a lump-sum system with a fixed amount.

In 2024, the Department received 32,414 applications for the General Program, representing a 47.87% increase compared to that of 2023. Among these, 3,658 applications were approved with a total direct cost of 1,758,910,000 yuan. The average direct cost is 480,800 yuan, with a mean funding rate of 11.29% (compared to 15.90% in 2023).

In 2024, the Department received 23,950 grant applications for the Young Scientist Fund, marking a 6.66% increase from 2023. Among these, 3,978 applications were approved, with a total direct cost of 1,193,400,000 yuan. The mean funding rate is 16.61%, slightly higher than the 17.41% rate in 2023.

In 2024, the Department received 3,618 grant applications for the Fund for Less Developed Regions, representing a 10.20% increase from 2023. Among these, 438 applications were approved, with a total direct cost of 140,050,000 yuan. The average direct cost is 319,700 yuan, and the mean funding rate is 12.11%, slightly lower than the 13.31% rate in 2023.

The Department encourages exploration in innovative and cutting-edge research, with a focus on addressing critical scientific problems and fundamental research derived from engineering practices that are highly significant for advancing relevant industries and enhancing China's global influence. Priority is given to research with significant scientific value and promising practical applications, as well as the potential to become new focal points of knowledge growth. Preference is also given to research that aligns with China's national context, guides discipline development, and has the potential to generate independent intellectual property rights. In 2025, the Department will continue to support the "Common Software Support Platform in Engineering and Material Sciences" as part of the Key Programs initiative. Proposals related to fundamental science and common technologies (such as theoretical modeling, core solvers, etc.) in industrial software relevant to engineering and material fields are also encouraged in the General Program and Young Scientist Fund.

Notes:

(1) Applicants are required to ensure the accuracy and completeness of all information in their applications. Special attention should be given to accurately filling out personal information, funded projects, and academic paper publications of applicants and primary participants. Specifically, when completing the section on representative works, applicants must adhere to the instructions and format outlined in the application form, and take into account the scientific integrity requirements specified in the application guidelines. The Department will rigorously evaluate the representative works provided in the proposals.

(2) Applicants are strongly encouraged to put forward projects that feature innovative and distinctive ideas, engage in substantial interdisciplinary collaboration, and advance the development of relevant disciplines. Nonetheless, the proposals must include specific scientific questions related to the target

discipline.

(3) Please refer to the average funding capacities of each program and suggest a realistic budget that aligns with the specific needs of different expenses.

Division I of Material Sciences

Metallic Materials (E01)

The discipline of metal materials supports basic research on various materials related to metal properties. The application project should focus on basic research and applied basic research, propose specific material science problems and distinctive research ideas, with the goal of promoting the forefront development or promoting scientific and technological progress in major national demand areas.

The scope of funding includes: the chemical composition, electronic structure, microstructure, phase diagram, phase transition, surface, interface, impurities and defects of metals and their alloys, metal matrix composites, intermetallic compounds, metamaterials, and other materials with metallic properties, as well as their influence mechanisms on mechanical, physical, and chemical properties; Theoretical methods, computational methods, modern analysis and testing methods, big data and artificial intelligence analysis methods for materials research; Materials science issues related to the control of melt composition and purity, solidification and crystal growth, casting, heat treatment, forging, welding, additive manufacturing, powder metallurgy, and other preparation and forming processes; Corrosion and protection, friction, surface modification, fatigue and fracture, creep and other behavior of metal materials; The interaction between materials and service environment, functional degradation and failure, cyclic regeneration mechanism and related fundamentals; The behavior of metals under external conditions such as irradiation, high/low temperature, high pressure, high strain rate, electric field, magnetic field and supersonic field, etc; The structure and properties of metal material surfaces, surface modification and coatings; The strengthening and toughening, deformation mechanism, and fracture behavior of metal materials; Mechanical properties, functional characteristics, and structural design of composite materials based on metal as the main element; The mechanical properties, functional properties, and structure/function integration of metals related to the design, preparation and processing; Metal amorphous, quasi-crystalline, high entropy and metastable materials, low-dimensional metal; Optical, electrical, magnetic, acoustic, and thermal functional metal materials; Energy, environmental, and catalytic metal materials; metal information materials related to the generation, transmission, storage, conversion, and processing; Biomedical, intelligent, and biomimetic materials, etc.

The Discipline encourages applicants to focus on common scientific issues and research ideas that go beyond the material system itself. While focusing on hotspots

and cutting-edge fields, it also emphasizes re-understanding of basic scientific issues in traditional materials.

Inorganic Non-metallic Materials (E02)

The Discipline of Inorganic Non-metallic Materials supports fundamental and applied fundamental research primarily based on inorganic non-metallic materials. With the development of the fundamental theory of materials and the continuous innovation in material design, preparation, processing, and characterization, research on inorganic non-metallic materials has been ever increasingly active, highlighting their strategic position in the key fields of aerospace, information, energy, life sciences, environment, high-end equipment manufacturing, and so forth. Presently, functional materials of inorganic non-metallic materials are developing in the direction of high performance, smartness, and multifunction integration; structural materials improve in respect of lightweighting, synergistic strength and toughness, multifunction integration, and extreme environment endurance; The green, low-cost preparation, high reliability, and long service life of materials have become key common issues.

Research on inorganic non-metallic materials features broadly-involved aspects and significant intersectionality. According to proposals submitted in the past three years, functional materials were the most active field, forming many subject hotspots, including energy conversion and storage materials, photoelectric information functional materials, low-dimensional carbon, ferroelectric and piezoelectric materials, biomedical materials, and so on; about 31.1% of those proposals were associated with energy conversion and storage materials (E0208). In comparison, proposals on structural materials (E0201~ E0205) accounted for 36.2% of the total, with relatively concentrated organizations. It is worth mentioning that a large number of those proposals fell within the field of composite materials (E0205).

The Discipline supports programs with innovative ideas, substantive interdisciplinary research of inorganic non-metallic materials cross-cutting with other relevant disciplines, and those to develop new material systems, new theories, new characterization methods and technologies for inorganic non-metallic materials. The following areas are encouraged: researches on strategic new materials that meet major national needs, investigations of key novel materials under the carbon peaking and carbon neutrality goals, and exploration of new materials that take the advantages of domestic resources. The Discipline also aims to strengthen the applied fundamental research on high-performance inorganic non-metallic materials and research on low-cost preparation materials with green strategy, high-efficient/value recovery, recycling of materials, etc. In 2025, the Discipline will set up General Program Group supporting basic researches on “high-quality raw materials for advanced structural ceramics” (please select the application code E0204), which will be given priority funding under the same conditions. To apply for this program group, the name of the general program group should be filled in the "Notes" column of the application form.

Division II of Material Sciences

Organic Polymer Materials (E03)

The Discipline of Organic Polymer Materials mainly supports the following areas: synthesis and preparation of polymer materials; physics of polymer materials; molding and processing of polymer materials; general polymer materials (plastics, rubbers, fibers, adhesives, etc.); polymer blends, composites, and organic-inorganic hybrid materials; environmentally friendly polymer materials; intelligent and biomimetic polymer materials; biomedical organic polymer materials; organic polymer materials with optical, electrical, or magnetic functions; other functional organic polymer materials (separation and adsorption materials, flexible and wearable smart materials and devices, low-dimensional and porous functional materials, energy and information related materials, self-assembly functional materials, etc.).

The Discipline encourages fundamental and applied fundamental research in the following areas: (1) preparation of polymer materials, such as highly efficient and controllable synthetic methods of polymer materials, and synthesis of high-performance polymer materials (new monomers, new routes, and new technologies); (2) theories and simulation of polymer materials and aggregated structure-property relationship of polymers and their composites; (3) new methods and theories for the rheology, processing, and molding of polymer materials; (4) methods and theories for high-performance and functionalization of general polymer materials; (5) polymer materials for extreme environments and their service performance; (6) low-cost, green preparation and structure-property relationship of functional organic/polymer materials, along with research on material stabilization; (7) fundamental research and application evaluation of biomedical organic polymer materials; (8) design and preparation of organic/polymer materials with optical, electrical, magnetic, or informatic functions, and research on high-performance and stability enhancement of their devices; (9) new concept design theories and preparation methods of intelligent materials and biomimetic polymer materials; (10) design and preparation of new organic polymer materials and their devices for artificial intelligence application; (11) new methods for controllable assembly of organic polymer materials and their functionalization; (12) polymer materials related to the ecological environment, such as the structures, properties, and efficient utilization of natural polymers, the design theories and preparation methods of environmentally friendly polymer materials, the recycling and utilization of polymer materials, polymer materials for environmental control and improvement of water, soil, and air pollution, and the stability and aging of polymer materials. The Discipline also encourages enhancing the theoretical guidance for the design of polymer materials and developing artificial intelligence-based new research paradigms for organic polymer materials; fundamental research aiming at common challenges in the preparation, modification, and processing of

major domestic polymer materials; fundamental research on new organic polymer materials and advanced molding and processing technologies to meet major national strategic needs.

New Conceptual Materials and Common Science of Materials (E13)

The Discipline of New Conceptual Materials and Common Science of Materials mainly supports research in the areas of new methods of material design and characterization, new material preparation technology and digital manufacturing, multi-functional integration of materials and devices, new composite and hybrid materials, new conceptual materials, key materials of advanced manufacturing, key engineering materials, etc.

With the rapid development of material sciences and the constant evolution of new theories, technologies, and applications, the research and application of materials are no longer limited to the existing material system. It has now become a general trend to explore new materials and cross-fused material systems to meet higher requirements put forward to the properties and functions of materials. In the paradigm of fundamental research of materials science, it is highly desired to resolve some pending common scientific problems that exist in new materials, such as the design, preparation, characterization, performance regulation, and fracture characteristics. At the same time, many key bottleneck issues encountered in major national projects are also expected to be solved by developing new materials and coordinating multi-material systems. Therefore, to meet the strong demand of national major industrial technology for pure, high-performance, unique, and new materials, the Discipline will focus on the key common scientific issues of materials science, as well as new materials leading future technology and key materials of revolutionary technology. This will promote the integration and development of materials science and engineering technology.

The Discipline focuses on supporting fundamental research and applied fundamental research in three aspects: leading materials and interdisciplinary research, key commonalities, and technical support. Specifically, (1) it focuses on leading materials and interdisciplinary research, such as new conceptual materials, new composite and hybrid materials, multi-functional integration of materials and devices, and new structures and new applications of materials. Through research project, the development of new materials or meta-materials with unique phenomena, outstanding performance, and superior properties compared to traditional materials is pursued. This involves developing composite and hybrid materials with multi-scale, multi-dimensional, and multi-degree-of-freedom synergy; designing multi-functional integrated materials and devices facing intelligence and information; and revealing the principles of collective response and cooperative function of materials, structures, and systems; explore new structures and new applications of materials. (2) It focuses on supporting the research on key commonalities of materials, including new methods of material design and characterization, new material preparation

technology, processing methods, and digital manufacturing, etc. Through project research, theoretical models for materials design and performance prediction are established, advanced in-situ and ex-situ characterization technologies for materials electronic structure, surface and interface, defects, etc., are developed, and new paradigms for materials preparation, processing methods, and digital manufacturing technologies are explored. (3) It focuses on supportive technology research, including key materials for advanced manufacturing and engineering. Through research project, critical new materials for high-end manufacturing and supporting major national needs are developed, bottlenecks in the design and preparation of critical materials are overcome, and the overall chain, cross-integration, and practical application level of new materials in key areas of advanced manufacturing and key engineering in the country are improved.

Division I of Engineering Sciences

Mining and Metallurgical Engineering (E04)

The Discipline of Mining and Metallurgical Engineering supports the fundamental research on mining and metallurgical engineering, involving mainly natural resources exploitation (petroleum, natural gas, and mineral ores), safety science and engineering, mineral engineering and separation science of substances, ferrous and nonferrous metallurgy, materials preparation and processing, resource recycling and utilization, mining and metallurgy environment, etc.

In recent years, driven by major national needs and the world frontier of engineering science, the Discipline has significantly progressed through continuous innovations. The theory relevant to the Discipline is much deepened and improved by continuously assimilating novel methods and techniques with the changes and expansions of demands for resources, environment, mineral, and metallic materials. Basic disciplines such as earth sciences, mathematics, physics, chemistry, and mechanics are involved in the Discipline more deeply and closely. New research areas have emerged one after another due to further development of interdisciplinary.

Hot research topics of the Discipline include complex oil and natural gas low-carbon and intelligent exploitation, intelligent green mines, safe and efficient exploitation theory and technology of deep mineral resources, flexible development and low-carbon utilization of coals, occupational-safety control theory and technology of mining, environmental management and ecological restoration of mining and metallurgy, fundamental science of industrial and public safety, accurate control of mineral separation process, preparation of high value-added mineral materials, low carbon metallurgy of materials, high-clean and high-homogeneous metal materials metallurgy, precision hot processing for light alloy, integration of production and forming for metallic materials, resource recycling and utilization, etc.

The following research fields are encouraged: (1) new theory and method for enhanced recovery of conventional oil and natural gas resources; (2) theory and method for high-efficiency exploitation of unconventional oil and natural gas resources; (3) safe and efficient intelligent developments in drilling and production for complex oil and gas resources in deep strata and deep sea; (4) safe and efficient operation of oil and gas pipeline network; (5) safe and high-efficiency mining and utilization of geothermal resources in deep strata; (6) theory and technology for safe and intelligent mining of mineral resources; (7) theory and technology for green and low-carbon mining of mineral resources; (8) theory of rock mechanics and strata control under multiple fields; (9) prevention and control of dynamic disasters in deep mines; (10) theory of prevention and emergency of major disasters and accidents in the production process and occupational hazards; (11) treatment and utilization of abandoned mines and ecological mine environment restoration ; (12) theory and technology of green mineral separation; (13) theory and technology for the production of high purity mineral materials;(14) new theory and method for high-efficiency utilization of strategic mineral resources; (15) clean and efficient extraction of mineral resources; (16) new theory, new technology and new process of low-carbon metallurgy; (17) metallurgical theory and technology for high-quality metallic materials; (18) high-efficiency production, processing and near-net-shape forming of metallic materials and special materials; (19) theory and technology for high-quality recycling of metallic materials; (20) cyclic utilization of waste gas and waste water produced in the dressing and metallurgical process; (21) new method and technology for low-carbon emission during the mining and metallurgical process; (22) formation, transportation and control of pollutants produced in the mining and metallurgical process; (23) treatments of solid waste for minimization, reclamation and harmlessness; (24) efficient utilization of secondary resources; (25) new theory and methods of visualization, digitization and intelligentization for the mining, dressing and smelting and material production processes.

In 2025, the Discipline sets up a General Projects Group named Thermodynamics and Phase Diagrams of Metallurgical Systems (E0410). Research proposals relevant to this specific topic will be given funding priority under the same conditions. To apply for this project, the applicant must select the name of the project group in the "Notes" column of the application form.

The Discipline will continuously enhance interdisciplinary research, and pay close attention to new theories, concepts and methods, and their creative applications. The Discipline will attach importance to ensure the development of the national economy and improving the quality of people‘s lives. In the context of carbon emission peak and neutrality, basic research will be encouraged to enhance the core competitiveness in China‘s petroleum, mining industry, metallurgy, materials preparation and processing, and engineering safety. In the aspect of natural resources exploitation and separation, research will focus on addressing the refinement,

greenization, and intellectualization of engineering and scientific issues, encouraging reengineering technology and science, improving mining efficiency and safety, accentuating the exploitation and utilization of poor resources, emphasizing source control, cyclic utilization, and environmental protection, and finally both economic and environmental benefits will be achieved. In the aspect of techniques, process, and equipment, emphases will be placed on structure optimization and adjustment, whole-process pollution control and innovation in greenization, and the applications of big data and artificial intelligence.

Engineering Thermophysics and Energy Utilization (E06)

The Discipline of Engineering Thermophysics and Energy Utilization supports the fundamental research on basic principles and applied technology in energy conversion, transfer and utilization. Traditional research mainly focuses on the basic laws of conventional energy conversion and utilization in the form of heat and work. At present, it has been extended to the research on the conversion, storage and utilization of various energies, including renewable energy and new energy. The research involves engineering thermodynamics, internal fluid dynamics, heat and mass transfer, multi-phase flow, combustion, fundamental technologies for measuring thermophysical properties, and thermal science in renewable energy and new energy utilization, as well as other fundamental and innovative research related to engineering thermophysics and energy utilization.

The primary development trends of the Discipline are as follows: (1) The scientificity, complexity and precision of fundamental research has been deepened by extending investigation from macro-scale to meso–and micro-scale, and from conventional parameters to those under extraordinary or extreme conditions. The focus will be shifted towards random, unsteady, multidimensional, multiphase and complicated thermophysical investigation, and towards more quantitative, more accurate, and more intellectual studies; (2) Research themes of the Discipline will be extended to promote interdisciplinary research, for instance, integrated with physics, chemistry, chemical engineering, life science, information science, materials science, environment, safety, *etc*. Current hot research topics include: innovative thermodynamic cycles and non-equilibrium thermal dynamics, refrigeration and cryogenic engineering, the control and optimization of thermodynamics in complicated systems, turbulence properties of internal flows and the properties and the control of unsteady flows, porous media and micro-scale heat and mass transfer, radiation and heat exchange by phase transformation, novel thermal management theory and method, low-carbon and zero-carbon combustion, combustion under extreme conditions, combustion pollution control, carbon dioxide capture, utilization and storage, novel power plant and fluid machinery, thermo-physical problems in public safety, the interactive mechanism thermo-physical model in multi-phase flow, new concepts, principles and methods in thermophysical measurement, as well as new thermophysical principles in low-carbon or zero-carbon energy conversion,

renewable energy and new energy utilization, energy and environment, heat and mass transfer in energy storage, medicine and engineering interdisciplinary fields, *etc*.

In 2025, the Discipline will preferentially support fundamental research with significant theoretical significance and scientific value, which aims at international academic frontiers and might foster new knowledge generation, continuously promote disciplinary development and be beneficial to the economy and society. The Discipline does not support purely technical product development or repetitive research in general terms. The Discipline will continue to preferentially support research with a substantial interdisciplinary nature or strong international cooperation background, or applicants acquired excellent achievements in their completed natural science foundation projects. It is expected to produce original research achievements with independent intellectual property rights in China, to promote the continuous development of fundamental research in engineering thermophysics and energy utilization, and to support the speedy realization of the national's goal of "carbon peaking and carbon neutrality".

Division II of Engineering Sciences

Mechanical Design and Manufacturing (E05)

The Discipline of Mechanical Design and Manufacturing primarily supports fundamental research in the fields of mechanics and manufacturing science, as well as interdisciplinary integration to promote the development of the Discipline.

Mechanics is a fundamental technical science that involves research on the functional synthesis, quantitative representation, and performance control of mechanical products, and the development of novel design theories and methodologies in mechanical design. Major research areas include robotics and mechanisms, transmissions and drives, mechanical dynamics, mechanical structural strength, mechanical tribology and surface technology, mechanical design theory, and mechanical bionics. Manufacturing science is a basic technical science that explores the theories, methods, processes, equipment, and systems for high-performance, high-precision, highly-efficient, low-cost, green, and intelligent manufacturing of mechanical products. Major research areas include forming, machining, manufacturing systems and intelligence, mechanical testing theory and technology, micro-nanomechanical systems, biomanufacturing, atomic-level manufacturing, etc.

Key research directions supported by the Discipline include: (1) fundamental research oriented towards national strategic priorities, academic frontier, and potential major engineering applications; (2) integration of sustainable design, manufacturing, inspection and assembly oriented towards environmental friendliness, resource conservation, and green and efficient energy utilization; (3) Innovative design, new manufacturing principles, new processes, measurement theories, and equipment

prototype for ultrahigh-precision, extreme loading, and in particular, extreme-scale (large/heavy/micro/nano) equipment and instruments; and (4) methodologies of design, manufacturing, and testing for components and parts under extreme conditions (e.g., parameters transitioning from conventional to extraordinary or extreme), or complex service environments (e.g., the coupling of electric, magnetic, thermal, force, and fluid fields), or for extremely large or small scales. In 2025, the Discipline plans to establish two project clusters within the type of General Program: "Product Performance Modeling and Design" (please select application code E0506) and "Space Additive Manufacturing" (please select application code E0508). These will be prioritized for funding under equal conditions. When applying for these projects, the name of the respective project cluster must be filled in the " *Explanatory Notes* " section of the proposal.

Based on the basic tasks of mechanical design and manufacturing, the Discipline encourages continuous in-depth research in specific areas and high-risk exploratory research with principles-based breakthroughs and disruptive innovations. Priority will be given to research that has already achieved innovative results and shows potential for significant breakthroughs, as well as interdisciplinary foundational studies that may open new directions in the Discipline, while avoiding deviation from its scope of support.

Division III of Engineering Sciences

Environmental Engineering (E10)

The Discipline of Environmental Engineering, which aims to better understand and solve environmental problems, is an emerging interdiscipline developed on the basis of natural science, engineering science, and humanity and social science. It is also a strategic discipline providing support for building a community of shared future for mankind and nature and implementing sustainable development of human society. The environmental engineering discipline focuses on major national demands on ecological environment protection and related cutting-edge areas, and undertakes fundamental research to develop basic theories, engineering technologies and management methods in the aspects of environmental pollution control, environmental quality improvement, remediation of the contaminated environment, restoration of damaged ecosystem and recycling and safe utilization of waste resources. The Discipline possesses problem-oriented and interdisciplinary characteristics.

The research areas of the Discipline include drinking water engineering, urban wastewater treatment and reclamation, industrial wastewater treatment and reuse, urban and rural water system and ecological cycle, air pollution control, solid waste recycling and safe disposal, environmental pollution abatement and remediation,

regional and urban eco-environmental system engineering, and eco-environmental risk control. To avoid application mistakes, applicants should carefully understand the funding scopes of the Discipline, and correctly select and fill in the application code with corresponding research directions and keywords. The adoption of new theories, new technologies and new methods in interdiscipline should be integrated with related cutting-edge areas, national strategic demands, and industrial bottleneck challenges in the field of environmental engineering.

Proposals in the Discipline emphasizes identifying, analyzing, and resolving key scientific problems encountered in environmental pollution control, ecosystem restoration, waste resource utilization and carbon emission reduction. It is encouraged to develop innovative theories and disruptive new technologies in high-level fundamental and interdisciplinary research in the field of environmental engineering. Innovative research is preferentially encouraged in the fields including "environmental pollution control and health security", "environmental quality improvement and ecological remediation", and "waste resource recycling and safe utilization".

Ocean Engineering (E11)

Ocean engineering is an emerging multi-disciplinary intersection of comprehensive engineering technologies that integrates mathematics, mechanics, physics, energy science, mechanical engineering, civil engineering, and information technology. With distinct goal-oriented and application-driven characteristics, its fundamental mission lies in ocean exploration, development, utilization, and protection. Ocean engineering addresses critical national strategic demands for building a strong maritime nation and serves at the forefront of the national economy. Its research scope encompasses applied fundamental theories, methodologies, technologies, and equipment development across multiple domains, including ocean exploration and observation systems, ocean resources development, ocean energy utilization, ocean space utilization, coastal engineering, marine transportation systems, marine ecological environment, protection of marine rights and interests, etc.

The research field of ocean engineering involves coastal and ocean engineering, ship engineering, marine technology, and navigation/maritime technology. The Discipline's funding scope covers (1) marine structure design and manufacturing, marine equipment and systems, port/channel/coastal engineering, subsea and seabed engineering, polar engineering, ocean energy systems, marine geotechnical engineering, and disaster mitigation; (2) ship design and manufacturing, marine onboard equipment and systems, marine power engineering, advanced waterborne vehicles, underwater vehicles, ship power and emission reduction technologies, and ship vibration/noise control; (3) underwater acoustics, marine sensors and detection equipment, ocean communication and networking, navigation and positioning systems, seawater resource utilization, marine ecological environmental protection,

and corrosion/stain-resistant materials; (4) fundamental theories in navigation, maneuvering and intelligent control, smart/green shipping, polar shipping, and maritime safety/risk management. Applicants should carefully review the Discipline's research domains and funding priorities to ensure accurate selection of application codes, research directions, and keywords for proper submission.

Ocean engineering prioritizes research support in the following domains: (1) coastal and ocean engineering, focusing on estuarine and coastal biogeomorphic processes, coastal resource conservation and utilization, digital twin technologies for coastal infrastructure, disaster mitigation under extreme sea states, offshore hydrocarbon exploitation technologies and equipment, ocean energy power generation technology and equipment, deep-sea mineral extraction technologies and equipment, subsea gas hydrate development equipment, polar resource exploitation technologies and equipment, and key technologies for deep-sea space station; (2) ship engineering, emphasizing strongly nonlinear ship hydrodynamics, green and intelligent ship design and manufacturing, ship safety in extreme environments, informatization and intelligentization for marine equipment, intelligentization for marine vehicles, novel marine power systems, novel underwater energy supply solutions, and specialized auxiliary devices and systems; (3) marine technology, covering marine environmental interaction technologies, multi-source ocean monitoring technologies, ocean information interoperability technologies, ocean big data analytics and AI applications, acoustic/non-acoustic sensing with intelligent recognition technologies, seawater chemical resource extraction, marine pollution control and remediation technologies, oil spill emergency response technologies, and advanced marine materials; (4) navigation and maritime technology, addressing maritime risk early-warning systems, maritime big data intelligent processing, shipping accident causality analysis, maritime safety and salvage operations, intelligent ship navigation, green shipping technologies, polar navigation systems, and smart maritime traffic management. For the 2025 funding cycle, the Discipline will establish the ‘Green and Intelligent Marine Equipment’ General Program Project Cluster (Application Code: E1101), which will receive prioritized funding under equivalent evaluation conditions. Applications for this cluster must specify the project cluster name in the *"Notes*" section of the proposal.

Division IV of Engineering Sciences

Architecture and Civil Engineering (E08)

The Discipline of Architecture and Civil Engineering supports fundamental research in architecture and civil engineering. The architecture research aims to investigate the fundamental theory of architecture, plan and design approaches, and innovations of architecture technology based on the strategy of sustainability and

greenization, from the viewpoint of a harmonic relationship between humanity and the resources and environment, and the integrated development of region, city and countryside, and architecture. Civil engineering aims to meet the critical demands for high-quality construction and maintenance of the nation‘s key civil projects and infrastructure. It explores the fundamental theory and cutting-edge technologies arising from engineering construction practices, promotes interdisciplinary integration and the applications of advanced experimental methods and information technologies, and enhances the development and implementation of new materials, structural systems, and constructional technologies.

For the Discipline, the field of architecture is subdivided into three categories: architecture, urban/rural planning (including landscape architecture), and building physics. Civil engineering is subdivided into seven categories: structural engineering, engineering materials, construction and service, rock and foundation engineering, underground and tunnel engineering, road and rail transit engineering, and engineering disaster mitigation. Applicants should carefully understand the field direction and funding scope of this Discipline, and correctly select and fill in the application code and keywords to avoid false applications. Applicants are recommended to submit their applications to other divisions if their key scientific problems or research topics are out of the scope of the Discipline.

Applications in the field of architecture should focus on new scientific problems that arise from urban/rural development practices, emphasize scientific methods in architectural design and urban/rural planning, and highlight the research and innovations of building physics, building environment control, and the fundamental theory of low carbon and energy saving. It encourages innovations in the priority field of design principles and technical systems of architecture and urban/rural habitation environments. Applications in the field of civil engineering should focus on the synthetic design of high-performance materials and structural systems, the maintenance and performance enhancement of existing structures, the stability mechanism and control of geotechnical and foundation structures under complex and severe environments, and the life-cycle design theories and methods for civil engineering projects. It encourages innovations in key scientific problems such as fundamental theories of materials and structure integration, the failure mechanism and performance control of engineering structures under extreme loads and severe environments, the multi-hazard effect and resilience improvement of engineering structures, modern civil engineering test and numerical simulation, the informatization and intelligentization of civil engineering. In 2025, the Discipline will initiate three General Program Clusters: "Building Environment Development under Extreme Conditions" (E0803), " Intelligent Digital Design of Engineering Structures" (E0804), and "Zero-Carbon Concrete" (E0805). Applications within these clusters will be prioritized for funding when all other evaluation factors are comparable. Applicants are required to clearly indicate the corresponding cluster

name in the "Remarks" field of the application form.

Transportation and Vehicle Engineering (E12)

The Discipline of Transportation and Vehicle Engineering primarily funds research on fundamental theories and key technologies in the fields of transportation engineering and vehicle engineering.

The Discipline focuses on various modes of transportation, including road, rail, waterway, aviation, aerospace, pipeline, and operational transportation. It studies the system formed by elements such as transportation participants, vehicles, infrastructure, environment, and information, as well as the nature of and the interactions among these elements. It also explores system planning and design, operation and control, integration and matching, operation and maintenance, aiming to achieve safety, efficiency, cost-effectiveness, energy conservation, and environmental protection in various transportation modes and integrated transportation systems. The funding scope includes foundational theory research and key technological breakthroughs in areas including road transportation engineering, rail transportation engineering,, waterway transportation engineering,, aviation transportation engineering,, aerospace transportation engineering, pipeline transportation engineering, operational transportation and special vehicles, integrated transportation systems, emerging transportation modes, and interdisciplinary technologies.

The Discipline will continue to promote engineering technology evaluations concerning reliability, availability, maintainability, and safety. It prioritizes foundational research with significant theoretical value, foresight, and exploratory nature. Applicants are encouraged to actively pursue scenario-driven exploration, research with the goal of building "a country with strong transportation network", and accelerate the integration of transportation and vehicle engineering.

The Discipline will continue to prioritize funding in the following areas: ① To support the "National Comprehensive Multimodal Transportation Network" planning and construction and achieve the ultimate goals of "satisfactory travel for people" and "efficient logistics for goods," research shall focus on the connection, transition, operational optimization, and element matching in the collaborative processes of rail, road, waterway, aviation, and pipeline transportation. Key research areas include collaborative planning and design of the integrated network, integrated passenger service systems, coordinated organization of multimodal freight transport, and joint pipeline freight transport. ② In response to the critical demands for national energy security and bulk industrial raw material transportation, and to accommodate the expansion of pipeline transport to multiple media, research shall explore the physical and chemical property changes of various transported media. It shall also focus on theories and technologies related to multi-media, multi-modal, multi-energy complementary integration, and smart multi-network interconnection within pipeline transportation systems to ensure safe and efficient operations. This will contribute to

building a modern pipeline transportation discipline. ③ Research shall continue on the design and control of novel distributed electric-drive vehicles, particularly to meet practical needs in operational transportation scenarios (such as industrial production, emergency rescue, and national defense). The focus shall be on speed synchronization, acceleration synchronization, and the unique constraints arising from heterogeneous dynamics in vehicle-to-vehicle collaborative transport. Efforts shall aim to overcome key challenges in cooperative autonomous driving without rigid constraints and develop evaluation and verification technologies for advanced autonomous driving in various transportation tools. ④ To support the development of new space transfer systems for on-orbit refueling, funding will continue for research on space transportation system design, satellite capture and autonomous spacecraft docking, multi-configuration design of refueling mechanisms adapted to different temperature zones of propellants in space environments, large-scale low-temperature propellant transfer and management in orbit, and multi-vehicle coordinated attitude control during refueling. ⑤ Research shall continue on the stability of the conventional high-speed maglev transportation system at a speed level of 600 km/h. The focus will be on exploring the stability potential of the electromagnetic suspension, guidance, and pantograph-catenary control systems between vehicles and tracks. Key areas include system operational smoothness, high energy efficiency, compatibility with atmospheric and geological environments, durability, and applicability. Research shall also cover design theories, methods, and verification technologies. ⑥ To advance aerospace transportation, research shall focus on air transport for special-purpose equipment, such as ultra-large, irregularly shaped, and heavy objects, as well as wide-range aerospace transport needs. Studies will address the design theories and methods for blended-wing-body aircraft and wide-range aerospace vehicles, solving key technical challenges such as overall layout and aerodynamic multidisciplinary optimization, weight reduction and efficiency enhancement of irregular structures, payload characteristics of wide-range aerospace vehicles, integrated flight propulsion, unconventional loose flight mechanics performance, and flight control design methods. In 2025, these areas will receive prioritized funding with higher-than-average funding rates and intensity. Approved projects will be managed in the form of project clusters.

Division V of Engineering Sciences

Electrical Science and Engineering (E07)

The Discipline of Electrical Science and Engineering includes two main fields: electrical (magnetic) energy science and the interaction between the electromagnetic field and matter. The funding scopes include fundamental research and applied fundamental research with objects or means of electric/magnetic phenomena and

principles, orienting the related scientific problems in electric (magnetic) energy generation, transformation and conversion, transmission and utilization, as well as the mechanisms and laws of the interactions between electromagnetic field and matter. The Discipline is established in the fields of electrical science such as electromagnetic field, circuits (electrical networks), and electrical materials, focusing on electric machines and their systems, power systems and integrated energy, high voltage and insulation, electric apparatus, pulse power, discharge plasma, power electronics, electric energy storage and application, superconducting electrotechnics, bio-electromagnetics technology, and other electrical engineering fields. Research on new phenomena, new theories, new models, new methods, new devices, and new equipment is encouraged.

The areas of the electromagnetic field and circuit mainly include the electromagnetic field, circuit (electric network), static electricity, electromagnetic measurement and sensing, new energy conversion and power transmission technology, electromagnetic environment, and electromagnetic compatibility. The areas of superconducting and electrical materials mainly include superconducting conductors and magnets, superconducting power technology, engineering dielectrics, conductor/semiconductor/insulation/magnetic/energy storage/sensing materials, and other new electrical materials. The areas of electric machines and their systems mainly include analysis and design of the electric machine, conversion and control of electric machine system, integration of electric machine system, as well as electric transmission and drive. The areas of power systems and integrated energy mainly include power system analysis, power system control, power system protection, electricity market, electricity information, integrated energy system, and energy internet. The areas of high voltage and discharge mainly include high voltage and large current, electrical equipment insulation, overvoltage and its protection, arc and electric contact, electrical apparatus, pulse power technology, and discharge plasma technology. The areas of power electronics mainly include power electronic devices and their applications, and power electronic systems and their control. The areas of electric energy storage and application mainly include principles of electric energy storage and conversion, devices, equipment, and systems. The areas of bio-electromagnetic technology mainly include bio-electromagnetic phenomena and mechanisms, the biological effect of electromagnetic fields, electromagnetic diagnosis and treatment of disease.

In recent years, the Discipline has presented new development trends: (1) constantly broadened research scopes, such as integrated energy systems, independent power systems, electrical materials, devices and equipment under extraordinary environments and extreme conditions, etc.; (2) continuously expanded application fields, such as electric machines used in robots and servo systems, electrified traffic, new energy transport equipment, multi-electric ships and aircraft, power supply, storage, and conversion in the fields of aeronautics and astronautics, electric

transmission and drive (propulsion), electromagnetic launch, metallurgy, environmental protection technology, etc.; (3) increasingly prominent interdisciplinarity, such as smart grid, energy and electricity market, electrical safety, intellisense, electric energy storage, pulse power, plasma and bio-electromagnetic technology and other fields have been intercrossed deeply with the disciplines like physics, chemistry, materials, information, management, and biomedicine, etc.

The Discipline encourages free exploration and cross-disciplines, tracking and leading the frontiers of this discipline and solving the scientific problems that exist in current technical bottlenecks. Interdisciplinary research on fundamental theory and key techniques are particularly encouraged, e.g., interactions between electromagnetic energy and materials, electrical equipment, power electronic devices, and bio-electromagnetic technology.

Applicants are advised to carefully understand the field direction and funding scope of the Discipline and correctly select or fill in application codes and the corresponding research directions and keywords to avoid misinformation.

Hydraulic Engineering (E09)

The Discipline of Hydraulic Engineering covers two scientific areas, i.e. hydro-science and hydraulic Engineering, with the fundamental objectives of water security and sustainable high-efficiency water utilization. On the one hand, the research of the Discipline involves pursuing scientific understanding of: watershed hydrological cycle and engineering hydrology, watershed water and sediment changes and river dynamics, engineering hydraulics and hydropower utilization, watershed and river/reservoir ecology, etc., under the natural and anthropogenic impacts; on the other hand, it aims to address engineering-oriented scientific issues, such as sustainable and efficient water resources utilization, causes and mitigation of flood and drought hazards, high-efficiency water use in agriculture, sediment dynamics and fluvial geomorphological evolution, remediation of aquatic environment of river/lake/reservoir/estuary ecosystems, planning of water networks and inter-watershed water transfer projects, safe and stable operation and regulation of hydraulic-mechanical systems, construction and maintenance of hydraulic/hydropower engineering and water networks, as well as hazard risk mitigation, etc. The Discipline is characterized by both fundamental theoretical science and engineering technological innovations. It is a basic and strategic discipline for safeguarding national water security.

The primary research areas of this discipline include Engineering Hydrology and Water Resources Utilization, Agricultural and Rural Water Conservancy, Hydraulics and River Dynamics, Hydro-machinery and Systems, Hydraulic Geotechnical Engineering, and Hydraulic Structures.

Applications for funding of the Discipline should: align with national strategic demands and global scientific and technological frontiers, focus on formulating, analyzing and solving key scientific questions, and emphasize theoretical innovations. Applications for Engineering Hydrology and Water Resources Utilization should

involve evolution of watershed hydrological cycle under climate change and anthropogenic impacts, ecohydrological processes and effects, evolution and regulation of water resources systems, principles and methodology of engineering hydrology, monitoring/early warning/mitigation of flood and drought hazards, optimized allocation of water resources, sustainable and efficient water resources utilization, etc. Applications for Agricultural and Rural Water Conservancy should involve conservation and protection of agricultural and rural water resources, agricultural water-soil ecosystems and environment, irrigation and drainage technology and equipment, amelioration of middle and low yield fields, smart irrigation areas and rural water networks, etc. Applications for Hydraulics and River Dynamics should involve water and sediment dynamics and regulation, water and sediment change and engineering safety control, sediment transportation and environmental substance transformation in rivers/lakes/reservoirs/estuaries, maintenance and restoration of aquatic ecosystem health, evolution and regulation of watershed aquatic ecosystem, etc. Applications for Hydro-machinery and Systems should involve stable and safe operation of hydraulic-mechanical systems, intelligent monitoring and regulation of hydraulic-mechanical systems, etc. Applications for Hydraulic Geotechnical Engineering should involve physical experiments and numerical simulations of rock and soil, coupling effects of multiphase flow in rock and soil, monitoring and early warning technology, geotechnical engineering hazard and risk management, etc. Applications for Hydraulic Structures should involve novel structures in hydraulic and hydropower complex projects and water transfer projects, high-performance hydraulic engineering materials, intelligent construction, safe operation and maintenance, hazard risk mitigation, etc. Smart hydraulic engineering, ecological water conservancy, and safe hydraulic engineering have emerged as new focal research areas in the hydraulic engineering discipline.

To tackle the challenges such as climate and environmental change adaptation and critical hydraulic infrastructure security, the Discipline encourages innovative research on the following fundamental scientific issues, including optimized allocation and high-efficiency use of watershed water resources, causes and mitigation of flood and waterlogging hazards, monitoring, early warning and hazard control of drought, water conservation and high-efficiency use in agriculture, watershed water networks and urban/rural water systems, inter-watershed water transfer, river/lake/reservoir water ecological security, river water and sediment change and engineering safety, safe operation and regulation of hydraulic-mechanical systems, intelligent construction of hydraulic and hydropower complex projects, intelligent integrated regulation and control, disaster chain risk prevention and control, and interdisciplinary integration of artificial intelligence and relevant fields in hydraulic engineering.

Department of Information Sciences

The Department funds researches in areas of the generation of signals, acquisition, storage, transmission, processing and utilization of information. Information science is based on informatics, control theory and system theory, and its main method is information methodology, and its main platform and means of research are computer, integrated circuity and photo electric devices.

Based on the trends of disciplinary development and social progress, the Department gives priorities on funding research on electronics, communication and network, electric devices and integrated circuit, computer science, automation, AI, photo electronics and microelectronics, network security, quantum information. Preferential support will be given to basic researches that meet national demands and have far-reaching importance in promoting the national economic and disciplinary development.

Scientific and technical issues in information sciences are increasingly interdisciplinary in nature. Therefore, the Department pays great attention to proposals for interdisciplinary researches between information science and mathematics, physics, chemistry, life sciences, medical sciences, materials sciences, engineering, geo-sciences and management sciences, and so on. The Department encourages cooperative research among scientists with different backgrounds and knowledge to put forward cross-disciplinary research proposals in smart city, smart agriculture, health, service and education information technology sciences. It also encourages scientists to combine theory with practice and explore basic theory and key technical issues that have important application potentials for national economy and security. It encourages research on basic theory and key technology driven by national need, and promote deep integration of industry and research. The Department will continue to encourage scientists to conduct substantial international cooperative research with scientists abroad in frontier areas of information sciences.

In 2025, the Department encourages creative basic research that is different from traditional research ideas, and welcomes researchers conduct discussions and studies on new concepts, new theories, new methods and new technologies.

In 2024，the Department received 18,650 applications for General Program, and funded 2,203 projects with a total direct cost of 1.1015 billion yuan. The average funding per project was 500,000 yuan, and funding rate was 11.81% (compared to 17.44% in 2023). In 2024, the Department received 13,482 applications for Young Scientists Fund programs, and funded 2,719 projects with a total direct cost of 815.70 million yuan. The success rate was 20.17% (compared to 23.13% in 2023). In 2024, the Department received 2,031 applications for Less Developed Region Programs, and funded 267 projects with a total direct cost of 85.3 million yuan. The success rate was 13.15% (compared to 15.28% in 2023).

Funding of Program projects in Department of Information Sciences in 2024

Unit: 10,000 yuan

Divisions		General program			Young scientist program			Less developed region program		
		Projects	Direct cost	Success rate (%)	Projects	Direct cost	Success rate (%)	Projects	Direct cost	Success rate (%)
I	Information and communication system	150	7 490	11.87	180	5 400	20.50	14	448	12.96
	Information acquisition and Processing	169	8 440	11.82	200	6 000	19.38	22	703	12.87
	Electronics and technology	190	9 490	11.80	268	8 040	20.58	23	735	13.53
II	Computer science	464	23 211	11.81	537	16 110	20.16	69	2 192	13.22
	Artificial intelligence	296	14 824	11.79	347	10 410	20.15	63	2 024	13.07
	Education information science and technology	46	2 280	11.92	42	1 260	20.49	8	252	13.33
III	Control theory and technology	152	7 607	11.83	215	6 450	20.21	16	517	12.90
	Automation system and applications	109	5 454	11.77	135	4 050	20.06	9	291	12.68
	Smart system	130	6 506	11.80	152	4 560	20.13	8	259	13.56
IV	Semiconductor science and information devices	199	9 964	11.80	257	7 710	20.14	14	433	13.59
	Information optics and photoelectric devices	124	6 200	11.80	160	4 800	20.20	9	294	12.86
	Laser and technical optics	174	8 684	11.84	226	6 780	20.20	12	382	13.19
Total or average		**2 203**	**110 150**	**11.81**	**2 719**	**81 570**	**20.17**	**267**	**8 530**	**13.15**
Direct cost per project		50.00			30.00			31.95		

* General Program and Fund for Less Developed Regions projects adopt the average funding strength of direct costs, while Young Scientist Fund projects implement a lump-sum system with a fixed amount.

Please note:

1) when submitting applications related to research ethics and security issues such as bio and information security, the evaluation papers from oversight agencies must be included in the application.

2) the requirements relating to research integrity stated in this Guide must be strictly observed, and information and typical work of the applicant included in the application must be real and accurate.

Division I of Information Sciences

Electronics and information system (F01)

The Division mainly funds basic research in areas of electronic science and technology, information and information system, information acquisition and processing and related interdisciplinary areas.

Researches funded in areas of electronic science and technology include circuit and system, electronic science and technology, magnetic field and wave, as well as electronics and applications. Researches funded in information and information system include information transmission, exchange and application in fields of information and communication. Researches funded in information acquisition and processing include applied technology of information sensing, acquisition and processing.

In 2025, the Division will support researches in areas of electro-magnetic scattering and propagation in complex environment and targets, regulation of new electro-magnetic media field/waves, new antenna and array technology, radio sensing and positioning, tetra hertz theory, wireless energy acquisition and transport, radio packaging and micro system integration, micro photon front end and integration system, high performance vacuum superconductivity micro nano devices, high performance sensors and integrated micro systems, circuit and system design in extreme and complex conditions, bio-medical data acquisition and application, medical image processing and analysis, TCM information acquisition and processing, theory of large scale coordinated integration of network, advanced coding near the limit, cognitive smart communications, molecular communication, syntax communication, space, sea and land information network theory and technology, communication system security, optical communication and sensing, quantum communication, underwater communication and sensor network, new principle and method of radar, new mechanism and method for multisource detection and imaging, multimode remote sensing information processing, multimedia information processing, space information acquisition and processing, underwater information acquisition and processing, acoustic signal and acoustic field sensing and smart processing, magnetic spectrum cognition and management and controls, low space smart network. The innovative and interdisciplinary research and exploratory studies with good prospects will be supported, and preferential funding will be given to the projects which have scored outstanding achievements in previous research. Preferential support will be given and encouraged to the combination of theory and practice to focus on innovation and to study and solve basic problems in important application areas, so as to improve China‘s research capabilities in the Discipline.

Division II of Information Sciences

The Division mainly funds researches in computer science, artificial intelligence, education information science and technology.

Computer science (F02)

The Division mainly funds researches in areas of basic theories, basic methods

and key techniques related to computer science and technology and relevant interdisciplinary areas. It mainly covers software technology, data base, computer architecture, computer network, network and system security, graph and image and multimedia technology, big data, bio information and digital health, and other new and interdisciplinary areas related to computer. The important trend of computer science and technology development is to obtain super speed, large storage, high performance, high reliability, mobile applicability and integration of sensing, storage and computing.

In 2025, the Discipline welcomes research proposals with creative ideas and reasonable plans in basic and farsighted areas and interdisciplinary subjects. The Discipline encourages and supports study difficult and important basic problems, studies focusing on strategic national goals, and collaborations with researchers in areas of mathematics, earth sciences, life sciences, medical sciences, and social sciences to make joint explorations on new theories, new method and technology in interdisciplinary areas. In addition, the Discipline encourages integration with homemade platforms in carrying out the research.

Artificial intelligence (F06)

The AI area (F06) focuses on key scientific issues and technology in AI theory, technology and system. It mainly covers basic theory, machine learning, machine sensing and patter recognition, natural language processing, smart system security, cognition and neural inspired AI, and interdisciplinary research. The Discipline encourages researchers to explore basic issues of great difficulties and great impacts, supports close cooperation between AI researchers and those in other disciplines and humanities and social sciences to explore new concepts, theory, method and technology. The Discipline encourages explorations in large general models, embedded intelligence and group intelligence.

Education information science and technology (F0701)

The discipline of education information science and technology F focuses on knowledge generation, cognition laws and learning mechanism, and original, fundamental, far-sighted and interdisciplinary research, encourages research on basic theory and method of AI driven education, education assessment method and models supported by big-data, online and mobile learning environment and key technology. The Discipline encourages collaborations with other disciplines including social science disciplines to explore new concept, theory, method and technology to solve education problems in China.

In 2025, the Division gives priorities on funding research in software theory and engineering, information security, network and system security, complex science and AI theory, intelligence system and AI security, machine learning, natural language processing, science and technology in education related areas.

Division III of Information Sciences

Automation (F03)

The Division mainly funds basic research and far-sighted research for the national economy and national security in areas of control theory and technology, automation system and application and related interdisciplinary areas. It includes control theory and technology, control system and engineering, automatic checking technology and devices, navigation, guidance and control, biomedical system and technology, robotics and intelligent system, smart manufacturing and automation system theory and technology, AI driven automation and other novel automation theory and systems.

In 2025, to address the problems found in recent project proposals, the Division encourages researchers to 1) select projects with application background of national interests, and provide scientific and technological support to the promotion of the economy and living standard; 2) select interdisciplinary projects and collaborate with scientists in biomedical, mathematics, economics and sociology, so as to promote development of the discipline; 3) select internationally challenging problems or creative problems so as to increase the influences of Chinese scientists in international academic circle.

Division IV of Information Sciences

The funding scope of the Division covers two disciplines, namely, semiconductor science and information devices, and optics and photo-electronics.

Semiconductor science and information devices (F04)

The main scope of funding is semiconductor physics, materials and devices, new information functional materials and devices, IC design, fabrication, packaging and equipment, EDA algorithm and tools, and micro nano mechanical and electrical devices and system.

In 2025, the Discipline gives priorities to funding of new semiconductor physics, materials and devices and integration of multi functions, wide band gap semiconductor material and devices of GaN, SiC, gallium oxide, diamond, etc., large range, high precision smart materials and self-repair sensing devices, bio-sensing devices and integrated sensing devices, new nano sensing, storage and computing chips, micro energy harvesting devices, integration of energy harvesting devices and chips, high back off efficiency power amplifier, high linear low noise amplifier, super wide band low oscillation frequency source, low spurious frequency variation circuit, digital radio technology, multichannel phase array chips, multidimensional information detection imaging devices, single photon detection devices and array,

high speed photo electric devices and integration, photo electric devices for AI, high power semiconductor laser, new luminescent and display devices, quantum materials and devices such as quantum point, quantum line, quantum well and new AI quantum structure, atomic fabrication of low dimensional semiconductor materials, organic semiconductor materials such as small molecule, polymer, conjugated oligomer and electronic and photo electric devices, flexible electronic devices and systems such as flexible display and sensing, and wearable equipment, new electronic information device and integration in post Moore era, new principle logic devices of super low energy consumption and high speed high performance surpassing CMOS, nonvolatile storage devices and its 3Dintegration, in memory computing devices and array architecture, in memory sensing and computing smart recognition system, multi temporal scale synaptic devices and integration, high density restructuring neuron cell devices and circuit, self-adaptive learning brain like computing system, low consumption high performance IC, high speed data interface, AD/DA chips, multidimensional isomorphism/isomerism IC and system, 3D integrated packaging, IC analysis and automatic design method, IC reliability studies, etc. . The Dicipline encourages studies on improving performance, reliability and testing method for materials and devices, including device physics, structure and technology, and encourage multidisciplinary innovative studies.

Optics and photo electronics (F05)

The Discipline includes information optics and photoelectric devices and laser technology and technical optics, focusing on the generation, acquisition, transport, storage, processing and display of optical information, the generation, transport, regulation, detection and application of laser, and related research on devices and system integration. The Discipline supports exploration on photonic principles and new optical materials, and promote interdisciplinary research on new energy and bio medical research, high precision manufacturing, climate and environment, and supports research on applications in space, on land and on the sea, as well as common issues and core technology breakthrough related to high end optical design and manufacture. It mainly covers basic research on optical devices and integration technology, inferred and tetra hertz physics and technology, nonlinear optics, laser, spectrum informatics, applied optics, micro nano optics.

The Discipline supports basic research in photonics and photo electronics, emphasizing on explorations in interactions of light and matter, optical information regulation and processing, explorations new principles, new method of regulation and detection in photo electronics in extremely microscopic, extremely weak and extremely strong scenarios, emphasizing on certain basic areas having potential objectives, especially the integration and merging of photo electric information and smart manufacturing, high end instrument, biomedical, Eco and environmental and IC industries, developing new technology of laser photo electronics, develop new devices, promoting technology transfer and making greater contributions to national

economy and security.

In 2025, the Division will give priority to researches on new photon research for next generation of core devices, far-sighted integration and precision instrument, smart equipment, encourage interdisciplinary research, especially extreme performance laser, multidimensional optical field regulation and information detection, optical sensor and technology, new types of optical fiber and optical wave guide devices, light communication technology, optical transmission and optical exchange devices, precision measurement of optical spectrum, smart optical computation and information processing, computational optics, high resolution and 3-D imaging, new types of display and interaction, hetero photo electric integration, large scale photon integration, photo quantum devices and chips, new optical material and devices, micro nano photo electric devices, visible light and inferred photon devices, tetra hertz photon devices, microwave photon devices and integration, photo electronic chips and technology, energy photonics, biomedical photonics, superfast optics, marine optics, advanced optical design, new nano photo lithography, extreme optical processing and checking, etc.

Department of Management Sciences

The Department of Management Sciences supports fundamental scientific research on the objective law of management and economic activities in various complex social and economic organizations, aiming at providing theories and methods to optimize the utilization of limited resources. The Department consists of three divisions, handling proposals of four disciplines, which are Management Science and Engineering, Business Administration, Economic Sciences, and Macro-Management and Policy.

The Department will be more active to encourage scientists to confront the frontier of management and economic sciences, as well as the needs of the nation‘s economic growth and social development, so that to propose their research topics, promote the innovation on theory and methodology, and enhance the capability for serving to the national strategy and economic and management practices. Meanwhile, it also encourages integrated development and innovation based on multidisciplinary, including Mathematical Sciences, Information Sciences and etc., driving the emergency and development of new fields in science. It also encourages the international cooperation and exchanges.

The Department emphasizes applying scientific method to explore the objective laws of management and economic activities, and encourages the revolution of research paradigm. The Department supports research that observes and describes the management phenomena based on data obtained from experiment, observation, investigation, measurement and etc. The Department also supports research that aims

at addressing management issues by analyzing and explaining management phenomena through modeling, computation, etc.

The Department encourages interdisciplinary research, and supports scientists from diverse academic backgrounds to take an active part in management science research and contribute to the development of Management Sciences from basic law and theoretical method. However, applications focusing on social science and humanities, as well as those within the funding scope of other scientific departments of NSFC, will not be handled by the Department.

Funding for Projects of General Program, Young Scientist Fund and Fund for Less Developed Regions in Department of Management Sciences in 2024

Unit: 10,000 yuan

Divisions		General Program			Young Scientist Fund			Fund for Less Developed Regions		
		Projects	Direct cost	Funding rate (%)	Projects	Directcost	Funding rate (%)	Projects	Direct cost	Funding rate (%)
Division I	Management science and engineering	257	10,431	14.40	303	9,090	16.70	35	953	14.11
Division II	Business administration	172	6,981	14.11	251	7,530	12.21	35	953	16.28
Division III	Economic sciences	173	6,940	14.15	270	8,100	14.06	35	953	14.34
	Macro-management and policy	239	9,698	11.78	289	8,670	11.52	40	1,091	13.33
Total or average		**841**	**34,050**	**13.44**	**1,113**	**33,390**	**13.41**	**145**	**3,950**	**14.40**
Average funding amount (10,000 yuan per project)		40.49			30.00			27.24		

*General Program and Fund for Less Developed Regions projects adopt the average funding strength of direct costs, while Young Scientist Fund projects implement a lump-sum system with a fixed amount.

In 2024, the Department received a total of 6,256 applications for General Program, an increase of 1,557 applications from 2023, with a growth rate of 33.13%. A total of 841 projects were funded, with a funding rate of 13.44%. The average funding amount (direct cost) was 404,900 yuan per project across various disciplines.

In 2024, the Department received a total of 8,299 applications for Young Scientist Fund, an increase of 923 applications from 2023, with a growth rate of 12.51%. A total of 1,113 projects were funded, with a funding rate of 13.41%.

In 2024, the Department received a total of 1,007 applications for Fund for Less Developed Regions, an increase of 80 applications from 2023, with a growth rate of 8.63%. A total of 145 projects were funded, with a funding rate of 14.40%. The average funding amount (direct cost) was 272,400 yuan per project.

Notes:

1. Avoid duplicate funding from the National Social Science Fund of China

(NSSFC)

To optimize the allocation of the National Natural Science Fund and to ensure that principal investigators invest adequate time and energy in their on-going national projects, the Department will reject proposals from the following applicants in 2025, unless otherwise specified in *this Guide*. This exclusion does not apply to applications of Excellent Young Scientists Fund and National Science Fund for Distinguished Young Scholar:

(1) Applicants who were supported by the National Social Science Fund of China as a principal investigator within the past 5 years (starting from Jan. 1, 2020), and have not yet got the project completion certificate awarded by the National Planning Office of Philosophy and Social Science by the deadline of this year‘s fund application.

Notes: If an applicant has gained the project completion certificate from the National Planning Office of Philosophy and Social Science, and is applying for an NSFC project with the application code starting with G in 2025, he/she must provide a scanning copy of the certificate with an official signature and seal of his/her home institution, and submit the copy of this certificate online.

(2) Applicants who apply for a project under the Department of Management Science, and also apply for a National Social Science Fund of China as the project leader in the same year.

2. Accuracy and integrality of information

Applicants are responsible for the accuracy, integrality, and reliability of the contents of their applications, and their home institutions are obligated to undertake serious check on the relevant information. The following requirements should be complied with when applicants prepare and submit the project proposals:

(1) Applicants are required to give a detailed description on their previous research work related to the proposed work, along with associated publications. The five representative works must be previously published papers or books (including online publications). When the applicant fills out the information of the representative works, he/she should carefully read the requirements of the *Guide* and ensure full compliance.

(2) The Department treats it unacceptable that applicants submit the same proposals to more than one science funding agency. Applicants who propose new research topics based on their previous NSFC projects are required to describe the progress of the previous NSFC projects and clarify the relations and differences between the newly submitted proposal and the previous ones. For applicants who are undertaking projects funded by other agencies, such as MOST, MOE, NSSF or local science funding organizations, they are required to clarify the similarities and differences between their on-going projects and the new proposal submitted to NSFC.

3. Special requirements for principal investigators (PIs) with recent NSFC

funding

To ensure that PIs invest adequate time and effort to their on-going projects, applications from **PIs** who **received** any NSFC project funding in 2023 or 2024 (particularly 2024) will undergo enhanced scrutiny during the 2025 review cycle.

4. Consideration of the performance of accomplished projects

The Department conducts performance evaluation for all General Program projects, Young Scientists Fund projects, and Fund for Less Developed Regions projects one year after these projects are completed. Researchers with good performance evaluation results will be given priority for funding when they apply for new projects. By contrast, researchers with poor performance evaluation results will undergo stricter review procedures when they apply for new projects.

Division I of Management Sciences

Management Science and Engineering (G01)

The Division mainly supports basic research on management theory and method, including Complex Systems Management, Operations Research and Management, Decision-making Theory and Game Theory, Evaluation and Forecasting Theory and Method, Management Statistics Theory and Method, Management Psychology and Behaviors, Management System Engineering, Industrial Engineering and Quality Management, Logistics and Supply Chain Management, Service Science and Engineering, Data Science and Management, Information System and Management, Risk Management, Financial Engineering, Engineering Management and Project Management, Transportation Management, Digital Platform Management Theory, etc.

The orientation of the Division is more focused on basis theoretical research, emphasizing innovative research on management theory and method integrated with China‘s management practices. The Division encourages interdisciplinary research and international frontier theoretical research.

During the last few years, the Discipline has experienced rapid development in China. Its performance, reputation and influence in the international scientific society has been unceasingly raised up in many research areas. However, the distribution of project applications across different fields is not balanced. Fields such as Operations Research and Management, Logistics and Supply Chain Management, Industrial Engineering and Quality Management, Transportation Management, and Engineering Management and Project Management have a higher number of project applications. In contrast, fields like Management Statistics Theory and Methods, and Service Science and Engineering have relatively fewer project applications.

In 2025, the Division will continue to encourage and support basic theoretical

research on management science, method on frontier as well as original studies based on China's management practices, which include as follows: 1)supporting pioneering research to explore the frontiers of management science and achieve innovative research findings with international influence; 2) supporting the integration of management science with Mathematics, Economic Sciences, Behavior Sciences, Information Sciences and etc., as well as other disciplines, seeking breakthroughs of theories, methods and techniques for the development of the Discipline, and encouraging the frontier research facing to the complex social systems and complex engineering systems; 3) providing support for scientists to link the frontier theory and method with problems within China, so that to solve the common and important issues from management practices in China and propose the general management theory and method; 4) supporting the frontier research confronting the important national demand, encouraging the scientists to pay more attention to the scientific management problems in emerging areas like intelligent manufacturing, artificial intelligence, digital economy, and etc., and the one behind the technical problems of "neck-lock".

Division II of Management Sciences

Business Administration (G02)

The Division mainly supports basic research and applied basic research on management theories and new management techniques and methodologies, taking micro-level organizations (all types of industries, enterprises, institutions, and nonprofit organizations) as research objects. The funding areas of the Division include Strategic Management, Theory of Firm, Enterprise Technology Management and Innovation Management, Human Resource Management, Financial Management, Accounting and Auditing, Marketing, Organization Theory and Organization Behaviors, Business Intelligence and Digital Business, Corporate Finance, Enterprise Operation Management, Corporate Governance, Entrepreneurship, International Business Management, Tourism Management and so on.

In recent years, all fields of Business Administration have been well developed. The number of applications in some fields was relatively large, which includes Marketing, Financial Management, Accounting and Auditing, Enterprise Technology Management and Innovation Management, Enterprise Operation Management, Organization Theory and Organization Behaviors, and etc. Correspondingly, the number of funded projects in these fields was also much larger than the one in other fields. In general, it has shown certain innovativeness for the proposals on basic research expanding the frontier theory, adopting new techniques and methods. Meanwhile, it has steadily increased for the basic applied research focused on the national strategic demands and Chinese firms' practical needs.

In 2025, the Division will continue to support the innovative basic research aiming at the national strategy demands and scientific frontier. The Division will give priority to the proposals that will bring out new theory and discovery, to the pioneering research employed various research methods including behavioral experiments, quantitative models, machine learning, text mining, and etc., from different disciplines including Information Science, Data Science, Behavioral and Psychological Science, and etc., verified by different sources of data, and being backed by multidisciplinary studies. The Division advocates scientific spirits, encourages original exploration, and supports original research that focused on the management theory and paradigm revolution based on practices of Chinese enterprises, as well as the one that is beneficial to the high-quality development of Chinese firms.

In order to promote the balance development, the Division will focus on all the 15 codes in the discipline of Business Administration and give priorities to basic research that pushes the cutting edge of the Discipline. The Division encourages the research focused on topic of management process and activities under the background of dual circulation, "Dual Carbon" goals, digital economics and artificial intelligence, which includes the firms' organization, production, operation, service and business.

Division III of Management Sciences

The Division supports two basic research areas: Economic Sciences and Macro Management and Policy.

Economic Sciences (G03)

The Discipline mainly supports basic research on unveiling rules of economic activities, explaining economic phenomena, and deriving economic theories through scientific research methods, such as empirical study, mathematical modeling, simulation, and behavior study and etc. The funding areas covers 14 different fields, including Econometrics and Economic Statistics, Behavior Economics and Experimental Economics, Mathematical Economics and Computational Economics, Microeconomics, Macroeconomic Management, International Economics and Trade, Financial Economics, Public Finance and Public Economics, Industrial Economics, Economic Development and Economic Institutions, Agricultural and Forestry Economics and Management, Regional Economics, Population, Labor and Health Economics, Resources and Environment Economics, etc.

In 2024, a relatively large number of projects were funded in the fields of Econometrics and Economic Statistics, Financial Economics, Resources and Environment Economics, International Economics and Trade, Agricultural and Forestry Economics and Management, Industrial Economics. Due to the adjustment of discipline application code in 2021, the number of both applications and funded

projects in some new fields were fewer, such as Mathematical Economics and Computational Economics, Microeconomics, Behavior Economics and Experimental Economics, Economic Development and Economic Institution, Public Finance and Public Economics. On the whole, the research on exploring new methods and technologies is growing rapidly, and the research on new problems and practical problems in China are also increasing steadily.

In 2025, the Discipline will face the main field of national social economy, place emphasis on supporting basic research which is innovative and aimed at cutting-edge science of the Discipline, pay attention to theoretical innovation, method innovation and research on new knowledge discovery and creation, and give priority to supporting quantitative research methods (e.g., mathematical modeling, empirical analysis), interdisciplinary approaches, and scientific discoveries that highlight China's national context and contribute to long-term knowledge accumulation. It will be given priority to support for the research on scientific issues with potential application value from Chinese economic practices, as well as the one with substantive international cooperation. It advocates the spirit of science, encourages free exploration and gives priority to the original theoretical exploration based on Chinese economic practices.

In order to promote the balanced development of the Discipline, subsidies will be given to new fields such as Mathematical Economics and Computational Economics, Microeconomics, Public Finance and Public Economics, Economic Development and Economic Institution, as well as emerging fields such as Digital Economics, Technology Finance and etc.

Macro-Management and Policy (G04)

The Macro-Management and Policy Discipline is a group of sub-disciplines that study the behavior of government and related public sectors in formulating macro policies and implementing comprehensive governance, in order to achieve the social and economic development goals. It covers 15 areas of basic research, including Public Administration and Public Policy, Theories and Methods of Policy Science, Governance and Policy of Science and Technology, Governance and Policy of Innovation, Governance and Policy of Health, Governance and Policy of Medicine, Governance and Policy of Education, Governance and Policy of Culture, Public Safety and Emergency Management, Social Governance and Social Security, Governance of Environment and Ecology, Governance and Policy of Resource, Regional Management and Urban Governance, Digital Governance and Information Resource Management, Global Governance and Sustainable Development, etc.

In 2024, the number of applications for Governance and Policy of Healthcare has been the largest, accounting for about 35% **(This field does not fund the Pathology, Clinical and Nursing Research of certain diseases. For related project applications, please choose the relevant application code under the Department of Health Sciences)**; however, the funding rate is relatively low. Relatively more

projects have been funded in advantageous fields such as Governance and Policy of Resource, Governance of Environment and Ecology. There are fewer applications and fewer funded projects in the fields of Governance and Policy of Culture, Theories and Methods of Policy Science, Global Governance and Sustainable Development.

The Discipline aims to facilitate discipline development, promote academic innovation, and support talent scientists and research teams. In particular, the Discipline encourages researchers to provide scientific support and evidences for macro policy makers while developing theories and methods. It encourages researchers to provide scientific support and evidences for macro policy makers while developing theories and methods. The applications should take China‘s practical governance issues as the main research objects, and bring up scientific theoretical issues from the research objects accurately. Special attention should be paid to the scientificity and normativeness of the research methods. Applicants are advised to differentiate between management science research and practical management work, differentiate between an NSFC project and a project on humanity and social science in terms of research methods. The scope of the research topic needs to be appropriate. The research goal should be concentrated. The research content should be specific and concrete. The research method and technology roadmap, as well as how to address the key scientific issues, need to be clearly clarified in the proposal.

Department of Health Sciences

The Department of Health Sciences adheres to target the global science frontiers, serve the main economic battlefield, strive to fulfill the significant needs of the country, and benefit people’s lives and health. It mainly supports basic research that aims at scientific issues in disease prevention, control and treatment, and focuses on the structural, functional, developmental, genetic and immune abnormalities of human body, as well as the occurrence, development, outcome, diagnosis, treatment and prevention of diseases. It also guides researchers to conduct innovative research in basic medicine, clinical medicine, preventive medicine, material medica, pharmacology, Traditional Chinese Medicine, Chinese Materia Medica and interdisciplinary fields of medicine and engineering, so as to improve the levels of medical scientific research in China.

The Department encourages research areas as follows: innovative academic questioning and methodological research on the scientific issues emerging from clinical practices; systematic and original research on key scientific issues; translational medical research combining basic medicine with clinical medicine; integrative medical research on the occurrence, development and regression of diseases at multiple levels from molecular, cellular, tissue level to organ, individual and population level by using new multidisciplinary and comprehensive techniques or

methods; interdisciplinary research integrated in other fields; substantive international joint research. The Department will give priority to funding basic research on major diseases, public health emergencies and newly emerging infectious disease, and common and frequently occurring diseases. The Department will also highlight research in distinctive fields, support relatively weak research fields, and ensure balanced, coordinated and sustainable development in all fields.

Funding for General Program, Young Scientist Fund and Fund for Less Develop Regions of the Department of Health Sciences in 2024

Unit: 10,000 yuan

Division		General Program			Young Scientist Fund			Fund for Less Develop Regions		
		No. of project	Direct cost	Funding rate (%)	No. of project	Funding cost	Funding rate (%)	No. of project	Direct cost	Funding rate (%)
I	Respiratory system, circulation System, hematologic system	534	26 303	10.62	588	17 640	12.49	106	3 391	12.21
II	Digestive system, urinary system, endocrine system/metabolism and nutrition support, ophthalmology, otorhinolaryngology head and neck science, oral and craniofacial science	657	32 203	9.57	793	23 790	11.11	118	3 775	10.09
III	Nervous system, mental health and psychological health, gerontology	439	21 569	9.50	479	14 370	11.16	65	2 083	8.11
IV	Reproductive system/perinatal medicine/neonatology, medical immunology, medical genetics	274	13 338	9.71	328	9 840	12.03	43	1 376	9.28
V	Special medicine, forensic medicine, medical imaging/nuclear medicine, biomedical engineering/regenerative medicine	270	13 282	8.62	314	9 420	9.18	37	1 184	8.73
VI	Locomotor system, emergency and intensive care medicine, trauma/burns/plastic surgery, rehabilitation medicine, medical virology and virus infection, medical pathogens and infection, laboratory medicine	449	22 104	7.81	494	14 820	10.14	88	2 816	9.43
VII	Oncology	882	43 302	9.44	1 108	33 240	12.62	157	5 022	9.62
VIII	Dermatology, radiation medicine, preventive medicine	249	12 124	10.00	297	8 910	13.28	59	1 887	12.63
IX	Materia medica, pharmacology	269	13 072	9.75	382	11 460	16.27	65	2 079	11.94
X	Traditional Chinese medicine, Chinese material medica, integrated Chinese and western medicine	661	32 223	7.36	833	24 990	10.00	255	8 157	10.93
Total or average		**4 684**	**229 520**	**9.04**	**5 616**	**168 480**	**11.50**	**993**	**31 770**	**10.31**
Average cost* (per project)			49.00			30.00			31.99	

* The average direct cost is shown for the General Program and Fund for Less Develop Regions; the Young Scientist Fund adopts a lump-sum funding system and the cost is fixed.

In 2024, the Department of Health Sciences received a total of 51,798 applications of General Program, with 16,789 more applications than in 2023 and an increasing rate of 47.96%. 4,684 applications were funded, the average funding rate was 9.04%, and the average direct cost was 490,000 yuan per project.

In 2024, the Department of Health Sciences received a total of 48,854 applications of Young Scientists Fund, with 4,601 more applications than in 2023 and an increasing rate of 10.40%. 5,616 applications were funded, the average funding rate was 11.50%, and the average cost was 300,000 yuan per project.

In 2024, the Department of Health Sciences received a total of 9,633 applications of Fund for Less Developed Regions, with 876 more applications than in 2023 and an increasing rate of 10.00%. 993 applications were funded, the average funding rate was 10.31%, and the average direct cost was 319,900 yuan per project.

Notes:

1. Points of attention and related issues for applicants

(1) Applicants are encouraged to perform in-depth basic research toward scientific issues, especially the original research. Applications with solid previously accumulated research work are encouraged to carry out further research. Applications merely pursuing new high-technology, or research hotspots rather than scientific innovation will not be in consideration for grant.

(2) Applicants are expected to elaborate the scientific and potential clinical values of the anticipated research results in detail. Applicants are suggested to propose a defined scientific issue or a specific hypothesis based on analysis of the relevant latest research trends and progress in the field. Furthermore, elucidation of theoretical and applicable value of the research is clearly warranted.

(3) Applicants are expected to elaborate whether the proposed research will possibly solve the specific scientific problems or verify the hypothesis, and the proposed research is supposed to be specific, feasible and logical. Furthermore, applicants are expected to propose adequate research contents, detailed research designs, clear research methods and reasonable budgets.

(4) Applicants are expected to provide detailed information about relevant previous research. All the relevant published papers are expected to be listed, and relevant unpublished results including experimental data, tables or graphics, etc., are suggested to be provided. In case of extension of previously funded project, the innovative ideas and further scientific issues of research are expected to be elaborated in detail.

(5) Applicants are expected to provide accurate and reliable information in their applications, including resumes of the applicant and major participants, previous grant information and relevant publications. Applicants are expected to write the applications carefully according to the relevant instructions in a scientific and truth-seeking attitude. The published academic papers and other representative achievements and academic awards should be filled in according to the application

regulations of this *Guide* and the instructions and outlines of the application form.

(6) Applicants are expected to provide a signed institutional certification or approval (the scanning copy should be attached to the electronic proposal) to meet the related ethical or clinical research requirement. Applications that do not provide certification or approval as required above will not be considered for funding.

(7) Applicants are expected to follow all appropriate guidelines for the use and handling of pathogenic microorganisms, including the *Bio-safety Administrative Rules of Pathogenic Microorganism in Lab* released by the State Council of China. If applications are involved in life sciences and medical research, applicants should strictly follow the *Measures for Ethical Review of Life Sciences and Medical Research Involving Human Beings*. If applications are involved in human genetic resources, applicants should strictly follow the *Regulations on Management of Human Genetic Resources*. Additionally, a commitment letter to guarantee bio-safety should be provided by the research institutions when applications are involved in the study of highly pathogenic microorganisms. Applications that do not provide certification or approval as required above will not be funded.

(8) Further emphasis will be placed on the post-project management, such as performance assessment, continuous funding for systematic and continuing research projects, etc. Applicants with good scientific reputations in their previous grants will be given priority under equal conditions.

(9) Applicants are expected to note that: in 2025, the Department will generally give no further funding for General Program to applicants who either have got intensive funding in 2024 from NSFC [such as Key Program, Key International (Regional) Joint Research Program, International (Regional) Cooperation Programs under Agreements/MoUs, Major Program, Key Program or Integrated Program of Major Research Plan or Programs of Joint Funds, Special Fund for Research on National Major Research Instruments], or are applying for repetitive or similar research to their ongoing national scientific projects funded by other governmental agencies.

2. Overview of applications in the Department in recent years and points of attention and related issues for host institutions

The number of applications has been increasing in the Department ever since its establishment. In 2024, a total of 113,700 applications were received from 1,130 research institutions during the centralized admission period, accounting for 29.57% of the total applications (384,564) in NSFC. Rapid growth in applications brings great difficulty for peer review and administration of the funding. To enable the healthy, stable and sustainable development of both NSFC and medical research in China, the research institutions are required to further strengthen their management in the process of NSFC grant applications, and make efforts to further improve the scientific quality of applications (rather than increasing the number of applications) under the guidance of the *Requirements of NSFC for Host Institutions to Improve Management*

of Scientific Projects.

3. Specific explanations on application codes

The application codes of the Department are composed of 35 primary application codes (H01 to H35) and their corresponding secondary codes. The basic characteristics of the application codes system are as follows: ①The primary application codes, which are mainly arranged in the order of organs or systems, addressing scientific issues, integrating basic medicine and clinical medicine, and putting the common scientific issues of each "discipline" and "department" into one application and review system. ②The secondary application codes, which are arranged in the order from basic to clinical research and from structural, functional and developmental abnormalities to diseases, and give considerations to disease related basic research.

The applicants are expected to carefully choose the primary application code and the relevant secondary one.

Important Notice for applicants:

The Department of Health Sciences sets up the Oncology Discipline separately. Please select the corresponding secondary application code under Oncology (H18) for all kinds of tumor-related medical scientific researches except for hematological tumor, epidemiology of tumor, oncological pharmacology, medical imaging of tumor and Traditional Chinese Medicine oncology. The applications on hematological tumor should be submitted to the corresponding secondary application code under Hematological System (H08); The applications on tumor epidemiology should be submitted to the Epidemiology of Noncommunicable Diseases (H3010); The applications on oncological pharmacology should be submitted to Anti-tumor Pharmacology (H3505); The applications on medical imaging and biomedical engineering of tumor should be submitted to the corresponding secondary application code under Medical Imaging/Nuclear Medicine (H27) and Biomedical Engineering/ Regeneration Medicine (H28); The applications on Traditional Chinese Medicine oncology research should be submitted to Traditional Chinese Medicine (H31), Chinese Materia Medica (H32), or Integrated Chinese and Western Medicine (H33).

The field of Radiation Medicine (H29) mainly covers the research of radiology pathology, protection, and non-oncology radiotherapy, and does not fund applications of radio diagnostics and oncology radiotherapy. For the applications of radio diagnostics, please select the appropriate secondary application code under Medical Imaging/Nuclear Medicine (H27). For the applications of tumor radiotherapy, the application code (H1816) should be selected.

The field of Gerontology (H19) only funds research on the pathogenesis and intervention of diseases related to the mechanisms of aging. Applications that focus on aging of single organ or system, and gerontology researches that do not involve

pathophysiological mechanisms of aging should be submitted to other proper divisions.

Applications that focus on neonatal diseases should be submitted to Reproductive System/Perinatology/Neonatology (H04). For other scientific issues in pediatrics, application code of the corresponding system should be selected.

Applications that focus on sexually transmitted diseases should be submitted to the application code (H2208) under Human Pathogens and Infections (H22).

4. Special Projects of General Programs: Guidelines and points for attention for "Exploration of Scientific Problems Derived from Clinical Practice"

The aim of the Special Projects of General Programs—Exploration of Scientific Problems Derived from Clinical Practice is not only targeting major medical scientific issues and original innovations, but also focusing on promoting translational medicine research that applies the achievements of basic research to clinical practice and people's life and health. Emerging from clinical diagnostic and therapeutic practices, innovative research are launched based on new phenomena or critical clinical issues, aiming to reveal new patterns, elucidate novel mechanisms, and address the scientific questions behind clinical challenges. Such endeavors are pivotal for elevating medical innovation, bridging the gap between basic research findings and clinical practice, and refining the landscape of medical research funding.

The Department encourages the combination of clinical practice and basic research, the interdisciplinary research and the innovation of clinical research methods. In 2025, the Special Project—Exploration of Scientific Problems Derived from Clinical Practice in General Programs will continue to be programmed, with about 130 projects to be funded and an average funding amount of 650,000 yuan in direct cost. The following research is to be supported: ①important scientific issues derived from clinical phenomena or clinical questions, utilizing clinical samples and clinical information and other resources to carry out innovative research that has important guiding significance for disease diagnosis, treatment and prevention; ②clinical translational exploratory research based on the innovative results obtained from previous basic research of the applicants or their teams; ③exploring the new paradigm of clinical research and novel techniques and methods for clinical translational research. **The research should be in line with the above-mentioned three directions. Application that does not meet the guidelines and requirements will not be funded.**

In 2024, a total of 1,811 applications were received for this Special Project. After peer review and group committee discussion, 130 projects were funded with 660,000 yuan each. Common issues observed in project applications received over the past years that did not comply with the guidelines include: ①scientific questions not derived from clinical practice of the applicants or their team but primarily derived from literature; ②having preliminary basic research achievements, but lacking

transformative research design integrated with clinical applications; ③absence of rigorous clinical research design or high-quality preliminary data.

In 2025, according to the research field, applicants should independently choose the secondary application code under the primary application codes of H01～H35, and indicate—Exploration of Scientific Problems Derived from Clinical Practice in the annotated column of the application form. **Before the "Project Basis" section of the application text, applicants are required to provide concise explanations (within 800 words) addressing the following three questions:** ①the clinical scientific question and its innovation in the proposed research; ②the clinical value and translational application potential of the proposed research; ③how the proposed research utilizes clinical resources to conduct integrated clinical-basic scientific exploration. This Special Project does not fund clinical trials being carried out by hospitals and enterprises. Projects involving clinical research must comply with relevant regulations and requirements of clinical studies in China and provide corresponding approval materials. The applications for the Special Projects are limited to the General Program.

5. Requirements for Pilot Reform of General Projects in the Oncology Field (H18)

In order to strengthen the innovativeness of basic research in oncology and guide applicants to refine key scientific issues from scientific questions and clinical needs, a pilot reform of project applications in the field of oncology will continue to be implemented in 2025. Applicants selecting H18 and its subordinate codes as the primary application code for General Program projects are **required to add an explanation of "Innovative Ideas and Key Research Clues" (within 800 words) before the "Project Basis" section in the main text of the application** (excluding the special project-"Exploration of Scientific Problems Derived from Clinical Practice"). This explanation should highlight the innovation and previous discoveries of the applied project, mainly including: ①the most prominent innovative ideas and scientific value of the topic; ②the important research clues and scientific evidence that have been obtained.

Division I of Health Sciences

The Division mainly supports basic research in the fields of respiratory circulatory and blood systems.

Respiratory System (H01)

Respiratory diseases are common and serious diseases that seriously affect human health, and their etiology, pathogenesis, diagnosis and treatment have always been the key supported areas. The Discipline mainly supports basic and clinical-related basic research on the diseases of lung, airway, pulmonary circulation,

mediastinum, pleura, thoracic cage, diaphragm and related diseases. The funding scope includes: respiratory system structure, function and developmental abnormalities; respiratory infections, inflammation and immunity; environmental factors and airway diseases; bronchial asthma; chronic obstructive pulmonary disease; bronchiectasis; pulmonary circulation and pulmonary vascular diseases; interstitial lung disease; acute lung injury and acute respiratory distress syndrome; sleep disordered breathing and breathing regulation; respiratory failure and respiratory support; pleura, mediastinum, thoracic and diaphragm related diseases; respiratory intervention, tracheal reconstruction and lung transplantation, etc. Research on new methods and techniques for respiratory disease are also within the funding scope.

The Discipline will continue to support studies of respiratory infections, especially on demonstration of the host's immune response to pathogen and their pathogenic roles to drive clinical outcomes; support the research on imbalance of respiratory immune function, the pathological and physiological changes of airway and lung, the lung microenvironment, alveoli and air-blood barrier, lung nodules, lung stem cells and lung regeneration; support research on lung injury, repair, and fibrosis; support research on sleep-disordered breathing and its associated target organ damage; support research on pulmonary hypertension and other pulmonary vascular diseases; support research on finding new methods, potential molecular markers and intervention targets for precise diagnosis and treatment of respiratory diseases; support research relating to the impacts of environmental factors (such as fine particulate matter, harmful gases, smoke and allergens) on the pathophysiological changes of airway and lung, and the interaction between microbiota and respiratory diseases. The Discipline specially encourages researchers to conduct research on the scientific issues emerging from clinical practices.

The utilization of new techniques and methods plays an important role in promoting basic and clinical research in the respiratory field. The Discipline encourages applicants to use new techniques and methods, such as multi-omics analysis, big data, animal disease models, etc., to solve basic and clinical research questions in respiratory system.

Based on the statistical data of accepted applications in the Discipline in 2024, research mainly focused on respiratory inflammation and infection, inflammation and immunity, bronchial asthma, acute lung injury and acute respiratory distress syndrome, interstitial lung disease, chronic obstructive pulmonary disease, pulmonary circulation and pulmonary vascular disease, etc. The number of applications focusing on sleep breathing disorders and respiratory regulation is steadily increasing, while the number of applications in other fields of respiratory system is relatively small.

For research on lung nodules, the Discipline does not accept applications that on lung cancer and mainly focusing on lung cancer.

Circulation System (H02)

The Discipline mainly supports scientific research related to various cardiac and vascular (including lymphatic vessels) diseases, as well as microcirculation and shock. In recent years, the largest number of applications was in the field of cardiac/vascular injury and protection, followed by atherosclerosis, coronary heart diseases, arrhythmia and heart failure. Applicants are encouraged to carry out research guided by major clinical issues, with emphasis on interdisciplinary collaboration among clinical medicine and biology, genetics, basic medicine, regenerative medicine and other related disciplines. Original research on the mechanisms of onset and progression of cardiovascular diseases as well as their intervention strategies are encouraged to facilitate the discovery of novel diagnostic markers, intervention targets and innovative treatments by utilizing artificial intelligence, visualization and big data analysis. Researchers are encouraged to establish international collaborations in the cutting-edge fields of cardiovascular diseases. Research for exploring the mechanisms of biological active substances in regulating heart and vascular function and the development of cardiovascular diseases are encouraged. Studies on molecular etiology, regulatory networks and intervention targets of the metabolic disorder-related cardiovascular diseases are encouraged. Studies as to the impact of other systemic diseases on the cardiovascular system and their crosstalk are also encouraged. Infectious cardiovascular diseases, immune-related diseases of circulatory system, lymphatic circulatory diseases and shock are still relatively weak established fields, and the relevant research is encouraged. Studies on cardiovascular diseases in children, the elderly and women in pregnancy as well as cancer patients are encouraged. Research and applications of new techniques, methods and materials in the cardiovascular field are endorsed. Basic research for critical clinical issues in the circulatory device implantation and perioperative period of cardiovascular surgery are encouraged.

Hematological System (H08)

Hematological system diseases are extremely harmful to human beings. Hematological ecology mainly refers to a balance of homeostasis in blood system under physiological conditions. The composition and maintenance mechanism of this balance, as well as the mechanisms and interventions for various major diseases caused by the imbalance, are the main areas. The Discipline supports basic and clinical research of the hematopoietic tissues/organs and their related diseases, including hematopoiesis and its regulation and microenvironment; erythrocyte and its related diseases; leukocyte and its related diseases; megakaryocyte, platelet and their related diseases; bleeding, coagulation, fibrinolysis and thrombosis; aplastic anemia and bone marrow failure; myelodysplastic syndromes; myeloproliferative diseases; leukemia; lymphoma and lymphocytic diseases; myeloma and plasma cell diseases; infectious diseases associated with hematological system and their treatment; hematopoietic stem cell transplantation and its complications; immunotherapy and

cell therapy for hematologic diseases; blood transfusion, blood regeneration and blood products; new research technologies and methods for hematological diseases.

The Discipline supports excellent researches in the areas of hematopoietic stem/progenitor cells, hematopoietic microenvironment, blood cell heterogeneity; platelet changes and functional abnormalities; coagulation and thrombosis-related disorders; development of blood cell, cellular metabolism, and the development of malignant hematologic diseases; precise classification and diagnosis of hematopoietic disease; mechanism of drug resistance and recurrence; immunotherapy and gene therapy for hematological diseases, including exploring new targets and methods or approaches; methods to improve clinical efficacy and safety, and to alleviate clinical side effects; basic and clinical research in hematopoietic stem cell transplantation.

Blood ecology refers to a homeostatic balance under physiological conditions maintained in the blood system after the exchange of matter and energy between the human body and the external environment. The composition of this homeostatic balance and its maintenance mechanism, as well as the early warning of major diseases in a state of imbalance, are the main research content. The Discipline encourages relevant applicants to pay attention and actively submit applications.

New technologies and methods have greatly improved the development of hematological diseases. Therefore, the Discipline strongly encourages applicants to carry out researches using new biotechnologies and methods to study normal or abnormal blood cells.

In terms of applications, the sponsored projects in 2024 were mainly focused on leukemia, lymphoma and lymphocytic diseases, myeloma, and plasma cell diseases. The increase in the number of applications for immunotherapy and cryotherapy for hematological diseases was remarkable, while the number of applications for other branches was relatively few.

There is an excellent research foundation in both basic and clinical research in the hematological field in China. Applicants are thus encouraged to make full use of the rich clinical resources to bring up more scientific questions derived from clinical problems and to strengthen relevant basic and translational research.

For project involving research contents of pulmonary circulation and pulmonary vascular diseases in Division I, applicants shall choose the appropriate application code from the respiratory system (H01) and the circulatory system (H02) based on their specific research direction. The Division does not support the applications of non-hematological malignancy projects. For details, please refer to the general introduction of the Department of Health Sciences.

Division II of Health Sciences

The Division mainly supports basic researches on digestive system, urinary

system, endocrine system/metabolic abnormalities and nutritional support, ophthalmology, otorhinolaryngology, head and neck science, as well as oral and craniomaxillofacial science.

Digestive System (H03)

The Discipline primarily supports studies on scientific questions regarding nonneoplastic diseases of digestive system. Key supporting scopes are as following: digestive system structural abnormality, dysfunction and dysplasia; immune-related diseases; abnormal gastrointestinal motility; abnormal gastrointestinal homeostasis, mucosal barrier disorders and related diseases; gastric acid-related diseases and neuroendocrine dysregulation in digestive system; gastrointestinal and abdominal infectious diseases; liver metabolic disorders and related diseases; drug, toxin and alcohol-induced digestive diseases; inflammatory and infectious liver diseases; liver injury, repair and regeneration; liver protection and artificial liver; cholelithiasis and biliary inflammation; pancreatic exocrine dysfunction and pancreatitis; digestive system organ transplantation; new techniques and methods for research in digestive diseases, etc.

The research areas of project application in digestive system are comparatively focused on liver diseases in 2024. Among them, the top number of applications were projects on liver injury, repair and regeneration, followed by liver metabolic disorders and related diseases, as well as inflammatory and infectious liver diseases. As for gastrointestinal diseases, the top number of applications were projects on inflammatory bowel disease, followed by abnormal gastrointestinal homeostasis, mucosal barrier disorders and related diseases, as well as abnormal gastrointestinal motility. The number of proposals related to pancreatic exocrine dysfunction and pancreatitis was similar. While the application projects on gastrointestinal and abdominal infectious diseases, liver protection and artificial liver, cholelithiasis and biliary inflammation, gastric acid-related diseases and neuroendocrine dysregulation in digestive system were few. The Discipline encourages the basic and clinical research on the cutting-edge issues in the above-mentioned research fields, and also encourages the studies on the interrelation between different organs of digestive system and the interaction with other systems, as well as the basic translational research according to the unmet medical needs of major digestive diseases in China.

Urinary System (H05)

This Discipline mainly supports non-tumor researches in relation of the structural and functional disorders, injury repairs, etiologies, urolithiasis and obstructions of the kidney, ureter, bladder, prostate and urethra. Supported areas include the structural, functional and development disorders of urinary system; injuries and repairs of urinary system; primary kidney diseases; secondary kidney diseases; chronic kidney diseases and its related complications; hemodialysis and renal replacement therapies; kidney transplantations; urolithiasis and urinary tract infections; benign diseases of prostate and bladder; voiding dysfunction; new

techniques and methods for the study of urological diseases.

In 2024, the majority of the proposals are still concentrated on areas of the prevention and treatment of acute kidney injuries and chronic kidney diseases. The most applied research areas are injuries and repairs of the urinary system and secondary kidney diseases, followed by chronic kidney diseases and its related complications, primary kidney diseases, kidney transplantations, urolithiasis and urinary tract infections and benign diseases of prostate and bladder. The number of applications on hemodialysis and renal replacement therapies, voiding dysfunction and the structural, functional and development disorders of urinary system is still small. More extensive and in-depth researches to these fewer application areas will be encouraged. Interdisciplinary research using new technologies and methods has further attracted researchers' attention, however, the quality still needs to be enhanced. The Discipline encourages the sustainable and innovative basic and clinical researches on the cutting-edge issues in the urinary system and upon clinical requirement.

Endocrine System/Metabolism and Nutritional Support (H07)

This Discipline mainly supports researches on abnormalities of endocrine organ structure and/or function and relative non-neoplastic diseases. The funding scopes include endocrine system immune-related diseases; pineal gland, hypothalamus, pituitary and related diseases; thyroid, parathyroid and related diseases; adrenal gland and related diseases; gonads and related diseases; physiological regulation and dysfunction of islets; imbalance of glucose homeostasis and insulin resistance in target organs; diabetes mellitus; abnormal regulation of energy metabolism and obesity; abnormal lipid metabolism; physiological regulation and dysfunction of adipose tissue; bone turnover, abnormal bone metabolism and abnormal calcium and phosphorus metabolism; abnormal metabolism of amino acids and nucleic acid; abnormal metabolism of water, electrolyte, trace elements and vitamins, acid-base imbalance; malnutrition and nutritional support; new technologies and methods in the field of endocrine system diseases/metabolic abnormalities and nutritional support.

In 2024, the majority of the proposals are still centered on diabetes mellitus and its related complications, abnormal regulation of energy metabolism and obesity, abnormal lipid metabolism, bone turnover, abnormal bone metabolism and abnormal calcium and phosphorus metabolism. The number of proposals related to immune, inflammation, stem cell and intestinal microecology is large. However, there is still lack of original researches. There are few applications on adrenal gland and related diseases, gonads and related diseases, malnutrition and nutritional support, abnormal water metabolism, electrolyte, trace elements and vitamins, acid-base imbalance. The Discipline encourages the basic and clinical researches on the cutting-edge issues in the above-mentioned research fields, and also encourages studies using new technologies and methods in the field of endocrine system diseases/metabolic abnormalities and nutritional support. Reasonable and deep researches on the

discovery of new phenomena and new questions in clinical practice will be encouraged.

Ophthalmology (H13)

The discipline of ophthalmology mainly supports the research on the structure, function, and vision formation of eyeball and ocular adnexa, as well as researches on the occurrence, development, diagnosis and prevention strategies for ocular diseases. The field of ophthalmology is focused on corneal and ocular surface related diseases; lens and cataract; sclera, uvea and ocular immunology related diseases; glaucoma, optic nerve and visual pathway related diseases; retina, choroid and vitreous related diseases; vision, optometry and myopia, amblyopia and ocular muscle disorder related diseases; ocular manifestations due to systemic disease; systemic-ocular interactions and disease; orbital diseases; ocular tissue transplantation; innovative technologies and methods in ophthalmic research.

According to the statistical analysis of ophthalmology applications in 2024, the research on fundus diseases, such as retinal, choroid and vitreous-related diseases remain to be the most concentrated area, followed by corneal and ocular surface related diseases; glaucoma, optic nerve and visual pathway related diseases; vision, optometry and myopia, amblyopia and ocular muscle disorder related diseases, lens and cataract. Diabetic retinopathy, retinal and choroidal neovascularization, age-related macular degeneration, refractive errors and visual abnormalities, corneal injury and repair, optic nerve injury and regeneration, eye-multi-organ interaction and related diseases remain the hot fields of ophthalmic research. The Discipline encourages extracting the scientific issues around clinical bottlenecks involved the prediction, diagnosis, treatment, rehabilitation, environment and vision of ocular diseases; combining the innovative theories and technologies in neuroscience, molecular medicine, digital technology, biomechanics information science, and materials science to conduct multidisciplinary and interdisciplinary integration research; obtaining original scientific achievements and promoting basic research to guide the clinical diagnosis and treatment for diseases.

Otorhinolaryngology Head and Neck Science (H14)

The Discipline supports scientific basic researches in related fields such as morphology, physiology and pathology etc., as well as innovative technology researches on disease pathogenesis, targeted prevention, treatment and rehabilitation. The scope includes olfactory, nasal and anterior skull base diseases, throat and neck diseases, ear and lateral skull base diseases, auditory abnormalities and balance disorders, otorhinolaryngology head and neck development related diseases, systemic interactions in otorhinolaryngology head and neck diseases, new technologies and methods of otorhinolaryngology head and neck scientific research.

Among the applications in 2024, the auditory abnormalities and balance disorders, olfactory, nasal and anterior skull base diseases, throat and neck diseases are still the focus of research. The mechanisms involved in various types of auditory

and balance disorders, as well as the reconstruction of auditory function are the key issues of otology, including pathogenesis research on genetic-environmental interactions, and development of novel therapeutic strategy. In the field of rhinology, researches mainly focus on mechanisms underlying the pathogenesis and development of rhinitis, rhinosinusitis and nasal polyp, and innovative diagnostic and therapeutic technologies. Researches on laryngopharyngeal diseases focus on obstructive sleep apnea, laryngopharyngeal reflux, phonation disorders and functional reconstruction. The mechanisms and interventions of auditory development and degeneration, deafness, tinnitus, hyperacusis, vertigo, allergic rhinitis, chronic rhinosinusitis, olfactory disorder are the important research directions, and the interdisciplinary studies with information science, biomaterials, new imaging technology, biomechanics, simulation technology, biotherapy and intelligent technology have attracted more and more attention, and will be continuously funded. Further attention is required in the mechanism of tinnitus and central plasticity disorder, nerve injury, olfactory disorder, obstructive sleep apnea, phonation and swallowing disorders.

Oral and Craniofacial Sciences (H15)

The Discipline mainly supports researches on diseases of oral organs, craniomaxillofacial soft and hard tissues, temporomandibular joint, salivary glands and other oral craniomaxillofacial related non-neoplastic tissues. Supported areas include diseases related to the development of oral craniomaxillofacial tissues and organs; the defect restoration and regeneration of oral craniomaxillofacial tissues and organs; dental pulp and periapical tissue diseases; periodontal and oral mucosal diseases; saliva, salivary glands, oral and maxillofacial, nerves and jaw benign diseases; taste, oral and maxillofacial pain, occlusion and temporomandibular joint diseases; restoration of tooth defects or missing and correction of dentognathic deformities; biomechanics and biomaterials of oral craniomaxillofacial tissues. New technologies or methods of oral craniomaxillofacial scientific research are also within the scope of funding.

Among the applications in 2024, the majority of the proposals are still concentrated on periodontal and oral mucosal diseases, followed by the defect repair and regeneration of oral craniomaxillofacial tissues and organs. Restoration of tooth defects or missing and correction of dentognathic deformities, biomechanics and biomaterials of oral craniomaxillofacial tissues, and dental pulp and periapical tissue diseases are also attracting attentions. The number of applications in new technologies or methods of oral-craniomaxillofacial scientific research, saliva, salivary glands, oral and maxillofacial vessels and nerves and jaw benign diseases is relatively small. The field related to the mechanism of periodontitis receives more attention, especially the periodontal immunity and regeneration. Hot topics such as oral microecology, tissue engineering materials, implant osseointegration, the relation between oral diseases and general health, oral digitization are also involved. The

Discipline encourages long term and systematic basic research or applied basic research that already has a good foundation or new investigation direction. The interdisciplinary researches between different directions of stomatology or with other related research fields will be encouraged in the future.

The Division does not support cancer research. Please refer to the general introduction of proposal guidance from Department of Health Science in detail.

Division III of Health Sciences

The Division mainly supports basic research in the fields of nervous system, mental health and psychological health, and gerontology.

Nervous System (H09)

The disciplines mainly support researches on the etiology, pathogenesis, diagnosis, treatment, and prevention of various non-neoplastic neurological diseases, including common neurological diseases, such as cerebrovascular diseases, cognitive dysfunction, dyskinesia, neurodevelopmental disabilities, injury and rehabilitation of nervous system, neurodegenerative disorders, epilepsy, pain & analgesia, anesthesia, sedation and related comorbidities.

The applied projects in the field of nervous system predominantly focused on cerebrovascular diseases, cognitive dysfunction, injury and rehabilitation of nervous system, neurodegenerative disorders, pain and analgesia. In recent years, there is a sustained increase in applied projects from perspectives of glia, neurocyte fate, exosomes, and microecology. However, the quality of research needs to be improved. The Discipline prioritizes innovative basic research on important scientific issues originated from clinical phenomena and clinical problems, new model and interdisciplinary studies using non-human primates, drosophila, zebrafish animal models and/or mankind organoid models, and the critical techniques and mechanisms of strengthening neural modulation and stem cell transplantation to promote neurological rehabilitation after injury. Investigations on cerebrovascular diseases around clinical concerns are encouraged, especially on key mechanisms, early intervention, functional reconstruction and precise diagnosis and treatment of neurovascular injury. Research still needs to be strengthened on pain, especially on the mechanisms and intervention of chronic pain, the transition from acute to chronic pain, and neuropsychiatric comorbidity of pain. It is encouraged to strengthen the basic research on mechanisms of general anesthesia and anesthesia-related complications. Investigations on related diseases of the nervous system in children are encouraged. In addition, substantial collaborative researches in big data, artificial intelligence, brain-computer interface and tissue engineering are also encouraged.

Mental Health and Psychological Health (H10)

The Disciplines mainly support researches on the etiology, pathogenesis,

diagnosis, treatment, and prevention of mental and behavioral disorders, including schizophrenia or other psychotic disorders, mood disorders, anxiety disorders, stress-related disorders, substance dependence and other addictive disorders, sleep disorders, psycho-behavioral disorders in children and adolescents, as well as the psychological assessment and intervention of mental and behavioral disorders, and new technique/methods used for the investigation on mental disorders and psychological health.

The applied projects in the field of mental and psychological health predominantly focused on mood disorders, schizophrenia, and anxiety or fear-related disorders, while less in related diseases of biological rhythm disorders or psychological assessment/intervention of mental disorders. The research foundation is relatively weak in the field of psycho-behavioral disorders in children and adolescents. It is encouraged to investigate the role of genetic, environmental, metabolism, immunity and other multiple factors in the occurrence and development of mental disorders, to identify potential etiologies and interventional targets, to establish biological markers that can monitor the occurrence, development and prognosis of mental disorders, to optimize psychological and behavioral examination techniques, in order to achieve early detection and diagnosis of mental disorders. It will be strengthened for researches on the comorbidity of mental disorders and its impact on physical health. The interdisciplinary collaboration of psychiatry and other disciplines are also encouraged, aiming to improve the diagnosis and treatment of mental and behavioral disorders through early intervention utilizing pharmacological or non- pharmacological strategies in China.

Gerontology (H19)

The Discipline mainly supports researches on pathophysiological mechanisms of aging and aging-related diseases. The research mainly focused on the pathophysiological changes, mechanisms, biomarkers, intervention strategies, and aging clock of aging population, systemic body, organ, tissue, cell, subcellular and molecular levels, aiming to elucidate the relationship of aging and aging related diseases and other factors (e.g., genetics, epigenetics, stress, microorganism, metabolism, immunity and inflammation).

The applied projects in the field of gerontology mainly focus on aging mechanisms and regulation, as well as aging and related diseases in the nervous system, circulation system, and motor system. There are relatively few projects related to aging and related diseases in other systems, aging biomarkers, aging evaluation and intervention, aging models, and new technologies and methods in gerontology research. It is encouraged to utilize new techniques, methods and models to carry out investigations into mechanisms of aging and aging-related diseases, and interdisciplinary researches, as well as investigations into aging interventions of drugs, cells, genes, and proactive health, thus providing theoretical basis for the early warning, prevention and treatment of aging related diseases.

The Division does not provide funding support for tumor related applications, for which please refer to the general introduction of the Department of Health Sciences. The field of gerontology does not fund applications for geriatric disorders in organs or systems unrelated to the aging mechanisms, for which please select other corresponding application codes.

Division IV of Health Sciences

The Division primarily funds basic research and clinical foundational research in the fields of the reproductive system/perinatal medicine/neonatology, medical immunology, and medical genetics.

Reproductive System/Perinatal Medicine/Neonatology Discipline (H04)

The main funding areas include: structural, functional, and developmental abnormalities of the reproductive system; injury and repair; inflammation and infection; reproductive endocrine disorders and related diseases; breast structure, function, and developmental abnormalities; sexual dysfunction; gametogenesis and fertilization; embryo implantation, maternal-fetal interaction, reproductive immunity, and related diseases; placental structure, function, and developmental abnormalities; pregnancy-, delivery-, and puerperium-related disorders; fetal development and fetal-origin diseases; assisted reproductive technologies; neonatal-related diseases; and novel technologies/methods for research on reproductive system/perinatal medicine/neonatal diseases.

Encouraged research includes: multidisciplinary innovative technologies and methods to study human germ cells, tissue/organ development, reproductive organ injury/remodeling/fertility preservation, sperm-egg recognition/fertilization mechanisms and abnormalities, early embryonic development and anomalies, regulatory mechanisms of pregnancy establishment/maintenance and related pathologies, impacts of gametes, maternal factors, and intra-/extra-uterine environments on pregnancy outcomes and offspring health, mechanisms and therapeutic strategies for major neonatal diseases. Applications of regenerative medicine, organoids, artificial intelligence, and other novel technologies in assisted reproduction and safety studies are encouraged. Studies that leverage China’s clinical disease resources to identify and refine scientific questions from clinical practice, conduct original and transformative research, and establish new paradigms through interdisciplinary integration to create distinctive research frameworks in reproductive system/perinatal medicine/neonatology are encouraged.

In 2024, applications for reproductive system/perinatal medicine/neonatology projects were predominantly concentrated in the following codes: neonatal-related diseases (H0421), pregnancy-related disorders (H0417), female reproductive endocrine abnormalities (H0411), spermatogenesis abnormalities and male infertility

(H0405), embryo implantation/maternal-fetal interaction/immunity-related diseases (H0415), and female reproductive system injury/repair (H0409). Less attention was given to: puberty initiation, perimenopausal disorders, reproductive system inflammation/infection, breast structure/function/developmental abnormalities, impacts of maternal nutrition/environment/genetics/diseases on pregnancy outcomes and offspring health, labor initiation/abnormalities, and neonatal nutrition. Key issues in applications included: 1) Insufficient preliminary experiments, weak scientific hypotheses, or reliance on literature speculation/omics data without robust evidence chains; 2) Some proposals merely describe phenomena without in-depth mechanistic exploration; 3) Overlap with published or funded projects; 4) Formulaic, prescriptive, or derivative research.

Research projects related to oncology are not funded under Reproductive System/Perinatal Medicine/Neonatology (H04).

Medical Immunology (H11)

This Discipline funds research on the structure, function, and developmental abnormalities of the immune system, organs, tissues, and cells; immunological mechanisms of diseases; and strategies for immune diagnosis, therapy, and prevention.

Encouraged research includes: immunological mechanisms of human diseases, fundamental questions such as immune cell development/differentiation/migration/senescence/death, discovery of novel immune cell subsets/functions, immune-related roles of non-immune cells, structural basis/activation mechanisms of immune recognition, dynamic balance between immune protection and injury, immune tolerance/evasion, formation/maintenance of immune memory, immunometabolic regulation, microbiome-immune interactions, neuro-endocrine-immune crosstalk, reproductive immunology, trauma/stress and immunity, mechanisms of immunotherapies, novel therapeutic targets, vaccines/adjuvants. Interdisciplinary studies integrating immunology with synthetic biology, biomechanics, nanoscience, bioinformatics, or AI, as well as imaging/multi-omics approaches to investigate immune homeostasis/response, are encouraged. Translational research leveraging clinical practice to address immunological signatures of major diseases is prioritized.

In 2024, applications were focused on autoimmune diseases (H1107), inflammation/infection/immunity (H1104), and immunotherapies (H1112). Common issues included: 1) weak preliminary data and hypotheses, reliance on literature/omics without causal evidence; 2) lack of mechanistic depth; 3) overlap with existing projects; 4) formulaic, prescriptive, or derivative research approaches persist.

Medical Genetics (H23)

The Discipline funds research on the pathogenesis, diagnosis, and prevention/treatment of human genetic and rare diseases, as well as novel technologies/methods in medical genetics.

Encouraged research includes: leveraging China’s genetic and clinical resources

to identify disease-causing genes/patterns, elucidating gene/protein functions and mutation-driven pathologies, epigenetic mechanisms, discovery of novel genetic diseases, and utilization of rare disease resources for mechanistic, diagnostic, therapeutic, and preventive studies. Interdisciplinary approaches integrating genetics, computational biology, and multi-omics to address undiagnosed/rare diseases are prioritized.

In 2024, key issues in applications included: 1) weak preliminary data, such as superficial clinical analyses without hypotheses; 2) focus on gene/variant screening without mechanistic exploration.

Division V of Health Sciences

The Division mainly supports basic research in the fields of special medicine, forensic medicine, medical imaging/nuclear medicine, and biomedical engineering/ regenerative medicine.

Medical Aspects of Specific Environments (H24)

This Discipline focuses on the unique demands for healthcare protection under special or extreme environments (aviation, aerospace, navigation, deep diving, plateaus, polar regions, etc.), studies and solves various special medical problems, and provides theoretical and technical support for major national strategic needs. These studies aim to understand the physiological and pathological changes and related mechanisms on the molecular, cellular, tissue, organ, and organism levels, revealing the regulatory mechanism of the body’s adaptive changes and pathological damage under special environments, as well as the critical factors of the body's tolerance to extreme environments. On this basis, research on risk prediction and damage assessment of organisms, and the development of novel protection technology in special environments are carried out. The Discipline mainly supports research on pathophysiological changes, mechanisms, and prevention methods of related diseases in special and/or extreme environments such as weightlessness, hyper gravity, radiation, weak magnetism, moondust, hypoxia, hyperbaric, hyperthermal, high humidity, cryogenic, and narrow confined space. It is encouraged to apply physics, chemistry, biology, and biomedical engineering to carry out in-depth and systematic research on specific medical problems under extreme environments in the above-mentioned fields, and to explore new theories and techniques for maintaining and enhancing body functions and vitality under special environments. Multiple integrated and interdisciplinary research within special medicine are also encouraged.

Forensic Medicine (H25)

This Discipline mainly funds research studies of using human body and other related forensic biological samples/materials as the research object, aiming at solving medical problems through technical and theoretical research in judicial practice. The

focusing fields mainly include the identification of the complicated cause of death, estimation of postmortem interval, mechanisms and forensic biomarkers of stress injury and death, analysis of injury mechanisms, and evaluation of craniocerebral trauma; mechanisms and assessment of personal injury caused by environmental pollution, toxicant (drug) abuse and dependence, toxicant metabolism and analysis, objective evaluation of the behavior capacity and the criminal responsibility of mentally disabled individuals; the individual identification and complex kinship analysis of challenging forensic samples, identification of tissue source and ethnic origin inference, multiomics identification of identical twins, identification of mixed stains and high-resolution characterization of human phenotypic traits; and exploration of function extension for molecular aptamer and evaluation of its application, etc. Applications of new theories and technologies integrating multiple disciplines such as medicine, biology, genetics, physics, chemistry, law, psychology, and information science are encouraged, with a focus on applying innovative multi-omics frameworks and frontier techniques to systematically investigate key scientific problems in forensic identification. Interdisciplinary studies between forensic medicine and other disciplines are strongly encouraged.

Medical Imaging/Nuclear Medicine (H27)

This Discipline mainly funds research studies on the application of medical imaging and other medical imaging related medical issues. The focusing fields include diagnostic radiology (such as conventional X-ray imaging, computed tomography, and magnetic resonance imaging), ultrasound medicine, nuclear medicine, interventional medicine, etc. The Discipline encourages multidisciplinary research exploration in the fields of multimodal cross-scale imaging, molecular imaging, optical imaging, bioelectromagnetic imaging, functional imaging, intelligent imaging, precise intervention, theranostics, and frontiers of the related translational medicine. The Discipline supports the development and application of new imaging technologies in the subjects of pathogenesis, early diagnosis, treatment planning and monitoring, treatment efficacy and prognosis evaluation, and drug screening of various diseases. The Discipline encourages basic research exploration, advanced pre-clinical application research, and translational application of diverse imaging techniques.

Biomedical Engineering/Regenerative Medicine (H28)

Biomedical engineering applies engineering principles and designing concepts to address biology and medical issues for the purpose of improving the capability of diagnosis and treatment of diseases and the healthcare management. The Discipline includes cross-disciplinary biomedicine studies that integrate knowledge from electronic information, instrument science, material science, etc. The Discipline mainly funds basic research related to medical electronic engineering, regenerative medicine, and nanomedicine for the prevention and early warning of disease, test and diagnosis, minimally invasive/non-invasive treatment, and clinical rehabilitation.

Applications are expected to target biomedical sensing, biomedical photonics, biomedical system modeling and simulation, medical information systems, digital healthcare, brain-computer interaction, neural engineering, rehabilitation engineering, treatment planning and navigation, medical robots, nanosized imaging probes, nanomedicine and physical therapy, drug and gene/cell delivery systems, biomedical materials, tissue engineering and regenerative medicine, artificial organs, etc. The Discipline encourages the frontiers exploration of interdisciplinary research for the biomedical development of novel methods, systems, and mechanisms. Special emphasis is put on creative research guided by clinical problems in developing clinically translatable medical apparatus, biomedical materials and nanomedicine.

The Discipline is committed to promoting a comprehensive and balanced development of special medicine, forensic medicine, medical imaging/nuclear medicine, and biomedical engineering/regenerative medicine. The Discipline encourages the collaboration of interdisciplinary researchers to conduct cross-disciplinary studies to advance medical optical imaging, bioelectromagnetic imaging and physical therapy, etc. The Division also encourages and supports theoretical research and hardware development in the interdisciplinary research fields such as biomedical sensing, signal detection, medical instruments, brain-computer interaction, and rehabilitation engineering, etc. The Disipline also emphasizes on clinically oriented imperative and translatable research studies to develop imaging probes, nanomedicine and biomedical materials. Special support would be given to young scholars who conduct research with high originality in the above-mentioned fields.

The medical imaging/nuclear medicine and biomedical engineering/ regenerative medicine Disciplines does not fund applications on radiation oncology or radiation prevention which instead should be submitted to the related codes in Division VII (H18) or Division VIII (H29), respectively. The Division does not fund applications related to pharmacology and drug administration which instead should be submitted to the related codes in Division IX (H34, H35).

Division VI of Health Sciences

The Division mainly supports basic research in the fields of locomotor system, emergency and critical care medicine, trauma/burns/plastic surgery, rehabilitation medicine, medical virology and viral infection, medical pathogen and infection, and laboratory medicine.

Locomotor System (H06)

The Discipline mainly supports researches on basic scientific issues related to the structure, function, dysplasia, pathogenesis, diagnosis and treatment of bone,

joint, muscle, tendon, ligament and related tissues, including metabolism, immunity and infection, injury and repair, transplantation and reconstruction, fatigue and recovery, degenerative disease, sports injury, deformity and correction, biological treatment, and other related scientific issues. Meanwhile, researches on the emerging scientific issues, such as medical biomaterials and artificial intelligence in musculoskeletal fields, are highly encouraged. In 2024, applications were mainly focused on the research fields in the degenerative diseases of bone, joint and soft tissue and the musculoskeletal damage and repair. Osteoarthritis, osteoporosis, intervertebral disc degeneration, fracture and bone healing are research hotspots in the field of locomotor system. In contrast, there were few applications in infection immunity, fatigue and recovery of bone, joint, muscle and soft tissue. The Discipline encourages innovative research based on clinical needs, systematic and original research on major scientific issues in locomotor system, interdisciplinary research using new techniques and methods, cross-talk research between locomotor system and other organs and tissues. Translational researches are encouraged.

Emergency and Critical Care Medicine (H16)

The Discipline mainly supports researches on new theories, technologies and methods in the field of emergency and critical care medicine, including sepsis, organ function failure and support, cardiac-pulmonary resuscitation, poisoning, and heatstroke. The pathogenesis, accurate diagnosis and treatment and scientific prevention in the field of emergency and critical care medicine are highly focused. Meanwhile, researches on pathophysiological changes, regulation mechanism of inflammatory immune response and metabolism, organ system interaction, and systems biological changes in this field are also encouraged.

Trauma/Burns/Plastic Surgery (H17)

The Discipline mainly supports researches on trauma, burns and chilblain, wound healing and scar management, surface tissues and organs malformation, injury and repair, regeneration, transplantation and reconstruction of surface tissues and organs, craniomaxillo-facial deformity and its correction, new technologies and methods in the field of trauma/burns/plastic surgery. The pathophysiological process, accurate diagnosis and treatment and scientific prevention in the field of trauma/burns/plastic surgery related diseases are highly focused. Meanwhile, researches on the following aspects are also encouraged, including injury mechanisms, prevention and treatment of complications of trauma and burns, surface tissue repair and function reconstruction, surface tissue aging and wound healing, repair and reconstruction of body surface tissues and organs malformation and defect.

Rehabilitation Medicine (H20)

The Discipline mainly supports researches on rehabilitation mechanism of structural abnormalities, function impairments, activity and participation limitations caused by system damage/disease of neural, locomotor, circulatory, and respiratory systems, researches on standardization and intellectualization of rehabilitation

assessment, development and application of new evaluation methods of rehabilitation, and researches on the basic scientific issues and related new strategies of physiotherapy, occupational therapy and speech therapy. The Discipline also encourages interdisciplinary research surrounding rehabilitation needs and functional reconstruction.

Medical Virology and Viral Infection (H21)

The Discipline mainly supports researches on the pathogenic mechanisms underlying disease development induced by medical viruses and their infections, including respiratory viruses and infections, digestive tract viruses, picorna viruses and infections, hepatitis viruses and infections, retroviruses and infections, herpes viruses and infections, arboviruses and infections, hemorrhagic fever viruses and infections, human papilloma virus, rabies virus, parvovirus, prion and other viruses and infections, and new technologies and new methods of medical virology and viral infection. The main focus is on etiological characteristics, genetic variation, mechanism of virus transmission, virus-host interaction, and mechanisms of pathogenesis. The Discipline encourages researches on highly pathogenic infectious diseases, highly transmissible viral infections and other emerging viral infections.

Medical Pathogens and Infection (H22)

The Discipline mainly supports research on the pathogenic mechanisms underlying disease development induced by non-viral pathogens and their infections, including pathogenic bacteria and infections, pathogens fungi and infections, parasites and infections, mycoplasma, Chlamydia, rickettsia, spirochetes and infections, infectious diseases and vectors, mutation and drug resistance of pathogens, hospital-acquired infections, sexually transmitted diseases, and the development of new technologies and methods for the study of nonviral medical pathogens and their infections. It is focused on biological characteristics, genetic variation and evolution of non-viral pathogens, mechanisms of persistence and drug resistance, and pathogen-host interaction and pathogenic mechanisms. The Discipline also encourages researches on rare infectious diseases, tropical diseases and opportunistic infectious diseases

Laboratory Medicine (H26)

The Discipline mainly supports researches on biochemical test, microbiological analysis, cytological examination, hematological examination, immunological test, molecular biology test, and new technologies and methods in the field of laboratory medicine. It is focused on new strategies, new theories, new technologies and their application researches for rapid, sensitive and accurate inspection, as well as the discovery, identification and verification of new biomarkers of diseases. The Discipline also encourages interdisciplinary researches that are closely aligned with the clinical needs, encompassing fields such as chemistry, physics, material science, biosensing and artificial intelligence.

The fields of Locomotor System (H06), Emergency and Critical Care

Medicine (H16), and Trauma/Burns/Plastic Surgery (H17) do not support oncology-related research. For related research, please select the appropriate secondary application code under Oncology (H18). The field of Rehabilitation Medicine (H20) does not support researches that are not directly related to the mechanism, assessment and treatment of rehabilitation, but are purely related to pathological mechanisms such as the occurrence and development of diseases. For related research, please select the corresponding application code of other systems. Rehabilitation engineering or rehabilitation of traditional Chinese medicine are also not supported under rehabilitation medicine (H20). For related research, please select the corresponding secondary application code under Biomedical Engineering/Regenerative Medicine (H28) of the Division V of Health Sciences, and Traditional Chinese Medicine (H31) of the Division X of Health Sciences. The field of Laboratory Medicine (H26) does not support research purely on pathogenesis and regulation pathways of diseases, and it also does not fund researches on clinical laboratory reference system and standardization. In addition, please refer to the general notes of the Department of Health Sciences for any research involving genetic resources, ethics and biosafety.

Division VII of Health Sciences

The Division mainly funds oncology research.

Oncology (H18)

The Discipline mainly funds basic and translational research projects related to the mechanisms of tumor initiation, progression, and outcomes, as well as tumor prevention, diagnosis, and treatment.

For proposals related to basic scientific questions including tumor etiology and pathogenesis, applicants should select the corresponding application codes for tumor etiology, tumorigenesis, tumor cell-fate, tumor genetics and evolution, tumor epigenetics, tumor immunology, tumor metabolism, tumor microenvironment, tumor recurrence and metastasis, tumor stem cells, and interdisciplinary oncology (H1801～H1811). For proposals related to translational research and clinical science issues including cancer prevention, diagnosis, and treatment, applicants should choose the corresponding application codes for cancer prevention, cancer diagnosis, cancer chemotherapy, targeted cancer therapy, cancer radiotherapy, cancer physical therapy, cancer immunotherapy, cancer biotherapy, comprehensive cancer therapy, cancer therapy resistance, cancer rehabilitation, rare tumors and cancer with special characteristics, solid tumors in children, big data and artificial intelligence for oncology, clinical translational research in oncology, and innovative technology and method in oncology (H1812~H1827).

Oncology research is one of the most active fields in medical science. In recent years, applications projects related to tumorigenesis, tumor recurrence and metastasis, targeted cancer therapy, and cancer therapy resistance have maintained a large number of applications every year, and application projects such as tumor immunology, tumor metabolism, tumor microenvironment, cancer immunotherapy, comprehensive cancer therapy, big data and artificial intelligence for oncology have become hot research fields with rapid growth in application volume.

With the constant deepening understanding of tumor, there are some emerging features and trends in this field. (1) The research paradigm in oncology has evolved from a micro to macro perspective, from local to systemic, and from static to spatiotemporal dynamics. Oncology research has transitioned from focusing solely on tumor cells to encompassing the tumor microenvironment and the internal milieu of the body, emphasizing a layered exploration of the interactions and influences between tumors and various organ systems within the body. (2) Advance in oncology research increasingly depends on close cooperation of basic research and clinical practice. On the one hand, due to insufficient understanding of the nature of tumor, clinical prevention, diagnosis and treatment remain to be innovated and improved. Translational and clinical research in oncology depends on the progress and breakthrough of basic research in oncology. On the other hand, the diversity and complexity of tumor clinical features, as well as treatment responses, continue to raise new scientific questions for basic research. A close integration of clinical and basic research activities should be strengthened to foster innovation in the development and clinical application of basic research. (3) Due to the biological nature and complexity in the law of development for tumor, multidisciplinary integration becomes increasingly important in cancer research. Advanced techniques from other frontier fields have been increasingly introduced in basic tumor research, clinical diagnosis and treatment. Thus, paradigm of oncology research switches from a model mainly based on medicine and life science toward a new one which is featured by cross-integration and coordinated development of multi-disciplines. The new paradigm emphasizes the employment of interdisciplinary methods, including biochemistry, immunology, neurobiology, bioinformatics, as well as clinical medicine, preventive medicine, pharmacology, radiology, engineering and materials science, informatics, mathematics, physics, chemistry, etc., to promote the systematic advances in oncology research.

Applicants are encourages to conduct original research and explore the temporal and spatial dynamics of tumors from multiple levels and dimensions, so as to develop new insights into the mechanisms of tumor initiation, progression, and prognosis, driving a paradigm shift in cancer research. This will ultimately provide novel theoretical foundations for the effective prevention, diagnosis, and treatment of tumors.

Applicants are encouraged to discover and refine important scientific questions

from preliminary research and clinical practice, and conduct fundamental research aimed at solving clinical problems. It is also encouraged to take advantage of the clinical resources in China to carry out innovative studies based on clinical data or cohorts focusing on high-incidence, prevalent, common, and rare tumors in the Chinese population. The establishment of new technologies and methods in the field of oncology research is also encouraged. Furthermore, research focusing on new strategies for tumor prevention, diagnosis, treatment, and rehabilitation is promoted, aiming improve survival time and life quality of cancer patients.

The Discipline does not support tumor epidemiological research. Applicants should note that the proposals on tumor epidemiology should be submitted to Division VIII (H30), and proposals on hematological malignancies such as leukemia and lymphoma should be submitted to Division I (H08).

In 2025, the ongoing pilot reform will continue to be implemented within the field of Oncology. Specific requirements can be found in Section 5: Pilot Requirements for General Projects in the Field of Oncology (H18) of the 'Guidelines', located under the General Notes of the Medical Science Department,.

Division VIII of Health Sciences

The Division mainly supports basic research in the fields of dermatology, radiation medicine, and preventive medicine.

Dermatology (H12)

The funding scope of the Discipline is basic research on structural, functional, and developmental abnormalities of skin and its appendages, as well as immune-mediated, infectious, hereditary, metabolic, traumatic, and physicochemical skin diseases. In recent years, the results of the project application and approval show that the level of basic research on skin-related diseases has improved rapidly, especially on skin and its appendages. The basic research on epidemiological, diagnostic and therapeutic techniques and methods, as well as the relationships between the skin and systemic diseases, should be strengthened. Interdisciplinary and integrated research involving life science, physics, chemistry, computer science, and other disciplines are encouraged.

The Discipline (H12) does not support oncology-related research, which should be applied to Division VI (H18).

Radiation Medicine (H29)

The funding scope of the Discipline is basic research on radiation injury and intervention, radiation toxicology and radio pathology, radiological hygiene and protection. In recent years, the number of projects application and the quality of funded projects indicate that great progress has been made in scientific research and

some studies have reached the internationally advanced levels, although the number of the researchers engaged in Radiation Medicine is small. While the funded projects mainly focus on radiological injury and intervention, basic research on early diagnosis and prevention of radiation damage should be further strengthened. The Discipline emphasizes the biological effects and bystander effects of low-dose radiation, encourages the fundamental research on medical radiobiology and the prevention and treatment of tissue and organ damage, and promotes the development of a more comprehensive and well-established disciplinary system.

The Discipline (H29) does not support cancer radiotherapy, which should refer to categories under Division VII (H18), while researches on medical imaging and radiological diagnosis are also not accepted, which should refer to categories under Division V (H27).

Preventive Medicine (H30)

The funding scope of the Discipline is basic research on environmental hygiene, occupational health and diseases, food hygiene, human nutrition, children and adolescent health, maternal and child health care, hygienic toxicology, hygienic analytical chemistry, infectious disease epidemiology, epidemiology of noncommunicable diseases, epidemiological methods and health statistics, behavior/psychological factors and health, and endemiology. In recent years, the number of projects application and the quality of funded projects indicate that the level of basic research related to preventive medicine keeps on increasing. Expanding disciplinary fields and research directions is an inevitable requirement for the development of preventive medicine. Interdisciplinary and integrated research needs to be further strengthened, and the combination of laboratory mechanism research with population research is encouraged to adapt to new health needs.

Food Hygiene (H3004) does not fund the study only about food processing, and applications are recommended to submit to relevant divisions of Life Sciences Department (C20).

Maternal and Child Health Care (H3005) and Child and Adolescent Health (H3006) do not fund projects related to obstetric/gynecological diseases or pediatric diseases. For obstetric/gynecological disease projects, please apply under relevant codes in Division IV (H04). Pediatric disease projects should select appropriate application codes based on their disease systems.

Hygienic Toxicology (H3007) does not fund drug toxicology projects. Relevant projects should apply under codes in Division IX (H35).

Hygienic Analytical Chemistry (H3008) does not fund clinical testing projects. Relevant projects should apply under codes in Division IX (H26), or drug analysis/testing projects. Relevant projects should apply under codes in Division IX (H34)..

Epidemiology (H3009, H3010) does not fund non-population-based pure laboratory research projects. Non-Communicable Disease Epidemiology

(H3010) excludes health economics, health policy, hospital management, and related administrative projects, and relevant projects should apply under codes in the Department of Management Sciences. Communicable Disease Epidemiology (H3009) excludes non-population-based pure pathogen studies or research on disease pathogenesis, treatment, and prognosis , and relevant projects should apply under other relevant codes in the Department of Medical Sciences.

Behavioral/Psychological Factors and Health (H3012) does not fund non-population-based clinical/experimental studies on mental/psychological disorders, and relevant projects should apply under corresponding codes in relevant departments.

Endemiology (H3013) does not fund disease projects without geographical characteristics. For related applications, please select the application code of the relevant disease system.

Division IX of Health Sciences

The Division mainly supports basic researches in the discipline of material medica and pharmacology targeting human diseases.

Materia Medica (H34)

The funding scope of the Discipline covers research areas or sub-disciplines including synthetic medicinal chemistry, the medicinal chemistry of natural products, microbial drugs, biotechnological drugs, marine drugs, special drugs and orphan drugs, drug design and drug informatics, pharmaceutics, pharmaceutical materials, pharmaceutical analysis, drug resources, new technologies and methods in pharmaceutical research, etc.

The Discipline puts emphasis on interdisciplinary researches, basic researches of innovative drugs and druggability. Funding in synthetic medicinal chemistry (H3401) focuses on the research of active molecules based on new targets, new mechanisms, new technologies or new structures. Funding in medicinal chemistry of natural products (H3402) and microbial drugs (H3403) mainly supports innovative theories, technologies and approaches for drug discovery from plants, animals and microorganisms. Funding in biotechnological drugs (H3404) mainly supports researches on innovative biotechnologies or approaches to obtain biotechnological drugs; meanwhile, exploratory researches on new types of expression systems and large scale culture techniques will also be supported. Funding in marine drugs (H3405) mainly supports the discovery of marine bioactive substances and researches on their druggability. Funding in special drugs and orphan drugs (H3406) mainly supports researches on the discovery of active substances and their druggability for diseases related to special environments (e.g., aviation, aerospace, deep-sea,

radiation, military) as well as rare diseases. Funding in drug design and informatics (H3407) mainly supports researches on novel theories, methodologies, or software systems for drug design and druggability prediction, along with their applications in drug discovery. Funding in pharmaceutics (H3408) mainly supports researches in physical pharmacy, biopharmaceutics, molecular pharmaceutics, industrial pharmaceutics, and related fields. Researches on nano-based drug delivery systems should focus on their druggability and clinical applications. It also encourages the exploration of administration route for different diseases and the study of new theories and methods. Funding in pharmaceutical materials (H3409) mainly supports basic researches on the establishment, disposition and safety evaluation of new pharmaceutical excipient. Funding in pharmaceutical analysis (H3410) mainly supports researches on novel analytical technologies and methodologies for investigating active pharmaceutical ingredients (APIs), metabolites, drug impurities, excipients, drug targets, and their interactions, with a focus on addressing analytical challenges in pharmaceutical and pharmacological studies. Funding in drug resources (H3411) mainly supports researches on key scientific problems associated with the discovery, exploration, sustainable utilization, and other critical scientific issues in pharmaceutical resource development. New technologies and methods in pharmaceutical research (H3412) mainly supports researches on establishment of innovative technologies and methodologies to solve key pharmaceutical challenges.

Pharmacology (H35)

The funding scope of Pharmacology supports researches on new mechanisms of action and the discovery of new drug targets for therapeutic drugs, drug candidates, and bioactive substances. This encompasses studies on the mechanisms of drug action across diverse diseases, drug metabolism and pharmacokinetics, clinical pharmacology, drug toxicology, and innovative technologies and methodologies in pharmacological research, etc.

The Discipline puts emphasis on the application of multidisciplinary technologies and methods to systematically reveal the action patterns of drugs on the body and the disposal patterns of the body towards drugs, elucidate their key mechanisms and action targets, and promote theoretical innovation in pharmacological research. The funding scope of the sub-disciplines of pharmacology (H3501-H3509) mainly support researches on novel action characteristics and patterns of drugs or bioactive substances, the elucidation of their action mechanisms, target discovery and validation. These sub-disciplines encourage basic research on new drug intervention mechanisms and treatment protocols targeting major clinical diseases, newly emerging infectious diseases, and rare diseases, as well as studies on new clinical combination therapy schemes and strategies to overcome drug resistance based on clinical needs. The sub-discipline of drug metabolism and pharmacokinetics (H3510) mainly supports researches on drug-target binding kinetics, and interactive regulation between drugs and human metabolic molecules or microbial metabolic

processing. The sub-discipline of clinical pharmacology (H3511) mainly supports researches on drug-human interaction patterns and individualized medication, covering clinical medication challenges, rational drug use in special populations, new mechanisms and applications of marketed drugs, and biomarker research related to drug efficacy or safety. The sub-discipline of drug toxicology (H3512) mainly supports researches on the mechanisms of drug toxicity and their metabolites, as well as intervention strategies for drug-induced toxicity. It also encompasses exploratory studies on new models for drug safety evaluation and systems toxicology. The sub-discipline of new technologies and methods for pharmacological research (H3513) mainly supports researches on basic research of novel technologies and methods to address developmental bottlenecks in pharmacology.

The Division encourages applicants to conduct high-level and high-quality basic research of innovative drugs. Peer review focuses on theoretical, methodological, and technological breakthroughs, along with innovative drug development potential. It also emphasizes the novelty and uniqueness of structures, mechanisms and targets of drug, prospect of clinical application and social value.

To innovative basic research with a great prospect for new drug development, the entire chemical structures or backbone of compounds should usually be provided in application, but the applicants should pay special attention to the protection of intellectual property and carefully handle the relationships between application and secrecy. If key technical details (including chemical structures) cannot be disclosed in the application due to confidentiality constraints, applicants must send these details directly to the office of Division IX via confidential letters and explained them in proposals. The young scholar should ask for the consent of the supervisor and attach the authorization letter signed by the supervisor with the proposal, if the research proposal is closely related to the supervisor's research work or is follow-up work of the young scholar's postgraduate research.

Division X of Health Sciences

Division X aims to inherit the essence of traditional Chinese medicine (TCM), innovate the theory of TCM, highlight the original advantages and characteristics of TCM, and promote the high-quality development of TCM. The Division funds basic research programs in the fields of TCM, Chinese materia medica (CMM) and integrative medicine (IM).

Traditional Chinese Medicine (H31)

The Discipline mainly supports: ① basic theory of TCM: zang-fu organs, qi, blood and body fluids, constitution, etiology and pathogenesis, the basis of syndromes, treatment principles and methods, TCM prescriptions, TCM diagnostics;

② the clinical basis of TCM: internal medicine of TCM, surgery of TCM, orthopedics of TCM, gynecology of TCM, pediatrics of TCM, ophthalmology of TCM, otolaryngology of TCM, stomatology of TCM, oncology of TCM, geriatrics of TCM, health preservation and rehabilitation of TCM; ③ acupuncture and tuina: Acupoints and Meridians, acupuncture and moxibustion of TCM, tuina massage; ④ethnic medicine; ⑤ New technologies and methods in TCM research.

Chinese Materia Medica (H32)

The Discipline mainly supports: ① CMM: resources, identification, substances in pharmacodynamics, quality evaluation, processing, pharmaceutics and theories in the properties of Chinese herbs; ② pharmacology of CMM: neuropsychopharmacology, cardiovascular and cerebrovascular pharmacology, anti-tumor pharmacology, endocrine and metabolic pharmacology, anti-inflammatory and immunopharmacology, anti-viral and anti-infective pharmacology, digestive and respiratory pharmacology, urinary and reproductive pharmacology, metabolism and pharmacokinetics, toxicology of CMM; ③ ethnopharmacy; ④ the novel techniques and methods in CMM research.

Integrative Medicine (H33)

The Discipline mainly supports: ① basic theory of integrated traditional Chinese and Western medicine; ② the clinical basis of integrated traditional Chinese and Western medicine; ③ new technologies and methods in research on the integrated traditional Chinese and Western medicine.

In recent years, the funded projects in the fields of TCM, CMM and IM have exhibited the following characteristics: ① Based on the clinical efficacy, the funded projects explored the overall law of human life activities and the integrated and regulated role of TCM with the guidance of the theory of TCM, combination of the macroscopic and microscopic; ② Modern scientific theories, methods and technologies are applied in the frontier fields of medical science and other sciences to constantly innovate research ideas and methods; the basic research of TCM is organically combined with the theories and research ideas of related emerging disciplines , and to promote the development of TCM; ③ Attention is paid to the basic clinical research of TCM and ethnic medicine in the treatment of functional, metabolic, senile, immune and viral infectious diseases, etc., to explore mechanisms responsible for the clinical efficacy.

Under the guidance of the basic theories of TCM, based on the key scientific issues of TCM, the Division supports deeply research on its modern scientific connotation, promotes new scientific discovery, and emphasizes its standardized and rational use of modern science and technology and methods. All the above is for promoting inheritance and innovation of the essence of the basic theory of TCM. The research proposals will mainly be supported in the following areas: the theory of Zangxiang (visceral organ function), the theory of disease prevention and the biological basis of syndromes, animal models for the combination of diseases and

syndromes, the law of compatibility of classical prescriptions and the material basis of drug effects, and the combination of macroscopic and microscopic differentiation of syndrome, the basis of the dominant diseases and the crucial links for which TCM treatment is indeed effective, the methodology of efficacy evaluation in line with the clinical characteristics of TCM, the specificity of acupoints, the rules of acupoint compatibility and acupuncture manipulations, the basis for the prevention and treatment of diseases by acupuncture, massage, and rehabilitation; the methodological research of data mining based on ancient documents and big clinical data; the basic theory, diagnosis and treatment law, and mechanism of action of integrated traditional Chinese and western medicine in the prevention and treatment of major, refractory, rare diseases and emerging infectious diseases, the basic theory and scientific connotation of combined use of Chinese and western medicine; germplasm selection, ecological planting, wild tending and bionic cultivation of traditional Chinese herb and substitutes for rare and endangered Chinese herbs, principles and methods of Chinese medicine identification, Chinese medicine quality evaluation methods and their principles, Chinese medicine processing principles, Chinese medicine preparation principles and new drug delivery systems that reflect the overall efficacy;, medicinal properties of traditional Chinese herbs, efficacy substances of traditional Chinese herbs, internal process of traditional Chinese herb and the regulation mechanism responsible for its TCM effects, pharmacological action and mechanism of traditional Chinese herb, correlation between toxicity, toxicology and toxicity-effect of traditional Chinese herb; ethnic medicine; innovative technologies and methods of Chinese medicine research etc.

The Division is dedicated to supporting basic research that reflects the clinical advantages and explains the modern scientific connotation of original theories and unique concepts of TCM. The main tasks and responsibilities of the Division include: encouraging continuous and in-depth research on mechanisms by which acupuncture and moxibustion exhibited definite clinical effects on some diseases, advocating innovative research on the compound preparations such as classic prescriptions and empirical prescriptions with precise clinical efficacy using novel technologies and new methods to analyze their pharmacodynamic material basis, compatibility principle and mechanism of action, encourages interdisciplinary integration, integrates multiple cutting-edge technologies and methods, and explains the pharmacodynamic material basis and scientific connotation of Chinese medicine, proposing the exploration of diagnosis and treatment scheme of integrated Chinese and Western medicine for the major and refractory diseases with clinical practice advantages, and conducts a comprehensive and systematic elucidation of their mechanisms.

The Division will not support the proposals without Chinese medicine contents. For pure modern medical research proposals, please submit to the related medical discipline (H01~H30) (code H01~H30). Proposals which focus on

natural medicine research only, should be filed to the related codes in Division IX (H34, H35). The research on Chinese herb resources should reflect the unique attributes of traditional Chinese medicinal materials, such as the yield and quality-related characteristics of the traditional Chinese herbs during production process, conduct the research on the protection, production and new resources of traditional Chinese herb. The Division does not support research on the resources of non-medicinal plant, animal and mineral. The research on the pharmacodynamic substances and pharmacology of Chinese herbs should elucidate the correlation between the efficacy of Chinese herbs and their substances, as well as the value to the development of Chinese herbology discipline. The new dosage forms in TCM pharmacy involving the loading of clinically effective substances should fully reflect the guidance of TCM theory and be guided by solving prominent problems in the clinical application of TCM; Ethnopharmacological research should indicate its relevance to the medical theories of the minority or traditional application principles. The Division will not fund the TCM research without natural science attributes. The proposals regarding Chinese medicine formulas or acupoint prescriptions should introduce the composition or the relevant acupoints. Regarding the prescription confidentiality in some proposals, applicants will be required to mail the prescriptions directly to the Division, and explain the reasons in the proposal. Applications that do not meet the above requirements will not be funded.

Department of Interdisciplinary Sciences

Interdisciplinary sciences refer to the group of disciplines that stem from deep interactions and inter-penetrations of multiple academic disciplines. It reconstructs trans-disciplinary structures of knowledge, logic of thoughts, frames of theories, and systems of methodologies. Distinguished from the original academic disciplines, interdisciplinary sciences are featured with comprehensiveness, extensiveness, uniqueness, and novelty. It is the outcome of evolutionary process of science, from the initial stage of general knowledge about nature to the intermediate stage of highly classified disciplines, and to the stage of recombination of knowledge. It also represents an additional novel stereotype for human beings to explore the nature. Interdisciplinary science aims to generate and provide revolutionary viewpoints, tools, and paradigms to search for solutions to important and sophisticated issues that human beings are facing.

The Department of Interdisciplinary Sciences (DIS) organizes and deploys research activities on interdisciplinary sciences to meet important national strategic needs and to push the frontier of science forwards. The responsibility of DIS

includes: 1. to develop a complete and sound system to support interdisciplinary research in all disciplines; 2. to promote collaborations of multiple disciplines to solve complex issues of science and technology; 3. to facilitate the development of new academic disciplines and scientific breakthroughs; 4. to probe for revolutionary paradigm of scientific research; 5. to cultivate scholars of interdisciplinary science and to create culture of interdisciplinary research.

In 2024, DIS received 526 applications for Excellent Young Scientists Fund and funded 31 projects with a funding rate of 5.89%. The total direct funding was 62 million yuan with each project of 2 million yuan.

In 2024, DIS received 523 applications for National Science Fund for Distinguished Young Scholars and funded 29 projects with a funding rate of 5.54%. The total direct funding was 116 million yuan with each project of 4 million yuan.

In 2024, DIS received 41 applications for Science Fund for Creative Research Groups and funded 5 projects with a funding rate of 12.20%. The total direct funding was 50 million yuan with each project of 10 million yuan.

In 2024, DIS received 15 applications for Basic Science Center Program A and funded 1 project with a funding rate of 6.67%. The direct funding was 60 million yuan.

In 2024, DIS received 13 applications for Basic Science Center Program B and funded 2 projects with a funding rate of 15.38%. The direct funding was 120 million yuan with each project of 60 million yuan.

Notes:

I. Types of projects accepted by DIS in 2025

(1) During the centralized acceptance period of project applications in 2025, the types of programs will be accepted by DIS include: some Major Research Plans, Young Scientists Fund A, Young Scientists Fund B, Science Fund for Creative Research Group, and Science Fund for Excellent Research Group.

(2) Apart from the centralized acceptance period of project applications in 2025, DIS also accepts following programs: the Special Fund for Research on National Major Research Instruments (recommended by departments), Major Program, some Major Research Plans, and special funds. Among the above mentioned Programs, the guideline of the Special Fund for Research on National Major Research Instruments (recommended by departments) has been listed in this *Guide*, while the guidelines for other programs will be published in due time on the website of NSFC.

II. Application Requirements

Besides the application requirements specified in this *Guide*, DIS also requires:

(1) The characteristic of interdisciplinary science must be obvious and necessary in the proposal;

(2) The applicant has at least two different majors across various first-level-disciplines during one's undergraduate, master, and/or doctoral peroids, or has done interdisciplinary scientific research in which the applicant has played a key role.

III. Application Documents

In addition to meeting the requirements of the application materials in this *Guide*, the program application documents of DIS shall also meet the following requirements:

(1) Special application forms of DIS shall be used for all program applications in DIS.

(2) When applying for the programs of DIS, the applicant shall select the acceptance code and the application code.

i. There are four acceptance codes in DIS: T01 (Physical Sciences), T02 (Intelligence Sciences), T03 (Life and Health Sciences), and T04 (Convergence Sciences). The applicant shall select one of the acceptance codes according to the applied research field.

ii. There is no special application code for DIS. The application codes can be found in the section "NSFC Application Codes" in this *Guide*. **The applicant should select 2 to 5 application codes with attention to:**

- When selecting the application codes, choose application codes that belong to at least two different scientific departments and are from different research fields, and try to select the secondary application code (4 digits).

- Fill in the "Research direction" and "Key words" accurately when filling in the short form of application.

IV. Additional Notes

1. When filling in the application form, please read the instructions and outlines of the programs carefully.

2. Science Fund for Excellent Research Group and Major Program may be applied by one applicant alone or two applicants together:

(1) For joint application, the two applicants are named as the first applicant and the second applicant.

(2) If these two applicants are not in the same institutions, the institution of the second applicant shall be regarded as the cooperative research institution.

(3) In the case of joint application, the online filling and submission of the application form in the information system shall be done by the first applicant and his/her institution.

3. Requirements for research ethics and technological security (such as biosecurity, information security, etc.):

(1) For projects involving research ethics, the applicant shall provide certification of ethical review from the ethics committee of their affiliated institution or superior authority (scanned copies should be uploaded as supporting documents with the application). Projects failing to provide the required certification will not be accepted or funded.

(2) For projects involving technological security (such as biosecurity, information security), the applicant shall adhere to relevant national laws and

regulations and comply with related provisions strictly. They should provide a commitment to technological security from their affiliated institutions (scanned copies should be uploaded as supporting documents with the application). Projects failing to provide the required commitment will not be accepted or funded.

(3) Human life science and medical research shall comply with the relevant requirements of the "Ethical Review Measures for Human Life Science and Medical Research".

(4) After the approval of these projects, if the research plan changes during execution, applicants shall resubmit certification of ethical review or/and commitment to technological security, as per the above requirements.

Division I of Interdisciplinary Sciences (T01)

The funding scope of the Division includes interdisciplinary researches based on fundamental natural sciences such as mathematics, physics, chemistry, etc. It aims to promote research at the global frontier of science and meet important national needs by solving fundamental scientific problems associated with information science, life science, material science, energy and environmental scienc,. and also to achieve significant breakthrough or to develop new academic discipline and research fields.

Division II of Interdisciplinary Sciences (T02)

The funding scope of the Division includes interdisciplinary researches based on advanced materials, contemporary engineering, information technologies, etc. It aims to promote research at the global frontier of science and meet important national and economical needs by solving problems appeared during the development of Chinese society, such as the key scientific and technological problems of engineering, control, and advanced manufacturing, etc.

Division III of Interdisciplinary Sciences (T03)

The funding scope of the Division includes interdisciplinary researches associated with science, engineering, and medical sciences in the field of life and health. It aims to develop advanced technology and methodology to clarify the regulatory mechanism in sophisticated life system from the aspect of multi-layer and trans-scale and to unveil the scientific law and principles governing biological phenomena. The Division works to explore novel mode of research in life science to face major challenges of human health and disease prevention and control.

Division IV of Interdisciplinary Sciences (T04)

The funding scope of the Division includes interdisciplinary researches based on theory and methodologies of natural science, convergence of knowledge, and tools from multiple disciplines. Focusing on the complexity and evolutionary patterns of the human-nature-society coupled system, it addresses major scientific challenges in sustainable human development, including earth system processes and global change response, resource exploitation and ecological conservation, human behavior and civilization evolution, as well as risk, disasters, and social governance.

General Program

General Program supports scientists engaged in basic research on self-selected topics within the funding scope of NSFC to conduct innovative research and promote a balanced, coordinated and sustained development of all disciplines.

An applicant must meet the following qualifications:

(1) Have the experience of undertaking basic research projects or conducting other basic research;

(2) Hold a senior professional position or doctoral degree, or be recommended by two professionals with senior academic positions in the same research field.

Full time post graduate students are not eligible to apply for the General Program, but on-the-job graduate students may apply through their host institutions with the consent of their supervisors.

Applicants should be familiar with the current situation of relevant research in China and the world, capable of leading a group to conduct research. Applicants should prepare proposals in accordance with the guideline. The proposed research should be of scientific significance and research merits, and have sufficient thematic basis, novel academic ideas, clear-cut objectives, reasonable and detailed research contents and feasible research schemes. The number of collaborative institutions for General Program projects should not exceed 2, and the duration is 4 years.

In 2024, NSFC funded 20758 General Program projects, with a direct cost of 10.13 billion yuan. The average funding was 488 300 yuan per project.

The average funding intensity of direct cost in 2025 for General Program is basically the same as that in 2024. Please refer to the funding areas and announcements of the relevant science departments for detailed funding scope and situation in recent years and other relevant requirements. Applicants are advised to prepare their research proposals in line with the funding intensity and the instructions by the respective science departments.

Young Scientists Fund

The Young Scientists Fund supports young scientists to freely select their research topics within the funding scope of NSFC to conduct basic research, particularly focus on fostering the ability of young scientists to independently undertake research projects and conduct creative research, stimulates their creative thinking and trains backup talents for basic research.

1. An applicant for Young Scientists Fund must meet the following qualifications:

(1) Have the experience of conducting basic research;

(2) Hold a senior professional position or doctoral degree, or be recommended by two professionals with senior academic positions in the same research field.

(3) By January 1 of the year of application, male applicants must be younger than 35 (born on or after January 1, 1990) and female applicants must be younger than 40 (born on or after January 1, 1985).

On-the-job doctoral students who satisfy the above criteria may apply through their host institutions with the consent of their supervisors. Those who are studying for a graduate degree are not allowed to apply for the Young Science Fund.

2. In 2025, scientific and technical personnel from host institutions in Hong Kong and Macao can apply for the Young Scientists Fund. In addition to meeting the basic requirements, the applicants shall also meet the following qualifications:

(1) Abide by the Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China, the Basic Law of the Macao Special Administrative Region of the People's Republic of China, and the provisions on the management of science funds;

(2) Formally employed in host institutions in Hong Kong and Macao.

Those who are engaged in postdoctoral research or studying for postgraduate degrees shall not apply for the Young Scientists Fund through the host institutions in Hong Kong and Macao.

1. Special reminders to the applicants:

(1) Those who are the PIs of ongoing project of Young Scientists Fund or have undertaken it, including one-year Small Fund for Exploratory Studies, or terminated or withdrawn projects, cannot apply again.

(2) For Young Scientists Fund, the creative potential of the applicant is mainly evaluated.

(3) Applicants should compose proposals in accordance with the outlines of application for Young Scientists Fund. The project duration is 3 years.

(4) In 2025, the funding contract system of the Young Scientists Fund will be implemented, and the funding will no longer distinguish between direct and indirect costs. The funding for each project is 300,000 yuan.

In 2024, a total of 23,226 Young Scientist Fund projects were funded, with a total cost of 6967.8 million yuan.

Fund for Less Developed Regions

The Fund for Less Developed Regions supports scientists of host institutions in specified regions of China to conduct innovative research within the funding scope of NSFC, so as to foster and support researchers in the regions, to stabilize and gather outstanding talents to facilitate the construction of the regional innovation system as well as the social and economic development of the regions.

An applicant of Fund for Less Developed Regions must meet the following qualifications:

(1) Have the experience of undertaking basic research projects or conducting other basic research;

(2) Hold a senior academic position (title) or doctoral degree, or be recommended by two professionals with senior academic positions (titles) in the same research field.

Full-time researchers meeting the above qualifications and working in Inner Mongolia Autonomous Region, Ningxia Hui Autonomous Region, Qinghai Province, Xinjiang Uyghur Autonomous Region, Xinjiang Production and Construction Corps, Tibet Autonomous Region, Guangxi Zhuang Autonomous Region, Hainan Province, Guizhou Province, Jiangxi Province, Yunnan Province, Gansu Province, Yanbian Korean Prefecture of Jilin Province, Enshi Tujia and Miao Prefecture in Hubei Province, Xiangxi Tujia and Miao Prefecture in Hunan Province, Liangshan Yi Prefecture in Sichuan Province, Ganzi Tibetan Prefecture in Sichuan Province, Aba Tibetan and Qiang Prefecture in Sichuan Province, Yan'an City and Yulin City in Shaanxi Province, may apply for the Fund. Researchers seconded by the Organization Department of the Central Committee of the CPC to Xinjiang Uyghur Autonomous Region and Tibet Autonomous Region for 3 or more years are also eligible to apply for this Fund during their tenure. If the host institution where an aid scientist is working in Xinjiang or Tibet is not a registered host institution at NSFC, he/she is allowed to apply for the Fund for Less Developed Regions through the eligible host institutions in the aided autonomous regions, on the condition that they provide the scanning copy of certificate documents issued by the organization departments or personnel department of their host institutions to prove their identity of aid scientists when applying for this Fund.

Researchers from the affiliated institutions to the central government or the PLA and part-time researchers working in the eligible host institutions in the above regions and provinces cannot apply, but may join the application as main participants. Graduate students cannot apply, but on-j-job students may apply through their host

institutions with the consent of their supervisors. Researchers without an institution or whose host institutions have not been registered at NSFC cannot apply for the Fund for Less Developed Regions.

In order to provide balanced support for qualified applicants for the Fund for Less Developed Regions and encourage them to apply for projects of General Program and other competitive programs of NSFC, so as to improve basic research in less developed regions, researchers who have been granted 3 or more projects under the Fund for Less Developed Regions are not allowed to apply for this Fund again since the year 2016, but the Fund for Less Developed Regions grants approved in 2015 and earlier will not be counted in.

Applicants should prepare proposals in accordance with the outline of application. The number of collaborative institutions for Fund for Less Developed Regions should not exceed 2, and the duration is 4 years (Pls as in-site post-doctoral researchers, whose duration of the project should be determined based on the written commitment from their host institutions, and not more than 4 years. However, they cannot change the host institution after the project is awarded).

In 2024, the Fund supported 3,519 projects with a total funding for direct cost of 11081.23 million yuan. The average funding was 314,900 yuan per project.

In 2025, the average funding for direct costs is expected to be consistent with that of 2024. Please refer to the funding intensity of direct cost of relevant departments and make budget request in a practical manner.

Key Program

The Key Program supports scientific and technical personnel engaged in basic research to carry out in-depth, systematic and innovative research on well-founded research directions or disciplinary growth points, promote disciplinary development, and promote breakthroughs in several important fields or scientific frontiers.

Key Program should reflect the principles of limited goals, limited scale, and prominent priorities, attach importance to interdisciplinary and infiltration, make effective use of the existing important scientific research bases of the state and departments, and actively carry out substantial international cooperation and exchanges.

Applicants for Key Programs should meet the following qualifications:

(1) Have experience in undertaking basic research project;

(2) Hold a senior professional and technical position (title).

Postdoctoral researchers in the station, researchers who are studying for a postgraduate degree, or those who do not have a work unit or whose unit is not a registered host institution of NSFC, are not allowed to apply as applicants.

Each year, NSFC determines the research fields or research directions of Key Program, for which applications are accepted, and issue guidelines to guide applications. Applicants should write applications in accordance with the requirements of this Guide and the outline of Key Program application writing, condense scientific issues within the research field or research direction, determine the project name according to the research content, and avoid the project name covering the entire field or direction.

Grants of Key Program are generally undertaken by one host institution, and in case cooperative research is necessary, the number of cooperative research institutions shall not exceed two. The funding period is 5 years.

In 2024, a total of 745 grants of Key Program were funded, with a total direct cost of 1,679.7 million yuan and an average direct cost of about 2.2546 million yuan per project.

For the research fields or research directions funded by Key Program and related requirements, please refer to the introduction of each science department in this part.

Funding of Key Program Projects in 2024

Unit: 10,000 yuan

Departments	No. of applications	Awards			
		No. of Awards	Funding for direct costs	Average funding for direct costs	Share of NSFC total funding for direct costs (%)
Mathematical and Physical Sciences	561	91	20 930	230.00	12.46
Chemical Sciences	321	67	15 410	230.00	9.17
Life Sciences	747	110	24150	219.55	14.38
Earth Sciences	659	108	24 840	230.00	14.79
Engineering and Materials Sciences	769	105	24 150	230.00	14.38
Information Sciences	433	105	24 1500	230.00	15.38
Management Sciences	181	32	5 140	160.63	3.06
Health Sciences	843	127	29 200	229.92	17.38
Total or average	181	**745**	**167 970**	**225.46**	**100.00**

Department of Mathematical and Physical Sciences

In 2024, the Department announced 132 areas for Key Programs, and received 561 applications. We funded 91 projects with direct cost funding of 209.30 million yuan. The average funding of direct cost was 2.3 million yuan per project, and the success rate is 16.22%.

In 2025, the Department plans to fund about 90 Key Program projects. The average direct cost funding will be about 2 to 3 million yuan per project. The funding will be 5 years. Please provide with the proper application code when applying.

Please give the proposed research directions in the “Annotations” column of the application form, otherwise the application will be returned without review.

In 2025, the main research directions are as follows:

1. Frontier problems in mathematical physical logic (A01, A02)
2. Key problems in number theory (A01, A02, A04)
3. Group and algebraic structure and representation (A01, A02)
4. Lee theory and quantum group (A01, A02)
5. Key problems in algebraic geometry (A01, A02)
6. Total differential geometry (A01, A02)
7. Geometry analysis and applications (A01-A03)
8. Modern method in mathematical physics (A01-A03)
9. Geometric topology and algebraic topology and their applications (A01, A02)
10. Complex analysis, complex dynamical system and algebraic dynamic system (A02, A03)
11. Multi complex variable and complex geometry (A01, A02)
12. Fractal geometry and analysis (A01-A03)
13. Theory and application of harmonic analysis (A02, A03)

14. Non exchange analysis and nonlinear functional analysis (A02, A03)
15. Operator theory and operator algebra and its applications (A01, A02)
16. Frontier problems in probability theory (A02, A03, A06)
17. Theory and applications of stochastic equations (A02, A03, A06)
18. Frontier problems in dynamical system (A02, A03)
19. Qualitative theory of differential equation (A02, A03)
20. Nonlinear partial differential equation (A02, A03)
21. Applied partial differential equation (A02, A03)
22. Infinite dimensional dynamic system and integrable system (A01-A03)
23. Statistic analysis of complex data (A04)
24. Statistical basis and method of big data (A04)
25. Optimization theory and method driven by model or data (A04)
26. Optimized modeling and efficient algorithm for large scale problems (A04)
27. Theory and application of combination mathematics (A04)
28. Key problem, algorithm and application of graph theory (A04)
29. Basic computational methods and theoretical analysis (A05)
30. Computable modeling and simulation (A05)
31. Problem or driven scientific and engineering computation (A05)
32. Mathematical model, algorithm and applications for industrial software (A04-A06)
33. Mathematical method in modern control theory (A06)
34. Mathematical theory and algorithm for quantum computation and quantum information processing (A01-A06)
35. Mathematical theory and algorithm for new generation of information technology (A04-A06)
36. Theory and method of uncertainty mathematics (A04-A06)
37. Key mathematical problems in economy and finance (A04-A06)
38. Mathematical theory and application in biology and medicine (A04-A06)
39. Mathematical theory and method of AI and data science (A01-A06)
40.Theory and method of AI assisted mathematical research(A01-A06)
41. Basic mathematics in modern cryptography (A01, A06)
42. Theory and method of computer mathematics (A04-A06)
43. Intelligent twins of end to cloud collaboration in gaming environment (A01-A06)
44.Basic theory and technological systems of credible intelligence (A01-A06)
45. Modeling, analysis and control of complex system dynamics (A07)
46. Nonlinear dynamic theory and experiment for high dimensional system (A07)
47. Vibration characteristics and control of complex structures and system (A07)
48. Dynamic design and system identification (A07)
49. Solid deformation and constitutive relations (A08)

50. Strength, failure and damage of materials and structure (A08)

51. Mechanical behavior of materials and structures in multi-field environment (A08)

52. Soft matter and flexible structure mechanics (A08)

53. Theory and design method for structural optimal design (A08)

54. Multi functional and integrated design and manufacture of materials and structures (A08)

55.Theory and method of physical mechanics (A08)

56. Unsteady complex flow mechanism and control (A09)

57. Aerodynamics of aircraft (A09)

58. Multi scale and multi physics gas dynamics (A09)

59. Hydro dynamics of marine vessels and structures (A09)

60. Theory and method of complex fluid and multi phase and multi interface flow (A09)

61. Bio mechanical problems in human health and medicine (A10)

62. Mechanical and biological problems of cells and tissues (A10)

63. Theory and method of bionic mechanics (A10)

64. Mechanism of energy release and damage mechanism of energy containing material explosion (A12)

65. Mechanical behavior of material and structure in dynamic loading (A12)

66. Rock mechanics in complex environments (A13)

67. New methods and technology in experimental mechanics (A07-A13)

68. New methods and software for computational mechanics (A07-A13)

69. Data driven theory and method of mechanics (A07-A13)

70. Fluid solid coupled mechanics (A07-A13)

71. Mechanical behavior of media and structure in extreme conditions (A07-A13)

72.Key mechanical problems in aerospace (A11)

73.Key mechanical problems in environment and catastrophe (A07-A13)

74. Key mechanical problems in high end equipment and advanced manufacturing (A07-A13)

75. Key mechanical problems in energy and environment areas (A07-A13)

76. Origin of the cosmos and nature of dark matter and dark energy (A1401)

77. Formation and evolution of large cosmos structure and galaxies (A1402, A1403)

78. Activities of super large mass black holes and active galaxies (A1404)

79. Formation, structure, and evolution of the Galaxy and local group of galaxies (A1405)

80. Formation, structure and evolution of stars and interstellar matters (A1501, A1502)

81. Physics of catastrophic eruption of stars, formation and evolution of dense

celestial body (A1503)

82. Fine structure of the sun and mechanism of corona heating (A1601)

83. Generation, storage and release of energy of the Solar magnetic field (A1602)

84. Formation, detection and dynamics of planetary system (A1701, A1702, A1703)

85. Spatial and temporal reference system, orbital dynamics and its applications (A1801-A1804)

86. Key technology of optical/infrared/ultraviolet instruments (A1901)

87. Key technology and method of radio/millimeter-wave/sub-millimeter wave (A1902)

88. High energy radiation and particle detection technology and method (A1903)

Big data, AI and numerical simulation technology and method (A1904)

90. Strong correlated system and superconductivity physics (A20, A24)

91. Topological quantum matter state and properties (A20)

92. Physics of confined quantum systems (A20, A24)

93. Quantum transportation and low power consumption quantum devices (A20)

94. Surface and interface and membrane physics (A20)

95. Physics of semiconductor materials and devices (A20)

96. Multi ferroic and magneto electric effect (A20)

97. Solid magnetism and device physics (A20)

98. Physics of soft matter and bio matters (A20)

99. method and software of computational solid state physics (A20)

100. Physical problems in energy conversion and storage (A20, A22)

101. New matter state and effect in extreme conditions (A20)

102. Optical detection and regulation of and condensed matters (A20, A22)

103. AI driven condensed matter physics (A20)

104. Atomic, molecular and cluster structures and dynamics (A21)

105. Atomic and molecular physical studies in extreme conditions (A21)

106. Regulation and quantum information of cold atoms and molecules (A21, A24)

107. Precision physical measurement based on atom and molecules (A21, A24)

108. Basis and applications of optical quantum information physics (A22, A24)

109. Nonlinear optics and spectral physics (A22)

110.Ultra fast and ultra strong optical physics and applications (A22)

111. Super high spatial temporal resolution optical measurement (A22, A24)

112. The interaction of light and matters in micro and nano scales (A22)

113. Physics and applications of optical field regulation (A22)

114. Acoustic propagation, inversion and control in complex media (A23)

115. Acoustic field and information processing in ocean (A23)

116. Acoustic sensing and acoustic devices for multi physical fields (A23)

117. New effect and regulation in open quantum system (A24)

118. Frontier problems in mathematical physics and basic theory of quantum physics (A25)

119. Basic problems in statistical physics and frontier areas of its interdisciplinary studies (A25)

120. Frontier problems in theory of gravitation and cosmology (A25)

121. Strong interaction and hadron physics (A26)

122. New method in quantum field, flavour physics and high precision measurement of standard models (A26)

123. Higgs physics and new physics (A26)

124. Dark matter, particle celestial physics and nuclear celestial physics (A26, A27)

125.Unique structure and reaction mechanism of nuclei (A27)

126.Heavy ion nuclear physics and laser nuclear physics (A27)

127.Quark gluon plasma and phase structure of nuclear matter (A27)

128. Accelerator physics and technology (A28)

129.Reactor physics and neutron technology (A28, A30)

130.Principle and technology of particle detection (A28)

131.Principle and technology of radiation detection (A28)

132. Method and technology of nuclear electronics (A28)

133. Magnetic confined fusion plasma physics and technology (A29)

134. Inertia confined fusion and laser plasma physics and technology(A29)

135. Low temperature plasma physics, diagnosis and applications (A29)

136. Key problems related to radiation physics and radiation effect and radiation protection (A30)

137. Advanced technologies and experimental methods of synchrotron radiation and free electron laser (A30)

138. Basis of nuclear technology application in new materials and energy areas (A30)

139. Basis of nuclear technology application in biomedical, agricultural and environmental areas (A30)

Department of Chemical Sciences

In 2024, the Department of Chemical Sciences funded 67 Key Program projects, with a direct cost of 154.1 million yuan. The average funding amount for direct cost is 2.3 million yuan per project for a period of 5 years. In 2025, the Department of Chemical Sciences issues guidelines for Key Program applications in 94 research fields. The average funding amount for direct cost is approximately 2.3 million yuan per project. In principle, no more than 2 projects will be funded in each field. To

further improve the level and quality of Key Program projects, research groups or teams with a good research foundation and a certain scale are encouraged to participate in the competition, and strong research collaboration is encouraged to apply for key projects in interdisciplinary fields.

Applicants shall select the specific research area in the "Annotations" column of the application form, otherwise the application will be returned without review.

Research areas for Key Program Projects funded by the Department of Chemical Sciences in 2025

1. New Methods/New Reagents/New Reactions in Inorganic Synthesis (B01)
2. New Methods/New Reagents/New Reactions in Organic Synthesis (B01)
3. New Methods/New Monomers/New Reactions in Polymer Synthesis (B01)
4. Precise Synthesis and Structure-Activity Relationship of Solid Materials (B01)
5. New Strategies for the Synthesis of Natural Products and Complex Drug Molecules (B01)
6. New Building Blocks, New Strategies and New Systems of Supramolecular Assembly (B01)
7. Polymer Synthesis with Controllable Chain Structure (B01)
8. Creation of Functional Molecules, Structures and Materials (B01)
9. Chemical Synthesis and Mechanisms under Extreme Conditions or External Field Regulation (B01)
10. Artificial Intelligence-Assisted Synthesis (B01)
11. Synthesis, Structure and Properties of Elemental Organic and Coordination Compounds (B01)
12. Organometallic and Small Molecule Catalysis (B01)
13. Synthetic Mechanisms: Characterization and Reactivity of Reactive Intermediates (B01)
14. Green and Sustainable Chemical Synthesis (B01)
15. Biosynthesis and Biomimetic Synthesis (B01)
16. Theoretical and Computational Studies of Catalysis and Surface/Interface Chemistry (B02)
17. In-situ Dynamic Studies of Catalysis and Surface/Interface Chemistry (B02)
18. Design and Construction of High-Performance Catalysts (B02)
19. Studies on Heterogeneous Catalytic Reactions Processes (B02)
20. Physicochemical Fundamentals of Surface/Interface Chemical Reactions (B02)
21. Colloid and Interface Physical Chemistry (B02)
22. Physicochemical Fundamentals of Soft Matter Systems (B02)
23. Physicochemical Fundamentals of Electrochemical Energy Storage (B02)
24. Electrocatalytic Substance Transformation or Energy Conversion (B02)
25. Physicochemical Fundamentals of Multi-Field Coupling Processes (B02)

26. Studies on Physicochemical Processes under Extreme Conditions (B02)
27. Electronic Structure Theory and Method (B03)
28. Chemical dynamics of Complex Molecular Systems (B03)
29. Theory and Simulation of Multiscale Systems (B03)
30. Aggregate Structure and Evolution Mechanism of Polymers (B03)
31. New Spectroscopic Method and Application (B03)
32. Machine Learning and Chemical Mechanism (B03)
33. Non-adiabatic dynamics (B03)
34. Non-equilibrium Experiment and Theory (B03)
35. Rheological and Mechanical Mechanism of Polymer Composites under Extreme Conditions (B03)
36. New Theories and Principles of Chemical Measurement Science (B04)
37. Chemical Measurements in Life and Living Organisms (B04)
38. Separation Analysis and Omics of Complex Systems (B04)
39. Chemical Measurement Methods for Energy and Materials (B04)
40. Micro/Nano Devices and Intelligent Sensing (B04)
41. Single-Molecule, Single-Particle, Single-Cell Measurements (B04)
42. Analysis, Early Warning and Tracing of Public Safety (B04)
43. Chemical Measurement Methods for Scientific Instruments (B04)
44. Chemical Measurement Data Analysis and Artificial Intelligence (B04)
45. Organic Optoelectronic Materials Chemistry (B05)
46. Biomedical Materials Chemistry (B05)
47. Special Polymer Materials Chemistry (B05)
48. Polymer Membrane Materials Chemistry (B05)
49. Energetic Materials Chemistry (B05)
50. Composite and Hybrid Functional Materials Chemistry (B05)
51. Low-Dimensional Functional Materials Chemistry (B05)
52. Inorganic Solid-state Functional Materials Chemistry (B05)
53. Biomimetic Materials Chemistry (B05)
54. Inorganic Molecular Crystalline Materials Chemistry (B05)
55. New Technologies and Methods for the Detection of Environmental Pollutants (B06)
56. Multi-medium Interface Behaviors and Migration and Transformation of Pollutants (B06)
57. Fundamental Research on Environmental Catalysis for Pollution Prevention and Control (B06)
58. Design and Application of Environmental Functional Materials (B06)
59. Pollution Processes and Principles of Green Remediation of Soil/ Groundwater (B06)
60. Treatment, Disposal and Resource Utilization of Solid Wastes (B06)
61. Environmental Exposure and Toxicological Effects of New Pollutants (B06)

62. Formation Mechanisms and Health Hazards of Air Pollution (B06)

63. Synergistic Mechanisms of Carbon Emission Reduction and Air Pollution Mitigation and Carbon Cycle Utilization (B06)

64. Interaction and Regulation Mechanisms between Microorganisms and Pollutants (B06)

65. Chemical Biology of Biomolecular Assembly and Condensates (B07)

66. Chemical Construction and Functional Regulation of Cell Communication (B07)

67. Discovery, Synthesis and Modification of Bioactive Molecules Based on the Intervention and Regulation of Biological Processes (B07)

68. Metabolic and Neurochemical Biology (B07)

69. Chemical Biology Targeting the Degradation of Biomacromolecules (B07)

70. Molecular Regulation of the Immune Process (B07)

71. Data-Driven Drug/Pesticide Discovery (B07)

72. Precise Chemical Regulation of Untargeted Proteins (B07)

73. Chemical Biology of Nucleic Acid Editing and Modification (B07)

74. In-situ Probes and Analysis of Biological Mechanisms (B07)

75. Mining of Chemical Engineering Basic Data and Artificial Intelligence (B08)

76. Interface Phenomena, Mechanisms and Regulation in Chemical Engineering Processes (B08)

77. Industrial Catalysts and New Catalytic Processes (B08)

78. Chemical Engineering Separation and Process Intensification (B08)

79. Key Basic Chemicals and High-End Special Chemicals (B08)

80. Chemical Engineering Basis of the Chip Manufacturing Process (B08)

81. New Chemical Engineering Processes for High-Energy Compounds (B08)

82. Chemical Engineering Basis for the Creation of New Drugs (Including Traditional Chinese Medicines) and Their Formulations (B08)

83. AI-Driven Design of New Chemical Engineering Materials and Processes (B08)

84. Photo/Electrochemical Reaction Engineering (B08)

85. Chemical Engineering Basis of Large-Scale Energy Storage and Energy Conversion (B08)

86. Chemical Engineering Basis for the Efficient Conversion of Biomass (B08)

87. Synthetic Biotechnology and Green Biological Manufacturing (B08)

88. Chemical Engineering Basis for the Efficient and Circular Utilization of Resources (B08)

89. Carbon Footprint and Chemical Engineering in the Ecological Environment (B08)

90. Resource Conversion Chemistry of Carbon Dioxide (B09)

91. Efficient Photo-/Electro-Chemical Production and Storage of Green

Hydrogen (B09)

92. High-specific-Energy Lithium Metal Secondary Batteries (B09)

93. Materials Chemistry of High-Efficiency Photovoltaic Cell (B09)

94. In-situ Analysis under the Working Conditions for Energy Conversion and Storage (B09)

Department of Life Sciences

The research fields funded by the Department of Life Sciences cover biology, agricultural science, ecology and population health. According to the funding principle of "limited goals, limited scale and prominent focus" for Key Program projects, Department of Life Sciences will focus on the development layout of —focusing on the forefront of scientific development, focusing on major national needs, striving to promote disruptive innovation, and solving the core scientific problems behind the demands and key technologies to carry out the project approval and funding works. In 2024, Department of Life Sciences received 747 applications of Key Program projects, 745 of which were eligible, and 110 applications were finally funded with an average funding amount of 2.2 million yuan per project.

In 2025, a dual-track model will be adopted for the application of Key Program projects in Department of Life Sciences, namely, application based on "Designated Areas" and application based on "Macroscopic Areas". These Key Program projects will provide a total funding budget of 240 million yuan for direct cost with an average funding amount of 2.2 million yuan per project. The applicants should provide a reasonable funding budget based on their actual research needs.

To meet major national needs, and combine the disciplinary development strategies and priority funding directions, the Department of Life Sciences have identified 47 designated areas for the Key Program projects in 2025through extensive research and experts consultation. The applicants should decide on their project title, research contents and research plans based on these designated areas. The applicants should select a research area from the 47 designated areas for the application of Key Program in the column of "Annotations", and select the corresponding application code indicated in the list as application code 1.

To promptly support the major national needs and solve the key scientific questions at the world’s science frontiers, the Department of Life Sciences set up "Macroscopic Areas" for the application of Key Program in 2025. The applications for this track of Key Program should meet the following requirements: (1) the applicant has made significant progress in their previous researches, the further research works are in the urgent needs of Key Program funding but the research contents are not in the funding scope of designated areas for the Key Program this year; (2) the research content belongs to the new frontiers of science or new

disciplinary developing points but is not in the funding scope of designated areas for the Key Program this year, the applicant has very good working foundations in this field and is in the urgent needs of high-impact funding support to carry out further in-depth researches. Applicants can autonomously choose their own research direction to apply for Key Program, and select "Macroscopic Areas" for Key Program application in the column of "Annotations", with an application code that they freely choose. Except for the writing of application following the regular requirements, this kind of applications need to add a "Explanation about Previous Significant Innovative Progresses" part (approximately 800 characters) before the "Justification for Proposed Research" in the main body of the application form, this part should emphasize the reasons for applying Key Program, significant innovative progresses closely related to this application, relevant work foundations and published papers in important international academic journals.

Applicants should carefully read the application requirements, special notes and funding plans as listed in the "Guide" from Department of Life Sciences, and apply for the Key Program according to the requirements of this "Guide". Notice for applicants:

(1) The designated areas of Key Program projects are closely related to the funding scope of the discipline. The relevant requirements of Department of Life Sciences, as well as its scientific divisions and disciplines in the "Funding Areas and Precautions" also apply to Key Program projects.

(2) To apply for Key Program projects based on designated areas, please determine the research topic and write the application refer to the designated areas for Key Program. The applicants must select the title of designated areas they applied in the column of "Annotations", and accurately select a corresponding code indicated in the designated areas in the column of "application code 1".

(3) The principal investigators that have been supported by program of high intensity such as Key Program, Key International (Regional) Joint Research Program, Major Program, Key Support Project of Major Research Plan, Key Support Project of Programs of Joint Funds, Special Fund for Research on National Major Research Instruments, etc. in 2024, and for those who apply for projects that showing overlapping research contents with their other ongoing national science and technology plans, will not be funded in principle for Key Program projects in 2025.

Special notice for applicants: in view of the issues that have arisen in the previous Key Program project applications, proposals with one of the following circumstances will be returned without review.

(1) The application that is inconsistent with the relevant requirements of Department of Life Sciences, as well as its scientific divisions and disciplines in the "Funding Areas and Precautions";

(2) The application based on "Designated Areas" that fails to indicate the title of designated research areas in the column of "Annotations" on the basic information

table in main body of the application text, or fails to be marked by the designated application code as required;

(3) The application based on "Designated Areas" that specifies the title of designated area in the column of "Annotations", but the actual research contents do not match the scope of funding;

(4) The application based on "Macroscopic Areas" that fails to be marked as "Macroscopic Areas" in the column of "Annotations", or without the "Explanation about Previous Significant Innovative Progresses" part with approximately 800 characters as required;

(5) The application without the electronic version of the PI's representative publications as required by the filling instructions and writing outlines of Key Program application;

(6) The applicant who is still working abroad and cannot guarantee to devote most of their time and energy to the research works in China.

In 2025, the main research directions are as follows:

1. Adaptation and Evolutionary Mechanisms of Extremophiles (C01)

2. Interactions between Pathogenic Microorganisms and their Host (C01)

3. Mechanisms of Plant Adaptation and Evolution in Extreme Environments (C02)

4. Basis of Cell Fate Determination and Development in Plants (C02)

5. Responses of Natural and Urban Ecosystems to Global Change (C03)

6. Basic Ecological Issues of Major Conservation and Restoration Projects (C03)

7. Evolution and Adaptation of Important Animal Traits (C04)

8. Animal Conservation and Sustainable Utilization (C0405)

9. Dynamic Process Characterization , Mechanistic Analysis of Biological Functional Molecules (C05)

10. Generation and Regulation of Biological Information Flow in Important Life Activities (C05)

11. Adaptation and Feedback Mechanisms of Organisms in Extreme Environments (C05)

12. Development of Novel AI Algorithms Based on Intrinsic Features of Life-Omics Big Data and Deciphering Biological Principles (C06)

13. Identification, Function and Mechanisms of Novel Genetic and Epigenetic Regulators (C06)

14. Unified Characterization and Deciphering of Intrinsic "Sequence-Structure-Function" Principles in Biomacromolecules (C06)

15. Novel Mesoscopic Cell Biology Technologies and Multicellular Functional Analysis (C0704)

16. Mechanisms and Therapeutic Interventions of Organelle Homeostasis Dysregulation in Major Diseases (C0707)

17. Intercellular Communication, Regulation, and Cellular Tissue Networks

(C0709)

18. Regulatory Mechanisms of Immune Cell Development, Differentiation, and Functional Fate (C08)

19. Multi-Organ, Multi-System Regulatory Mechanisms and Intervention Strategies of Immune Response(C08)

20. Neural Mechanisms of Environmental Sensing and Brain-Body Interactions (C09)

21. Molecular, Cellular, and Network Mechanisms of Neuropsychiatric Disorders and Therapeutic Targets (C09)

22. Psychological Processing and Neural Mechanisms of Human Social Cognition and Emotion(C09)

23. Novel Principles, Methods, and Technologies for Multi-Scale Biofabrication (C10)

24.Engineering Reconstruction of Tissue/Organ Structure and Function (C10)

25. Physiological and Pathological Regulatory Mechanisms of the Body Perceptions and Responses to Internal and External Environment Changes (C11)

26. Metabolic Regulation and Its Role in Aging and Disease Pathogenesis (C11)

27. Mechanisms of Non-Coding Sequences in Cell Fate Determination and Organogenesis (C12)

28. Metabolic Regulatory Mechanisms of Gametogenesis and Embryonic Development (C12)

29. Coupling Mechanisms of Key Agronomic Traits and Precision Breeding in Crops(C13)

30. Theoretical Basis of Crop Environmental Adaptation and Green-Efficient Production (C13)

31. Mechanism, Green Prevention and Control of Pests Caused Disasters in Crops (C14)

32. Regulatory Mechanisms of Crop-Multipest Interactions (C14)

33. Mechanisms and Regulation of Growth, Development, and Key Trait Formation in Horticultural Crops (C15)

34. Efficient Utilization Mechanism and Regulation of Nutrient Resources (C15)

35. Early Warning, Evolution, and Control of Major Forest Disasters (C16)

36. Grassland Degradation Restoration and Sustainable Management (C22)

37. Biological Basis of Large Animal Breeding (C17)

38. Precision Nutrition and Efficient Feed Utilization in Livestock and Poultry (C17)

39. Pathogenic Characteristics, Pathogenesis, and Immunity of Important Livestock and Poultry Diseases, and Zoonoses (C18)

40. Occurrence and Prevention of Important Diseases in Livestock and Poultry (C18)

41. Biological Basis and Regulation of Unique Traits in Aquaculture Species

(C19)

42. Occurrence, Prevention and Control Mechanism of Important Diseases in Aquaculture Organisms (C19)

43. Regulatory Mechanism of Green Food Processing, Biological Manufacturing and Preservation (C20)

44. Food Safety Detection, Control, and Mechanisms of Nutrition, Quality Formationl (C20)

45. AI-Based Analysis of Life Phenomena (C21)

46. Precision Design, Engineering, and Construction of Living Systems (C21)

47. Detection, Analysis, and Manipulation of in Vivo Biomolecular Events (C21)

Department of Earth Sciences

Earth science is a fundamental discipline dedicated to understanding the planetary Earth system. It encompasses Geography, Geology, Geochemistry, Geophysics and Space Physics, Atmospheric Science, Marine Science, Environmental Geoscience, and other related interdisciplinary fields. The discipline primarily investigates various phenomena, processes, and interactions, as well as changes and causal relationships occurring within the planetary Earth system. It provides scientific and technological support for addressing key issues such as resource supply, environmental protection, and disaster prevention and mitigation. Innovative research in Earth sciences continually advances our understanding of the planetary Earth system and enriches the knowledge hierarchy concerning the origin and evolution of the Earth and other planets. Scientists not only from various branches of Earth sciences but also from mathematics, physics, chemistry, biology, medicine, materials science and engineering, information science, and management science are encouraged to jointly apply for Key Programs supported by the Department of Earth Sciences. Applicants should also take note of and correctly select application codes for interdisciplinary research when completing the application form.

Proposals must clearly state their relevance and academic contributions to the specified priority themes. To avoid duplicate funding, applicants should clearly explain the relationship and differences between the submitted proposal and any related projects funded by other national agencies.

Each priority area within the Department of Earth Sciences emphasizes cross-disciplinary collaboration and integration beyond the boundaries of traditional fields. Key Program topics are not limited to conventional disciplines, and applicants should select the appropriate application code based on their specific research theme.

In 2024, the Department of Earth Sciences received 659 Key Program proposals,

of which 108 were funded. The total funding amount for direct cost reached 248.40 million yuan, with an average of 2.30 million yuan per project. The funding period is five years.

In 2025, the Department of Earth Sciences has identified eight priority fields for the Key Program:

(1) New techniques and methods of Earth and planet research;

(2) Habitability and Evolution of the Earth and Planets

(3) Deep Earth processes and dynamics

(4) Ocean processes and polar environment

(5) Earth system processes and global change

(6) Weather, climate, and associated sustainable development

(7) Human activities and environment

(8) Formation mechanisms of mineral and energy resources and their supply potential

In the "Annotations" section of the proposal, applicants must select one appropriate field from the above eight fields using the pull-down menu. Proposals with missing or incorrect annotations will be returned without review.

Applicants may determine the project title, research content, and research plan independently based on any of the research directions under the Key Program priority fields, by thoroughly reviewing previous work around the world, identifying potential breakthrough points, and clarifying approaches to achieve such breakthroughs. The main text of the proposal should clearly elaborate on the relationship between the proposed project and the selected research direction.

1. New techniques and methods of Earth and planet research

Scientific objectives: Towards technological breakthroughs in the observation of key processes or key components of the Earth and the scientific frontiers of planetary exploration, encourage the integration of fundamental theories in mathematics, physics, and chemistry with emerging technologies such as artificial intelligence; develop relevant innovative theories, and novel techniques including experimentation and analysis, observation and information extraction, as well as simulation and prediction; promote the innovation of remote sensing, in-situ observation, and simulation and prediction with the Earth or other planetary bodies as targets; facilitate the integrated application of new technologies and methods from microscopic processes to macroscopic features; stimulate the establishment of a data–model–knowledge-driven scientific research system, and lead the comprehensive innovation of multi-sphere, multi-scale, quantitative, and integrated research approaches for the Earth system.

Preferred research themes in this field:

(1) New theories, techniques, and methods of Earth observation, lunar and planetary exploration, and interplanetary space exploration;

(2) New observation methods, detection techniques, and equipment targeting deep space, deep earth, deep time, deep ocean, habitable Earth strategy, and sustainable development;

(3) New techniques and methods for analyzing the material composition and structure of the Earth, planets, and interplanetary space;

(4) Methods of assimilation, fusion, analysis, and integration techniques for spatio-temporal big data;

(5) Establishment and key techniques of Earth observation system and multi-sources data fusion platform;

(6) New techniques and methods for modeling and predicting the Earth system and multi-sphere coupling processes.

2. Habitability and Evolution of the Earth and other Planets

The scientific objectives of this field are to study the transportation, conversion, coupled evolution processes of the matter and energy on the Earth and other planets, as well as multi-layer systems, to explore the origin and evolution of life, to understand the formation and evolutionary processes of the habitable environments of the Earth and other planets. The evolution of life on the Earth is closely related to the change of environment, and the habitability of the Earth is closely related to its multi-layer interaction and human activities. It is important to understand the reciprocal feed-back process between the Earth habitability and the evolution of the Earth life and environment from the perspective of multidisciplinary integration.

Preferred research themes in this field:

(1) Origin and evolution of the Sun and planets;

(2) Solar-Terrestrial space physics and space weather;

(3) Planetary and interplanetary space environment and variation;

(4) Earth's and planetary magnetic fields, atmospheric evolution, and their effects on habitability;

(5) Key geological processes and the life habitability evolution of the Earth and other planets;

(6) Earth and planetary environments and the evolution of life;

(7) Impact of human activities on the habitability of the Earth.

3. Deep Earth processes and dynamics

Scientific objectives: Adhering to Earth planetary science concept, obtaining the information of Earth interior material, structure and dynamics by applying multidisciplinary means of geology, geophysics and geochemistry; Deciphering the interactions among the internal spheres of the Earth by studying the multiscale running laws of solid-Earth; Exploring the coupling between deep Earth and surficial processes to promote development and innovation in solid Earth science.

Preferred research themes in this field:

(1) Deep architectures and dynamics of typical regions and global scale;

(2) Comparison and interaction between Earth and terrestrial planets;

(3) Early Earth evolution, the beginning of plate tectonic system and the formation, growth and reconstruction of continents;

(4) Process and kinetics of continental polymerization and lysis;

(5) Deep process and material cycling and their effects on resource and environment;

(6) Plate subduction, mantle plume and the interactions among Earth's multiple spheres;

(7) Multiple-scale geodynamic experiment and simulation;

(8) Earthquakes, volcanic and geotherms, and deep-shallow coupling mechanisms;

(9) Active tectonics and tectonic geomorphology.

4. Ocean Processes and Polar Environment

Scientific goals in this field: Constructing a theoretical framework for multi-scale motions in the ocean, revealing the mechanisms of the material-energy cycle in multi-layers of the ocean, clarifying the interaction mechanisms of ocean dynamics with biological and chemical processes and the ocean floor evolution, and exploring the regulation mechanisms relating to the variations of the Earth system, especially in the deep sea, polar regions, and land-sea interaction zone, revealing the formation and evolution mechanisms of the oceanic lithosphere from nascent to extinction, and providing scientific and technological support for sea-land coordination, blue economy, marine sustainable development, and deep sea and polar strategies.

Preferred research themes in this field:

(1) Ocean dynamics and its coupling with biogeochemical and ecological processes, including the study of observation, mechanism, and simulation prediction;

(2) Changes in the polar environment and multi-layer interaction;

(3) Deep sea fluid-solid coupling, material energy cycle, and environmental resource effects;

(4) High and low latitude ocean processes, sea-land-atmosphere interactions, and their driving and responses to global change;

(5) Multi-interface coupling process and sustainable development in offshore and coastal zones;

(6) Mechanisms for the formation and maintenance of marine ecosystems and biodiversity;

(7) Linkage effects between high-latitude and alpine climate and ecological environment changes;

(8) Evolution mechanism of the oceanic lithosphere and its resource and environmental effects.

5. Earth system processes and global change

The scientific objectives: The evolution and operation laws of the different spheres need to be explored associated with the Earth surface system at diverse spatio-temporal scales, to understand the co-evolution and coupling relationship among the

biosphere, hydrosphere, cryosphere, atmosphere, lithosphere and anthroposphere of the Earth surface, thereby, to reveal the impacts of the Earth system evolution on the resources and environment; and to comprehend the interactions of the Earth surface processes and climate change with the development of the Earth's life and human society, thus providing key scientific evidence and theoretical support for the future prediction of the Earth surface processes, biodiversity, resources and environment, and environmental change trends.

This field plans to fund 2-3 projects for each of the following 6 main research themes. Applicants should clearly articulate the relevance of their project proposal to one of the following research directions:

(1) Interactions among the Earth's multiple spheres and the evolution mechanism of Earth surface processes;

(2) Response mechanisms and impact assessment of the Earth's surface system to global change (extreme events);

(3) Coupling mechanisms and processes of the water cycle with key elemental (carbon, nitrogen, phosphorus) cycles;

(4) Local and telecoupling effects and system resilience in human-environment systems;

(5) Dynamics of strategic resource flows and geopolitical security risk assessment under global change;

(6) Impacts of global change on regional ecosystems and human health.

6. Weather, climate, and associated sustainable development

By investigating the physical, chemical and dynamic processes in the atmosphere and their interactions with other spheres, this direction aims to reveal the principles and mechanisms of the evolution of and variations in weather, climate, and the atmospheric environment; to integrate dynamic numerical forecasting with artificial intelligence technology; to develop high-resolution numerical models and observational techniques; and to improve the theories and technologies for forecasting and predicting weather, climate, atmospheric environment, and especially the extreme disastrous events; to elucidate the impact, mitigation and adaptation of extreme weather events and climate change by focusing on national needs of people's livelihood and sustainable development, thus raising climate security thresholds, enhancing our capabilities in disaster prevention and adaptation to global climate changes and providing the scientific and technological basis for the safety of people's lives and property and the sustainable development of social economy.

Preferred research themes in this field:

(1) Mechanisms, forecasting, and prediction theories and technologies for weather, climate, and atmospheric environmental variations;

(2) Physical and chemical processes in the atmosphere and the mechanisms underlying their interactions;

(3) Biogeochemical processes and weather/climate;

(4) Multi-spheres coupling and evolution mechanism of the earth's climate system;

(5) Research and development of atmospheric models, Earth system models and artificial intelligence models;

(6) Atmospheric environment, weather, climate change, and its health effects;

(7) Impacts, mitigation and adaptation of extreme weather and climate change;

(8) Formation mechanism, detection and prediction method of middle and upper atmospheric turbulence.

7. Human activities and the environment

The scientific goals in this area are: to reveal the evolution processes and the influencing factors of environmental geosciences, to clarify the interference and transformation effects of human activities on environmental elements such as water, soil, air, and surface rock in the complex human-earth system, and to provide theoretical support for understanding the formation mechanism of earth surface environmental habitability and relationship between diverse factors.

Preferred research themes in this field:

(1) Trans-media processes, health effects, and regulation of regional environmental pollution;

(2) Mechanism of soil degradation and restoration;

(3) Disaster-causing mechanism and risk prevention and control of major engineering geological disasters;

(4) Interaction processes, coupling mechanisms, and environmental effects of human-earth system;

(5) Multi-sphere and multi-factor coupling mechanism and environmental quality evolution.

8. Formation mechanisms of mineral and energy resources and their supply potential

Scientific objectives of this field: Aiming at achieving national resource and energy security and supporting high-quality development, this field focuses on fundamental, applied, and frontier scientific issues related to resource and energy strategic reserve bases, secure supply, and supply chains. It emphasizes theoretical and experimental research on efficient exploration of conventional oil and gas, prediction of unconventional oil and gas resources, and enrichment mechanisms of solid mineral resources, thereby strengthening the foundation for China’s independent scientific and technological innovation in the resource and energy sectors.

Preferred research themes in this field:

(1) Resource and energy effects related to inter-sphere interactions and major geological events;

(2) Formation mechanisms of solid mineral resources;

(3) Accumulation mechanisms of fossil fuels;

(4) Mineralization and accumulation mechanisms and exploration and mining

technology of submarine resource and energy;

(5) Formation and distribution of new energy resources;

(6) Theories and technological methods for resource and energy exploration;

(7) Innovative techniques and methods for dating and tracing mineralization and resource accumulation.

Department of Engineering and Material Sciences

In 2025, the Department of Engineering and Material Sciences (DEMS) plans to prioritize 14 funding areas for Key Program in engineering, materials, and the interdisciplinary areas of engineering and materials.

In 2024, DEMS received 769 proposals for Key Program, among which 105 were granted. The total direct cost funding was to 241.50 million yuan, with an average funding amount of 2.3 million yuan per project. In 2025, DEMS intends to support approximately 110 projects across 14 areas, with an average funding amount of 3 million yuan per project and a period of five years.

The 14 funding areas for DEMS's Key Program in 2025 are as follows:

(1) Fundamentals of design, preparation, and application of metallic materials (E01);

(2) Design, preparation and application of inorganic nonmetallic materials (E02);

(3) Design, preparation and application of organic polymer materials (E03);

(4) Safe and high-efficiency mining and resource green processing and utilization (E04);

(5) Scientific challenges in mechanical design, manufacturing and service (E05);

(6) Engineering thermophysics and energy utilization (E06);

(7) Scientific fundamentals and key technologies of electrical engineering (E07);

(8) Green architecture and high-performance civil engineering structures (E08);

(9) Key scientific research issues for hydro-science and hydraulic engineering (E09);

(10) Environmental engineering science fundamentals and key technologies (E10);

(11) Advanced equipment and cutting-edge technologies for ocean engineering (E11);

(12) Intelligent transportation and vehicle engineering (E12);

(13) New conceptual materials, material commonalities, and engineering intersection (E13);

(14) Common software support platform in engineering and material fields (E01~E13).

Notes:

Applicants are required to select a specific research area of the Key

Program in the pull-down menu of the "Annotations" section. Applications that do not include a specific research area or that specify an incorrect one will be returned without review.

Applicants can determine project titles, research contents, and research plans based on the specific research area within the funding fields of the Key Program. The corresponding first-tier or second-tier application code for the funding areas of the Key Program, which includes the specific research area, must be accurately selected in the "Application Code 1" column. For example, if "2.1 Exploring Novel Theories, Technologies, Systems, and Effects of Cutting-edge and Interdisciplinary Inorganic Nonmetallic Materials" is selected in the "Annotations" section, one should then choose E02 or a second-tier application code of E02 in "Application Code 1". "Application Code 2" can be selected as additional information if needed.

Key Program project areas funded by the Department in 2025 are as follows:

1. Fundamentals of Design, Preparation, and Application of Metallic Materials (E01)

Key research directions to be funded under this area:

1.1 Critical issues in the design, preparation, processing, service performance, and applications of ferrous and nonferrous metallic materials;

1.2 High-temperature alloys, intermetallics, and metal-matrix composites;

1.3 Key challenges in enhancing the properties of metallic structural materials;

1.4 Low-dimensional and metastable metallic materials;

1.5 Novel strategies for performance regulation and multifunctional coupling in metallic functional materials;

1.6 Metallic biomaterials, smart materials, and bioinspired materials;

1.7 Structural characterization, surfaces, and interfaces of metallic materials;

1.8 Fundamental research on metallic materials addressing national strategic priorities;

1.9 Exploration of new theories, technologies, and effects in metallic materials.

2. Design, preparation and application fundamentals of inorganic non-metallic materials (E02)

Key research areas to be supported include:

2.1 Original research in the frontier intersection of inorganic non-metallic materials;

2.2 Thermodynamic and kinetic studies on the structure and property regulation of inorganic non-metallic materials;

2.3 Research on inorganic non-metallic materials driven by artificial intelligence;

2.4 Research on the preparation or service of inorganic non-metallic materials in extreme environments;

2.5 Research on the multifunction integration and intelligentization of inorganic non-metallic materials and devices;

2.6 Research on inorganic non-metallic materials towards the strategies of carbon peaking and carbon neutrality;

2.7 Research on inorganic non-metallic materials for life and health;

2.8 Applied fundamental research on inorganic non-metallic materials for the key strategic fields of integrated circuits, aerospace, etc;

2.9 Applied basic research on the green design, preparation and recycling of inorganic non-metallic materials.

3. Design, preparation, and application of organic polymer materials (E03)

Key research areas to be supported include:

3.1 New synthetic methods and principles of polymer materials;

3.2 Aggregated structure and properties of polymer materials;

3.3 New theories, methods, and technologies for the processing (including micro -nano processing and additive manufacturing) of polymer materials;

3.4 High-performance enhancement of general polymer materials;

3.5 Organic polymer composite materials;

3.6 Eco- and environmentally friendly polymer materials;

3.7 Intelligent organic polymer materials;

3.8 Biomedical organic polymer materials;

3.9 Optoelectronic organic polymer materials and devices;

3.10 Organic polymer materials for major national needs.

4. Secure and high-efficiency mining and resource green processing and utilization (E04)

Key research areas to be supported include:

4.1 Fundamental scientific issues for achieving high-efficiency and green drilling and extraction in deep strata, deep sea, and unconventional oil and natural gas resources;

4.2 Fundamental scientific issues for carbon sequestration and enhanced oil recovery;

4.3 Key scientific issues for the safety and reliability of oil and gas storage and transportation;

4.4 Safe, efficient and intelligent collaborative exploitation theory and key technology of deep strategic mineral resources;

4.5 Theory and key technology for the mine rehabilitation, ecological treatment and utilization of solid wastes;

4.6 Theory and methods for the accurate pre-control of industrial production process safety and public safety;

4.7 Green separation and process intensification of strategic mineral resources;

4.8 New process and technology for low-carbon iron and steel metallurgy and relevant basic green and environmental issues;

4.9 New theory and technology for the efficient extraction and cyclic utilization of unconventional complex metallic resources;

4.10 New technology for high-purity metals and alloys smelting and shaping;

4.11 Fundamental research on the materials processing technology of short process, composite forming and intelligent processing;

4.12 Scientific foundations and key technologies for high-quality utilization of recycled metallic materials;

4.13 Big data and element behaviors of metallurgical process (material flow, energy flow, information flow).

5. Scientific challenges in mechanical design, manufacturing and service (E05)

Key research areas to be supported include:

5.1 New theories and methods of performance-driven mechanism design;

5.2 Design and manufacturing of high-performance drive transmission systems and new types of basic components;

5.3 Dynamics modeling, design, simulation, and control of mechanical systems and equipment;

5.4 Reliability design of mechanical structures and electromechanical equipment serving under extreme environments;

5.5 Mechanical and tribological behaviors of complex mechanical surfaces/ interfaces and their regulation;

5.6 Intelligent design theories and methods;

5.7 Bionic design and biofabrication theories and methods;

5.8 Theories and methods for high-precision and high-performance forming manufacturing ;

5.9 Theories and methods for ultra-precision, ultrahigh-speed, and high-energy field machining;

5.10 Processes, equipment, and systems for green and intelligent manufacturing;

5.11 New principles and methods for multi-dimensional and multi-parameter sensing and measurement;

5.12 Principles, methods and systems for micro/nano manufacturing;

5.13 Theories and technologies for atomic-level manufacturing;

5.14 Visual-tactile fusion sensing and high dynamic walking control of humanoid robot.

6. Engineering thermophysics and energy utilization (E06)

Key research areas to be supported include:

6.1 Analysis, control and optimization of low carbon energy system;

6.2 Power and fluid mechanical energy work conversion, flow mechanisms and flow control;

6.3 Fundamental of heat and mass transfer in energy conversion and utilization;

6.4 Fuel combustion theory, the mechanism of pollution control, and new

combustion techniques;

6.5 Fundament of multi-phase flow in energy and power systems;

6.6 Measurement principles and methods for complex thermophysical fields;

6.7 New energy and renewable energy utilization;

6.8 Technology of energy storage and hydrogen energy.

7. Scientific fundamentals and key technologies of electrical engineering (E07)

Key research areas to be supported include:

7.1 Common fundamentals and new technologies of electrical engineering, such as electromagnetism and plasma (including sensing and testing, multi-field coupling, digital twin, new types of power generation, power transmission, discharge plasma and its application);

7.2 Electrical materials, devices and equipment;

7.3 Smart grid and integrated energy;

7.4 Electromechanical energy conversion and electric drive;

7.5 Electric energy conversion and control;

7.6 Electric energy storage and its application;

7.7 Bio-electromagnetic technology.

8. Green Architecture and High-Performance Civil Engineering Structures (E08)

Key research areas to be supported include:

8.1 Theory and Methods for Sustainable Architecture Design;

8.2 Theory and Methods for Urban-Rural Space and Landscape Ecology Planning;

8.3 Fundamental Theory and Key Technology for Low-carbon Healthy Architecture;

8.4 Civil Engineering Design and Construction in Complex and Harsh Environments;

8.5 High-Performance Civil Engineering Materials and Structures;

8.6 Fundamental Theory and Key Technology for Intelligent Civil Engineering Construction and Maintenance;

8.7 Service Safety and Performance Enhancement of Civil Engineering Infrastructure;

8.8 Fundamental Theory of Geotechnical Engineering under Complex Conditions;

8.9 Life-Cycle Design Theory and Disaster Prevention Technology of Road and Underground Engineering;

8.10 Multi-Hazard Effect, Disaster-Preventing Resilience Theory and Technology in Civil Engineering.

9. Key Scientific Research Issues for Hydro-science and Hydraulic Engineering (E09)

The main research directions to be funded in this discipline:

9.1 Hydrological-ecological processes in cold-arid region basins and modeling;

9.2 Processes and regulation of water-carbon cycling in agroecosystems;

9.3 Development and intelligent management for modern agricultural irrigation and drainage systems (Key Program Project Group);

9.4 Flow regulation and ecological impacts in basin water network systems;

9.5 Water quality evolution and ecosystem reconstruction in inter-basin water transfer projects;

9.6 Hydraulic safety control for navigation in contemporary canal systems;

9.7 Mechanisms and control of sediment-cavitation coupled abrasion in hydraulic machinery under complex conditions;

9.8 Hazard mitigation during construction of hydraulic tunnels and underground engineering under extreme or complex environments;

9.9 Hazard formation and resilience enhancement of long-serving embankments or dams;

9.10 Fundamental theories for interdisciplinary integration of artificial intelligence and hydraulic engineering.

10. Environmental engineering science fundamentals and key technologies (E10)

Key research areas to be supported include:

10.1 Low-carbon water treatment and safety assurance of water quality;

10.2 Sustainable urban and rural water systems construction and water ecological security;

10.3 Collaborative reduction air pollutants and greenhouse gas emissions;

10.4 Containment of pollution and health risks in urban built environment;

10.5 Safe disposal and high-value utilization of solid waste;

10.6 Green restoration of contaminated sites;

10.7 Synergetic pollution control and carbon reduction in key industries;

10.8 Metabolic processes simulation and ecological risk prevention and control in urban-rural systems;

10.9 Regional environmental pollution control and ecological integrity remediation.

11. Advanced Equipment and Cutting-Edge Technologies for Ocean Engineering (E11)

This domain prioritizes funding for the following research directions:

11.1 Ocean environment dynamics and loads;

11.2 Ecological restoration, protection, and utilization of coastal zones;

11.3 Ocean disaster prevention and mitigation;

11.4 Efficient and economical utilization of seawater and ocean energy resources;

11.5 Safe and reliable development and exploitation of ocean resources;

11.6 Novel design theories and methodologies for ocean and polar development

equipment;

11.7 Green and intelligent ships and underwater vehicles;

11.8 Operation, maintenance, and safety assurance technologies for ocean infrastructure;

11.9 Marine environmental interactions and advanced detection/observation technologies;

11.10 Marine pollution prevention, control, and remediation technologies;

11.11 Smart navigation and intelligent maritime technologies.

12. Intelligent transportation and vehicle engineering (E12)

Key research areas to be supported include:

12.1 Configuration design and key technologies for long-term on-orbit reuse of large space transfer vehicles with in-orbit refueling;

12.2 Key evaluation and verification technology of automated driving technology/scenario construction and accelerated performance testing technologies for automated driving in ultra-heavy-duty transport;

12.3 Configuration design methods for mobile carrier platforms in field operations/underwater operations and the theory of multi-platform collaborative operations;

12.4 Chassis domain collaborative control technology for distributed electric-driven heavy-duty/oversized cargo transport vehicles;

12.5 Key technology for reconfigurable specialized vehicles considering complex transportation environment;

12.6 Design theories and methods for blended wing body aircraft;

12.7 Flight/propulsion matching and combined power variable flow path adaptive control methods for wide-range aerospace transport vehicles;

12.8 Theory and key technology for the comprehensive transportation multi-network integration;

12.9 Key technology for coordinated operation of hub airport traffic systems.

13. New conceptual materials, material commonalities, and engineering intersection

The main research directions to be funded in the field:

13.1 Key scientific issues of new materials in design, preparation, processing, characterization, etc.;

13.2 Original innovative new concept, new structure, and new performance materials;

13.3 New composite and hybrid materials;

13.4 Multi-functional integration of materials and devices for intelligence, informatization, and miniaturization;

13.5 Key new materials for high-end manufacturing and major national projects;

13.6 Key new materials for major national needs, including energy, environment, and life health;

13.7 Key new materials for the “Carbon Peaking and Carbon Neutrality Goals”.

14. Common software support platform in engineering and material fields (please select an appropriate first-tier application code of DEMS according to the relevant software application fields)

Scientific Objectives in This Field: The common software support platform aims to advance core software technologies in engineering and material fields, address fundamental scientific challenges and algorithms with commonness in industrial software development, and provide essential support for creating autonomous and controllable key tool software.

Key research areas to be supported include:

14.1 Fundamental theory, algorithm, and application of material property evolution under multi-physics;

14.2 Technology, solver, and software of hybrid modeling of data and mechanisms;

14.3 Core algorithm and application program of AI-enabled industrial software;

14.4 Efficient solving algorithm and program of geometric and physical core in industrial software;

14.5 Major demand-oriented application software in engineering and material fields.

Applicants with a background in engineering and material fields, as well as the capacity and experience in developing industrial software, are encouraged to spearhead an application that addresses the specific needs of specialized application fields. Applications that do not meet the criteria outlined in this Guide or do not demonstrate the autonomy and controllability of underlying codes and software features in engineering and materials fields will be returned without review. Applications solely focused on information science will not be supported.

Department of Information Sciences

In 2024, the Department announced 3 key project groups in 13 research directions, and 118 areas for the application of Key Programs. We received 433 applications, and funded 105 projects with direct cost funding total of 241.50 million yuan, and average direct cost funding was 2.3 million yuan per project.

In 2025, the Department will announce 1 group of key program projects in 4 priority directions, and 109 areas for Key Program projects. We plan to fund 105 Key Program projects with an average funding amount for direct cost of about 2.5 million yuan per project for 5 years. Applicant should follow the guidelines for research directions in relevant areas, in accordance to the trend of development in the research area and basis of their research team and the actual research object or process, propose key scientific problems and conduct systematic and in-depth theoretical

studies or experimental verification. Apart from high level papers, some research results should be verified in experimental system or in practical applications.

The deadline for proposing areas of Key Program for 2026 is April 30, 2025. Please see the department's website (https://www.nsfc.gov.cn/publish/portal0/tab1118/).

Priority areas (project groups) for 2025

Basic mathematical physics theory for artificial intelligence

Mathematical physics is the basis of artificial intelligence, and it plays an important role in the disciplinary development of AI. To provide strong support to AI applications, this project group focuses on the mathematical basis and physical mechanism of intelligence emergence, support research on the general theory and method of autonomous perception, dynamic learning and memory, advanced decision making, so as to promote interdisciplinary development of AI.

There are 4 research directions for this group of Key Program. Around 4 projects will be funded.

1) Physical mechanism of machine learning intelligence based on mathematical physical statistics and biological principles

2) Autonomous perception and interactive theory of embodied AI in open environment

3) Theory of ordinary differential equations of dynamic learning memory nerves

4) Theory of alignment cognition and credible decision making for large model of emotional values

Key Program project areas funded by the Department of Information Science in 2025

1. Mechanism and key technology for electro magnetic safety control of low altitude objects in complex environment (F0102)

2. Theory and technology wireless communication network with super high reliable time delays (F0103)

3. Theory and key technology for video network in wide range of space land integration (F0103)

4. Theory and method of low altitude internet of intelligence in limited spectrum resources (F0104)

5. Theory and method of holographic and highly efficient transmission of wireless data and energy (F0105)

6. Theory and technology of integration of communication and navigation signals for giant constellations (F0106)

7. Acquisition and transmission of dynamic underwater cloud data and reconstruct of scenarios (F0108)

8. Theory and application of optical exchange network of new large scale intelligent computing center (F0109)

9. Quantum key distribution protocol and its realization in non ideal conditions (F0110)

10. Theory and method of low altitude synaesthesia wide band array signals (F0111)

11. Method of imaging for wide band radar on satellite (F0112)

12. Method of constructing basic models of smart analysis of target using multi mode remote sensing image (F0113)

13. Smart computing method for the space remote sensing edge for event cognition(F0113)

14. Elastic PNT method for the merging of multi mode information based on non cooperative low orbit satellite (F0113)

15. Method of monitoring abnormalities based on multi physical field chip modules (F0114)

16. Underwater acoustic perception and smart analysis (F0115)

17. Electro magnetic detection and verification of non-contact high sensitivity vital signs(F0119)

18. Small electro magnetic integration and adjustable antenna of low loss hexaferrite (F0119)

19. Generation of man-made plasma cloud and mechanism of electromagnetic wave propagation for marine communication (F0119)

20. Mechanism of lightning damage and protection of antenna covers (F0119)

21. Re-configurable high precision photo electric computation (F0120)

22. Mechanism and measurement of noise generation above 300 GHz (F0120)

23. Key technology of real time high sensitivity reception of wide band microwave photons (F0121)

24. Enhanced far field electromagnetic wave sensing mechanism by singular point(F0122)

25. Studies on multi mode integrated two-directional interactive flexible brain machine interface(F0123)

26. Cancer multi-omics bio information technology and analysis(F0124)

27. Acquisition and analysis of intestinal tract microbe for major disease (F0124)

28. Modeling and processing of images of heart structure and function (F0125)

29. Theoretical analysis and optimization of SAT algorithm (F0201)

30. Basic theory and key technology of nerve symbol data base (F0202)

31. Theory and method of meta-model construction of operating system for smart manufacturing (F0202)

32. Key technology of generative security test of data base system(F0203)

33. Syntax embedded models for multi mode contents for network (F0210)

34. Unified programming model and optimal compilation for hetero chips (F0204)

35. Credible assessment of large model generated contents (F0205)

36. Design and analysis of ARX code architecture (F0206)

37. Key technology for smart operation of general smart computing network (F0207)

38. Self adaption theory and method for integration of perception and computing of intelligent internet of things(F0208)

39. Smart configuration of large model driven visual analysis system (F0209)

40. Representation and reconstruct of integrated perception and computing for deep space detection (F0210)

41. Theory and method of generation of real and natural long videos (F0210)

42. Key technology of content generation for growing social robots (F0211)

43. Key technology of federated smart computing for multi mode big data (F0212)

44. Theory and method for general characterization of graph and data based on metric space (F0212)

45. Smart design and optimization of new protein devices (F0213)

46. Smart analysis of digital dye and micro environment for cancer space-omics (F0213)

47. Approximation theory and efficient algorithm for deep neural network learning (F0601)

48. Studies on perception activated modeling and emergence mechanism for generative large language models (F0601)

49. Theory and method of sustained learning in large scale across mode pre-training models (F0603)

50. Verification of AI generated images (F0604)

51. Efficient and continued evolution of multi mode large models (F0604)

52. Mining and interpretation of TCM data based on main and collateral channels and pulse conditions (F0610)

53. Intelligent perception and block intervention of fake information in multi scenarios and environment (F0610)

54. Key theory and technology for immersed and fragmented learning for international Chinese learning (F0701)

55. Control, optimization and gaming for data security and delay guarantee (F0301)

56. Monitor and smart diagnosis of electrical and mechanical equipment in mining site and wells (F0301)

57. Evaluation and safety control for unmanned equipment groups conducting complicated missions (F0301)

58. Key control technology for solar cell calibration in near space(F0302)

59. Key control technology in signal detection process of sub-millimeter wave telescopes (F0302)

60. Credible transaction and smart decision making for electric hydrogen coupled energy systems (F0303)

61. Smart control of energy system in near space spacecraft (F0304)

62. Key technology of coordinated guidance of flight of unmanned boat and aircraft groups for large ships in complex water (F0304)

63. Smart configuration of nuclear acid aptamer for precise cancer treatment (F0305)

64. Smart evaluation of drug safety (F0305)

65. Studies on integrated sensor for monitoring damage caused by multi source pollutant in precise agriculture (F0306)

66. In situ test method and sensors for micro plastic pollutant in ground water system (F0306)

67. Studies on new types of optical angular rate sensors based on micro cavity on chips (F0307)

68. Smart coordinated control of distributed system for multi dimensional spacial and temporal complex tasks (F0308)

69. Performance evaluation and safety of process control in industrial internet environment (F0308)

70. Smart monitoring and control of batch fault tolerance for semiconductor manufacturing process (F0308)

71. Brain like smart decision making and guidance of bionic robots(F0309)

72. Smart evolution of unmanned groups on sea and air (F0309)

73. Autonomous control of robots in complex scenarios based on strengthened migrating learning (F0309)

74. Dynamic 3D sensing and flexible work control of hetero unmanned system (F0309)

75. Smart sensing and control of robots with autonomous transfer between water and land (F0309)

76. Autonomous coordinated anti interference control of unmanned aircraft in complex environment at low altitude (F0310)

77. Theory and key technology for smart coordinated control of complex dynamical systems (F0310)

78. Silicon based dynamic single photon total color night vision imaging sensor chips (F0402)

79. Silicon based solid laser radar chips for multi mode integrated detection and treatment (F0402)

80. Nearly zero power consumption high performance radio receiver chips (F0402)

81. Hydro acoustic communication sensor mode chips with self power supply

for monitor of radiation at sea (F0402)

82. High sensitivity super fast response ultraviolet photoelectric transistors (F0403)

83. High power silicon based laser devices on chips for large scale integration (F0403)

84. High frequency high voltage wide band gap semiconductor with integrated driver and control single power chips (F0404)

85. 10 Kv super high voltage Gallium nitrde power electronic materials and devices (F0404)

86. 3D hetero integration technology of wafer level gallium semiconductor radio devices (F0404)

87. Silicon based ferro electric effect transistor memory and wafer level integration (F0404)

88. Integrated chips for high speed single photon detection for satellite optical communications (F0409)

89. Large scale programmable photon brain like computing chips (F0501)

90. Studies on 3D imaging of coded aperture non interference digital holographic high temporal and spatial resolution (F0501)

91. Silicon based multi dimensional reusable chips for super large capacity of Pbit/s optical transmissions (F0502)

92. Studies on in situ sensing multi photoelectric detection chips (F0502)

93. Studies on technology of optical acoustic spectrum micro and nano sensing for marine gas monitoring (F0503)

94. Acquisition of 3D optical field video and remote transmission and display technology (F0503)

95. Photon devises based on hollow fibre (F0503)

96. Tetra hertz laser of wide band with continuous frequency regulation (F0504)

97. High precision measurement of inferred heat radiation spectrum of micro nano structural materials (F0504)

98. Generation and regulation of tetra hertz based on super fast non linear time variation effect (F0504)

99. Mechanism and regulation of multi dimensional temporal and spatial evolution of femto second laser (F0506)

100. Wide and deep compression of line width and wave length regulation of single frequency optical fiber laser (F0506)

101. Hetero integration of single chip for hydrogen sensing of laser Raman spectrum (F0507)

102. Key technology of computation optical EDA across macro and micro scales (F0508)

103. Overall view of imaging and information characterization of vegetation by multi mode computation of spectrum (F0510)

104. Multi dimensional and dynamic high resolution imaging of cloud structure by integration of multiple data (F0510)

105. Multi parameter nonlinear high resolution imaging of vector optical field for deep level bio tissue (F0511)

106. Optical and acoustic imaging of knee joint inflammation and noninvasive optical treatment (F0511)

107. High resolution imaging and total light image processing based on super structural surface (F0513)

108. Wide band tetra hertz phase array technology based on photonics(F0514)

109. Single photon detector of super high speed of 40 GHz for extremely low darkness counting chamber (F0515)

Department of Management Sciences

In 2024, the Department of Management Sciences received a total of 181 Key Program applications, and funded 32 projects. The average funding amount (direct cost) was 1.61 million yuan per project.

During the 14th Five-Year Plan period, the Department will release funding fields of Key Program annually. The Key Program should be focused on the following three aspects: (1) scientific frontier issues that can promote discipline development, obtain great innovative achievement, and generate international impacts; (2) important theoretical and application issues regarding economy development, society development, reform and opening-up, and the improvement of China‘s comprehensive competitiveness, which need to be urgently addressed, and are possible to be addressed; (3) systematic and in-depth innovative research, which explores management theories and laws for Chinese characteristic and has sound research background or good potential for discipline development.

The funding priority areas described in this *Guide* outline the main contents and scopes. Please note that the title of application is not required to be exactly the same as the areas of Key Program listed below. Applicants are required to possess solid research experiences and abilities in the areas that they are applying for. Applicants are encouraged to exploit their full advantages, present deep academic thoughts in their applications, make the research goals clear and concrete, emphasize the key points of research, focus on one or several key points of the research and actually address them, and achieve theoretical breakthroughs. In addition, applications are required to combine theories with practice, discover key scientific issues from important practical management issues from perspectives of China’s situations and the nation’s key demands, and conduct in-depth research, and try to provide new approaches to address practical management issues. Applicants should focus on scientific methodologies, emphasize the application of scientific approaches, and take

real data and actual cases as the fundamental information of their research.

Applicants who apply for Key Program of the Department should choose the codes noted after the areas of the Key Program as Application Code 1, and fill the name of the corresponding areas in the Appendix of the application. Applications that fail to do so will be returned without review.

In 2025, the Department proposes the following priority areas for Key Program, and plans to support 35 projects. The funding amount (direct cost) will be about 2 million yuan per project with a duration of 5 years.

Priority areas for Key Program in 2025 are as follows:

1. Theories and Methods of Supply Chain Operations Management

(1) Optimization Theories and Algorithms for Non-convex Problems in Supply Chain Management(G0102)

(2) Theories and Methods of Supply Chain Operations Management Based on Information Design(G0109)

(3) Research on AI-Driven Innovation Design in Supply Chain Management (G0109)

(4) Theories, Methods, and Applications of Supply Chain Collaborative Innovation Considering Social Responsibility(G0109)

2. Systems Engineering Theory for Ultra-Large Ship Complex Systems(G0101)

3. Efficacy Research of Visual Display Terminal (VDT) work(G0108)

4. Long-Term Endogenous Risk Mechanism and Proactive Governance of Public Opinion Security(G0113)

5. Financial Services and Behavioral Decision-Making in a Multimodal Information Environment(G0114、G0106)

6. Fundamental Issues and Key Methods of Financial Regulatory Technology in the Context of Artificial Intelligence(G0114)

7. Planning and Operation Management of Demand-Responsive Passenger Transport(G0116)

8. Model-Data Dual-Driven Collaborative Optimization of Large-Scale Urban Road Traffic Flow(G0116)

9. Growth Paths, Business Models, and Strategic Choices of Science and Technology Innovation Enterprises (G0201、G0213)

10. Personal and Professional Development of Gig Workers (G0204)

11. Cross-Border Capital Flows and Financial System Reform (G0205、G0206)

12. Intelligent Marketing Models of Enterprises in Intelligent Perception Environments (G0207)

13. Leadership and Team Behavior in the Context of AI-Enabled Collaborative Office (G0208)

14. Empowerment of Artificial Intelligence in Platform Ecosystems and Management Innovation (G0209、G0211)

15. Transaction Design and Risk Management Based on Intelligent Contract

Technology (G0210、G0212)

16. Big Data-Driven Corporate Bond Risk Identification and Asset Allocation (G0210、G0212)

17. Service Innovation and Service Quality Evaluation of Smart Connected Products (G0211)

18. Corporate Ethics and Social Responsibility in the Context of Artificial Intelligence (G0212)

19. Research on Individual Behavioral Decision-Making in the Labor Market (G0302)

20. The Application of General Equilibrium Theory in Medical System Modeling and Policy Design(G0304)

21. Research on Pension Finance Theory and Policy Design Based on Big Data (G0307)

22. Research on the Reconstruction of Central-Local Relations, Transformation Path toward an Optimal Fiscal Framework, and Debt Risk Prevention and Control (G0308)

23. Design of Products for Data Factor Circulation and Benefit-Sharing Mechanism(G0309)

24. Economic Development Theory and Quantitative Research Based on Endogenous Economic Policies(G0310)

25. Research on China's Employment Restructuring and Optimization of the Social Security System in the Era of Artificial Intelligence(G0313)

26. Analysis of Environmental Regulation and Policy Optimization Based on Multimodal Big Data(G0314)

27. The Mechanism and Policy Research on Resilience Shaping of High-tech Industry Chain Driven by Technical Standards(G0403、G0404)

28. The Governance Model of Drug Safety under the Deep Integration of Blockchain and Supply Chain(G0406)

29. The Mechanism and Model of High-Quality Development of Rural Basic Education Driven by Digital and Intelligent Technologies(G0407)

30. The Mechanism of Risk Propagation and Resilience Enhancement in the Production and Distribution of Hazardous Materials in Cities(G0409)

31. Labor Characteristics, Driving Factors, and Social Security System of Flexible Employment in the Digital Economy (G0410)

32. The Mechanism of Complexity and Decision-Making Paradigm in Intelligent Social Governance(G0410)

33. Research on Risk Identification and Security Resilience of Strategic Critical Mineral Resources Supply Chain(G0412)

34. Research on Global Climate Risks and Climate Resilience Enhancement Strategies for Sustainable Development Goals(G0415)

Department of Health Sciences

In 2024, a total of 843 applications for the Key Program in 42 thematic areas and macroscopic areas were received, 127 of which were finally funded with a total funding amount of 292.00 million Yuan (direct cost) and an average funding amount of 2.2992 million yuan (direct cost) per project. **In 2025, the funding plan for the Key Program will still be divided into two categories: projects in the listed thematic areas and projects in macroscopic areas. The average funding amount (direct cost) is about 3.00 million yuan per project, and the duration is 5 years.**

According to the significant national needs, combining the discipline development strategy and the priority funding direction in the field of health science, a total of 42 thematic areas for solicited Key Program were proposed by the Department following expert appraisal in 2025. Applicants are encouraged to decide project title, research contents and approach on their own based on the scope of the key program. **In the "Annotations" section, one of the following 42 areas of Key Program should be selected; in the column of Application Code 1, the corresponding application code for the area should be chosen.**

To ensure timely support of the key scientific issues facing significant national demands and science frontiers in the world, the Department of Health Sciences continues to fund the **Key Program in macroscopic areas**. For those fields that have achieved significant progress or innovative findings in the initiation, development, prognosis, diagnosis, treatment and prevention of critical illness, applicants may choose research directions for the Key Program if the planned research content falls out of the scope of the Key Program. **They should indicate "macroscopic areas" in the "Annotations" section, but can choose the application code on their own. The proposal should be attached with a description of 1000 words regarding the progress of achieved vital innovation. Application without this description will be returned without review.**

Applications that do not correctly select "Annotations" and the application code as specified above will be returned without review.

For the requirements and precautions of the proposals, please refer to the general introduction of Key Program in this *Guide*.

Special instructions for applicants are as follows:

(1) The Department's requirements in the "Funding and Instructions" section remain valid for the Key Program. Thus, applicants should carefully read and follow the instructions.

(2) In 2025, the Department will generally not fund applicants who were either

intensively funded in 2024 by NSFC [such as Key Program, Key International (Regional) Joint Research Program, Major Program, Key Program of Major Research Plan or Programs of Joint Funds, Special Fund for Research on National Major Research Instruments], or are applying with a proposal of similar research to their ongoing national scientific projects funded by other governmental agencies.

Proposals for the Key Program will be returned without review if they fail to conform to the regulations or the required materials are not attached.

In 2025, the research fields of Key Program in Department of Health Sciences are as follows:

1. Mechanisms and interventions of lung injury and pulmonary fibrosis (H01)
2. Research on the role and mechanism of immunocytotherapy on the hematopoiesis or immune microenvironment (H08)
3. Clonal hematopoiesis and the occurrence, development and intervention of hematological diseases (H08)
4. The mechanism and intervention of heart failure with preserved ejection fraction (HFpEF) (H02)
5. Novel mechanisms of interorgan crosstalk in blood pressure regulation and new strategies for hypertension prevention and treatment (H02)
6. The role of the intestinal mucosal barrier dysfunction in the pathogenesis of the diseases in the digestive system and the underlying mechanism (H03)
7. The mechanism and intervention of urolithiasis (H05)
8. Abnormal regulation of energy metabolism and obesity (H07)
9. The pathogenesis and intervention strategies of oral maxillofacial infections and inflammatory diseases (H15)
10. The pathogenic mechanism of critical eye diseases and the repairing therapy against the injury in the eyes (H13)
11. Mechanisms and interventions of acute central nervous system injury and repair (H09)
12. Mechanisms and intervention strategies for epilepsy drug resistance (H09)
13. Genetic and environmental interaction mechanisms and interventions for common mental disorders (H10)
14. Mechanisms and intervention strategies for organ aging and related diseases (H19)
15. Developmental potential of gametes/embryos and fertility promotion (H04)
16. New mechanisms or strategies for immunotherapy (H11)
17. Mechanisms of immune senescence, its relationship with diseases, and immune remodeling (H11)
18. Pleiotropic principles of genes in genetic diseases/rare diseases and intervention strategies (H23)
19. Regulatory mechanisms and protective strategies of physiological stress under special or extreme environmental conditions (H24)

20. Forensic identification studies on functional injuries (H25)

21. Development of super-resolution clinical imaging technologies for dynamic progression of major diseases (H27)

22. Intelligent manufacturing and application of artificial organ models for major diseases (H28)

23. Immune-Related Mechanisms and Intervention Strategies in Musculoskeletal Diseases (H06)

24. Repair Mechanisms and Intervention Strategies for Skin, Bone and Muscle Trauma (H17)

25. Pathogenicity Mechanisms and Intervention Strategies of Pathogens (H21, H22)

26. Key Mechanisms and Interventions for Immune Dysregulation in Sepsis (H16)

27. Evolutionary principles of cancer and treatment response (H18)

28. Regulatory mechanisms and intervention strategies for tumor dormancy (H18)

29. Neural regulation mechanisms of tumor progression (H18)

30. Tumor metabolism and tumor microenvironment (H18)

31. The mechanism and intervention of microenvironment in the occurrence and development of skin diseases (H12)

32. The mechanism and intervention of radiation-induced tissues and organs damage (H29)

33. Epidemic patterns and prevention strategies of infectious diseases (H30)

34. The mechanism and prevention strategies of environmental exposure in the occurrence and development of chronic diseases（H30）

35. Drug discovery based on modulation of target conformational changes (H34)

36. Discovery and druggability researches of innovative peptide-derived drug molecules (H34)

37. Target discovery and drug candidates based on common mechanisms of tissue damage repair (H35)

38. Discovery of new targets and drug candidates for tumor immunotherapy (H35)

39. The mechanism and material basis of traditional Chinese medicine compound for metabolic diseases and their complications (H31)

40. The evolution of syndromes and corresponding treatment principles and methods of panvascular diseases (H31)

41. The material basis and mechanistic analysis of clinical efficacy of animal-based traditional Chinese medicine (H32)

42. The mechanism of the interaction between clinically effective traditional Chinese medicine and gut microbiota in the prevention and treatment of major chronic diseases (H33)

Major Program

Aiming at the science frontiers and serving the major needs of national economic, social and S&T development and national security, Major Program is deployed in advance to conduct multidisciplinary research, and play a supporting and guiding role in improving the capability of original innovation in China‘s basic research.

The duration of the Major Program project is 5 years.

Applicants should have the following qualifications:

(1) Have experience of undertaking basic research projects;

(2) Have senior academic position (title).

Post-docs, graduate students and those without employment at a host institution or whose institution is not registered at NSFC are not qualified to apply.

Specific call for Major Program will be published separately.

Major Research Plan

Major Research Plan is designed to be a program cluster which contains a number of projects with relatively unified objectives and orientations by focusing on critical scientific issues in accordance with major national strategic demands and key scientific frontiers, strengthening the top-level design, encapsulating scientific goals and gathering advantageous research resources, so as to facilitate crossing and convergence of multiple-disciplines, foster innovative talents and teams, promote the original innovation ability of the basic research in China and provide scientific support for the national economy, social development and national security.

The Major Research Plan follows the principle of ―definite objective, stable support, integration and promotion, and leap-forward development. The funding period for Major Research Plan projects is 8 years in general.

An applicant must meet the following eligibility requirements:

(1) Have the experience of undertaking basic research projects.

(2) Have a senior professional position (title).

In-site post-doctoral fellows, or graduate students, or researchers without a research institution or whose host institutions have not been registered at NSFC cannot apply as the Principal Investigator.

The Major Research Plan consists of three subcategories, namely, the Fostering Program, Key Program and Integrated Program. Proposals shall be prepared in accordance with the requirement for the Major Research Plan and outlines of application, highlighting definite objective and key breakthrough, featuring interdisciplinary research, emphasizing on the contributions to solving critical scientific issues and fulfilling the overall goals of the Major Research Plan. Applicants should select ―Major Research Plan for the column of the funding type in the application form, and Fostering Program, Key Program, or Integrated Program for the column of sub-type, and input the title of the Major Research Plan in the annotation.

Generally, the duration of Fostering Program projects is 3 years, and 4 years for Key Program projects, and that for Integrated Program project is determined by the Steering Committee of each Major Research Plan based on the actual need. For Fostering Program projects and Key Program projects, the number of collaborative research institutions shall not exceed two. The number of collaborative research institutions in one Integrated Program project may not exceed 4. The main participants must be the actual contributor to the Integrated

Program project, and the total number of main participants may not exceed 9.

Regulations on managing and sharing of data and information should be observed in order to implement the overall scientific objectives and multi-disciplinary integration of the Major Research Plan. During the progress of project, attention should be paid to the supporting relationship among various programs.

Annual academic seminar on funded projects of the Major Research Plan and a periodic academic symposium on relevant research area should be held, so as to strengthen academic exchange, achieve the overall scientific objectives and encourage multidisciplinary convergence and integration. The PIs of the granted projects are obliged to participate in these activities.

Specific call for Major Research Plans will be published separately on the NSFC website.

Excellent Young Scientists Fund

The Excellent Young Scientists Fund supports young scholars who have made excellent achievements in basic research to select their own research directions and conduct creative research, focus on the international science frontiers and major national needs, further refine the scientific issues, so as to speed up the rapid growth of young scientific talents, and foster a group of prominent academic pacemakers in the forefront of international science and technology.

1. The applicant for Excellent Young Scientist Fund based in the host institution should meet the following qualifications:

(1) Abide by the laws of the People's Republic of China and the management regulations of NSFC. Have good scientific integrity, and consciously practice the spirit of scientists in the new era;

(2) Be under the age of 38 (for male, born on or after January 1, 1987) or 40 (for female, born on or after January 1, 1985) by January 1 of the year of application;

(3) Have senior professional position (title) or PhD degree;

(4) Have the experience of conducting basic research projects or other basic research;

(5) Have no employment with foreign institutions;

(6) Be able to work in host institutions for no less than 9 months per year. 2.

In 2025, the Excellent Young Scientists Fund Project remains open to researchers from host institutions in Hong Kong and Macau. The funding model and evaluation criteria will be the same as those for mainland applicants. In addition to the qualifications specified in items (1), (2), (3), (4), and (6) above, applicants must also meet the following requirements:

(1) Adhere to the "Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China," the "Basic Law of the Macao Special Administrative Region of the People's Republic of China," and the various management regulations of the National Natural Science Foundation;

(2) Be formally employed by a host institution in the Hong Kong or Macau Special Administrative Region.

3. Applicants with the following conditions shall not apply:

(1) Grantees of the National Science Fund for Distinguished Young Scholars or the Excellent Young Scientists Fund;

(2) Applicants for the National Science Fund for Distinguished Young Scholars in the same year;

(3) Post-doctoral fellows (employed) and graduate students;

Special reminder:

In 2025, the Excellent Young Scientists Fund will adopt the lump-sum funding system, and the funding will no longer consist of direct costs and indirect costs, with 2 million yuan for each grant. The duration is 3 years.

In 2025, according to the requirements of the overall planning of the national scientific and technological talent plan, the applicant can only have one grant of the national scientific and technological talent plan at the same level during the funding period, and cannot apply inversely for a talent program at lower level. Those who have received any kind of grant from the same level of the national science and technology talent plan and are in the funding period, and those who have received any kind of funding from the national science and technology talent plan at the higher level shall not apply for the Excellent Young Scientists Fund.

In 2025, 8394 applications were received and 654 projects were funded, with a total funding amount of 1.308 billion yuan.

Funding for Projects of Excellent Young Scientists Fund in 2024

Departments	No. of applications	No. of awards	Success rate (%)
Mathematical and Physical Sciences	985	74	7.51
Chemical Sciences	1 017	88	8.65
Life Sciences	1 130	89	7.88
Earth Sciences	861	60	6.97
Engineering and Materials Sciences	1 440	116	8.06
Information Sciences	1 134	95	8.38
Management Sciences	240	23	9.58
Health Sciences	1 061	78	7.35
Interdisciplinary Sciences	526	31	5.89
Total or average	**8 394**	**654**	**7.79**

National Science Fund for Distinguished Young Scholars

The National Science Fund for Distinguished Young Scholars supports young scholars who have made outstanding achievements in basic research to select their own research directions and conduct creative research, focus on the international forefront of science and major national needs, further refine the scientific issues, so as to speed up the growth of young scientific talents, attract overseas talents and foster a group of prominent academic pacemakers in the forefront of international science and technology.

I. Requirements for the application of the National Science Fund for Distinguished Young Scholars

1. The applicant for National Science Fund for Distinguished Young Scholars based in the host institution should meet the following qualifications:

(1) Abide by the laws of the People's Republic of China and the management regulations of NSFC, have good scientific integrity and consciously practice the spirit of scientists in the new era;

(2) Be under the age of 45 by January 1 of the year of application (born on or after January1, 1980）, for female applicants be under the age of 48 (born on or after January1, 1977);

(3) Have a senior professional position (title) or PhD degree;

(4) Have the experience of presiding over basic research projects or conducting other basic research;

(5) Not be employed by foreign institutions;

(6) Be able to work in host institutions for no less than 9 months per year within the funding period.

2. In 2025, the National Science Fund for Distinguished Young Scholars remains open to applicants affiliated with institutions in the Hong Kong and Macao regions. The funding mechanism and evaluation will be the same as those for mainland applicants. In addition to adhering to (1) (2) (3) (4) (6) rules, the applicant must also:

(1) Adhere to the Basic Laws of the Hong Kong and Macao Special Administrative Regions of the People's Republic of China and the various management regulations of NSFC.

(2) Additionally, applicants must be formally employed by institutions in the Hong Kong and Macao regions.

3. The following personnel are not eligible to apply for the National Science Fund for Distinguished Young Scholars: individuals who

(1) have previously received the National Science Fund for Distinguished Young Scholars;

(2) currently have the Excellent Youth Science Fund (including the Excellent Youth Science Fund for Hong Kong and Macao) unless it‘s in its final year;

(3) apply for the Excellent Young Scientists Fund in the same year.

(4) are post-doctors (employed) and graduate students;

In particular, the applicant is reminded that:

In 2025 National Science Fund for Distinguished Young Scholars will continue adopting the lump-sum funding system, and the funding will no longer consist of direct costs and indirect costs. The funding amount for each project is 4 million yuan (2.8 million yuan for mathematics and management science). The funding duration is 5 years.

In 2025, according to the requirements of the overall planning of the national scientific and technological talent plan, the applicant can only have one grant of the national scientific and technological talent plan at the same level during the funding period. Those who have received any kind of grant from the same level of the national science and technology talent plan and are in the funding period shall not apply for the National Science Fund for Distinguished Young Scholars.

In 2024, National Science Fund for Distinguished Young Scholars received 5975 applications and supported 433 projects, with a total funding amount of 1.6996 billion yuan.

Funding for Projects of National Science Fund for Distinguished Young Scholars in 2024

Departments	No. of application	No. of Awards	Success rate (%)
Mathematical and Physical Sciences	775	52	6.71
Chemical Sciences	733	55	7.50
Life Sciences	713	51	7.15
Earth Sciences	587	42	7.16
Engineering and Materials Sciences	954	78	8.18
Information Sciences	731	53	7.25
Management Sciences	159	13	8.18
Health Sciences	782	60	7.67
Interdisciplinary Sciences	523	295.54	5.54
Total or average	**5 957**	**433**	**7.27**

II. Requirements for Application of the Continuation Funding of the National Science Fund for Distinguished Young Scholars

To strengthen the continuous development of outstanding talents and establish a long-term stable funding mechanism, NSFC has initiated the continuation funding of the National Science Fund For Distinguished Young Scholars starting from 2025.

Eligible applicants shall meet the following conditions:

1. Comply with the laws and regulations of the People's Republic of China and the management regulations of NSFC, possess good scientific ethics, and consciously practice the spirit of scientists in the new era.

2. Do not have formal employment relationships with overseas institutions.

3. Ensure that the time spent on research work at the host institution during the funding period is more than 9 months per year.

4. Principal Investigators whose funding period ends by the end of 2024.

The continuation funding for the National Science Fund for Distinguished Young Scholars in 2025 adopts a lump-sum funding model, with no distinction between direct and indirect costs. The funding amount for each project is 8 million RMB (5.6 million RMB for Mathematics and Management Science). The funding duration is 5 years.

The number of projects funded is expected not to exceed 20% of the total number of projects whose funding period ends by the end of 2024. Please select the " National Science Fund for Distinguished Young Scholars (Continuation Funding)" subcategory during the application process. Applicants for the continuation funding of the National Science Fund for Distinguished Young Scholars can only select the same application code under the same department as the first funding cycle and cannot apply across departments.

The application for the continuation funding of the National Science Fund for Distinguished Young Scholars projects is not counted in the total number of applications or projects undertaken during the application process until after formal acceptance.

The total number of grants under the Science Fund for Excellent Research Groups, Science Fund for Creative Research Groups, the continuation funding of the National Science Fund for Distinguished Young Scholars and Science Fund for Joint Creative Research Groups that they apply or participate in the application is limited to one in the same year.

Principal Investigators currently undertaking or whose funding period has ended for the continuation funding project of the National Science Fund for Distinguished Young Scholars are not eligible to apply or participate in the application for the Science Fund for Creative Research Groups.

In 2024, in the continuation funding of National Science Fund for Distinguished Young Scholars 41 applications were funded, with a total funding amount of 320.8 million yuan.

III. Supplementary Explanation for the Addition of the "Clinical Science" Option in the Application for the National Science Fund for Distinguished Young Scholars

In line with the nature of medical science and the growth characteristics of clinical medical talents, NSFC is piloting the reform of the scientific research

evaluation system for clinicians and conducting in-depth reviews of clinical medical talent projects under the National Science Fund for Distinguished Young Scholars. It encourages young clinicians to base their research on clinical practice, aiming to reveal the essence of diseases, improve clinical outcomes, conduct innovative scientific research and technological exploration, and cultivate and foster a group of clinical science research leaders with international influence.

Supplementary instructions have been added for the the National Science Fund for Distinguished Young Scholars projects to include the "Clinical Science" option.Applicants who possess medical practitioner qualifications and hold senior professional and technical titles in the health series and meet other application requirements for the National Science Fund for Distinguished Young Scholars projects can select this option. The Department of Health Sciences will organize specialized reviews for proposals selecting the "Clinical Science" option. Specific filling requirements for proposals selecting the "Clinical Science" option can be found in the Guidelines and Outlines for Filling in the Application Form for the the National Science Fund for Distinguished Young Scholars Projects in the Grants System (Special for the Department of Health Sciences).

Science Fund for Creative Research Groups

The Science Fund for Creative Research Groups supports outstanding academic leaders at home and abroad to independently choose research directions, establish and lead research teams to carry out innovative basic research, target at international science frontiers and around major national needs, overcome difficulties, and cultivate research teams that occupy a place in the forefront of international science.

Since 2025, the Science Fund for Creative Research Groups has been divided into two subcategories, namely Category A and Category B. Among them, the application requirements for Category A are the same as in previous years. Category B is specifically used to fund teams composed of outstanding young researchers, providing them with more opportunities to take on important responsibilities and play leading roles, so as to promote their early emergence as outstanding talents.

I. Requirements for the application

(1) Have the experience of conducting basic research projects or other basic research;

(2) Guarantee to work in host institutions for no less than 6 months per year within the funding period;

(3) Be composed of one academic leader, an independent team, no more than 5 key participants, with the foundation of long-term cooperation;

(4) As a project applicant, academic leaders should have senior professional and technical positions (professional titles). Key research members, as participants, should hold a senior professional and technical position (title) or have a doctoral degree.

(5) For Category A projects, as of January 1st of the application year, the applicant should not have reached the age of 55 (born on or after January 1st, 1970). The key members should mainly be young and middle-aged, and the number should not exceed 5. For Category B projects, as of January 1st of the application year, both the applicant and the key members should not have reached the age of 40 (born on or after January 1st, 1985), and the number of key members should not exceed 3.

II. Limitation Requirements

When applying for the Science Fund for Creative Research Groups, it is not

counted within the total scope of the number of applied and undertaken projects; from the formal acceptance of the application until the decision on whether to provide funding by the National Natural Science Foundation of China is made, and after obtaining the funding, it will be counted within the total scope of the number of applied and undertaken projects. The projects funded by the Science Fund for Creative Research Groups approved before 2024 (including 2024) are not counted within the total scope of the number of applied and undertaken projects.

Those who have served as principal investigators for projects funded by the Science Fund for Creative Research Groups are not allowed to apply as applicants. The principal investigators of the projects funded by the ongoing Science Fund for Creative Research Groups and the participants with senior professional and technical positions (titles) are not allowed to apply for or participate in the application. Participants who have withdrawn from projects funded by the Science Fund for Creative Research Groups and the Science Fund for Excellent Research Groups (including the former Basic Science Center projects) are not allowed to apply for or participate in the application within 2 years.

For individuals with senior professional and technical positions (titles), they are not allowed to apply for and participate in the application of more than 1 project funded by the Science Fund for Creative Research Groups in the same year. **In the same year, the total number of applications and participation in the application of projects funded by the Science Fund for Creative Research Groups, the Science Fund for Excellent Research Groups projects, the Continuation Funding Projects of the National Science Fund for Distinguished Young Scholars, and the Science Fund for Joint Creative Research Groups projects should not exceed 1 in total.**

The principal investigators of the Continuation Funding Projects of the National Science Fund for Distinguished Young Scholars that are currently being undertaken and have reached the expiration of the funding period are not allowed to apply for or participate in the application of projects funded by the Science Fund for Creative Research Groups.

In 2024, a total of 392 applications for projects funded by the Science Fund for Creative Research Groups were received, and 43 projects were funded, with the direct funding cost being 424 million yuan.

The funding period of projects funded by the Science Fund for Creative Research Groups is 5 years. The direct cost is 10 million yuan per project, and the indirect cost is 2 million yuan per project (for mathematics and management science, the direct cost is 8 million yuan per project, and the indirect cost is 2 million yuan per project).

Funding of Science Fund for Creative Research Groups in 2024

Unit: 10,000 yuan

Departments	No. of applications	Awards		Success rate（%）
		No. of Awards	Funding for direct costs	
Mathematical and Physical Sciences	38	5	4800	13.16
Chemical Sciences	43	5	5000	11.63
Life Sciences	52	5	5000	9.62
Earth Sciences	50	5	5000	10.00
Engineering and Materials Sciences	62	6	6000	9.68
Information Sciences	53	5	5000	9.43
Management Sciences	9	2	1600	22.22
Health Sciences	44	5	5000	11.36
Interdisciplinary Sciences	41	5	5000	12.20
Total or average	**392**	**43**	**42400**	**10.97**

The Science Fund for Excellent Research Groups

（Formerly known as Basic Science Center Program)

Since 2025, the Basic Science Center Program is renamed as the Science Fund for Excellent Research Groups. The Science Fund for Excellent Research Groups aims to gather and integrate domestic advantageous scientific research resources, targets at international science frontiers and around major national needs, advance deployment, gives full play to the advantages and characteristics of the science funding system, relies on high-level academic leaders, attracts and assembles outstanding S&T talents from different disciplines, and promotes in-depth crossdisciplinary integration, supports scientific personnel to conduct research and exploration in a relatively long-term and stable way, so as to produce a number of original achievements at international leading level, seize the dominant position in international scientific development and establish a number of academic highlands with important international influence.

Starting from 2025, the Science Fund for Excellent Research Groups remains having two subcategories, Category A and Category B. The application conditions for Category A remain consistent with previous years, while Category B is specifically designed to fund teams composed of outstanding young researchers, providing them with more opportunities to take on major responsibilities and leadership roles, thereby promoting their emergence.

I. Application requirements.

Applicants and key participants for the Science Fund for Excellent Research Groups should meet the following qualifications:

(1) Have the experience of undertaking basic research project or doing other basic research;

(2) The applicant should be an excellent research team with multi-disciplinary crossings at the scientific frontiers, including 1 academic leader and at most 4 key participants.

(3) As the applicant, the academic leader should be an internationally well known scientist in the field, with senior academic position (title), outstanding academic ability and a proven track record of coordinating and managing large-scale projects, strong coordination and cohesion, and able to assemble excellent researchers from various scientific backgrounds. Key participants should have senior academic

position (title) and outstanding research achievements in related scientific fields and potential for continuous growth.

(4) For Type A projects, applicants must not be older than 60 years of age as of January 1 of the application year [born on or after January 1, 1965], with key members primarily being middle-aged and young adults. For Type B projects, both the applicants and key members must not be older than 55 years of age as of January 1 of the application year [born on or after January 1, 1970], and the average age of the applicants and key members must not exceed 50 years of age.

The total number of supporting institutions and collaborative research institutions must not exceed three.

II. Requirements on Restrictions

There is a restriction on the total number of projects for researchers applying for and undertaking the Science Fund for Excellent Research Groups (including the former Basic Science Center Program, limit for academic leader and key participants), NSFC's Major Program, Special Fund for Research on National Major Research Instruments (limit for PI and major participants with a senior professional rank or title of the departmental recommended projects), National Key Research and Development Program (excluding Young Scientist Program, Technological Innovation Fund for Technology-based Small and Medium-sized Enterprises International Cooperation Programs, limit for PI and project leader), the Sci-Tech Innovation 2030 Agenda - Major Program (excluding Young Scientist Program, limit for PI and subject leader). The number of projects applied for and undertaken by the applicant at the same time shall not exceed 2 in principle. Unless specified otherwise, projects whose funding period terminates in the year of application are not included in the limit of the total number of applying and undertaking. Before submitting the application, the academic leader should confirm that he or she and key participants meet the above requirements.

At the stage of application, the Science Fund for Excellent Research Groups (including the former the Basic Science Center Program) is not counted in the total number of application and on-going projects, but counted before receiving have not reached the on-site investigation are not counted. After receiving and before the termination of the funding period of Basic Science Center Program and before the completion of the funding the applicant and the key participants cannot apply for or participate in other types of program except for the National Science Fund for Distinguished Young Scholars and the Excellent Young Scientist Fund.

The total number of applications for National Major Instrument Equipment R&D Program and the Science Fund for Excellent Research Groups for one applicant within the same year cannot exceed one.

The total number of applications either as the PI or as the participant by individuals holding senior positions (titles) for the Science Fund for Creative

Research Groups, the Science Fund for Excellent Research Groups, and the National Science Fund for Distinguished Young Scholars continuation funding shall not exceed one

The applicant is not allowed to apply for the Science Fund for Excellent Research Groups program if he or she has been the PI of such a program (including the former Basic Science Center Program). The applicant and the participant with senior academic positions (titles) of the on-going project of the Science Fund for Excellent Research Groups program cannot apply for the same program either as the applicant or participant, unless it is in the last year of the funding. The participants who quit from the project of the Science Fund for Creative Research Groups or the Basic Science Center Program shall not apply as a PI or participant in the next 2 years.

The funding duration of the Science Fund for Excellent Research Groups program is 5 years. The direct cost shall not exceed 60 million yuan (for mathematics and management sciences, the direct cost shall not exceed 50 million yuan).

Tianyuan Fund for Mathematics

Tianyuan Fund for Mathematics is a special fund to integrate the collective wisdom of mathematicians, explore funding method that suits the unique features of mathematics, and make China a mathematical powerhouse. This fund supports researchers to conduct research while considering the features and demands of mathematics, fostering young talents, promoting academic exchanges, optimizing the research environments, and cultivating mathematical culture, so as to strengthen the innovation capability of China in mathematics. The fund mainly supports the following 5 types of programs in 2025.

1. Tianyuan Center of Mathematics Program

The Tianyuan Center of Mathematics Program aims to set up a platform to promote research cooperation and exchanges in various mathematical topics and interdisciplinary areas of study. Through a variety of academic exchanges and seminars, this program aims to bring together research teams to solve core scientific problems, deepen collaboration between experts from various fields at home and abroad, foster research talents, and promote interdisciplinary research between mathematics and other related disciplines or sub-fields, thus enhancing overall research of mathematics in China, forming leading research directions and advancing the development of the mathematical discipline.

The project should be based on a large region, strengthen its radiating effect within the region, and face the whole country. Centering around several frontier fields and important development directions of mathematics and its applications, it should organize and undertake various academic activities carried out by the Mathematical Tianyuan Fund，including summer schools and training workshops for young teachers of mathematics. The project title should be in the form of ―Tianyuan xx Center of Mathematics‖. Please include the significance, scope, working plan, background of the proposed activity, and possible collaborators and personnel in the application proposal.

In 2025, previously funded projects will be re-evaluated upon submission, and the excellent ones will be selected for continued funding. 5 projects are planned to be funded. Among them, the funding period of 1 project is 5 years, with a funding intensity of 17 million yuan; the funding period of the remaining 4 projects is 1 year, with a funding intensity of 2 million yuan per project.

1. Tianyuan Center of Mathematics Program

The Tianyuan Center of Mathematics Program aims to build an international

academic exchange platform. Facing the international community and centering around the frontier research fields and important development directions of mathematics and its applications, it promotes in-depth exchanges and cooperation among domestic and international mathematicians on hot issues in the frontier fields.

The center is responsible for organizing and undertaking high-level mathematics exchange and seminar activities, and organizes 30 to 50 exchange and seminar projects every year. Each exchange and seminar project should invite several internationally renowned mathematicians and domestic scholars at the forefront of mathematical research to participate, and it will be carried out in the form of a combination of academic reports and free discussions.

In 2025, previously funded projects will be re-evaluated upon submission, and the excellent ones will be selected for continued funding. 1 project is planned to be funded. The funding period is 1 year, and the funding intensity is approximately 10 million yuan.

3. Tianyuan Mathematics Young Researcher Project

The Tianyuan Mathematics Young Researcher Project aims to encourage young researchers to engage in research in mathematics and its applications, support the growth and development of young mathematical talents, and cultivate more reserve talents for the discipline of mathematics. The funding period of the Tianyuan Mathematics Young Researcher Project is 2 years, and the funding intensity for each project is approximately 100,000 yuan.

Application Requirements:

As of January 1 of the application year, male applicants should be under 33 years old (born on or after January 1, 1992), and female applicants should be under 35 years old (born on or after January 1, 1990).

Applicants must have a doctoral degree.

Applicants should not have served as the principal investigator of a National Natural Science Foundation of China project.

Applicants should apply for the Tianyuan Mathematics Young Researcher Project independently, and the information of participants should not be filled in the application form.

The acceptance period for the online application of the Tianyuan Mathematics Young Researcher Project is from August 20, 2025, to 16:00 on August 31, 2025. Applications for the Tianyuan Mathematics Young Researcher Project will not be accepted at other times.

4. Special lectures, high-level workshops on mathematics

Special lectures are organized for postgraduate students focusing on one or several related themes to introduce frontier topics in mathematical research. Lectures could include basic courses and special courses with large audiences lasting for 3 weeks. The application should include a teaching outline, teaching contents, and name list of the lecturers.

High-level workshops mainly support research groups consisting of highly skilled and exceptional mid-career and young mathematicians who collaborate to host regular workshops and seminars on specific mainstream topics and important international mathematical issues. At least one review paper should be published after the workshop.

The funding amount for each project will be 150,000 - 200,000 yuan.

5. Mathematical culture and communication program

This program supports the publication of mathematics communication series or books, which includes organizing domestic scholars to write or translate outstanding foreign works. This program also supports the publication of influential national journals related to mathematical culture, mathematical communication, mathematical education, and mathematical modeling, with the goal of improving the quality and expanding the reach of these journals among the public. This program supports important national mathematical communication activities organized by colleges and universities, research institutions, science associations at or above the provincial level, and mathematical societies.

6. Tianyuan Mathematics Frontier Key Special Program

Aiming at the international academic frontier, the Tianyuan Mathematics Frontier Key Special Program supports basic mathematical research targeting major international forefront issues in mathematical science, and cultivates research teams that are willing to explore the most challenging scientific problems. The Mathematics Tianyuan Fund Academic Leading Group conducts research and analysis based on the development trends of international mathematics and is responsible for approving the research topics to be supported each year. The annual application guide for this program will be released separately.

7. Interdisciplinary Mathematics Joint Funding Program

The Interdisciplinary Mathematics Joint Funding Program is jointly funded with other research organizations and government departments to promote the deep integration of mathematics with other disciplines and specialized fields. The program aims to facilitate the application of mathematics in other disciplines/fields, solve key mathematical problems in related fields and major projects, and cultivate interdisciplinary research teams. The Mathematics Tianyuan Fund Academic Leadership Group is responsible for approving the prioritized interdisciplinary areas and joint funding institutions. In order to form stable interdisciplinary research teams and expand the scope of mathematics, interdisciplinary areas will be changed every 2-3 years and remain the same for the same period of time. The annual application guide for this program will be released separately.

The submission period for the online application of the mathematics Tianyuan Program is divided into two periods: from **March 1, 2025, to 16:00 on March 20, 2025; and from August 20, 2025, to 16:00 on August 31, 2025.** After completing the application, the applicant shall submit the electronic application and its

attachments online. All the attachment materials required in the application (the original version of relevant supporting materials, approval documents, and other paper materials required by special instructions) should all be uploaded as electronic scanned copies.

The supporting institutions must confirm and submit their electronic applications and attached materials item by item through NSFC‘s Grants system before the application deadline. **Within 24 hours after the deadline, they must submit the project application list for their institution online, without the need to submit paper application materials**. After the project is approved, the paper signature and seal page of the application shall be bound at the end of the funded project plan and submitted together. The information signed and sealed shall be strictly consistent with the electronic application.

The funding category of the application form is ―Tianyuan Fund for Mathematics Program, the sub-category description is ―Tianyuan Fund for Mathematics‖, and in the ―Annotations‖ section, one of the above five types of projects should be filled in according to the content of the application. For all projects, application code 1 should select the application code for the Mathematics subject. **Applications with incorrect or unselected selections above will be returned without review.** The funding period of the Tianyuan Fund for Mathematics projects generally does not exceed 1 year.

The Tianyuan Fund for Mathematics has no indirect costs, and the applied funds are direct costs. During the implementation of the Tianyuan Fund for Mathematics projects, it is necessary to acknowledge that―the project is supported by the Tianyuan Fund for Mathematics of the National Natural Science Foundation of China.

Special Fund for Research on National Major Research Instruments

Aiming at the science frontiers and national demands and guided by scientific goals, the Fund supports the development of original scientific research instruments and core components that play an important role in promoting scientific development, exploring natural laws, and broadening research fields, in order to enhance China's original innovation.

Special Fund for Research on National Major Research Instruments comprises two categories: department-recommended projects and free application projects.

Funding for Projects of Special Fund for Research on National Major Research Instruments in 2024

Unit: 10,000 yuan

Category	No. of applications	No. of awards	Direct cost	Average funding amount for direct costs (Unit: 10,000 yuan/project)
Departmental recommendation	38	4	31 735.00	7 933.75
Free application	709	67	51 964.64	775.59

The funding duration for projects of the Special Fund for Research on National Major Research Instruments is 5 years, and the number of collaborative institutions in one project should not exceed 5.

1. Eligibility criteria

To be eligible for the Special Fund for Research on National Major Research Instruments, applicants should meet the following criteria:

(1) Have the experience of presiding basic research;

(2) Hold a senior professional position (title).

Postdoctoral research fellows, full-time graduate students, researchers without host institutions, and researchers whose host institutions have not been registered at NSFC are not eligible for application.

2. Requirements for application and budget for direct cost

(1) For free application projects, applicants may submit research proposals via their host institutions. The budget for direct costs is less than 10 million yuan per project.

(2) For departmental recommended projects, the following 13 departments are entitled to recommend projects of the Special Fund for Research on National Major Research Instruments: Ministry of Education, Chinese Academy of Sciences,

Ministry of Natural Resources, Ministry of Industry and Information Technology, Ministry of Ecology and Environment, Ministry of Agriculture and Rural Affairs, National Health Commission, China Earthquake Administration, State Administration for Market Regulation, China Meteorological Administration, China Academy of Engineering Physics, Equipment Development Department and Logistic Support Department of Central Military Commission. The budget for direct costs of the departmental recommended projects of the Special Fund for Research on National Major Research Instruments should be 10 million yuan or above per project.

3. Notes on the application

(1) Applicants should read this Guide carefully and prepare research proposals in accordance with the outline of applications of the Special Fund for Research on National Major Research Instruments. Please select the "Special Fund for Research on National Major Research Instruments" from the funding categories, and choose either "free application" or "department recommendation" as the funding subcategory. Please choose the application code in all departments except the Department of Management Sciences based on your research content.

(2) Project leaders and primary participants with senior professional titles applying for the National Major Research Instruments Development Project are limited to applying for and undertaking no more than two projects (topics) concurrently with the following programs, the Basic Science Center Project (for academic leaders and core members), the Major Project (for project leaders and topic leaders), the National Key R&D Program Project (for project leaders and topic leaders, excluding young scientist programs, science and technology-based SME projects, and international cooperation projects), and the Science and Technology Innovation 2030 - Major Project (for project leaders and topic leaders, excluding young scientist programs). Projects that end in the same year as the application will not count toward the project limit. Applicants should confirm that they and their primary participants meet the above joint application requirements before submitting their project proposals.

For researchers with senior academic rank (title), the total number of Special Fund for Research on National Major Research Instruments (including Special Program on National Major Research Instruments) and the National Major Instrument R&D Program and the Key Special Program for Basic Scientific Research Infrastructure and Major Research Instrument R&D (Scientific Equipment direction) by Ministry of Science and Technology one may apply for (including as applicant and main participant) and undertake (including as PI and main participants) shall not exceed one.

(3) **Applicants should compile the project budget seriously and carefully based on the actual needs of instrument development, adhering to the principles of relevance to objectives, policy compliance, and economic rationality. NSFC will organize experts to review the budget, and projects whose requested funds significantly exceed the actual needs will not be funded.**

International (Regional) Cooperation and Exchange Programs

To enhance the quality of China's scientific research and strengthen its global competitiveness, the International (Regional) Cooperation and Exchange Programs aims to support Chinese researchers in engaging in substantive collaboration with international partners to explore the frontiers of science while fully leverage international scientific and technological resources in the principles of equitable collaboration, mutual benefit, and shared outcomes.

The International (Regional) Cooperation and Exchange Programs consist of two categories: Key International (Regional) Joint Research Programs, and International (Regional) Joint Research and Exchange Programs funded under the Agreements/ MoUs.

Key International (Regional) Joint Research Program

The Key International (Regional) Joint Research Program (hereafter referred to as Key Joint Research Program) provides funding to scientists and researchers with established collaborative foundations to conduct international (regional) cooperative research with overseas partners to address global scientific frontiers and shared challenges facing humanity.

Key Joint Research Program should fully leverage the academic strengths of both the applicant and the foreign research team, demonstrating the necessity and complementation of the collaboration. This program is designed to encourage Chinese researchers to lead or participate in large-scale international scientific research initiatives, as well as to utilize major domestic and international research facilities for joint studies. Chinese applicants and their partners shall have long-term steady collaboration (e.g., coauthored publications, continued personnel exchanges and interactions) and the partners shall have matching resources for this research. In the process of cooperation, attention shall be given to the sharing of outcomes and the protection of intellectual property rights.

Key Joint Research Program organize expert discussions to identify priority research areas and issue guidelines for research direction. Applicants should refer to the priority fields listed in this Guide and select the accurate name of the field they are applying for in the "Annotations" section of the application form, and propose a proposal centered on significant scientific questions with innovative ideas. If an applicant’s research content falls outside the priority research areas but demonstrates a solid foundation for collaboration and potential for important collaborative outcomes, they may select "Free Application" in the "Annotations" section. In addition to meeting the regular application requirements, such applications should include a "Statement on Collaborative Foundation and Necessity" (no more than 800 characters) before the "Basis for Project Initiation" section in the main body of the application.

Applicants must meet the following eligibility criteria:

(1) Having the position/title of professor or associate professor;

(2) Must be the Principal Investigator (PI) of an ongoing or completed NSFC research grant with a minimum duration of 3 years.

(3) Having solid foundation of cooperation with overseas partners.

Their collaborative partners should meet the following eligibility criteria:

(1) Engaging in scientific research abroad and being in charge of research laboratories or key research projects independently;

(2) Having the position/title of professor or associate professor in the host countries/regions.

Attached Documents and requirements:

Apart from the Chinese application form, the applicant must also submit the following documents as required:

(1) English Application Form: The English Application Form can be downloaded from the NSFC's Grants System and should be submitted online during the submission process.

(2) Letter of Agreement: A copy of the Letter of Agreement signed between/ among the collaborating PIs must be provided. Unilaterally signed letters are not valid. The Letter of Agreement must include:(i) Research contents and objectives; (ii) List of collaborating Pls and participants; (iii) Duration, mechanism and plan of joint research; (iv) Ownership, use and transfer of IPR; (v) Relevant budgetary arrangements. For specific requirements, please refer to the the cooperation agreement template downloaded from the NSFC Grants system.

(3) Documents that confirm the partners' engagement and participation in research projects that are relevant to the submitted application, or a list of publications related to the submitted application by the foreign partners within the past 3 years.

(4) Confirmation letter from overseas collaborator regarding the English application form: If the overseas collaborator is unable to sign the English application form, they should send a signed confirmation letter via fax or scan. The letter must state that they have read and approve the application's contents and agree to participate in the project application and the collaborative research.

The confirmation letter should be printed on the official letterhead of the foreign partner's university or research institution, and it should include the partner's institutional information, such as the university or research institution's logo, the name of the institution, and specific contact details. The foreign partner must provide complete and accurate postal address and contact information, and specify the cooperation topic, content, time frame and agreement on sharing of achievement.

In 2024, 484 applications were received for Key Joint Research Program, with 87 funded at a total of 206 million yuan.

In 2025, the Key Joint Research Program plans to fund 90 projects, with a direct cost similar to 2024.

Chinese research institutions for cooperation should not exceed two. The funding period is five years.

Funding for the Key Joint Research program in 2024

Unit: 10,000 yuan

Research areas	No.of applications	Grants		
		Number	Direct cost	Average funding intensity(10,000 yuan/project)
Mathematical and Physical Sciences	24	5	1 120	224.00
Chemical Sciences	26	5	1 200	240.00
Life Sciences	91	16	3 840	240.00
Earth Sciences	64	11	2 640	240.00
Engineering and Materials Sciences	73	13	3 120	240.00
Information Sciences	62	11	2 640	240.00
Management Sciences	26	5	1 000	200.00
Medical Sciences	118	21	5 040	240.00
In total/Average	**484**	**87**	**20600**	**236.78**

Priority areas for the Key Joint Research program in 2025

1.Department of Mathematical and Physical Sciences

(1) Cutting-edge mathematical theoretical research

(2) Research on mathematical theory and methods driven by problems

(3) Understanding, design and control of complex system dynamics

(4) Mechanics of new materials and new structures

(5) Theory, method and control of high speed flows

(6) Dark matter, dark energy and galaxy survey

(7) Exploration and research on the Galaxy, stars, the sun and planetary system

(8) Key technology of next generation telescopes

(9) Quantum materials and device

(10) Quantum information and quantum precision measurement physics

(11) Mechanisms and control of optical or acoustic field

(12) Magnetism, superconductivity, and strongly correlated electron systems

(13) Elementary particles and their interactions

(14) Key scientific issues in nuclear fusion

(15) Scientific research conducted based on major domestic and international scientific facilities.

2.Department of Chemical Sciences

（1）Construction and characterization of novel chemical bonds and molecular systems

（2）Surface and interface fundamentals in materials science

（3）New methodologies for molecular reaction dynamics

（4）Chemical measurements in complex systems

（5）Chemical design and synthesis of new materials

（6）Tracing and assessment of global pollutants in environmental and ecological systems

（7）Molecular basis of multi-level interactive communication in living systems

（8）Efficient storage, conversion, and utilization of chemical energy

（9）Green synthesis method and process

（10）Chemistry and chemical engineering under new paradigms or unconventional conditions

3.Department of Life Sciences

（1）Precise design, transformation, and simulation of living organisms

（2）Spatiotemporal and cross-scale in situ detection and analysis of biomolecular events

（3）Biodiversity evolution and adaptive mechanisms of key traits

（4）Molecular basis of cell fate plasticity in development and aging

（5）Genetic and epigenetic mechanisms of physiological homeostasis regulation

（6）Neurobiological foundations and applications of cognition and perception

（7）Dysregulation of immune system development and intervention strategies

（8）Responses and adaptations of biodiversity and ecosystems to global change

（9）Formation and regulation mechanisms of food quality

（10）Biological basis of key trait formation and germplasm innovation in crops, forestry, forage, and horticultural plants

（11）Disaster mechanisms, evolution, and control strategies of agricultural and forestry pests

（12）Biological basis of key traits in livestock and pathogenesis of major animal diseases.

4.Department of Earth Sciences

（1）Critical surface processes and their multivariate effects

（2）Coupling and interactions of major geological-environmental-biological events

（3）Mineralization and reservoir formation processes and mechanisms

（4）Earth's deep processes and shallow surface responses

（5）Key atmospheric physical/chemical processes and extreme weather phenomena

（6）Oceanic dynamics and polar science

（7）Pollution control and sustainable development

（8）Earth system modeling and global change

（9）Planetary science technologies and platforms

（10）Mechanism, monitoring, early-warning and risk prevention of geological disasters

5.Department of Engineering and Materials Sciences

（1）High-performance metallic materials

（2）Inorganic non-metallic functional materials

（3）Advanced materials preparation and processing

（4）Novel organic polymer materials

（5）Intelligent and safe resource extraction with green processing and utilization

（6）Intelligent design and manufacturing

（7）Renewable energy, new energy sources and energy storage technologies

（8）Efficient systems of electrical energy conversion and transformation

（9）Smart cities and intelligent buildings

（10）Disaster prevention and resilience in civil engineering

（11）Watershed hydrology, water resources, and hydroelectric engineering

（12）Marine engineering and deep-water equipment

（13）Intelligent transportation and vehicle engineering

（14）Smart and flexible wearable materials.

6.Department of Information Sciences

（1）Basic theory and key technologies for mobile communication and network

（2）Detection imaging, remote sensing theory and key technologies

（3）Novel computing paradigms and software methodologies

（4）Architecture and system of large complex computation scenarios

（5）Theory and application of big data computation

（6）Brain-like model and information processing

（7）New control theory and system

（8）Robotics and intelligent systems

（9）Biological and medical information system and technology

（10）Semiconductor electronics and optoelectronic devices

（11）Integrated circuit design and manufacturing

（12）Photonic integration technologies and devices

7.Department of Management Sciences

（1）Operations management based on general artificial intelligence

（2）System reliability management for complex mission scenarios

（3）Industrial engineering and quality management in the digital-intelligent era

（4）Optimization and management of integrated energy systems

（5）Resilience and security of strategic emerging industry chains and supply chains

（6）Theories and methods of digital-intelligent management

（7）E-commerce competition-collaboration management under network traffic effects

（8）Financial security and risk management in the digital economy

（9）Trade risks and global economic governance in the context of major global change

（10）AI-based economic prediction theories and methods

（11）Integration mechanisms between artificial intelligence and industries

（12）Security management and risk prevention of strategic resources.

8.Department of Health Sciences

（1）Epidemiology, pathogenesis, and precision diagnosis/treatment of major chronic diseases

（2）Pathogenesis and intervention of neuropsychiatric disorders

（3）Pathogenesis and precision diagnosis/treatment of malignant tumors

（4）Mechanisms of immune-inflammatory diseases and new immunotherapy strategies

（5）Research on the frontier of reproduction, development, aging related

diseases

（6）Repair and replacement therapies for tissue/organ damage and dysfunction

（7）Rapid identification, pathogenesis, transmission patterns, prevention/early warning, and novel treatment strategies for infectious diseases and emerging/outbreak infections

（8）Frontier research on first aid, trauma, rehabilitation and regenerative medicine

（9）Medical imaging and biomedical engineering

（10）Discovery of novel drug targets and druggability validation, along with AI applications in medicine and drug development

（11）Modern scientific connotation and material basis of traditional Chinese medicine, and its modernization and standardization

（12）Basic research on special and forensic medicine

International (Regional) Cooperation and Exchange Programs under Agreements/MoUs

Jointly organized and funded by NSFC and international science funding agencies (or research institutions and international organizations), the International (Regional) Cooperation and Exchange Programs under Agreements/MoUs support bilateral and multilateral joint research and academic exchanges between Chinese scientists and their partners. In recent years, NSFC has been actively enhancing its international collaboration policies, making notable progress in its partnerships. These efforts include strengthening cooperation with the United States, promoting a comprehensive new partnership with European counterparts, and deepening collaborations with Asian and African countries. NSFC further expands its multilateral cooperation through international organizations by leveraging its unique role of coordinating cross-border scientific research programs to engage more Chinese researchers in the participation, planning and implementation of cross-border regional research plans with scientific significance. Adhering to the one country, two systems policy of the central government, NSFC has attached significance to the scientific collaboration between Chinese mainland and Hong Kong, Macao Special Administrative Region, and the Taiwan region. NSFC has signed 106 cooperation agreements/MoUs with science funding agencies, research institutions and international organizations in 54 countries/regions. After NSFC and its partners agree on the modes of cooperation and exchange, funding area, types of grant, funding intensity, and review mechanism through negotiation, both sides will release call guides on their websites to call for proposals and organize application reviews.

The International (Regional) Cooperation and Exchange Programs under

Agreements/MoUs consist of 2 types of program: Joint Research Program and Exchange Program.

The Joint Research Program: In this category, NSFC and other funding organizations (or research institutions and international scientific organizations) jointly fund bilateral or multilateral joint research projects to support Chinese researchers and their partners to conduct basic research projects under the framework of cooperation agreements/MoUs.

Applicants applying for the Joint Research Program through the host institutions are required to meet the following eligibility criteria:

（1）Having the position/title of professor or associate professor;

（2）Must be the Principal Investigator (PI) of an ongoing or completed NSFC research grant with a minimum duration of 3 years.

（3）Having a solid foundation for cooperation with international (regional) partners.

The Joint Exchange Program: This category is designed to support Chinese researchers with active NSFC projects in fostering international collaboration and exchange initiatives. The primary objectives of this program include promoting innovation, cultivating talent, and enhancing the development of research disciplines to improve the overall quality of ongoing NSFC projects. The Exchange Program consists of Personnel Exchange Program and Academic Conference Program. The Personnel Exchange Program enables Chinese researchers to maintain sound bilateral or multilateral relations with their partners through cooperation and exchange activities, so as to lay a solid foundation for future in-depth and substantial collaboration. The Academic Conference Program aims at supporting researchers to organize bilateral or multilateral international conferences in and outside of China to keep pace with the latest research frontiers and hot spots in the international academic arena, establish and deepen cooperation between Chinese researchers and their foreign peers, strengthen the publicity of the research results of NSFC projects and enhance the international influence of China’s scientific research.

Applicants applying for the Joint Exchange Program through the host institutions are required to meet the following eligibility criteria:

（1）As the Principal Investigator (PI) of an ongoing NSFC research grant with a minimum duration of 3 years.

（2）As the participant of an on-going NSFC research project with a minimum duration of 3 years, and having a senior academic rank (title) or a doctoral degree, or recommendation from two researchers who are in the same research field and have a senior academic rank (title), and having consent from the PI of the said NSFC project.

Applicants who apply as main participants through the host institutions for the Joint Exchange Program are required to meet the following eligibility criteria:

（1）As the Principal Investigator (PI) or main participants of an ongoing NSFC

research grant with a minimum duration of 3 years.

（2）Having obtained consent from the PI of the NSFC ongoing project.

Please note that ongoing NSFC research projects do not include Joint Exchange Projects. More information about the International (Regional) Collaborative Research and Exchange Program is listed below. For detailed requirements about the application in 2025, please refer to the call for proposals to be launched on NSFC's website.

Asia and Africa

Japan

Japan Society for the Promotion of Science (JSPS)

NSFC and JSPS jointly fund the exchange projects and bilateral workshops.

（1）Exchange Program

NSFC and JSPS jointly fund the exchange projects between the Chinese and Japanese researchers. The funding period is 2 years and 9 months. The maximum funding amount for each project is no more than 200,000 yuan for Chinese researchers from NSFC, supporting the traveling cost of the Chinese researchers to Japan and the local expenses of the Japanese researchers in China. The traveling cost of Japanese researchers to China and the local expenses of the Chinese researchers in Japan will be covered by JSPS. The number of projects to be funded will be decided by both sides through negotiation.

（2）Bilateral Workshop

Participants of a bilateral workshop from each side must come from at least 3 institutions. The maximum funding amount for each project is 200,000 yuan from NSFC. For bilateral workshops held in China, the local cost of the attendees and the expense of the workshop will be covered by NSFC, while the cost of the international traveling of Japanese attendees will be covered by JSPS. For bilateral workshops held in Japan, the local cost of the attendees and the expense of the workshop will be covered by JSPS, while the cost of the international traveling of Chinese attendees will be covered by NSFC. The number of workshops to be funded will be decided by both sides through negotiation.

NSFC supports approximately 10 outstanding young researchers each year to attend the international HOPE Meeting hosted by JSPS. The conference invites Nobel laureates to deliver reports to young researchers from Asia and Africa through poster exchanges, group discussions, cultural experiences, and other ways that facilitate in-depth communication. JSPS covers the costs of the conference organization and local activities, while the NSFC funds the international travel expenses and related costs for Chinese participants.

South Korea

National Research Foundation (NRF)

NSFC and NRF jointly support joint research projects, exchange projects, and bilateral workshops.

（1）Joint Research Program

NSFC and NRF jointly fund research projects in areas of common interests between Chinese research and Korean researchers. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

（2）Exchange Program

NSFC and NRF jointly fund the exchange projects between Chinese and Korean researchers. The funding period is 2 years. The maximum funding amount for each project is 150,000 yuan for Chinese researchers from NSFC, supporting the traveling cost of the Chinese researchers to Korea and the local expenses of the Korean researchers in China. The traveling cost of Korean researchers to China and the local expense of the Chinese researchers in Korea will be covered by NRF. The number of projects to be funded will be decided by both sides through negotiation.

（3）Bilateral Workshop

Participants of a bilateral workshop from each side must come from at least 3 institutions. NSFC provides a maximum funding amount of 150,000 yuan for each project For bilateral workshops held in China, the local cost of the attendees and the expense of the workshop will be covered by NSFC, while the cost of the international traveling of Korean attendees will be covered by NRF. For bilateral workshops held in Korea, the local cost of the attendees and the expense of the workshop will be covered by NRF, while the cost of the international traveling of Chinese attendees will be covered by NSFC. The number of workshops to be funded will be decided by both sides through negotiation.

Israel

Israel Science Foundation (ISF)

NSFC and ISF jointly support joint research projects and bilateral workshops.

（1）Joint Research Program

NSFC and ISF jointly fund research projects in areas of common interests between Chinese research and Israeli researchers. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

（2）Bilateral Workshop

NSFC and ISF will fund approximately 2 bilateral academic workshops each year. The theme of the workshops will be determined through consultation between the two organizations.

Three Asian Countries (China, Japan and South Korea)

A3 Foresight Program

The A3 Foresight Program is a joint research program set up and sponsored by NSFC, Japan Society for the Promotion of Science (JSPS), and the National Research Foundation of Korea (NRF) together. NSFC, JSPS and NRF support researchers from China, Japan and South Korea to conduct collaborative world-class research in selected strategic areas with the aim to foster outstanding young researchers and address common regional challenges.

The priority areas of the A3 Foresight Program for each year are consistent with the themes of the Northeastern Asian Symposium jointly organized by NSFC, JSPS and NRF, with NSFC funding up to 4 million yuan per project for 5 years.

Thailand

National Research Council of Thailand (NRCT)

NSFC and NRCT jointly fund research projects in areas of common interests between Chinese research and Thai researchers. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

Pakistan

Pakistan Science Foundation (PSF)

NSFC and PSF jointly support joint research projects, exchange projects, and bilateral workshops.

（1）Joint Research Program

NSFC and PSF jointly fund research projects in areas of common interests between Chinese research and Pakistani researchers. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

（2）Exchange Program

NSFC and PSF jointly fund the exchange projects between Chinese and Pakistani researchers. The funding period is 2 years. The maximum funding amount for each project is 150,000 yuan for Chinese researchers from NSFC, supporting the traveling cost of the Chinese researchers to Pakistan and the local expenses of the Pakistani researchers in China. The traveling cost of Pakistani researchers to China and the local expense of the Chinese researchers in Pakistan will be covered by PSF. The number of projects to be funded will be decided by both sides through negotiation.

（3）Bilateral Workshop

Participants of a bilateral workshop from each side must come from at least 3 institutions. NSFC provides a maximum funding amount of 150,000 yuan for each project. For bilateral workshops held in China, the local cost of the attendees and the expense of the workshop will be covered by NSFC, while the cost of the international

traveling of Pakistani attendees will be covered by PSF. For bilateral workshops held in Pakistan, the local cost of the attendees and the expense of the workshop will be covered by PSF, while the cost of the international traveling of Chinese attendees will be covered by NSFC.

The number of workshops to be funded will be decided by both sides through negotiation.

Iran

Iran National Science Foundation (INSF)

NSFC and INSF jointly support joint research projects and bilateral workshops.

（1）Joint Research Program

NSFC and INSF jointly fund research projects in areas of common interests between Chinese research and Iranian researchers. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

（2）Bilateral Workshop

Participants of a bilateral workshop from each side must come from at least 3 institutions. NSFC provides a maximum funding amount of 150,000 yuan for each project For bilateral workshops held in China, the local cost of the attendees and the expense of the workshop will be covered by NSFC, while the cost of the international traveling of Iranian attendees will be covered by INSF. For bilateral workshops held in Iran, the local cost of the attendees and the expense of the workshop will be covered by INSF, while the cost of the international traveling of Chinese attendees will be covered by NSFC. The number of workshops to be funded will be decided by both sides through negotiation.

The United Arab Emirates (UAE)

Ministry of Education (MOE) of UAE

Exchange Program

NSFC and MOE jointly fund exchange projects.

Egypt

Academy of Scientific Research and Technology (ASRT)

Joint Research Program

NSFC and ASRT jointly fund research projects in areas of common interests between Chinese research and Egyptian researchers. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

Other Cooperation Channels

NSFC has signed bilateral cooperation agreements with the National Research Foundation of Singapore (NRF), the Department of Science and Technology of India (DST), and the Council of Scientific and Industrial Research of India (CSIR) to

jointly support collaborative research projects, exchange programs, and academic conferences for researchers.

America and Australasia

USA

The National Science Foundation (NSF)

According to the cooperative agreement between NSFC and NSF, both sides jointly support research and exchange projects in areas of common interests.

(1) Joint Research Program

NSFC and NSF jointly solicit collaborative research proposals in the areas of Biodiversity on a Changing Planet (BoCP) and Ecology and Evolution of Infectious Diseases (EEID).

NSFC and NSF will release the call for proposals together. The Chinese and U.S. researchers should submit the proposals to NSFC and NSF respectively. NSFC and NSF will jointly make final funding decisions based on the review conducted in the agreed approach and procedures.

(2) Exchange Program

NSFC and NSF will fund 3- to 5-year exchange projects in the areas of Biodiversity on a Changing Planet (BoCP) and Ecology and Evolution of Infectious Diseases (EEID) to support network building and preliminary research.

NSFC and NSF will release the call for proposals together. The Chinese and U.S. researchers should submit the proposals to NSFC and NSF respectively. The proposals will be reviewed by NSFC and NSF according to the agreed approach and procedures. And the final funding decisions will be mutually made.

Gates Foundation (GF)

According to the cooperative agreement between NSFC and BMGF, both sides jointly support research projects and bilateral workshops in areas of common interests.

(1) Joint Research Program

NSFC and BMGF will jointly solicit collaborative research proposals in the areas of global health, and support Chinese scientists to conduct collaborative research with international partners.

NSFC and BMGF will release the call for proposals together. NSFC and BMGF will jointly make final funding decisions based on the review conducted in the agreed approach and procedures.

(2) Bilateral Workshop

NSFC and BMGF will fund bilateral workshops in areas of global health and

agriculture. The topics of the workshops will be mutually identified and agreed by both parties.

New Zealand

Ministry of Business, Innovation and Employment (MBIE)

According to the cooperative agreement between NSFC and MBIE, both sides jointly support research and exchange projects in areas of common interests.

(1)Exchange Program

NSFC and MBIE will fund exchange projects in the areas of common interests to support network building and preliminary research.

NSFC and MBIE will release the call for proposals together. The Chinese and New Zealand researchers should submit the proposals to NSFC and MBIE respectively. The proposals will be reviewed by NSFC and MBIE according to the agreed approach and procedures. And the final funding decisions will be mutually made.

(2)Workshop

NSFC and MBIE will fund bilateral workshops in areas of common interests. The topics of the workshops will be mutually identified and agreed by both parties.

Latin America

NSFC will support research projects and workshops with São Paulo Research Foundation (FAPESP), the National Council of State Funding Agencies for Cooperation of Brazil (CONFAP), National Scientific and Technical Research Council of Argentina (CONICET), the National Research and Development Agency of Chile (ANID), and the Ministry of Science, Technology and Environment of Cuba respectively based on the bilateral cooperative agreements.

(1)Joint Research Program

NSFC will solicit collaborative research proposals with the above funding agencies respectively in the areas of common interests, and make final funding decisions jointly based on the review conducted in the mutually agreed approach and procedures.

(2)Exchange Program

NSFC and the above funding agencies will release the call for proposals together. The proposals will be reviewed by NSFC and the relevant funding agency according to the agreed approach and procedures. And the final funding decisions will be mutually made.

(3)Bilateral Workshop

NSFC will fund bilateral workshops with the above funding agencies respectively in areas and numbers mutually identified and agreed.

Europe

European Union

European Research Council (ERC)

Talent Program

NSFC and ERC will jointly fund the Chinese researchers to visit European countries for a single long-term or multiple short-term research stay (3 to 12 months in total). The Chinese researchers should join the ERC-funded project teams to conduct collaborative research based on the common interest. The international traveling cost will be covered by NSFC, with a maximum funding amount of 30,000 yuan per project. The local and research costs in Europe will be covered by the ERC granted projects.

JPI Urban Europe (JPI UE)

Joint Research Program

NSFC and JPI UE will jointly fund the collaborative research in areas of common interest between the Chinese and European researchers. The maximum funding amount for each project and funding period shall be determined through consultation between the NSFC and JPI UE.

Russia

Russian Science Foundation (RSF)

Joint Research Program NSFC and RSF will jointly fund the collaborative research in areas of common interests between the Chinese and Russian researchers. The maximum funding amount for each project will be 1.5 million yuan from NSFC. The funding period will be 3 years.

Germany

German Research Foundation (DFG)

Joint Research Program

NSFC and DFG will jointly fund the collaborative research in areas of mathematical and physical sciences, earth sciences, engineering and materials sciences, and information sciences between Chinese and German researchers. The maximum funding amount for each project will be 3 million yuan from NSFC. The funding period will be 3 years.

UK

UK Research and Innovation (UKRI)

Joint Research Program

NSFC and UKRI (EPSRC, BBSRC, NERC, MRC, ESRC and STFC) will jointly fund the collaborative research between the Chinese and UK researchers based on the research fields of common interest. The maximum funding amount for each project will be 3 million RMB from NSFC. The funding period will be 3 to 4 years.

Royal Society (RS)

Exchange Program

NSFC and RS will jointly fund the exchange visits between the Chinese and UK researchers. The maximum funding amount for each project will be 100,000 yuan for Chinese researchers from NSFC and 12,000 pounds for UK researchers from RS. The cost for the international traveling, accommodation, meals and intercity transportation will be covered by the granted projects. The funding period will be 2 years.

Belgium

The Research Foundation-Flanders (FWO)

Exchange Program

NSFC and FWO will jointly fund the exchange visits between researchers from

China and Flemish researchers from Belgium. The maximum funding amount for each project will be 100,000 yuan from NSFC, supporting the international traveling cost of the Chinese researchers to Belgium and local expenses of the Chinese researchers in Belgium. The international traveling cost of the Belgian researchers to China and local expense of the Belgian researchers in China will be covered by FWO. The funding period will be 2 years.

The Fund for Scientific Research (FNRS)

Exchange Program

NSFC and FWO and FNRS will jointly fund the exchange visits between researchers from China and Wallonia-Brussels Federation researchers from Belgium. The maximum funding amount for each project will be 100,000 yuan from NSFC, supporting the international traveling cost of the Chinese researchers to Belgium and local expenses of the Chinese researchers in Belgium. The international traveling cost of the Belgian researchers to China and local expense of the Belgian researchers in China will be covered by FNRS. The funding period will be 2 years.

Italy

The National Research Council (CNR)

Exchange Program

NSFC and CNR will jointly fund the exchange visits between researchers from China and CNR of Italy. The maximum funding amount for each project will be 100,000 yuan from NSFC, supporting the international traveling cost of the Chinese researchers to Italy and local expenses of the Chinese researchers in Italy. The international traveling cost of the Italian researchers to China and local expense of the

Italian researchers in China will be covered by CNR. The funding period will be 2 years.

France

National Scientific Research Center (CNRS)

Exchange Program

NSFC and CNRS will jointly fund the exchange visits between researchers from China and CNRS of France. The maximum funding amount for each project will be 150,000 yuan from NSFC, supporting the international traveling cost of the Chinese researchers to Italy and local expenses of the Chinese researchers in France. The international traveling cost of the French researchers to China and local expense of the Italian researchers in China will be covered by CNRS. The funding period will be 2 years.

Poland

National Science Center(NCN)

NSFC and NCN will jointly fund the collaborative research between the Chinese and Polish researchers based on the research fields of common interest. The maximum funding amount for each project will be 2 million RMB from NSFC. The funding period will be 4 years.

Spain

State Research Agency (AEI)

NSFC and AEI will jointly fund the collaborative research between the Chinese and Spanish researchers based on the research fields of common interest.

Belarus

Belarusian Republican Foundation for Fundamental Research (BRFFR)

Exchange Program

NSFC and BRFFR will jointly fund the exchange visits between Chinese and Belarusian researchers. The maximum funding amount for each project will be 200,000 yuan from NSFC, supporting the international traveling cost and local expenses of Chinese and Belarusian researchers as well as the expenses for the bilateral workshops. The funding period will be 2 years.

Switzerland

Swiss National Science Foundation (SNSF)

Joint Research Program

NSFC and SNSF will jointly fund the collaborative research in areas of common interest between Chinese and Swiss researchers. The maximum funding amount for

each project will be 3 million yuan from NSFC. The funding period will be 4 years.

Sweden

Swedish Research Council (VR)

NSFC and VR will jointly fund the collaborative research between the Chinese and Swedish researchers based on the research fields of common interest.

Finland

Research Council of Finland（RCF）

Exchange Program

NSFC and RCF will jointly fund the exchange visits between the Chinese and Finnish researchers. The maximum funding amount for each project will be 100,000 yuan from NSFC, supporting the international traveling cost and local expenses for the Chinese researchers in Finland. The international traveling cost and the related expenses for the Finnish researchers in China will be covered by RCF. The funding period will be 2 years.

Turkey

The Scientific and Technological Research Council of Turkey (TÜBİTAK)

Joint Research Program

NSFC and TÜBİTAK will jointly fund the collaborative research in areas of common interest between Chinese and Turkish researchers. The maximum funding amount for each project will be 1.5 million yuan from NSFC. The funding period will be 3 years.

International Scientific Organizations and Multilateral Cooperation

International Center for Theoretical Physics (ICTP)

About 50 Chinese young researchers are funded by NSFC every year in the areas of mathematics, physics, and earth sciences to participate in various research activities at ICTP, such as summer seminars and short-term joint research. NSFC provides funding for international travel expenses and related costs for Chinese participants, while ICTP covers accommodation and meal expenses for Chinese participants.

International Institute of Applied Systems Analysis (IIASA)

NSFC encourages Chinese scientists to conduct multilateral cooperation with researchers from IIASA Programs in the areas of energy, environment, land use, water, population, and to jointly apply for research funding from governmental

organizations, private and national science foundations, World Bank and EU Framework Program.

NSFC fund young scientists to participate in the 3-month IIASA Young Scientists Summer Program (YSSP) in Vienna each year. Relevant information and application forms can be downloaded from the IIASA website (http://www.iiasa.ac.at).

Consultative Group on International Agricultural Research (CGIAR)

NSFC collaborates with 11 CIGAR-affiliated institutes/centers to fund joint research and academic conferences for researchers from both sides, including the Center for Bioversity International, International Center for Tropical Agriculture (CIAT), Center for International Forestry Research (CIFOR), International Maize and Wheat Improvement Center (CIMMYT), International Potato Center (CIP), International Center for Agricultural Research in the Dry Areas(ICARDA), World Agroforestry (ICRAF), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Food Policy Research Institute(IFPRI), International Livestock Research Institute (ILRI), and International Rice Research Institute (IRRI). The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 5 years.

United Nations Environment Program (UNEP)

NSFC and UNEP jointly support scientists to conduct collaborative research in the fields of ecosystem, climate change, resource efficiency and environmental governance and other sustainable development related areas. Cooperation with developing countries in Africa and Asian-Pacific regions will be given special focus. The maximum funding amount for each project is 3 million yuan from NSFC with a funding period of 5 years.

Belmont Forum (BF/IGFA)

NSFC supports Chinese researchers to participate in multilateral cooperation under the framework of the Belmont Forum. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

International Centre for Integrated Mountain Development (ICIMOD)

NSFC and ICIMOD jointly fund research projects to support researchers from China and ICIMOD member countries to advance research in the fields of sustainable development related areas in the region of Hindu Kush-Himalayas in China and the neighboring countries.

BRICS STI Framework Program

Chinese Ministry of Science and Technology (MOST), NSFC, Brazil National Council for Scientific and Technological Development (CNPq), Foundation for Assistance to Small Innovative Enterprises of Russia (FASIE), Ministry of science and higher education of the Russian Federation (MSHE), Foundation for Assistance to Small Innovative Enterprises (FASIE), Department of Science and Technology of India (DST), Department of Science and Technology of South Africa (DST), and National Research Foundation of South Africa (NRF), jointly fund multilateral

research projects under the framework of BRICS STI Framework Program. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

The East Asia Science and Innovation Area Joint Research Program (e-ASIA)

NSFC collaborates with research funding agencies of 10 ASEAN member countries and 8 additional countries (Australia, Japan, New Zealand, China, India, South Korea, Russia, and the U.S.) to jointly fund multilateral research under the the East Asia Science and Innovation Area Joint Research Program (e-ASIA) framework.

Field of Cooperation include materials (nanotechnology), alternative energy, agriculture (food), health research, disaster risk reduction and management, environment (climate change, marine science) and advanced interdisciplinary research towards innovation. The maximum funding amount for each project is 2 million yuan from NSFC with a funding period of 3 years.

European Organization for Nuclear Research (CERN)

The European Organization for Nuclear Research (CERN) is a global center for cutting-edge particle physics research and is home to the Large Hadron Collider (LHC), the world's most powerful particle accelerator. Its four major particle detectors—ALICE, ATLAS, CMS, and LHCb—are equipped with advanced technology to study microscopic phenomena and provide a top-notch platform for developing cutting-edge particle detection tech.

Since 2024, NSFC has launched the "NSFC-CERN Large Scientific Infrastructure International Cooperation Research Program" following the organizational model of NSFC Major Research Plan Program. Focusing on detector upgrades and physics research, the program supports Chinese researchers in joining CERN international cooperation through cultivation projects, key projects, and integration projects.

Sustainable Development International Cooperation Program (SDIC)

Aiming at realizing the United Nations Sustainable Development Goals (SDGs), NSFC will work with other funding agencies and international organizations to fund multilateral scientific research projects to address global challenges and major scientific problems faced by all countries around the world, especially developing countries, through three types of programs: Capacity Building Projects, Key Projects and Integrated Projects.

The Capacity Building Projects aim to enable further research and collaboration among Chinese and foreign researchers through exchange activities including collaborative research, researcher mobility, networking, workshops, training, and fieldwork.

The Key Projects support Chinese and foreign researchers to conduct collaborative research in selected fields, fostering outstanding scientific talents to solve regional scientific issues, developing strategies for the coordinated

implementation of ecological, resource, and socio-economic aspects of the SDGs and propose sustainable development strategies to provide scientific decision-making support for sustainable development in relevant countries and regions.

Hong Kong and Macao SARs and Taiwan Region of China

NSFC has established cooperations with the Research Grant Council of Hong Kong (RGC), Beijing-Hong Kong Academic Exchange Centre (BHKAEC), Macao Foundation for the Development of Science and Technology (FDCT), and K.T. Li Foundation for the Development of Science and Technology in Taiwan Region, jointly funding cooperation and exchange between researchers from the inland of China and Hong Kong and Macao SARs, and between researchers from two sides of the Taiwan Straits in areas of common interest. Types of activities that can be funded are joint research projects and exchange projects (including exchanged visits and academic workshops).

Hong Kong

The Research Grant Council of Hong Kong

NSFC and RGC will jointly fund join research in areas of natural sciences in 2025. The priority funding areas include information sciences, biological sciences, new materials, marine and environmental sciences, medical sciences, and management sciences. Meanwhile, to further encourage academic exchanges between young researchers from Hong Kong SAR and the inland of China, academic forums are organized and funded in areas of common interest.

Beijing-Hong Kong Academic Exchange Centre

NSFC and BHKAEC will jointly organize and fund academic conferences in areas of common interest.

Macao

Foundation for the Development of Science and Technology

NSFC and FDCT will, under the framework of the signed cooperative agreement, jointly fund basic research projects between scientists from the inland of China and Macao SAR. The priority areas include information sciences, TCM research, marine sciences, environmental sciences, biological sciences, new material sciences, as well as space sciences. Meanwhile, NSFC and FDCT will organize and fund academic conferences in areas of mutual interest for academic communities from the inland of China and Macao SAR.

Taiwan

K.T. Li Foundation for the Development of Science and Technology

NSFC has been dedicated to encouraging and promoting scientific cooperation and exchange between scientists on both sides of the Taiwan Straits. In 2025, NSFC will continue to support cross-Straits academic workshops held by scientists from the mainland of China and the Taiwan region. NSFC will also fund substantial joint research projects according to the consensus reached with K.T. Li Foundation for the Development of Science and Technology.

Sino-German Center for Research Promotion

The Sino-German Center for Research Promotion (abbreviated as SGC) is a research funding agency, jointly set up by NSFC and German Research Foundation (DFG). SGC's legal status is NSFC's affiliated institution. It aims at promoting scientific cooperation and exchange between Chinese and German researchers so as to push forward in-depth cooperation and development in fundamental science between China and Germany. **Starting from 2024, the application, funding and management of all SGC Programs (except for the Lindau Program) has been transferred to its parent agencies (i.e. NSFC and DFG) and incorporated into the NSFC's MOU-based International (Regional) Cooperation and Exchange Program. Applicants shall submit applications to NSFC and DFG respectively and are subject to the eligibility and requirements of NSFC and DFG.**

1. Subjects Covered

The SGC supports the cooperation activities between Chinese and German scientists in fundamental research in all fields of natural sciences.

2. Eligibility of Applicants

An applicant from China must be a PI or participant of an ongoing NSFC granted project with a duration of at least 3 years; Applicants from Germany must be eligible to apply for funding from DFG. Eligible Chinese and German scientists shall submit proposals respectively to NSFC and DFG. Unilateral applications are not accepted.

3. Application Limit

The SGC Programs (except for the Lindau Program) are subject to NSFC's regulation on the limit of the number of projects that an individual researcher could undertake or apply for.

4. Programs

(1) Bilateral Workshop (SGC Forum)

The Program supports small scale bilateral workshops between Chinese and German researchers. For workshops held in China, the expenses for the workshop, the

domestic traveling cost and local expenses for Chinese and German attendees will be covered by NSFC, while the cost for the international traveling will be covered by DFG. For workshops held in Germany, the cost for the international traveling for Chinese attendees will be covered by NSFC, while the expense for the workshops, the domestic traveling cost and local expenses of Chinese and German attendees will be covered by DFG.

For detailed requirements about the application in 2025, please refer to the call for proposals to be launched on NSFC's and SGC's websites.

(2) International Exchange Program (SGC Mobility)

The Program aims at supporting in-depth cooperation and exchanges between Chinese and German scientists in a specific field over a period of 3 years. It mainly supports scientists' short-term visits and small-scale workshops. A maximum of 750,000 yuan to the Chinese team and 100,000 Euros to the German team per project would be provided by NSFC and DFG respectively.

For detailed requirements about the application in 2025, please refer to the call for proposals to be launched on NSFC's and SGC's websites.

(3) Lindau Program

Lindau Nobel Laureate Meeting is held in late June each year in Lindau, Germany. Excellent young scientists from around the globe are also invited to attend the event. The SGC, together with Lindau Nobel Laureates Foundation, invites and funds 30 excellent Chinese PhD students and 10 excellent undergraduate students to participate in the Nobel Laureate meeting in Lindau, Germany, after a week-long academic visit to the German research institutions well-known in relevant disciplines solely organized by the SGC. Candidates are selected throughout China and must be recommended by their home institutions. The final approval list is decided by correspondence review and interviews by a panel of Chinese and German experts. The SGC provides funding for formally selected students for international travel expenses, inter-city travel expenses and accommodation costs according to its current funding rates. The SGC will handle the visa affairs for the selected students and pay for the related fees. The acceptance, funding and management of the Lindau Program is administered by the SGC.

Research Fund for International Scientists

Aiming at providing more research opportunities for and contributing to the career development of researchers at different academic stages, the Research Fund for International Scientists (hereinafter referred to as the RFIS) is set up to support international scientists with foreign citizenship in China's mainland to carry out basic research on self-selected topics that fit into the NSFC's funding scope. It will also enhance the long-term, sustainable academic collaboration and exchange between Chinese and international scientists.

The RFIS consists of three sub-types:

1. The Research Fund for International Young Scientists (RFIS-I)
2. The Research Fund for International Excellent Young Scientists (RFIS-II)
3. The Research Fund for International Senior Scientists (RFIS-III)

I. Eligibility Requirements

Scientific and technical personnel from host institutions applying for the RFIS sub-types shall meet the following respective requirements:

1. The Research Fund for International Young Scientists (RFIS-I)

(1) Doctoral degree obtained within the past 6 years (PhD must have been obtained after January 1, 2019);

(2) Experience of conducting basic research or postdoctoral research;

(3) Commitment of working for no less than 9 months each year (calendar year) at the host institution during the implementation of the project;

(4) Compliance with China's laws and NSFC's relevant rules and regulations while conducting research in China.

2. The Research Fund for International Excellent Young Scientists (RFIS-II)

(1) Doctoral degree completed within the past 15 year (PhD must have been obtained after January 1, 2010);

(2) Senior academic title;

(3) Experience of conducting basic research projects as Principal Investigator (PI);

(4) Commitment of working for no less than 9 months each year (calendar year) at the host institution during the implementation of the project;

(5) Compliance with China's laws and NSFC's relevant rules and regulations while conducting research in China.

3. The Research Fund for International Senior Scientists (RFIS-III)

(1) Senior academic title;

(2) Outstanding academic achievements and significant international influence;

(3) Commitment of working for no less than 9 months per year (calendar year) at the host institution during the implementation of the project;

(4) Compliance with China's laws and NSFC's relevant rules and regulations while conducting research in China.

II. Additional Requirements for Eligibility

1. The applicant can only be granted each sub-type of the RFIS for once.

2. The PI of an on-going grant of the RFIS cannot apply for a new RFIS project. The total number of application for the RFIS shall not exceed 1 for each year. If the applicant has submitted an application for any of the sub-types of the RFIS, the applicant shall not apply for the following programs in the same year: the Young Scientists Fund (YSF), the Excellent Young Scientists Fund (EYSF, including EYSF for scholars in Hong Kong and Macao), the National Science Fund for Distinguished Young Scholars (NSFDYS), the Science Fund for Creative Research Groups (SFCRG), and the International Collaboration Fund for Creative Research Teams (ICFCRT).

3. An applicant is not eligible to apply for the RFIS-I if the applicant has been the PI of an on-going or completed project of the RFIS-II, the RFIS-III, the ICFCRT, the YSF, the EYSF, the NSFDYS and the SFCRG.

4. An applicant is not eligible to apply for the RFIS-II if the applicant has been the PI of an on-going or completed project of the RFIS-III, the ICFCRT, the EYSF, the NSFDYS and the SFCRG.

5. An applicant shall not apply for the RFIS-III if the applicant has been the PI of an on-going or completed project of the ICFCRT, the NSFDYS and the SFCRG.

III. Funding Areas and Intensity

The funding areas include: Mathematical and Physical Sciences, Chemistry Sciences, Life Sciences, Earth Sciences, Engineering and Material Sciences, Information Sciences, Management Sciences, Health Sciences, and Interdisciplinary Sciences.

Applicants can apply for a one-year or two-year RFIS project. The direct cost is 200,000 RMB per year (per project) for the RFIS-I, 400,000 RMB per year (per project) for the RFIS-II, and 800,000 RMB per year (per project) for the RFIS-III.

IV. Proposal submission

For detailed information of proposal submission, please refer to the 2025 Call Guidelines for RFIS published on the official website of NSFC.

The Funding Statistics for the RFIS in 2024

Unit: 10,000 yuan

No.	Funding Areas	RFIS-III			RFIS-II			RFIS-I		
		Projects funded	Direct Funding	Success rate (%)	Projects funded	Direct Funding	Success rate (%)	Projects funded	Direct Funding	Success rate (%)
1	Mathematical and Physical Sciences	12	1 911	12.63	9	696	9.47	23	656	13.29
2	Chemistry Sciences	6	880	11.76	6	396	9.09	23	740	10.90
3	Life Sciences	9	1 440	9.57	9	679	9.38	49	1 680	11.53
4	Earth Sciences	6	944	12.50	4	280	8.70	17	540	11.89
5	Engineering and Material Sciences	10	1 520	10.87	11	863	10.19	39	1 258	11.21
6	Information Sciences	7	1 120	11.48	5	320	7.94	17	520	10.97
7	Management Sciences	1	160	11.11	4	280	10.26	19	580	10.73
8	Health Sciences	6	960	8.45	4	319	10.81	13	420	11.02
9	Interdisciplinary Sciences	3	480	7.14	3	240	8.57	—	—	—
Total or Average		**60**	**9 415**	**10.66**	**55**	**4 073**	**9.40**	**200**	**6 394**	**11.43**
Average Direct Funding per project		156.92			74.05			31.97		

International Collaboration Fund for Creative Research Teams

The International Collaboration Fund for Creative Research Teams (hereinafter referred to as the ICFCRT) aims to enhance international scientific collaborations, attract and support pioneering scientists with foreign citizenship to build research teams in China's mainland, and carry out creative basic research and applied basic research on self-selected topics within the funding scope of NSFC, and eventually cultivate leading research teams that contribute to the advancement of global scientific frontiers.

I. Eligibility Requirements

(1) The applicant, as the PI of the Collaborative Creative Research Team, shall meet the following requirements:

a. Foreign citizenship and a senior academic title;

b. Outstanding academic achievements and significant international influence, and ability to build and lead a research team to carry out creative research in China's mainland;

c. Commitment to work for no less than 6 months per year (calendar year) at the host institution during the implementation of the project;

d. *The Agreement to Support the Application of ICFCRT* shall be signed between the applicant and the host institution (If the applicant has a full-time position abroad

at the application stage, the foreign employer institution should be informed).

(2) Participants as backbone researchers of the Collaborative Creative Research Team, regardless of nationalities, shall hold senior academic titles or doctoral degrees.

(3) No more than 4 backbone researchers and 2 participating institutions in each project.

(4) Compliance with THE Chinese laws and NSFC's relevant rules and regulations while conducting research in China

II. Additional Requirements for Eligibility

(1) For an individual with a senior academic title, the total number of applications, no matter as PI or as participant, for the ICFCRT, the Science Fund for Creative Research Groups (SFCRG)，the Continuing Grant of National Science Fund for Distinguished Young Scholars (CGNSFDYS) and the Excellence Research Group Program (ERGP, the former Basic Science Center Program) shall not exceed 1 for each year.

(2) The PI of an on-going or completed project of the Continuing Grant of National Science Fund for Distinguished Young Scholars (CGNSFDYS), the Science Fund for Creative Research Groups (SFCRG) or the Excellence Research Group Program (ERGP) shall not apply for or participate in this program.

(3) The individual with a senior academic title who is participating in an on-going project granted by the ICFCRT, the Science Fund for Creative Research Groups (SFCRG) or the Excellence Research Group Program (ERGP), shall not apply for or participate in this program.

(4) The PI of an on-going grant of the Research Fund for International Scientists (RFIS) cannot apply for the ICFCRT. The total number of application for the RFIS and the ICFCRT shall not exceed 1 for each year.

(5) NSFC's general limit that the total number of projects one can apply for and hold at the same time should not exceed 2 does not apply to this program.

III. Funding Areas, Duration and Intensity

In 2025, the funding areas for the ICFCRT include: Mathematical and Physical Sciences (A), Chemical Sciences (B), Life Sciences (C), Earth Sciences (D), Engineering and Material Sciences (E), Information Sciences (F), Management Sciences (G), Health Sciences (H), and Interdisciplinary Sciences (T).

The project duration will be three years with an average direct funding of 6 million RMB per project and indirect funding of 1.2 million RMB per project. For projects of Mathematical Sciences and Management Sciences, the direct funding will be 4.8 million RMB per project and indirect funding 1.2 million RMB per project.

IV. Proposal submission

For detailed information of proposal submission, please refer to the 2025 Call Guidelines for ICFCRT published on the official website of NSFC.

The Funding Statistics for the ICFCRT in 2024

Unit: 10,000 yuan

No.	Funding Areas	Projects funded	Direct Funding	Success rate (%)	Average Direct Funding per project
1	Mathematical and Physical Sciences	5	2760	14.29	552.00
2	Chemistry Sciences	4	2400	17.39	600.00
3	Life Sciences	4	2400	8.51	600.00
4	Earth Sciences	3	1800	10.71	600.00
5	Engineering and Material Sciences	2	1200	3.03	600.00
6	Information Sciences	2	1200	3.92	600.00
7	Management Sciences	1	480	20.00	480.00
8	Health Sciences	3	1800	7.32	600.00
9	Interdisciplinary Sciences	**1**	600	3.23	600.00
Total or Average		**25**	14,640	**7.65**	**585.60**

NSFC Application Code

A. Department of Mathematical and Physical Sciences

A01 Algebra and Geometry

A0101 History of Mathematics, Mathematical Logic, and Axiomatic Set Theory
A0102 Analytic Number Theory and Combinatorial Number Theory
A0103 Algebraic Number Theory
A0104 Structure of Groups and Algebras
A0105 Lie Theory and Its Generalizations
A0106 Representation Theory and Homology Theory
A0107 Algebraic Geometry and Complex Geometry
A0108 Global Differential Geometry
A0109 Geometric Analysis
A0110 Symplectic Geometry and Mathematical Physics
A0111 Algebraic Topology and Geometric Topology
A0112 General Topology

A02 Analysis

A0201 Complex Analysis in One Variable
A0202 Complex Analysis in Several Variables
A0203 Complex Dynamical Systems
A0204 Geometric Measure Theory and Fractals
A0205 Harmonic Analysis and Approximation Theory
A0206 Nonlinear Functional Analysis
A0207 Operator Theory
A0208 Space Theory
A0209 Markov Processes and Statistical Physics
A0210 Stochastic Analysis and Stochastic Processes
A0211 Probability Limit Theory and Randomized Structures

A03 Differential Equations and Dynamical Systems

A0301 Ordinary Differential Equations

A0302 Difference Equations
A0303 Dynamical Systems and Ergodic Theory
A0304 Elliptic and Parabolic Partial Differential Equations
A0305 Hyperbolic Partial Differential Equations
A0306 Mixed and Degenerate Partial Differential Equations
A0307 Infinite Dimensional Dynamical Systems and Dispersion Theory
A0308 Integrable Systems and Their Applications

A04 Statistics and Operations Research

A0401 Theory and Methods of Data Sampling
A0402 Statistical Inference and Statistical Computing
A0403 Bayesian Statistics and Statistical Applications
A0404 Statistics for Big Data
A0405 Continuous Optimization
A0406 Discrete Optimization/Combinatorial Optimization
A0407 Stochastic Optimization and Statistical Optimization
A0408 Combinatorial Mathematics
A0409 Graph Theory and Its Applications
A0410 Algorithm Complexity and Approximation Algorithm

A05 Computational Mathematics

A0501 Fundamental Theories and Construction Methods of Algorithms
A0502 Numerical Algebra
A0503 Numerical Approximation and Computational Geometry
A0504 Numerical Solutions of Differential Equations
A0505 Modeling and Computation of Inverse Problems
A0506 Computable Modeling and Numerical Simulation of Complex Problems
A0507 Novel Computational Methods

A06 Mathematics Intersects with Other Disciplines

A0601 Mathematical Methods in Control
A0602 Mathematical Theory and Methods of Information Technology and Uncertainty
A0603 Economic Mathematics and Financial Mathematics
A0604 Mathematics in Biology and Life Sciences
A0605 Symbolic Computation and Automated Theorem Proving
A0606 Mathematical Theory and Methods in Artificial Intelligence
A0607 Mathematical Theory and Methods in Data Science
A0608 Mathematical Theory in Security
A0609 Intersection with Other Fields

A07 Dynamics and Control

A0701 Analytical Mechanics
A0702 Nonlinear Vibration and Control
A0703 Stochastic Dynamics and Control
A0704 Nonlinear Dynamics of Multibody and High-Dimensional Systems
A0705 Dynamics of Aircraft and Transport Systems
A0706 Rotor Dynamics
A0707 Dynamics of Neural and Intelligent Systems
A0708 Design and Inverse Problems in Dynamics

A08 Solid Mechanics

A0801 Deformation and Constitutive Theory of Solids
A0802 Strength, Damage, Fracture and Fatigue of Solids
A0803 Wave, Vibration and Noise
A0804 Contact, Friction, Surface and Interface Mechanics
A0805 Micro-Nano Mechanics and Multiscale Mechanics
A0806 Optimal Design, Manufacture and Reliability of Materials and Structures
A0807 Mechanics of Composite Materials and Structures
A0808 Mechanics of Multi-Field Coupling and Smart Structures
A0809 Mechanics of Soft Matter and Flexible Structures
A0810 Fluid Solid Coupling Mechanics
A0811 Chemomechanical Coupling
A0812 Experimental Solid Mechanics
A0813 Computational Solid Mechanics
A0814 Mechanics of Materials and Structures under Extreme Conditions
A0815 Physical Mechanics

A09 Fluid Mechanics

A0901 Turbulence and Flow Stability
A0902 Vortex and Separation Flows
A0903 Aerodynamics
A0904 Hydrodynamics
A0905 Multiphase Flow, Porous Flow and Non-Newtonian Fluid Mechanics
A0906 Flow Noise and Aeroacoustics
A0907 Micro-Nano Flows and Interfacial Flows
A0908 Multi-Field, Multi-Medium Coupling Flow and Flow Control
A0909 Experimental Fluid Mechanics
A0910 Computational Fluid Dynamics

A10 Biomechanics

A1001 Biomechanics of Solids and Fluids
A1002 Multiscale Mechanobiology
A1003 Biomechanics and Bionics of Natural Materials, and Sport Mechanics
A1004 Mechanical Principles and Design of Medical Materials and Devices

A11 Aeronautic and Astronautic Mechanics

A1101 Fundamentals of Aerodynamic and Dynamic Design
A1102 Structural mechanics design and performance evaluation
A1103 Flight mechanics and control

A12 Explosion and Impact Dynamics

A1201 Explosion Mechanics
A1202 Impact Dynamics

A13 Environmental Mechanics

A1301 Mechanics of Rock and Soil
A1302 Environmental Fluid Mechanics and Granular Flows
A1303 Mechanics in Extreme Environments and Disasters

A14 Cosmology and Galaxies

A1401 Dark Matter, Dark Energy, Early Universe and Cosmological Models
A1402 Formation and Evolution of Cosmic Structures
A1403 Formation, Structure and Evolution of Galaxies
A1404 Interactions and Nuclear Activities of Galaxies
A1405 Formation, Structure and Evolution of the Milky Way

A15 Stars and Interstellar Medium

A1501 Interstellar Medium and Star Formation
A1502 Structure and Evolution of Stars, Stellar Atmosphere, Variable Stars, Binary Stars and Multiple Star Systems
A1503 Late Stellar Evolution and Explosion, Compact Objects and Related High-Energy Astrophysical Processes

A16 Solar Physics

A1601 Solar Structure, Solar Activity Cycle, Solar Atmosphere and Solar Magnetic Fields
A1602 Solar Eruption and Its Effects on Interplanetary Space

A17 Planet Science

A1701 Formation and Evolution of the Solar System, Characteristics and Exploration of Solar System Small Bodies

A1702 Exploration, Structure and Atmosphere of Terrestrial Planets and Giant Planets of the Solar System

A1703 Detection and Characteristics of Exo-Solar Planets, Formation and Evolution of Planet Systems

A18 Fundamental Astronomy

A1801 Astrometry, Astronomical Reference System, Astrogeodynamics, History of Astronomy

A1802 Time and Frequency

A1803 Methods and Theories of Celetial Mechenics, Relativistic Fundamental Astronomy

A1804 Application of Fundamental Astronomy on Space Target Monitoring, Navigating and Locating

A19 Astronomical Techniques and Methods

A1901 Techniques and Methods of Optical, Ultraviolet and Infrared Astronomy

A1902 Technology and Methods of Radio Astronomy

A1903 Technology and Methods of Space Astronomy and High-Energy Astronomy

A1904 Astronomical Information Technology, Mass Data Processing and Numerical Simulation Methods

A20 Condensed Matter Physics

A2001 Structures, Phase Transitions and Lattice Dynamics of Condensed Matter

A2002 Mechanical, Thermal, Optical and Electronic Properties of Condensed Matter

A2003 Transport Properties of Condensed Matter

A2004 Electronic Structures of Condensed Matter

A2005 Physics of Semiconductors

A2006 Ferroelectric and Multiferroic Systems

A2007 Magnetism and Spintronics

A2008 Superconductivity and Superfluid

A2009 Strongly Correlated Systems

A2010 Topological Systems in Condensed Matter

A2011 Surface, Interface and Low-Dimensional Physics

A2012 Liquid, Quasicrystalline and Amorphous State Physics

A2013 Soft Matter and Biological Physics
A2014 Emerging and Interdisciplinary Fields in Condensed Matter Physics
A2015 Computation Physics

A21 Atomic and Molecular Physics

A2101 Structure, Collision, and Spectroscopy of Atoms and Molecules
A2102 Interaction of Atoms, Molecules with Photons
A2103 Cold Atom/Molecule Physics and Application
A2104 Cluster Physics
A2105 Atomic and Molecular Physics at Extreme
A2106 Atoms and Molecules in External Fields: Properties and Manipulations
A2107 Atomic and Molecular Physics Intersects with Other Disciplines

A22 Optics

A2201 Light Propagation, Detection and Imaging
A2202 Light-Matter Interaction
A2203 Light Field Manipulation and Nonlinear Optics
A2204 Ultrafast Optics and Strong Field Physics
A2205 Quantum Optics
A2206 Micro-and Nano-Optics and Photonics
A2207 Spectroscopy and Solid State Luminescence
A2208 Optical Materials and Device Physics
A2209 Optics in Emerging Spectral Range and Novel Light Sources
A2210 Interdisciplinary Fields Related to Optics

A23 Acoustics

A2301 Linear and Nonlinear Acoustics
A2302 Underwater Acoustics and Aeroacoustics
A2303 Ultrasonics and Ultrasonic Technique
A2304 Environmental Acoustics
A2305 Bioacoustics and Speech Acoustics
A2306 Acoustic Material, Transducer and Measurement
A2307 Interdisciplinary Fields Related to Acoustics

A24 Quantum Manipulation

A2401 Quantum Materials and Physical Property Manipulations
A2402 Quantum Structures and Quantum Effects
A2403 Precision Measurement Physics
A2404 Quantum Computation and Quantum Communication
A2405 Quantum Simulation

A2406 Quantum Device Physics
A2407 Novel Quantum Technologies and Interdisciplinary Fields

A25 Fundamental Physics

A2501 Mathematical Physics and Computational Methods in Physics
A2502 Quantum Physics and Quantum Information
A2503 Statistical Physics and Complex Systems
A2504 Relativity, Gravitation and Cosmology
A2505 Theoretical Physics for Interdisciplinary Sciences

A26 Particle Physics

A2601 Quantum Field Theory and String Theory
A2602 Strong Interactions and Hadronic Physics
A2603 Heavy Flavor Physics
A2604 Electroweak Interactions and Higgs Physics
A2605 Precision Tests of the Standard Model and New Physics
A2606 Neutrino and Particle Astrophysics

A27 Nuclear Physics

A2701 Nuclear Structure and Decay
A2702 Nuclear Reaction and Heavy Ion Nuclear Physics
A2703 Intermediate and High Energy Nuclear Physics
A2704 Nuclear Astrophysics
A2705 Nuclear Parameter Measurements and Evaluations

A28 Particle Accelerator, Nuclear Reactor and Particle Detector

A2801 Accelerator Physics
A2802 Accelerator Technology and Application
A2803 Physics and Technology of Nuclear Reactor
A2804 Particle Detection Technology
A2805 Nuclear Electronics Technology
A2806 Online and Offline Data Processing

A29 Plasma Physics

A2901 Basic Processes and Characteristics in Plasmas
A2902 Plasma Matter Interactions
A2903 Plasma Diagnostic Technology
A2904 Magnetic Confinement Fusion Plasmas
A2905 Inertial Confinement Fusion Plasmas
A2906 High Energy Density Physics

A2907 Low Temperature Plasmas
A2908 Space and Astrophysical Plasmas

A30 Nuclear Technology and Application

A3001 Interaction of Particle Beam with Matter
A3002 Radiation Damage in Materials and Devices
A3003 Ion Implantation and Ion Beam Modification of Materials
A3004 Nuclear Analysis Techniques and Applications
A3005 Neutron Techniques and Applications
A3006 Radiation Detection and Imaging
A3007 Radiation Dosimetry and Radiation Protection
A3008 Principles and Techniques of Synchrotron Radiation and Free-Electron Laser
A3009 Beamline Techniques and Experimental Methods
A3010 Application of Nuclear Technology in Other Fields

B. Department of Chemical Sciences

B01 Synthetic Chemistry

B0101 Elemental Chemistry
B0102 Coordination Chemistry
B0103 Cluster and Nanochemistry
B0104 Inorganic Synthesis
B0105 Catalytic Synthetic Reactions
B0106 Asymmetric Synthesis
B0107 Total Synthesis of Natural Products
B0108 New Reactions and New Reagents
B0109 Polymer Synthesis
B0110 Supramolecular Chemistry
B0111 Biomimetic and Green Synthesis
B0112 Synthesis of Functional Molecules/Materials
B0113 Structure and Reaction Mechanisms

B02 Catalysis and Surface/Interface Chemistry

B0201 Fundamental Theories and Characterization Methods
B0202 Catalytic Chemistry
B0203 Surface Chemistry
B0204 Colloid and Interface Chemistry

B0205 Electrochemistry

B03 Chemical Theory and Mechanism

B0301 Chemical Theory and Method
B0302 Chemical Simulation and Application
B0303 Chemical Thermodynamics
B0304 Chemical Kinetics
B0305 Structural Chemistry
B0306 Photochemistry and Spectroscopy
B0307 Chemical Reaction Mechanism
B0308 Moletronics and Molecular Magnetism
B0309 Polymer Physics and Polymer Physical Chemistry
B0310 Chemical Informatics and Artificial Intelligence
B0311 Chemical Programs and Software

B04 Chemical Measurement Science

B0401 Separation and Analysis
B0402 Electroanalytical Chemistry
B0403 Spectroscopic Theories and Methods
B0404 Chemical and Biosensing
B0405 Chemical Imaging
B0406 Analysis for Life Sciences and Public Safety
B0407 Instrumentation Development and Application of Large-Scale Scientific Facilities

B05 Materials Chemistry

B0501 Advanced Characterization and Theoretical Mechanisms
B0502 Functional Inorganic Materials Chemistry
B0503 Functional Organic Materials Chemistry
B0504 Functional Polymer Materials Chemistry
B0505 Composite and Hybrid Materials Chemistry
B0506 Intelligent and Biomimetic Materials Chemistry
B0507 Biomedical Materials Chemistry
B0508 Information Technology Materials Chemistry
B0509 Ecomaterials Chemistry
B0510 Energetic Materials Chemistry
B0511 Functional Specialty Materials

B06 Environmental Chemistry

B0601 Theoretical Environmental Chemistry

B0602 Environmental Analytical Chemistry
B0603 Chemistry in Atmospheric Pollution and Control
B0604 Chemistry in Water Pollution and Control
B0605 Chemistry in Soil Pollution and Remediation
B0606 Chemistry in Solid Waste Pollution and Disposal
B0607 Environmental Toxicology and Health
B0608 Radiochemistry and Radiation Chemistry
B0609 Biosafety and Protective Chemistry
B0610 Interfacial Chemical Behaviors of Pollutants

B07 Chemical Biology

B0701 Molecular Probes for Biological Systems
B0702 Chemical Biology of Biomolecules
B0703 Chemical Biology of Natural Products
B0704 Chemical Genetics
B0705 Biosynthetic Chemistry
B0706 Medicinal Chemical Biology
B0707 Theories, Methods and Technologies of Chemical Biology

B08 Chemical Engineering and Industrial Chemistry

B0801 Chemical Engineering Thermodynamics
B0802 Transport Processes
B0803 Reaction Engineering
B0804 Separation Engineering
B0805 Process Intensification and Chemical Engineering Equipment
B0806 Mesoscience and Intelligent Chemical Engineering
B0807 Green Chemical Engineering and Chemical Engineering Safety
B0808 Medicinal and Pharmaceutical Chemical Engineering
B0809 Photochemical and Electrochemical Engineering
B0810 Agricultural and Food Chemical Engineering
B0811 Biomass Conversion and Light Chemical Engineering
B0812 Biochemical Engineering and Synthetic Bioengineering
B0813 Fine Chemical Engineering and Specialty Chemicals
B0814 Chemical Product Engineering and Materials Chemical Engineering
B0815 Energy Chemical Engineering
B0816 Chemical Engineering of Resources, Environment and Ecology

B09 Energy Chemistry

B0901 Hydrogen Energy Chemistry
B0902 Carbon-based Energy Chemistry

B0903 Thermal Energy Chemistry
B0904 Mechanical Energy Chemistry
B0905 Electro-energy Chemistry
B0906 Photo-energy Chemistry
B0907 Energy Chemistry in Extreme Conditions
B0908 Energy Materials Chemistry

C. Department of Life Sciences

C01 Microbiology

C0101 Microbial Diversity, Classification, and Phylogeny
C0102 Microbial Physiology and Biochemistry
C0103 Microbiomics and Metabolism
C0104 Microbial Genetics and Biosynthesis
C0105 New Microbiological Techniques and Methods
C0106 Microbial Environmental Interaction
C0107 Virology
C0108 Pathogenic Bacteriology
C0109 Pathogenic Mycology and Other Microorganisms

C02 Botany

C0201 Plant Taxonomy
C0202 Phylogenesis and Evolution of Plants
C0203 Plant Photosynthesis and Nitrogen Fixation
C0204 Transport and metabolism of water and nutrients
C0205 Plant Environment Interaction
C0206 Plant Hormones and Growth Regulators
C0207 Plant Reproduction and Development
C0208 Plant Resource Protection and Utilization
C0209 Phytochemistry
C0210 New Technologies and Methods in Botany Research

C03 Ecology

C0301 Environment and Biological Evolution
C0302 Behavioral Ecology
C0303 Physiological Ecology
C0304 Population Ecology
C0305 Community Ecology

C0306 Ecosystem Ecology
C0307 Landscape and Regional Ecology
C0308 Global Change Ecology
C0309 Microecology
C0310 Pollution Ecology and Restoration Ecology
C0311 Soil Ecology
C0312 Protective Biology
C0313 Sustainable Ecology

C04 Zoology

C0401 Animal Evolution and Development
C0402 Animal System and Classification
C0403 Animal Physiology and Behavior
C0404 Animal Breeding and Population Dynamics
C0405 Animal Resources and Protection
C0406 Marine Zoology
C0407 Wildlife Epidemics and Transmission
C0408 Experimental Zoology

C05 Biophysics and Biochemistry

C0501 Structural Biology
C0502 Molecular Biophysics
C0503 Cell Sensing and Environmental Biophysics
C0504 Physical Biology
C0505 Protein, Peptide, and Enzyme Biochemistry
C0506 Biochemistry of sugars and lipids
C0507 Nucleic Acid Biochemistry
C0508 Inorganic Biochemistry and Environmental Measurement and Control
C0509 Biological Processes and Metabolism

C06 Genetics and Bioinformatics

C0601 Structure and function of genetic material
C0602 Gene expression and non coding sequence regulation
C0603 Epigenetic regulation
C0604 Phenotype, Behavior, and Genetic Basis of Diseases
C0605 Genetics and Evolution
C0606 Population genetics and quantitative genetics
C0607 Genomics
C0608 Biological Data Resources and Analysis Methods
C0609 Biological Big Data Analysis

C07 Cell Biology

C0701 The structure, interaction, and function of organelles and subcellular cells
C0702 Cell Signal Transduction
C0703 Cell Proliferation and Cell Cycle
C0704 Cell fate and reprogramming
C0705 Cell Aging, Death and Autophagy
C0706 Cell Polarity and Cell Movement
C0707 Cell Variation and Functional Abnormality
C0708 Cell Metabolism and Steady State Regulation
C0709 Extracellular microenvironment and intercellular communication

C08 Immunology

C0801 Innate immunity
C0802 Adaptive immunity
C0803 Immune Evolution and Environmental Adaptation
C0804 Autoimmunity and immune tolerance
C0805 Tumor Immune Microenvironment
C0806 Infection and Non Infectious Inflammation
C0807 Immunoinformatics and Big Data Analytics
C0808 Vaccine, Antibody, and Immune Intervention

C09 Neuroscience and Psychology

C0901 Molecular and Cellular Neurobiology
C0902 Developmental and Aging Neurobiology
C0903 Structure and function of nervous system and abnormalities
C0904 Neurobiology of the sensory and motor systems
C0905 Behavioral and Emotional Neuroscience
C0906 Cognitive Neurobiology
C0907 Cognitive Psychology
C0908 Developmental and Educational Psychology
C0909 Behavior, Decision Making, and Social Psychology
C0910 Applied Psychology and Others
C0911 Physiology and Medical Psychology
C0912 Psychological Disorders and Cognitive Disorders and Interventions
C0913 New Technologies and Paradigms in Neuroscience and Psychology Research
C0914 Cognitive Simulation, Computing, and Artificial Intelligence

C10 Biomaterials, Imaging, and Tissue Engineering

C1001 Biomechanics and Biorheology

C1002 Biomaterials and Biological Effects
C1003 Tissue Engineering
C1004 Tissue Regeneration and Artificial Organs
C1005 Bioimaging, Electronics, and Probes
C1006 Biomimetics and Artificial Intelligence
C1007 Nanobiology
C1008 New Technologies and Methods for Biological and Medical Engineering

C11 Physiology and Integrative Biology

C1101 Circulation and Blood Physiology
C1102 Endocrine, urinary, and reproductive physiology
C1103 Respiratory and Digestive Physiology
C1104 Sensory Organs and Exercise Physiology
C1105 Integrative Physiology and Integrative Biology
C1106 Aging and Biological Rhythm
C1107 Nutrition and Metabolic Physiology
C1108 Special Environmental Physiology and Comparative Physiology
C1109 Pathophysiology

C12 Developmental Biology and Reproductive Biology

C1201 Basic Research on stem cells
C1202 Applied research on stem cell
C1203 Early embryonic development and cell lineage establishment
C1204 Tissue and organ development and in vitro construction
C1205 Tissue and Organ Steady State Maintenance and Regeneration Repair
C1206 Germ Cells and Sex Determination
C1207 Fertilization, implantation, and maternal fetal interaction
C1208 Reproductive abnormalities and assisted reproduction

C13 Agriculture and Crop Science

C1301 Agricultural Informatics
C1302 Agronomy and Agromechanics
C1303 Agricultural Biological Systems Engineering
C1304 Crop Physiology
C1305 Crop Stress Biology
C1306 Crop Germplasm Resources
C1307 Crop Genome and Genetics
C1308 Crop Breeding
C1309 Cultivation of Rice Crops
C1310 Wheat Crops and Maize Cultivation

C1311 Other Crop Cultivation
C1312 Tillage
C1313 Tropical Crop Science

C14 Plant Protection

C1401 Plant Pathology
C1402 Agricultural Entomology
C1403 Crop Immunity and Resistance
C1404 Grass, mouse, and other harmful organisms in farmland
C1405 Plant Chemical Protection
C1406 Biological Control
C1407 New Plant Protection Technology
C1408 Crop Biological Factor Interaction and Ecological Regulation

C15 Horticulture and Plant Nutrition

C1501 Physiology and Cultivation of Fruit Trees
C1502 Fruit Tree Germplasm Resources and Genetics and Breeding
C1503 Fruit Tree Growth and Development
C1504 Physiology and Cultivation of Vegetables, Melons and Fruits
C1505 Vegetable, melon and fruit germplasm resources and genetics and breeding
C1506 Vegetables and Fruit Growth and Development
C1507 Ornamental Horticulture
C1508 Tea Science
C1509 Postharvest Biology of Horticultural Crops
C1510 Edible Mycology
C1511 Facility Horticulture
C1512 Fundamentals of Plant Nutrition
C1513 Fertilizers and Nutrient Management

C16 Forestry

C1601 Wood Physics
C1602 Forest Products Chemistry
C1603 Tree Biology
C1604 Forest Soil Science
C1605 Forest Cultivation
C1606 Forest Informatics and Forest Management
C1607 Forest Conservation
C1608 Tree Genetics and Breeding
C1609 Economic Forestry

C1610 Landscape Architecture
C1611 Desertification and Soil and Water Conservation
C1612 Bamboo Science

C17 Animal Husbandry

C1701 Fundamentals of Animal Husbandry
C1702 Livestock Germplasm Resources and Genetics and Breeding
C1703 Germplasm Resources and Genetics and Breeding of Poultry and Other Economic Animals
C1704 Livestock and Poultry Reproduction
C1705 Animal Nutrition
C1706 Feed Science
C1707 Animal Behavior and Intelligent Breeding
C1708 Beekeeping
C1709 Sericulture

C18 Veterinary Medicine

C1801 Basic Veterinary Medicine
C1802 Veterinary Virology
C1803 Veterinary Bacteriology and Other Microbiology
C1804 Veterinary Immunology
C1805 Veterinary Parasitology
C1806 Veterinary Infectious Diseases
C1807 Chinese Veterinary Medicine
C1808 Veterinary Pharmacology and Toxicology
C1809 Clinical Veterinary Medicine
C1810 Zoonosis
C1811 Veterinary Public Hygiene

C19 Aquatics

C1901 Fundamentals of Aquatics
C1902 Aquatic Biology Genetics and Breeding
C1903 Aquatic Biological Reproduction and Development
C1904 Fisheries Resources and Conservation Biology
C1905 Aquatic Animal Nutrition and Feed Science
C1906 Aquaculture
C1907 Aquatic Biological Immunology
C1908 Aquatic Bioaetiology and Disease Control
C1909 Aquaculture and Fishery Engineering

C20 Food Science

C2001 Food Ingredients
C2002 Food Biochemistry
C2003 Food Microbiology
C2004 Food Composition and Nutrition
C2005 Food and Intestinal Microflora
C2006 Food Processing and Manufacturing
C2007 Food Storage and Preservation
C2008 Food Quality and Safety Testing
C2009 Food Safety Risk Assessment
C2010 Food Safety and Quality Control
C2011 Food Flavor Chemistry and Sensory Evaluation
C2012 New Methods for Food Science Research

C21 Molecular Biology and Biotechnology

C2101 Basic Theory of Frontier Technology
C2102 Synthetic Biology and Biomodification Technology
C2103 Biomics Technology
C2104 Common Biotechnology
C2105 Cross Fusion Biotechnology
C2106 Applied Biotechnology
C2107 Instrument Development for Life Sciences Research

C22 Grass Science

C2201 Grass Germplasm Resources and Genetic Breeding
C2202 Grass Genomics and Basic Biology
C2203 Grass Cultivation Science
C2204 Grass Product Processing and Utilization
C2205 Natural Grassland Restoration
C2206 Grassland Conservation and Sustainable Management
C2207 Grassland Agronomy Systems
C2208 Turfgrass Science
C2209 Grassland Informatics and Smart Grassland Industry

D. Department of Earth Sciences

D01 Geography

D0101 Geomorphology

D0102 Hydrology and Climatology
D0103 Biogeography and Soil Geography
D0104 Environmental Geography and Disaster Geography
D0105 Landscape Geography and Integrated Physical Geography
D0106 Cryospheric Science
D0107 Geographical Environmental Change and Civilization Evolution
D0108 Economic Geography
D0109 Urban Geography and Rural Geography
D0110 Human Geography
D0111 Land Science and Natural Resource Management
D0112 Regional Sustainable Development
D0113 Remote Sensing
D0114 Geographical Information Science
D0115 Geodesy and Cartography
D0116 Geographical Big Data and Spatial Intelligence
D0117 Geographic Observation and Simulation Technology

D02 Geology

D0201 Paleontology, Paleoanthropology and Paleoecology
D0202 Stratigraphy
D0203 Mineralogy (including Mineral Physics)
D0204 Petrology
D0205 Mineral deposits
D0206 Sedimentology and Basin Dynamics
D0207 Petroleum and Natural Gas Geology
D0208 Coal Geology
D0209 Quaternary Geology
D0210 Precambrian Geology
D0211 Tectonics and Structural Geology
D0212 Exploration Technology and Geological Drilling
D0213 Hydrogeology
D0214 Engineering Geology
D0215 Mathematical Geology and Remote Sensing Geology
D0216 Volcanology and Geothermal Geology
D0217 Biogeology

D03 Geochemistry

D0301 Isotope geochemistry
D0302 Elemental geochemistry
D0303 Geochronology

D0304 Organic geochemistry
D0305 Analytical geochemistry
D0306 Experimental and computational geochemistry
D0307 Emerging and interdisciplinary geochemistry
D0308 Petrogeochemistry
D0309 Fossil fuel geochemistry
D0310 Surface geochemistry
D0311 Ore deposit and exploration geochemistry
D0312 Biogeochemistry
D0313 Atmospheric and marine geochemistry

D04 Geophysics and Space Physics

D0401 Physical Geodesy
D0402 Satellite Geodesy
D0403 Applied Geodesy
D0404 Gravity
D0405 Geomagnetism
D0406 Geo-electromagnetism
D0407 Seismology
D0408 Earth Interior Physics and Geodynamics (including Geothermy)
D0409 Oil and Gas Geophysics
D0410 Mineral Geophysics
D0411 Engineering and Environmental Geophysics
D0412 Space Physics
D0413 Space Weather
D0414 Physics Experiments and Instruments of the Earth and other Planets

D05 Atmospheric Science

D0501 Synoptic Meteorology
D0502 Climate and Climate System
D0503 Paleoclimate Simulation and Dynamics
D0504 Atmospheric Dynamics
D0505 Atmospheric Physics
D0506 Atmospheric Chemistry
D0507 Ecological Meteorology
D0508 Atmospheric Observation, Remote Sensing and Detection Technology and Methods
D0509 Atmospheric Data and Information Techniques
D0510 Atmospheric Numerical Model Development
D0511 Earth System Model Development

D0512 Climate change, impacts and Countermeasures
D0513 Atmospheric Environment and Health Meteorology
D0514 Applied Meteorology

D06 Marine Science

D0601 Physical Oceanography
D0602 Marine Chemistry
D0603 Marine Geology and Geophysics
D0604 Biological Oceanography and Marine Bioresources
D0605 Marine Ecology and Environmental Science
D0606 Estuarine and Coastal Science
D0607 Ocean Remote Sensing
D0608 Ocean Physics and Marine Observation & Detection Technology
D0609 Marine Data Science and Information System
D0610 Ocean System and Global Change
D0611 Ocean Engineering and the Associated Environmental Effects
D0612 Marine Disasters, Disaster Prevention and Mitigation
D0613 Marine Energy and Resources
D0614 Sea-land Coordination and Sustainable Development
D0615 Polar Science

D07 Environmental Geosciences

D07 Environmental Geosciences
D0701 Environmental Soil Science
D0702 Environmental Water Science
D0703 Environmental Atmospheric Science
D0704 Environmental Biology
D0705 Engineering Geological Environment and Disasters
D0706 Environmental Geology
D0707 Environmental Geochemistry
D0708 Ecotoxicology
D0709 Basic Soil Science
D0710 Soil Erosion and Soil Fertility
D0711 Environmental Behavior and Effects of Pollutants
D0712 Environment and Health Risk
D0713 Quaternary Environment and Environmental Archaeology
D0714 Environmental Information and Environmental Prediction
D0715 New Technologies and New Methods in Environmental Geosciences
D0716 Regional Environmental Quality and Safety
D0717 Environmental Protection and Sustainable Development

D08 Lunar and Planetary Science
D0801 Planetary Geology
D0802 Planetary Chemistry
D0803 Physics and Dynamics of Planetary Interiors
D0804 Planetary Space Physics
D0805 Planetary Atmosphere and Ocean
D0806 Astrobiology
D0807 Planetary Remote Sensing and Geodesy
D0808 Planetary Exploration and Simulation
D0809 Planet Formation and Evolution
D0810 Earth-Moon System
D0811 Planetary Resources

E. Department of Engineering and Material Sciences

E01 Metallic Materials

E0101 Design, calculation and characterization of metallic materials
E0102 Preparation and processing of metallic materials
E0103 Service behavior and surface engineering of metallic materials
E0104 Metallic structural materials and mechanical behavior
E0105 Metal matrix composites and structure-function integration
E0106 Metallic low-dimensional and metastable materials
E0107 Metallic functional materials
E0108 Metallic energy and environmental materials
E0109 Metallic information functional materials
E0110 Metallic biomaterials and biomimetic materials

E02 Inorganic non-metallic materials

E0201 Artificial crystals and glass materials
E0202 Inorganic non-metallic basic materials
E0203 Carbon based materials and super-hard materials
E0204 Structural ceramics
E0205 Inorganic non-metallic basic composite materials
E0206 Functional ceramics
E0207 Inorganic non-metallic semiconductors and information functional materials
E0208 Inorganic non-metallic energy conversion and storage materials
E0209 Inorganic non-metallic high-temperature superconducting materials and

magnetic materials

E0210 Inorganic non-metallic biological materials
E0211 Other inorganic non-metallic materials

E03 Organic polymer materials

E0301 Preparation of polymer materials
E0302 Physics of polymer materials
E0303 Processing and molding of polymer materials
E0304 General polymer materials
E0305 Polymer blends and composites
E0306 Polymer materials and the ecological environment
E0307 Intelligent and biomimetic polymer materials
E0308 Biomedical organic polymer materials
E0309 Organic polymer materials with optical, electrical, or magnetic functions
E0310 Other functional organic polymer materials

E04 Mining and Metallurgical Engineering

E0401 Oil-Gas Well Engineering
E0402 Oil and Gas Production
E0403 Storage and Transportation of Oil and Gas
E0404 Basic Theory of Mining
E0405 Mining Engineering
E0406 Intelligent Mine
E0407 Mine Restoration Engineering
E0408 Safety Science and Engineering
E0409 Mining Engineering and Separation of Substances
E0410 Metallurgical Physical Chemistry and Principles of Metallurgy
E0411 Ferrous Metallurgy
E0412 Nonferrous Metals Metallurgy
E0413 Powder Metallurgy and Powder Engineering
E0414 Materials Processing Engineering and Metallurgy
E0415 Resource recycling

E05 Mechanical Design and Manufacturing

E0501 Robotics and Mechanism
E0502 Transmission and Drive
E0503 Mechanical Dynamics
E0504 Mechanical Structural Strength
E0505 Mechanical Tribology and Surface Technology
E0506 Mechanical Design

E0507 Mechanical Bionics and Biomanufacturing
E0508 Forming Manufacturing
E0509 Machining Manufacturing
E0510 Manufacturing Systems and Intelligence
E0511 Mechanical Measurement Theory and Technology
E0512 Micro-nanomechanical Systems

E06 Engineering Thermo-physics and Energy Utilization

E0601 Engineering Thermodynamics
E0602 Internal Flow Fluid Mechanics
E0603 Heat and Mass Transfer
E0604 Combustion
E0605 Multiphase Flow Thermo-physics
E0606 Thermal Properties and Thermophysical Testing Techniques
E0607 Engineering Thermo-physics in Renewable Energy and New Energy Utilization

E07 Electrical Science and Engineering

E0701 Electromagnetic field and circuit
E0702 Superconducting and electrical materials
E0703 Electric machine and its system
E0704 Power system and integrated energy
E0705 High voltage and discharge
E0706 Power electronics
E0707 Electric energy storage and application
E0708 Bio-electromagnetic technology

E08 Architecture and Civil Engineering

Architecture and Civil Engineering
E0801 Architecture
E0802 Urban and Rural Planning
E0803 Architectural Physics
E0804 Structural Engineering
E0805 Engineering Materials
E0806 Engineering Construction and Service
E0807 Geotechnical and Foundation Engineering
E0808 Underground and Tunnel Engineering
E0809 Road and Rail Transit Engineering
E0810 Engineering Disaster Prevention

E09 Hydraulic Engineering

E0901 Engineering Hydrology and Water Resources Utilization
E0902 Agricultural and Rural Water Conservancy
E0903 Hydraulics and River Dynamics
E0904 Hydro-machinery and Systems
E0905 Hydraulic Geotechnical Engineering
E0906 Hydraulic Structures

E10 Environmental Engineering

E1001 Drinking water engineering
E1002 Urban wastewater treatment and reclamation
E1003 Industrial wastewater treatment and reuse
E1004 Urban and rural water system and ecological cycle
E1005 Air pollution control
E1006 Solid waste recycling and safe disposal
E1007 Environmental pollution abatement and remediation
E1008 Regional and urban eco-environmental system engineering
E1009 Eco-environmental risk control

E11 Ocean Engineering

E1101 Costal and Ocean Engineering
E1102 Ship Engineering
E1103 Marine Technology
E1104 Navigation and Maritime Technology

E12 Transportation and Vehicle Engineering

E1201 Theory of Transportation System Analysis
E1202 Transportation Planning and Design
E1203 Traffic Information and Control
E1204 Transportation Safety and Environment
E1205 Foundation of Vehicle Design
E1206 Vehicle System Dynamics
E1207 Intelligentization of Vehicle System
E1208 Vehicle Application Engineering

E13 New Conceptual Materials and Common Science of Materials

E1301 New methods for materials design and characterization
E1302 New Material Fabrication techniques and digital manufacturing
E1303 Multi-functional integration of materials and devices

E1304 New composite and hybrid materials
E1305 New concept materials
E1306 Essential materials for advanced manufacturing
E1307 Essential engineering materials

F. Department of Information Sciences

F01 Electronics and information system

F0101 Information theory
F0102 Information system and system security
F0103 Communication theory and system
F0104 Communication network
F0105 Mobile communication
F0106 Aerospace communication
F0107 Maritime and underwater communication
F0108 Multimedia communication
F0109 Optical communication
F0110 Quantum communication and its information processing
F0111 Signal theory and signal processing
F0112 Radar principle and technology
F0113 Information acquisition and processing
F0114 Detection and imaging
F0115 Underwater information acquisition and processing
F0116 Image information processing
F0117 Multimedia information processing
F0118 Circuit and system
F0119 Electromagnetic field and wave
F0120 Terahertz theory and technology
F0121 Microwave photonics
F0122 Physical electronics
F0123 Sensitive electronics and sensors
F0124 Bio-electronics and bio-information processing
F0125 Medical information detection and processing
F0126 Interdisciplinary Research in Electronic Information

F02 Computer Science

F0201 Theoretical Foundations of Computer Science
F0202 System Software, Databases, and Enterprise Software

F0203 Software Theory, Software Engineering, and Services
F0204 Computer System Architecture and Hardware Technology
F0205 Network and System Security
F0206 Information Security
F0207 Computer Networks
F0208 Internet of Things and Other Emerging Networks
F0209 Computer Graphics and Virtual Reality
F0210 Computer Image and Video Processing and Multimedia Technology
F0211 Information Retrieval and Social Computing
F0212 Data Science and Big Data Processing
F0213 Bioinformatics and Digital Health
F0214 New Computing Methods and Applications
F0215 Interdisciplinary Research in Computer Science

F03 Automation

F0301 Control Theory &Technologies
F0302 Control Systems &Applications
F0303 System Modeling Theory & Simulation Technologies
F0304 Systems Engineering Theory &Technologies
F0305 Biological & Medical Informatics: Systems & Technologies
F0306 Automatic Measurement Technologies & Devices
F0307 Navigation, Guidance & Control
F0308 Automation for Intelligent Manufacturing
F0309 Robotics & Intelligent Systems
F0310 Artificial Intelligence-Driven Automation
F0311 Automation for Emerging Fields

F04 Semiconductor Science and Information Devices

F0401 Semiconductor Materials
F0402 Integrated Circuit Design
F0403 Semiconductor Optoelectronic Devices and Integration
F0404 Semiconductor Electronic Devices and Integration
F0405 Semiconductor Device Physics
F0406 Integrated Circuit Devices, Manufacturing, and Packaging
F0407 Micro-Nano Electromechanical Devices and Control Systems
F0408 Novel Information Devices
F0409 Interdisciplinary Research in Semiconductors

F05 Optics and Optoelectronics

F0501 Optical Information Acquisition, Display and Processing

F0502 Photonic and Optoelectronic Devices
F0503 Photonic Devices for Transmission and Switching
F0504 Infrared and Terahertz Physics and Technology
F0505 Nonlinear Optics
F0506 Lasers
F0507 Spectral Informatics
F0508 Applied Optics
F0509 Optical And Optoelectronic Materials
F0510 Space, Atmospheric, Oceanic and Environmental Optics
F0511 Biological, Medical Optics and Photonics
F0512 Energy and Illumination Photonics
F0513 Micro-Nano Photonics
F0514 Photonic Integration Technology and Devices
F0515 Quantum Optics
F0516 Optical Problems in Interdisciplinary Research

F06 Artificial Intelligence

F0601 Fundamentals of Artificial Intelligence
F0602 Complexity Science and Artificial Intelligence Theory
F0603 Machine Learning
F0604 Machine Perception and Machine Vision
F0605 Pattern Recognition and Data Mining
F0606 Natural Language Processing
F0607 Knowledge Representation and Processing
F0608 Intelligent Systems and Artificial Intelligence Security
F0609 Cognitive and Neuroscience Inspired Artificial Intelligence
F0610 Artificial Intelligence Issues in Interdisciplinarity

F07 Information Science in Interdisciplinarity

F0701 Information Science and Technology in Education

G. Department of Management Sciences

G01 Management Science and Engineering

G0101 Complex Systems Management
G0102 Operations Research and Management
G0103 Decision-Making Theory and Game Theory
G0104 Forecasting and EvaluationTheory and Method

G0105 Management Statistics Theory and Method
G0106 Management Psychology and Behaviors
G0107 Management System Engineering
G0108 Industrial Engineering and Quality Management
G0109 Logistics and Supply Chain Management
G0110 Service Science and Engineering
G0111 Data Science and Management
G0112 Information System and Management
G0113 Risk Management
G0114 Financial Engineering
G0115 Engineering Management and Project Management
G0116 Transportation Management
G0117 Digital Platform Management Theory

G02 Business Administration

G0201 Strategic Management
G0202 Theory of Firm
G0203 Enterprise Technology Management and Innovation Management
G0204 Human Resource Management
G0205 Financial Management
G0206 Accounting and Auditing
G0207 Marketing
G0208 Organization Theory and Organization Behaviors
G0209 Business Intelligence and Digital Business
G0210 Corporate Finance
G0211 Enterprise Operation Management
G0212 Corporate Governance
G0213 Entrepreneurship
G0214 International Business Management
G0215 Tourism Management

G03 Economic Sciences

G0301 Econometrics and Economic Statistics
G0302 Behavioral Economics and Experimental Economics
G0303 Mathematical Economics and Computational Economics
G0304 Microeconomics
G0305 Macroeconomic Management
G0306 International Economics and Trade
G0307 Financial Economics
G0308 Public Finance and Public Economics
G0309 Industrial Economics

G0310 Economic Development and Economic Institutions
G0311 Agricultural and Forestry Economics and Management
G0312 Regional Economics
G0313 Population, Labor and Health Economics
G0314 Resources and Environmental Economics

G04 Macro-management and Policy

G0401 Public Administration and Public Policy
G0402 Theories and Methods of Policy Science
G0403 Governance and Policy of Science and Technology
G0404 Governance and Policy of Innovation
G0405 Governance and Policy of Public Health
G0406 Governance and Policy of Medicine
G0407 Governance and Policy of Education
G0408 Governance and Policy of Culture
G0409 Public Safety and Emergency Management
G0410 Social Governance and Social Security
G0411 Governance of Environment and Ecology
G0412 Governance and Policy of Resource
G0413 Regional Management and Urban Governance
G0414 Digital Governance and Information Resource Management
G0415 Global Governance and Sustainable Development

H. Department of Health Sciences

H01 Respiratory system

H0101 Structural and developmental abnormalities of the respiratory system
H0102 Respiratory infections, inflammation and immunity
H0103 Environmental factors and airway diseases
H0104 Bronchial asthma
H0105 Chronic obstructive pulmonary disease
H0106 Bronchiectasis
H0107 Pulmonary circulation and pulmonary vascular disease
H0108 Interstitial lung disease
H0109 Acute lung injury and acute respiratory distress syndrome
H0110 Sleep-disordered breathing and respiratory regulation
H0111 Respiratory failure and respiratory support
H0112 Pleura, mediastinum, thoracic and diaphragm-related disorders

H0113 Respiratory interventions, tracheal reconstruction and lung transplantation

H0114 New technologies and methods for respiratory disease research

H02 Circulation System

H0201 Abnormalities in cardiac structure, function and development

H0202 Myocardial injury, repair, remodeling and regeneration

H0203 Congenital heart disease

H0204 Abnormal cardiac electrical activity and arrhythmia

H0205 Coronary Artery Disease

H0206 Pulmonary heart disease

H0207 Myocarditis and cardiomyopathy

H0208 Heart valve disease and pericardial disease

H0209 Heart Failure

H0210 Heart/Vascular Transplantation and Assisted Circulation

H0211 Abnormalities in angiogenesis and vascular structure and function

H0212 Vascular injury, repair, remodeling and regeneration

H0213 Abnormal regulation of blood pressure and hypertension

H0214 Atherosclerosis and arteriosclerosis

H0215 Aortic disease

H0216 Peripheral vascular disease

H0217 Lymphatic vessels and lymphatic circulation diseases

H0218 Microcirculation and shock

H0219 Infections and immune-related diseases in circulation system

H0220 New technologies and methods for circulatory system diseases

H03 Digestive system

H0301 Digestive system textural abnormality, dysfunction and dysplasia

H0302 Immune-related diseases

H0303 Abnormal gastrointestinal motility

H0304 Abnormal gastrointestinal homeostasis, mucosal barrier disorders and related diseases

H0305 Gastric acid-related diseases and neuroendocrine dysregulation in digestive system

H0306 Gastrointestinal and abdominal infectious diseases

H0307 Liver metabolic disorders and related diseases

H0308 Drug, toxin and alcohol-induced digestive diseases

H0309 Inflammatory and infectious liver diseases

H0310 Liver injury, repair and regeneration

H0311 Liver protection and artificial liver

H0312 Cholelithiasis and biliary inflammation
H0313 Pancreatic exocrine dysfunction and pancreatitis
H0314 Digestive system organ transplantation
H0315 New technologies and methods for digestive diseases

H04 Reproductive System/Perinatal Medicine/Neonatology

H0401 Male reproductive system structure, function and development abnormalities
H0402 Male reproductive system injury and repair
H0403 Male reproductive system inflammation and infection
H0404 Male reproductive endocrine abnormalities and related diseases
H0405 Spermatogenic abnormalities and male infertility
H0406 Sexual dysfunction
H0407 Mammary structure, function and development abnormalities
H0408 Female reproductive system structure, function and development abnormalities
H0409 Female reproductive system injury and repair
H0410 Female reproductive system inflammation and infection
H0411 Female reproductive endocrine abnormalities and related diseases
H0412 Endometriosis and adenomyosis
H0413 Oocyte development, maturation, fertilization and related abnormalities
H0414 Early embryo development
H0415 Embryo implantation, maternal-fetal interaction, reproductive immunity and related diseases
H0416 Placental development, structure, function and related abnormalities
H0417 Pregnancy related diseases
H0418 Delivery and puerperal related diseases
H0419 Fetus related diseases and embryo origin diseases
H0420 Assisted reproduction
H0421 Neonatal diseases
H0422 New technologies and methods for reproductive system/perinatal medicine/neonatology research

H05 Urinary System

H0501 The structural, functional and development disorders of urinary system
H0502 Injuries and repairs of urinary system
H0503 Primary kidney diseases
H0504 Secondary kidney diseases
H0505 Chronic kidney diseases and its related complication
H0506 Hemodialyses and renal replacement therapies

H0507 Kidney transplantations
H0508 Urolithiasis and urinary tract infections
H0509 Benign diseases of prostate and bladder
H0510 Voiding dysfunction
H0511 New technologies and methods for urological diseases

H06 Locomotor System

H0601 Structural, functional and developmental abnormalities in locomotor system
H0602 Immune related diseases in locomotor system
H0603 Biomedical materials for bone, joint and soft tissue
H0604 Injury and repair of bone, joint and soft tissue
H0605 Transplantation and reconstruction of bone, joint and soft tissue
H0606 Infection of bone, joint and soft tissue
H0607 Fatigue and recuperation of bone, joint and soft tissue
H0608 Degenerative disease of bone, joint and soft tissue
H0609 Sports injury of bone, joint and soft tissue
H0610 Deformity and correction in locomotor system
H0611 New technologies and methods for locomotor system diseases

H07 Endocrine System/Metabolic Abnormalities and Nutritional Support

H0701 Endocrine system immune-related diseases
H0702 Pineal gland, hypothalamus, pituitary and related diseases
H0703 Thyroid, parathyroid and related diseases
H0704 Adrenal gland associated diseases
H0705 Gonads and related diseases
H0706 Physiological regulation and dysfunction of islets
H0707 Imbalance of glucose homeostasis and insulin resistance in target organs
H0708 Diabetes mellitus
H0709 Abnormal regulation of energy metabolism and obesity
H0710 Abnormal lipid metabolism
H0711 Physiological regulation and dysfunction of adipose tissue
H0712 Bone turnover, abnormal bone metabolism and abnormal calcium and phosphorus metabolism
H0713 Amino acids and nucleic acid metabolic abnormalities
H0714 Abnormal metabolism of water, electrolyte, trace elements and vitamins, acid-base imbalance
H0715 Malnutrition and nutritional support
H0716 New technologies and methods for endocrine system diseases/metabolic abnormalities and nutritional support

H08 Hematologic System

H0801 Hematopoiesis, hematopoiesis regulation and hematopoietic microenvironment
H0802 Erythrocyte and its related diseases
H0803 Leukocyte and its related diseases
H0804 Megakaryocyte, platelet and their related diseases
H0805 Bleeding, coagulation, fibrinolysis and thrombosis
H0806 Aplastic anemia and bone marrow failure
H0807 Myelodysplastic syndromes
H0808 Myeloproliferative diseases
H0809 Leukemia
H0810 Lymphoma and lymphocytic diseases
H0811 Myeloma and plasma cell diseases
H0812 Infection associated with blood system diseases and its treatment
H0813 Hematopoietic stem cell transplantation and its complications
H0814 Immunotherapy and cell therapy for hematologic disease
H0815 Blood transfusion, blood regeneration and blood products
H0816 New technologies and methods for hematological diseases

H09 Nervous System

H0901 Neurodevelopmental and metabolic abnormalities
H0902 Disorders of consciousness and cognitive dysfunction
H0903 Sensory disorders, pain and analgesia
H0904 Dyskinetic diseases
H0905 Anaesthesia and sedation
H0906 Abnormalities of cerebrovascular structure, function and related disorders
H0907 Neurological immune abnormalities and related diseases
H0908 Diseases associated with neurological barrier and cerebrospinal fluid circulation disorders
H0909 Inflammation, infection and related diseases of the nervous system
H0910 Nerve injury, repair and regeneration
H0911 Neuromuscular junction and muscle diseases, autonomic nerve diseases
H0912 Neurodegeneration and associated disorders
H0913 Abnormal neural electrical activities and paroxysmal diseases
H0914 Protection and regulation of neurological function
H0915 New technologies and methods for neurological diseases

H10 Mental Health and Psychological Health

H1001 Biological rhythm disorders and associated diseases
H1002 Sleep and sleep disorders

H1003 Organic mental disorders
H1004 Substance dependence and other addictive disorders
H1005 Schizophrenia or other psychotic disorders
H1006 Anxiety disorders, obsessive-compulsive disorders and stress-related disorders H1007 Mood disorders
H1008 Psycho-behavioral disorders in children and adolescents
H1009 Other behavioral and psychiatric disorders
H1010 Psychological assessment and intervention of psycho-behavioral disorders
H1011 New technologies and methods for mental disorders and psychological health

H11 Medical Immunology

H1101 Immune system development and differentiation abnormalities
H1102 Immune response abnormalities
H1103 Immune regulation abnormalities
H1104 Inflammation, infection and immunity
H1105 Organ transplantation and transplant immunity
H1106 Hypersensitivity reaction diseases
H1107 Autoimmune diseases
H1108 Immunodeficiency diseases
H1109 Neuroendocrine-immune abnormalities
H1110 Regional immune and mucosal immune diseases
H1111 Vaccine and immunoprophylaxis
H1112 Immunotherapy and related mechanisms
H1113 New technologies and methods for medical immunology research

H12 Dermatology

H1201 Abnormalities of skin morphology, structure, and function
H1202 Immune-mediated skin diseases
H1203 Infectious skin diseases
H1204 Non-infectious skin diseases
H1205 Skin appendages and related diseases
H1206 New techniques and approaches for dermatology research

H13 Ophthalmology

H1301 Corneal and ocular surface related diseases
H1302 Lens and cataract
H1303 Sclera, uvea and ocular immunology related diseases
H1304 Glaucoma, optic nerve and visual pathway related diseases

H1305 Retina, choroid and vitreous related diseases
H1306 Vision, optometry and myopia, amblyopia and ocular muscle disorder related diseases
H1307 Ocular manifestations due to systemic disease and orbital diseases
H1308 Ocular tissue transplantation
H1309 New technologies and methods for ophthalmic research

H14 Emergency and Critical Care Medicine

H1401 Olfactory, nasal and anterior skull base diseases
H1402 Throat and neck diseases
H1403 Ear and lateral skull base diseases
H1404 Auditory abnormalities and balance disorders
H1405 Otorhinolaryngology head and neck development related diseases
H1406 New technologies and methods for otorhinolaryngology head and neck research

H15 Oral and Craniofacial Sciences

H1501 Diseases related to the development of oral craniomaxillofacial tissues and organs
H1502 Defect restoration and regeneration of oral craniomaxillofacial tissues and organs
H1503 Dental pulp and periapical tissue diseases
H1504 Periodontal and oral mucosal diseases
H1505 Saliva, salivary glands, oral and maxillofacial, nerves and jaw benign diseases
H1506 Taste, oral and maxillofacial pain, occlusion and temporomandibular joint diseases
H1507 Restoration of tooth defects or missing and correction of dentognathic deformities
H1508 Biomechanics and biomaterials of oral craniomaxillofacial tissues
H1509 New technologies and methods for oral craniomaxillofacial research

H16 Emergency and Critical Care Medicine

H1601 Sepsis
H1602 Organ function failure and support
H1603 Cardiac-pulmonary resuscitation
H1604 Poisoning and heat stroke
H1605 New technologies and methods for emergency and critical care medicine

H17 Trauma/Burns/Plastic Surgery

H1701 Trauma

H1702 Burns and chilblain
H1703 Wound healing and scar management
H1704 Deformity, injury, repair and regeneration of surface tissues and organs
H1705 Transplantation and reconstruction of surface tissues and organs
H1706 Craniomaxillo-facial deformity and its correction
H1707 New technologies and methods for trauma/burn/plastic surgery research

H18 Oncology

H1801 Tumor etiology
H1802 Tumorigenesis
H1803 Tumor cell-fate
H1804 Tumor genetics and evolution
H1805 Tumor epigenetics
H1806 Tumor immunology
H1807 Tumor metabolism
H1808 Tumor microenvironment
H1809 Tumor recurrence and metastasis
H1810 Tumor stem cells
H1811 Interdisciplinary oncology
H1812 Cancer prevention
H1813 Cancer diagnosis
H1814 Cancer chemotherapy
H1815 Targeted cancer therapy
H1816 Cancer radiotherapy
H1817 Cancer physical therapy
H1818 Cancer immunotherapy
H1819 Cancer biotherapy
H1820 Comprehensive cancer therapy
H1821 Cancer therapy resistance
H1822 Cancer rehabilitation
H1823 Rare tumors and cancer with special characteristics
H1824 Solid tumors in children
H1825 Big data and artificial intelligence for Oncology
H1826 Clinical Translational research in Oncology
H1827 New technologies and methods for oncology

H19 Gerontology

H1901 Mechanism and regulation of aging
H1902 Aging-related diseases
H1903 New technologies and methods for gerontology

H20 Rehabilitation Medicine

H2001 Rehabilitation treatment and rehabilitation mechanism
H2002 Rehabilitation evaluation
H2003 New technologies and new methods for rehabilitation medicine research

H21 Medical Virology and Viral Infection

H2101 Respiratory viruses and infections
H2102 Digestive tract viruses, picorna viruses and infections
H2103 Hepatitis viruses and infections
H2104 Retroviruses and infections
H2105 Herpes viruses and infections
H2106 Arboviruses and infections
H2107 Hemorrhagic fever viruses and infections
H2108 Human papilloma virus, rabies virus, parvovirus, prion and other viruses and infections
H2109 New technologies and methods for medical virology and viral infection

H22 Medical Pathogens and Infection

H2201 Pathogenic bacteria and infections
H2202 Pathogens fungi and infections
H2203 Parasites and infections
H2204 Mycoplasma, chlamydia, rickettsia, spirochetes and infections
H2205 Infectious diseases and vectors
H2206 Mutation and drug resistance of pathogens
H2207 Hospital-acquired infections
H2208 Sexually transmitted diseases
H2209 New technologies and methods for the study of non-viral medical pathogens and their infections

H23 Medical Genetics

H2301 Genetic diseases
H2302 Rare diseases
H2303 New technologies and methods for medical genetics research

H24 Medical Aspects of Specific Environments

H2401 Adaptation changes and injury mechanism of organism in specific environments
H2402 New technologies and methods for evaluation and protection of medical problems in specific environments

H25 Forensic Medicine

H2501 Forensic pathology and forensic clinical medicine
H2502 Forensic material evidence and forensic anthropology
H2503 Forensic toxicology
H2504 New technologies and methods for forensic medicine research

H26 Laboratory Medicine

H2601 Biochemical test
H2602 Microbiological analysis
H2603 Cytological and hematological examination
H2604 Immunological test
H2605 Molecular biology test
H2606 New technologies and methods for laboratory medicine

H27 Medical Imaging/Nuclear Medicine

H2701 Magnetic resonance imaging
H2702 X-rays and CT, electrons and ion beams
H2703 Ultrasonic medicine
H2704 Diagnosis and treatment in nuclear medicine
H2705 Medical optical imaging
H2706 Molecular imaging
H2707 Bio-electromagnetic imaging
H2708 Data processing, analysis and visualization for medical images
H2709 Big data and artificial intelligence for medical images
H2710 Interventional medicine and engineering
H2711 New technologies and methods for medical imaging/nuclear medicine

H28 Biomedical Engineering/Regenerative Medicine

H2801 Brain-computer interaction, neural engineering and rehabilitation engineering
H2802 Medical signal detection, recognition, processing and analysis for human
H2803 Biomedical sensing
H2804 Electromagnetic and physical therapy
H2805 Biomedical system modeling and simulation
H2806 Medical information system and telemedicine
H2807 Treatment planning, navigation and robot assistance
H2808 Nanomedicine
H2809 Biomaterials and biomimetic materials for medical uses
H2810 Mechanism and regulation of tissue/organ regeneration
H2811 Tissue and organ construction

H2812 Organ chip and system
H2813 Medical devices and instruments for detection and treatment
H2814 New technologies and methods for biomedical engineering/regenerative medicine

H29 Radiation medicine

H2901 Radiation injury and prevention
H2902 Medical radiobiology
H2903 New technologies and methods for radiation medicine research

H30 Preventive medicine

H3001 Environmental hygiene
H3002 Occupational health and diseases
H3003 Human nutrition
H3004 Food hygiene
H3005 Maternal and child health care
H3006 Children and adolescent health
H3007 Hygienic toxicology
H3008 Hygienic analytical chemistry
H3009 Infectious disease epidemiology
H3010 Epidemiology of non-communicable diseases
H3011 Epidemiological methods and health statistics
H3012 Behavior/psychological factors and health
H3013 Endemiology
H3014 New technologies and methods for preventive medicine research

H31 Chinese medicine

H3101 Zang-fu organs, qi, blood and body fluids
H3102 Etiology and pathogenesis
H3103 Basis of syndromes
H3104 Treatment principles and methods
H3105 Chinese medicine prescription
H3106 Chinese medicine diagnosis
H3107 Acupoints and Meridians
H3108 Chinese medicine internal medicine
H3109 Chinese medicine surgery
H3110 Chinese medicine orthopedics
H3111 Chinese medicine gynecology
H3112 Chinese medicine pediatrics
H3113 Chinese medicine ophthalmology

H3114 Chinese medicine otolaryngology and oral science
H3115 Chinese medicine oncology
H3116 Chinese medicine geriatrics
H3117 Chinese medicine health and rehabilitation
H3118 Acupuncture and moxibustion
H3119 Tuina and Massage
H3120 Ethnic medicine
H3121 New technologies and methods for Chinese medicine research

H32 Chinese materia medica

H3201 Chinese materia medica resources
H3202 Chinese medicinal identification
H3203 Chinese medicinal substances
H3204 Substances in pharmacodynamics
H3205 The processing of Chinese materia
H3206 Chinese materia medica preparation
H3207 Theories in the properties of Chinese materia medica
H3208 Neuropsychopharmacology of Chinese medicine
H3209 Cardio-cerebrovascular pharmacology of Chinese medicine
H3210 Anti-tumor pharmacology of Chinese medicine
H3211 Endocrinological and metabolic pharmacology of Chinese medicine
H3212 Anti-inflammatory and immune pharmacology of Chinese medicine
H3213 Antiviral and anti-infective pharmacology of Chinese medicine
H3214 Digestive and respiratory pharmacology of Chinese medicine
H3215 Urologic and reproductive pharmacology of Chinese medicine
H3216 Metabolism and pharmacokinetics of Chinese medicine
H3217 Toxicology of Chinese medicine
H3218 Ethnopharmacy
H3219 New techniques and methods for Chinese materia medica research

H33 Integrative medicine

H3301 Basic theory of integrated Chinese and western medicine
H3302 Clinical basis of integrated Chinese and western medicine;
H3303 New technologies and methods for research on integrated Chinese and western medicine

H34 Materia medica

H3401 Synthetic medicinal chemistry
H3402 Medicinal chemistry of natural products
H3403 Microbial drugs

H3404 Biotechnology drugs
H3405 Marine drugs
H3406 Special drugs and orphan drugs
H3407 Drug design and drug informatics
H3408 Pharmaceutics
H3409 Pharmaceutical materials
H3410 Pharmaceutical analysis
H3411 Drug resources
H3412 New technologies and methods for pharmaceutical research

H35 Pharmacology

H3501 Neuropsycho-pharmacology
H3502 Cardio-cerebrovascular pharmacology
H3503 Geriatric pharmacology
H3504 Pharmacology of anti-inflammatory and immunomodulatory drugs
H3505 Pharmacology of anti-tumor drugs
H3506 Pharmacology of anti-infective drugs
H3507 Pharmacology of metabolic disease drugs
H3508 Pharmacology of the digestive and respiratory system
H3509 Pharmacology of the blood, urinary and reproductive system
H3510 Drug metabolism and pharmacokinetics
H3511 Clinical pharmacology
H3512 Drug toxicology
H3513 New technologies and methods for pharmacological research

T. Department of Interdisciplinary Sciences

T01 Physical sciences
T02 Intelligence sciences
T03 Life and health sciences
T04 Convergence sciences

Notes:

These are the acceptance codes of Department of Interdisciplinary Sciences (DIS). There is no application code for DIS. When applying for the programs in DIS, the applicant should select an acceptance code (T01, T02, T03 or T04) and 2 to 5 application codes from the application codes of aforementioned eight science departments in NSFC.

Appendix

Contact information for the National Natural Science Foundation Departments

Department Name		Telephone number
Department of Mathematical and Physical Sciences		
Division of Planning		62326910 62326911
Division of Mathematics		62325025
Division of Mechanics		62327178
Division of Astronomy		62325940
Division I of Physics		62325055
Division II of Physics		62325069
Department of Chemical Sciences		
Division of Planning		62326906 62329320
Division I	Synthetic Chemistry	62327462
Division II	Catalysis and Surface/ Interface Chemistry	62327035
	Chemical Theory and Mechanism	62327167
Division III	Materials Chemistry	62328253
	Environmental Chemistry	62328181
Division IV	Chemical Measurement	62327173
	Environmental Chemistry	62327075
	Chemical Biology	62327169
Division V	Chemical Engineering and Industrial Chemistry	62327111 62328370
Department of Life Sciences		

Department Name		Telephone number
Division of Agriculture and Food Sciences	Basic Agriculture and Crop Science	62329494
	Food Sciences	62326919
Division of Agricultural Environment and Horticulture	Plant Protection	62327082
	Horticulture and Plant Nutrition	62327197
Division of Agriculture Animal	Animal Husbandry	62327196
	Veterinary Science	62329585
	Aquatic Science	62329105
Department of Earth Sciences		
Division of Planning		62327157 62326900
Division I	Science of Geography	62327161
Division II	Geology	62327652
	Geochemistry	62327675
Division III	Environmental Geosciences	62327159
	Geophysics and Space Physics	62327619
Division IV	Marine Science	62328528
Division V	Atmospheric Science	62327654
Department of Engineering and Materials Sciences		
Division of Planning		62326887 62326884
Division I of Materials Sciences	Metallic Materials	62327144
	Inorganic nonmetallic materials	62328234

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Department Name		Telephone number
Division of Planning		62326916 62327200 62329341
Division I of Biology	Microbiology	62329221
	Botany	62329135
	Zoology	62326914
Division II of Biology	Genetics and Bioinformatics	62329253
	Cell Biology	62327213
	Developmental Biology and Reproductive Biology	62329170
Division of Biomedicine	Immunology	62329630
	Neuroscience and Psychology	62329240
	Physiology and Integrative Biology	62325489
Division of Interdisciplinary Research	Biophysics and Biochemistry	62329246
	Biomaterials, Imaging and Tissue Engineering	62327842
	Molecular Biology and Biotechnology	62326915
Division of Environment and Ecology	Ecology	62329321
	Forestry and Grassland Science	62329573
Department of Management Sciences		
Division of Planning		62326898
Division I	Management science and engineering	62327156
Division II	Business administration	62326972
Division III	Macro-management and policy	62327152
	Economic Sciences	62326660
Division of Planning		62328991 62328047 62328952 62328941

Department Name		Telephone number
Division II of Materials Sciences	Organic polymer materials	62328337
	New concept and general science of materials	62327138
Division I of Engineering Sciences	Mining and Metallurgical Engineering	62327136
	Engineering Thermophysics and Energy Utilization	62327131
Division II of Engineering Sciences	Mechanical Design and Manufacturing	62327084
Division III of Engineering Sciences	Environmental Engineering	62327092
	Ocean Engineering	62327137
Division IV of Engineering Sciences	Architecture and Civil Engineering	62327135
	Transportation and Vehicle Engineering	62327142
Division V of Engineering Sciences	Electrical Science and Engineering	62328301
	Hydraulic Engineering	62328362
Department of Information Sciences		
Division of Planning		62329778
Division I	Electronics and technology	62327143
Division II	Computer Science	62327929
Division III	Automation	62327149
Division IV	Information Devices and Optics and Photo Electronics	62327351
Department of International Programs		
Division of Planning		62329547 62327017 62329034
Division I		62328949 62327244 62327413
Division II		62325943 62329469 62325430
Division III		62325143 62327014
Division of General Affairs (Division of Host Institution Management)		62328042 62325277 62326980
Division of Programs and Outcomes		62325562 62326978 62329336

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Department Name		Telephone number	Department Name	Telephone number
Division I	Respiratory system, circulatory system, hematological system	62327215 62328559	Division of Talents	62329133 62325932 62328046
Division II	Digestive system, urinary system, endocrine system, metabolism, and nutrition support, ophthalmology, otorhinolaryngology head and neck science, oral and craniomaxillo-facial science	62328790 62328680	Division of Joint Funds	62328041 62329897
			Division of Major Tasks	62327230 62327008
Division III	Nervous system, mental health and psychological health, gerontology	62327199	**Bureau of Finance**	
Division IV	Reproductive system/perinatal medicine/neonatology, medical immunology, medical genetics	62327207	Secretary of the Bureau	62328485
Division V	Special medicine, forensic medicine, medical imaging/nuclear medicine, biomedical engineering/regenerative medicine	62327198	Division of Budget Management	62327229 62327225 62329112 62328383 62326961
Division VI	Locomotor System, emergency and intensive care medicine, trauma/burns/plastic surgery, rehabilitation medicine, medical virology and virus infection, Human Pathogensand Infections, laboratory medicine	62328775 62327465	**Bureau of International Cooperation**	
			Division of Foreign Affairs Planning	62325454 62325793
			Division of Asian, African and International Organizations	62327014 62326998
Division VII	Oncology (hematological system not included)	62329157 62328944	Division of American and Oceanian Affairs	62326877 62327145
			Division of European Affairs	62325377 62327017
			Office for Hong Kong, Macao and Taiwan Affairs	62328256 62326943
Division VIII	Dermatology, radiation medicine, preventive medicine	62328962	**Service Center for Administrative Affairs**	
Division IX	Materia medica, pharmacology	62327212	Department I	62328591
Division X	Traditional Chinese medicine, Chinese materia medica, integrated Chinese and western medicine	62328634 62328552	Center for Science Communication and Achievement Transformation	
			General Office	62326876
Department of Interdisciplinary Sciences			**Sino-German Centre for Research Promotion**	
Division of Planning		62325654	Telephone Number	82361200
Division I	Material Science	62328382		
Division II	Intelligent Science and Intelligent Manufacturing	62329489		
Division III	Life Science and Heath	62327096		
Division IV	interdisciplinary Science	62328922		

Programs of Joint Funds

NSFC collaborates with relevant sectors, provincial governments and enterprises to establish the Joint Funds, supporting basic research in agreed scientific and technological fields.

The Joint Funds are designed to give full play to the guiding role of the National Natural Science Fund, mobilize and integrate societal resources for basic research, foster collaboration of relevant sectors, enterprises and regions with academic institutions and research organizations, cultivate scientific and technological talents, and enhance China's innovation capabilities in related fields, industries and regions.

Since 2018, NSFC has co-invested with provincial governments and enterprises to set up the Joint Fund for Regional Innovation and Development and the Joint Fund for Industrial Innovation and Development, which are managed in an integrated manner regarding funding distribution, program solicitation, review process, and project oversight. NSFC also partners with industry authorities to jointly fund programs addressing key scientific issues in these industrial sectors, contributing to the establishment of a joint funding system with higher funding efficiency in the new era.

As part of the National Natural Science Fund, the application, review and management of the Joint Funds will comply with NSFC management methods such as the *Regulations, Measures for Fund Management of NSFC-funded Projects* and *Measures for Programs of Joint Funds Management.*

In 2025, the Joint Funds announced in this *Guide to Programs* include the Joint Fund for Regional Innovation and Development, Joint Fund for Corporate Innovation and Development, NSAF Joint Fund, Ye Qisun Science Fund, Joint Fund for Meteorology, Joint Fund for Railway Basic Research, Joint Fund for Railway Innovation and Development, Joint Fund for Geology, and Joint Fund for Basic Research of Large Aircraft. Other programs of Joint Funds will be announced on the NSFC official website.

Research outcomes supported by the Joint Funds shall acknowledge the contribution of NSFC with the fund name and project approval number.

Applications to the Joint Funds should be prepared according to the requirements and outlines specified for each Joint Fund in this *Guide to Programs*. Please select "Joint Fund" for funding category, "Key Project", "Integrated Project" or "Young Researcher Project (Xinjiang)" for subcategories, and select the name of the Joint Fund in the "Annotations" section.

For Key Project, the number of collaborative research institutions shall not exceed two. For Integrated Project, the number of collaborative research institutions shall not exceed four.

The funding duration for Key Project and Integrated Project will be 4 years with the period specified as “January 1, 2026 to December 31, 2029” in the application form, while Young Researcher Project (Xinjiang) has a funding period of 3 years specified as “January 1, 2026 to December 31, 2028” in the application form.

Joint Fund for Regional Innovation and Development

The Joint Fund for Regional Innovation and Development, jointly funded by NSFC and provincial governments, aims to give play to the guiding role of the National Natural Science Fund by attracting outstanding scientific research teams across the country to address major needs in regional economic and social development. The Fund supports basic research and applied basic research on key scientific issues, encourages cross-regional and cross-sector collaborations, and contributes to enhancing regional innovation capabilities.

In 2025, in order to better serve regional economic and social development and promote talent cultivation in local areas, the Fund will focus on the suggested research directions proposed by governments of the Inner Mongolia Autonomous Region, Jiangxi Province, Guangxi Zhuang Autonomous Region, Hainan Province, Guizhou Province, Yunnan Province, Gansu Province, Ningxia Hui Autonomous Region, and Xinjiang Uygur Autonomous Region. Applicants from host institutions based in these regions are encouraged to apply, while applicants from outside host institutions should collaborate with higher education institutions, research institutes or enterprises of considerable research strength and conditions in these regions.

In 2025, the Joint Fund for Regional Innovation and Development will support subcategories of “Key Project”, “Integrated Project” and “Young Researcher Project (Xinjiang)”. Key Project and Integrated Project have a funding duration of 4 years, and Young Researcher Project (Xinjiang) has a 3 year period. The average funding amount (direct cost) for Key Project will be 2.6 million yuan per project. The average funding amount (direct cost) for Integrated Project is specified in this Guide. The average funding amount (direct cost) for Young Researcher Project (Xinjiang) will be 400,000 yuan per project.

Joint Fund for Corporate Innovation and Development

The Joint Fund for Corporate Innovation and Development, co-funded by NSFC

and enterprises, aims to give play to the guiding role of the National Natural Science Fund by attracting the nation's excellent scientific research forces to address urgent needs in the industrial development. The Fund supports the basic research focusing on core scientific issues in key technology areas, seeks to integrate the knowledge innovation and technological innovation, so as to enhance the innovation capabilities of Chinese enterprises.

For 2025, the applicants for Joint Fund for Corporate Innovation and Development will be exempted from the general restriction that the total number of NSFC projects one can apply for and hold at the same time on a pilot basis. But once officially accepted, the exemption will be lifted. The total number of projects of Joint Fund for Corporate Innovation and Development applied for and undertaken by a researcher (including PI and main participants) shall not exceed 1.

In 2025, the Joint Fund for Corporate Innovation and Development will support subcategories of "Key Project" and "Integrated Project" with a funding period of 4 years. The average funding amount (direct cost) for Key Project is 2.6 million yuan per project. The average funding amount (direct cost) for Integrated Project will be specified in this Guide.

NSAF Joint Fund

Jointly funded by the NSFC and China Academy of Engineering Physics (CAEP), the NSAF Joint Fund aims to leverage the platform and management advantages of the National Natural Science Fund, encourage and mobilize scientists and teams from universities and research institutes nationwide to focus on fundamental research related to areas addressing the national strategic demands, explore new research directions, cultivate high-tech talents, and promote the improvement of innovation capabilities.

In 2025, the NSFC-NSAF Joint Fund calls for proposals of Key Projects, with an average funding amount (direct cost) of 2.6 million yuan per project for 4 years.

Ye Qisun Science Fund

Aiming at the implementation of the strategy of innovation-driven development and making full use of the guiding role of the National Natural Science Fund, the Ye Qisun Science Fund is set up to attract and mobilize scientific and technological resources in society to conduct fundamental, frontier and exploratory research to meet the demands of the industry. It also aims to promote the integration and development of modern engineering technology and basic science for groundbreaking progress in solving basic science problems, and improve independent innovation capacity.

In 2025, the applicants for Ye Qisun Science Fund will be exempted from the general restriction that the total number of projects one can apply for and hold at the same time should not exceed 2 on a pilot basis. But once accepted formally, the exemption will be lifted. The total number of projects that researchers apply for (including applicants and main participants) and are undertaking (including PIs and main participants) for the "Ye Qisun" Science Fund should not exceed 1.

In 2025, the Ye Qisun Science Fund calls for proposals of Key Projects, with an average funding amount (direct cost) of 2.6 million yuan per project for 4 years.

Joint Fund for Meteorology

The Joint Fund for Meteorology is jointly established by the NSFC and the China Meteorological Administration (CMA) to implement the important instructions of President Xi Jinping on meteorological work, accelerate the STI in meteorological field, and strengthen basic research. It intends to solve and break through important scientific bottlenecks closely related to the core technology of meteorological industry, cultivate outstanding talents, enhance independent innovation capability, and promote high-quality development of China’s meteorological services.

In 2025, the Joint Fund will call for proposals of “Integration Project” and “Key Project” with a funding duration of 4 years. The average funding amount (direct cost) for Integrated Project and Key Project will be about 10 million and 2.6 million yuan per project respectively.

Joint Fund for Railway Basic Research

The Joint Fund for Railway Basic Research is jointly established by the NSFC, China Railway, CRRC Corporation Limited, China Railway Group Limited, China Railway Construction Corporation Limited, and China Railway Signal&Communication Corp. By giving full play to the guiding role of the National Natural Science Fund, it will attract and mobilize scientific research resources of the whole society. Its focus will be placed on the fundamental research of major scientific issues, key technical problems and common problems in the fields of railway equipment manufacturing, engineering construction, and operation management in China, so as to enhance the self-reliance in the capabilities of China's railway technology.

In 2025, the Joint Fund for Railway Basic Research will call for proposals of Key Projects, with a funding period of 4 years. The average funding amount (direct cost) will be 2.6 million yuan for each project.

Joint Fund for Railway Innovation and Development

The Joint Fund for Railway Innovation and Development is jointly established by the NSFC, the National Railway Administration of China, and China Energy Investment Corporation. By making full use of the guiding role of the National Natural Science Fund, it will attract and mobilize the strength of higher education institutions and research institutions across the country, focus on basic, cutting-edge, and exploratory research in railway engineering construction, equipment manufacturing, transportation services, safety assurance, green intelligence etc., so as to promote the integrated development of railway technology and basic science and enhance independent innovation capabilities.

In 2025, the Joint Fund for Railway Innovation and Development will call for proposals of Key Projects, with a funding period of 4 years. The average funding amount (direct cost) will be 2.6 million yuan for each project.

Joint Fund for Geology

The Joint Fund for Geology set up by the NSFC and the China Geological Survey is aimed at contributing to the high-quality development of China‘s geological cause in accordance with the national strategic demands and guiding excellent talents in related fields of the country‘s geological industry. It also intends to support basic, forward-looking and innovative research on basic geological problems and key technological approaches that may affect and restrict the major resource and environment security.

In 2025, the Joint Fund for Geology calls for proposals of Key Projects with a funding period of 4 years. The average funding amount (direct cost) will be 2.6 million per project.

Joint Fund for Basic Research of Large Aircraft

Focusing on the major strategic needs of the country in the field of large aircraft, the Joint Fund for Basic Research of Large Aircraft is jointly established by the NSFC and the Ministry of Industry and Information Technology. It intends to carry out major fundamental, forward-looking, and innovative research around the basic theories and key core technology methods in the field of large aircraft, so as to consolidate the foundation for the long-term development of large aircraft.

In 2025, the Joint Fund for Basic Research of Large Aircraft calls for proposals of Key Projects with a funding period of 4 years. The average funding amount (direct cost) will be 2.6 million per project.

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