

# Fund for Less Developed Regions

The Fund for Less Developed Regions is one of programs for the talent fostering that is developing very fast. It supports scientists in specified regions of China to conduct creative research within the funding scope of NSFC, so as to foster and support researchers in these regions, and stabilize and gather outstanding talents to facilitate the construction of the regional innovation system as well as the social and economical development of the region.

Any applicant for the Fund for Less Developed Regions should be satisfied with following qualifications:

- (1) Have the experience of undertaking basic research project or doing other basic research;
- (2) With senior academic rank (title) or doctoral degree, or recommendations by 2 researchers with senior academic rank (title) in the same research area.

Researchers, who are satisfied with above qualifications and working in the autonomous regions of Inner Mongolia, Ningxia, Xinjiang, Tibet and Guangxi, the Yanbian Korean Prefecture and the provinces such as Qinghai, Hainan, Guizhou, Jiangxi, Yunnan and Gansu, may apply for the Fund for Less Developed Regions. Other scientists can not apply, but may work as main participants. Graduate students can not apply, but on-job students may apply through their employer institutions at the consent of their supervisors. Scientists listed in Clause 2, Article 10 of the *Regulations of the National Natural Science Fund* can not apply for the Fund for Less Developed Regions.

Applicants for the Fund for Less Developed Regions should satisfy above qualifications, and pay attention to special requirements in specific areas.

The application, evaluation and management mechanism of the Fund for Less Developed Regions are almost the same as those for General Program projects. Its feature is the promotion of talent training and development by using the management model for General Program in coordination with major national strategic plans of coordinated regional development and by strengthening the communication and cooperation with local governments. Please refer to the Outlines of Applications for the Fund for Less Developed Regions and make out your application form accordingly. The collaborative units cannot exceed 2, and the research period is increased from 3 years to 4 years.

In 2010, the Fund for Less Developed Regions funded 1,326 projects with a total funding of 335.6 million yuan. The average funding was 253,100 yuan per project, which is 12,500 yuan more than that in 2009. The funding rate was 21.34%, which is 2.25% higher than that in 2009 (please refer to the table below for the funding statistics). In 2011, the average funding per project will have large increase (about 500,000 yuan), and the funding rate will be increased moderately.

**Funding for Projects of the Fund for Less Developed Regions in 2010**

Unit: 10 000 yuan

Scientific department	Applications	Projects and funding approved				Funding rate (%)
		Projects	Funding	Percentage of the total (%)	Average funding per project	
Mathematical and Physical Sciences	289	83	2,204	6.57	26.55	28.72
Chemical Sciences	497	114	2,902	8.65	25.46	22.94
Life Sciences	1,703	360	9,039	26.93	25.11	21.14
Earth Sciences	324	85	2,197	6.55	25.85	26.23
Engineering and Materials Sciences	714	155	4,272	12.73	27.56	21.71
Information Sciences	456	106	2,524	7.52	23.81	23.25
Management Sciences	289	50	1,108	3.30	22.16	17.30
Health Sciences	1,941	373	9,314	27.75	24.97	19.22
Total	6,213	1,326	33,560	100.00	25.31	21.34

Please refer to the General Program sections of various departments for the funding scope of the Fund and funding statistics in recent years and relevant requirement.

**Department of Mathematical and Physical Sciences**

The Fund for Less Developed Regions in mathematical and physical sciences is aimed at creating a good research environment for these regions, fostering and stabilizing an appropriate amount of researchers, training talents in basic research for local scientific and technological development, and increasing the capability of solving urgent scientific problems in the development of national economy and society. In the evaluation of proposals for the Fund, special attention is paid to researches that have relative good research background with characteristics and advantage, so as to give full play to the role of the Fund for Less Developed Regions in talent fostering, and strengthen the support to researchers in the western regions of China.

### Funding for Projects of the Fund for Less Developed Regions in the Department of Mathematical and Physical Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2009			2010		
		Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Mathematics	Math I	16	295	27.58	17	430	22.37
	Math II	13	246	20.63	24	599	31.58
Mechanics	Basic problems and methods in mechanics	1	25	33.33	-	-	-
	Dynamics and control	1	22	50.00	2	62	50.00
	Solid mechanics	4	91	23.53	7	209	33.33
	Fluid mechanics	2	38	28.57	1	30	14.29
	Bio-mechanics	-	-	-	-	-	-
	Explosive and impact dynamics	-	-	-	-	-	-
Astronomy	Astrophysics	4	92	44.44	5	152	45.45
	Astrometry and celestial mechanics	-	-	-	-	-	-
Physics I	Condensed matter physics	6	131	18.75	8	223	23.53
	Atomic and molecular physics	4	84	50.00	3	80	23.08
	Optics	5	114	35.71	6	145	40.00
	Acoustics	1	24	33.33	-	-	-
Physics II	Fundamental physics and particle physics	5	106	31.25	6	172	30.00
	Nuclear physics, nuclear technology and its application	2	50	33.33	3	72	42.86
	Particle physics and nuclear physics experimental facilities	-	-	-	1	30	100.00
	Plasma physics	1	20	33.33	-	-	-
Total		65	1,338	26.21	83	2,204	28.72
Average funding per project		20.58			26.55		

## Department of Chemical Sciences

On the basis of stabilizing the funding scale of the Fund for Less Developed Regions, the Department of Chemical Sciences will make efforts to further increase the research quality and efficiency of the Fund, stabilize a batch of research talents for basic research, and continuously bridge the gap with developed regions. Applicants are encouraged to carry out research work related to the local resources so as to promote the economic development of the regions. The funding period will be extended to 4 years, and the average funding will reach 500,000 yuan per project.

### Funding for Projects of the Fund for Less Developed Regions in the Department of Chemical Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2009			2010		
		Projects	Funding	Funding rate <sup>++</sup> (%)	Projects	Funding	Funding rate <sup>++</sup> (%)
Division I	Inorganic chemistry	10+2*	292	19.05	15+1*	407	22.86
	Analytical chemistry	8+1*	229	17.30	13+1*	356	22.22
Division II	Organic chemistry	21+3*	604	18.90	27+3*	764	23.44
Division III	Physical chemistry	9+2*	264	19.30	15+2*	433	22.97
Division IV	Polymer sciences	5	138	17.86	9+1*	255	23.26
	Environmental chemistry	6+1*	174	17.95	12+1*	331	22.81
Division V	Chemical engineering	6+2*	201	17.39	13+1*	356	22.58
Total		65+11*	1,902	18.49	104+10*	2,902	22.94
Average funding per project		25.03			25.45		

Notes: \* Projects of Small Fund for Exploratory Studies.

++ Including projects of Small Fund for Exploratory Studies.

## Department of Life Sciences

The Fund for Less Developed Regions is a talent fostering fund of NSFC to stabilize researchers in remote areas and promote S&T development in these regions. In 2010, the Department received 1,703 applications for the Fund for Less Developed Regions (accepted 1,607), and funded 360 projects including 2 projects within the Joint Fund for Less Developed Regions. The funding rate was 22.4% and the average funding was 251,100 yuan per project. In the future, the Department will continue to follow the principle of “fostering regional talents, supporting sustained exploration, gathering outstanding talents and promote regional development”, provide steady support to regional talents and encourage applications related to local resources and natural conditions. For details, please refer to the sections in the General Program of the Department in the *Guide to Programs*.

### Funding for Projects of the Fund for Less Developed Regions in the Department of Life Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2009			2010		
		Projects	Funding	Funding rate <sup>++</sup> (%)	Projects	Funding	Funding rate <sup>++</sup> (%)
Division I	Microbiology	22	522	18.80	25	636	23.36
	Botany	26	633	20.16	31	804	22.63
Division II	Ecology	31	766	19.38	39	970	22.41
	Forest science	20	510	20.59	25	619	22.52
Division III	Biophysics, biochemistry, and molecular biology	7	171	19.40	8	195	22.86
	Immunology	-	-	-	4	89	25.00
	Biomechanics and tissue engineering	2	45	17.40	3	67	25.00
Division IV	Neuro, cognitive science and psychology	5	117	17.86	7	167	23.33
	Physiology and integrated biology	7	167	17.90	5	117	23.81
Division V	Genetics and bioinformatics	12	29	9.50	13	318	22.81
	Cytobiology	4	96	21.20	4	95	23.53
	Developmental biology and reproductive biology	3	73	17.60	4	106	21.05
Division VI	Fundamentals of agronomy and crop science	31	767	19.70	39	987	22.03
	Food science	8	19	27.50	27	686	21.95
Division VII	Plant protection	19	456	12.90	18	446	22.50
	Horticulture and plant nutrition	12	286	20.60	26	663	21.85
Division VIII	Zoology	10	237	17.40	15	390	21.43
	Animal husbandry and grassland science	25	613	23.80	34	858	22.08
	Veterinary science	26	619	21.70	25	636	21.93
	Aquaculture	5	120	15.10	8	190	23.53
Total		900	17,971	21.10	1,139	22,490	22.52
Average funding per project		19.97			19.75		

In 2009 and 2010, no project for Small Fund for Exploratory Studies in the Fund for Less Developed Regions was funded.

## Department of Earth Sciences

The objective of the Fund for Less Developed Regions is to foster regional talents, support sustained exploration, attract outstanding talents and promote regional development. In 2010, the Department of Earth Sciences received 324 applications for the Fund from 87 research institutions. Among them, 261 are from universities,

## Fund for Less Developed Regions

accounting for 80.6%, and 53 from research institutes, accounting for 16.4%. 85 projects were finally funded with a total funding of 21.97 million yuan, an average funding of 259 000 yuan per project and a funding rate of 26.2%. Among the projects funded in 2010, 69 are conducted by universities, accounting for 81.2%, and 14 by research institutes, accounting for 16.5%. In 2011, the Department will maintain the funding rate and increase the average funding intensity. The average funding intensity will be about 500,000 yuan per project and the funding period will be 4 years.

### Funding for Projects of the Fund for Less Developed Regions in the Department of Earth Sciences in the Last Two Years

Unit: 10,000 yuan

Divisions		2009			2010		
		Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Division I	Geology (including soil science and remote sensing)	41	1,073	22.16	56	1,431	26.17
Division II	Geology	6	157	24.00	7	190	25.00
	Geochemistry	5	131	23.80	7	183	25.93
Division III	Geophysics and space physics	1	26	25.00	3	78	30.00
Division IV	Marine science	3	79	25.00	3	78	30.00
Division V	Atmospheric science	9	236	24.32	9	237	25.72
Total		65	1,702	22.89	85	2,197	26.24
Average funding per project		26.18			25.85		

## Department of Engineering and Materials Sciences

In order to foster talents for less developed regions and encourage basic research related to local economic development, the Department adopted the preferential policy to increase the funding rate and maintain relatively high funding intensity for the less developed regions in its funding plan. In 2010, the Department received 714 applications for the Fund, which was increased of 34.32% from that in the previous year. Proposals in areas of architecture and environmental engineering, and mechanical engineering were accounted for the majority of the total applications, both of them exceeding 100 applications, which reflected of strong regional and applied features of the projects in the Department. In 2010, The Department funded 155 projects with 42.72 million yuan. The average funding per project is 275,600 yuan with a funding rate of 21.71% (17.48% in 2009).

### Funding for Projects of the Fund for Less Developed Regions in the Department of Engineering and Materials Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2009			2010		
		Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Materials Sciences I	Metallic materials	10	260	17.24	17	468	21.52
Materials Sciences II	Inorganic and non-metallic materials	11	272	17.19	18	496	21.43
	Polymer materials	6	148	17.65	9	251	23.08
Engineering sciences I	Metallurgy and mining science	14	356	18.92	22	604	25.29
Engineering sciences II	Mechanical engineering	17	423	15.60	28	771	21.37
Engineering sciences III	Engineering thermo physics and energy utilization	4	96	16.67	8	220	21.05
Engineering sciences IV	Architecture, environmental and structural engineering	17	404	18.89	27	756	20.45
Engineering sciences V	Hydrology and marine engineering	10	250	17.24	17	462	21.25
	Electrical science and engineering	4	101	19.05	9	244	20.45
Total		93	2,310	17.48	155	4,272	21.71
Average funding per project		24.84			27.56		

## Department of Information Sciences

In 2010, the Department of Information Sciences received 456 applications for the Fund and funded 106 projects with a total funding of 25.24 million yuan. The funding rate is 23.25% (18.18 in 2009) and the average funding is 238,100 yuan per project (217,500 yuan in 2009). In 2011, the Department will continue to give preferential support to the Fund for Less Developed Regions, and the average funding intensity will reach 500,000 yuan per project for four years. All eligible researchers are welcome to apply.

### Funding for Projects of the Fund for Less Developed Regions in the Department of Information Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2009			2010		
		Projects	Funding	Funding rate <sup>++</sup> (%)	Projects	Funding	Funding rate <sup>++</sup> (%)
Division I	Electronic science and technology	3	56	18.75	8	191	27.59
	Information and communication system	4	80	22.22	6	132	22.22
	Information acquisition and processing	6	106	23.08	6+1*	134	21.88
Division II	Theoretical computer science and computer software and hardware	7	151	16.67	12+1*	288	23.64
	Computer application	13	278	17.81	21+2*	551	23.23
	Network and information security	6	127	20.00	9+1*	226	22.22
Division III	Control theory and control engineering	5	121	20.83	7	175	17.50
	Systems science and system engineering	1	22	8.33	7	165	36.84
	AI and intelligent systems	4	95	18.18	9+1*	262	21.74
Division IV	Semiconductor science and information devices	2	52	12.50	6	160	23.08
	Information optics and photoelectric devices	3	78	23.08	6	160	25.00
	Laser technology and technical optics	2	52	13.33	3	80	21.43
Total		56	1,218	18.18	106	2,524	23.25
Average funding per project		21.75			23.81 (24.07**)		

Notes: \* Projects of Small Fund for Exploratory Studies.

\*\* Not including projects of Small Fund for Exploratory Studies.

++ Including projects of Small Fund for Exploratory Studies.

## Department of Management Sciences

In 2010, the Department of Management Sciences received 289 applications for the Fund, which was increased of 39.62% from that in 2009, and funded 35 projects, 11 more than that in 2009. The total funding was 11.08 million yuan, an increase of 46.95% from 2009. The average funding was 221,600 yuan per project and the funding rate was 17.30%.

Considering the features of talent fostering of the Fund for Less Developed Regions, the average funding per project in 2011 will continue to be increased. The number of projects funded will depend on the actual number of applications. The average funding intensity will be about 320,000 to 380,000 yuan per project for four years.

The requirements given in the general description of the General Program in the



Department of Management Sciences in this guide is also valid for this Fund. Applicants may refer to information concerned carefully.

### Funding for Projects of the Fund for Less Developed Regions in the Department of Management Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2009			2010		
		Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Division I	Management science and engineering	7	155	18.42	13	288	20.00
Division II	Business administration	10	222	18.18	13	288	18.84
Division III	Macro management and policy	17	377	14.91	24	532	15.48
Total		34	754	16.43	50	1,108	17.30
Average funding per project		22.18			22.16		

## Department of Health Sciences

The Department of Health Sciences supports mainly basic research on the occurrence, development, transfer, diagnosis, therapy and prevention of disease.

Eligible scientists are welcomed to carry out basic research on diseases and submit proposals to the Department for the Fund for Less Developed Regions. The Fund for Less Developed Regions aims to stabilize and foster research teams in less developed regions, promote S&T development and serve regional economy and society. Applicants are encouraged to propose creative research ideas, and conduct basic research on diseases with local features by using of modern medical research means. It is also encouraged to carry out the joint research with research institutes and labs in developed regions for fully utilizing their various advanced research facilities. Please refer to sections in the Fund for Less Developed Regions and General Program in this guide for detailed information.

Along with the continued increase of national investment in basic research, the approval rate and funding intensity of the Fund for Less Developed Regions will also be increased. In 2011, the funding for the Fund for Less Developed Regions will be 500,000 yuan per project for 4 years. Please make a reasonable research budget according to the actual need, and provide budget explanations in addition to the budget form.

**Funding for Projects of the Fund for Less Developed Regions  
in the Department of Health Sciences in 2010**

Unit: 10,000 yuan

Divisions		Projects	funding	Funding rate <sup>***</sup> (%)
Division I	Respiratory System, Circulatory System, Digestive System, Blood System, Gerontology	50	1,252	20.83
Division II	Urinary System, Reproductive System/Perinatology/Neonatology, Endocrine System/Metabolism and Nutrition Support, Ophthalmology, Otorhinolaryngology Head and Neck Science, Oral and Craniomaxillo-facial Science	42	1,051	20.00
Division III	Neurological and Psychiatric Diseases	22	547	19.82
	Medical Imaging and Biomedical Engineering	8	192	21.05
Division IV	Medical Pathogenic Microorganism and Infection, Skin and Appendages, Orthopedics and Sports Medicine, Emergency and Intensive Care/Trauma/burns/cold Injury/plastic Surgery/Special Medicine/Rehabilitation,	41	1,032	20.10
Division V	Oncology I	24	590	20.00
	Oncology II	37	912	20.00
Division VI	Medical Immunology, Forensic Sciences	7	173	20.00
	Preventive Medicine, Endemiology, Occupational Medicine, Radiology	22	552	19.64
Division VII	Materia Medica and Pharmacology.	24	609	19.51
Division VIII	Chinese Medicine, Chinese Materia Medica	96	2,404	19.88
Total		373	9,314	20.04
Average funding per project		24.97		

## Joint Funded Projects for Less Developed Regions

According to the funding scope of Joint Funded Projects for Less Developed Regions and agreements with provinces or autonomous regions concerned, basic research programs, which are aimed to train talent and serve to the development of economy and society in the region, are jointly supported in a certain number of special fields and research directions with regional advantages and characteristics, and urgent needs for the region.

In applying for the Joint Funded Projects for Less Developed Regions, applicants should select “Joint Funded Projects for Less Developed Regions” as the project type, leave the sub-category empty, and fill in the areas for application in the annotation section. Application code 1 should be the corresponding codes for specific areas.

In 2011, the funding for project of this Fund will be 800 thousand yuan per project for 4 years.

### **1. Genetic research on high altitude pulmonary edema**

Through the collection of the cases of high altitude pulmonary edema (HAPE) that confirmed by accurate diagnosis and standard laboratory assessment, and in combination with serology and (or) serum proteomic detection, it is to analyze the distribution of gene polymorphisms of HAPE by referring to the latest data of International Human Genome HapMap Project, and determine the high-risk genotype of HAPE in China by the functional verification for providing the experimental basis to the clinical alert and individualized treatment.

Eligibility of applicants: Researchers in the universities and research institutions under the jurisdiction of Tibet Autonomous Region

The Department of Health Sciences is responsible for handling applications: (Application Code 1, H0109)

### **2. Dynamic modeling of desertification of typical oasis in Ebinur Lake basin**

As an important environment unit in western China, the Ebinur Lake is an important component of economic zone in the northern slope of the Tianshan Mountains. Ecology and environment in this area are more sensitive under the climate change, economic development and population pressure. By choosing the typical oasis in the Ebinur Lake basin as the study area, and using advanced methods of diagnostic analysis of desertification, the research is aimed to explore the overall spatial and temporal distribution and diversity of desertification, to comprehensively detect and evaluate the oasis evolution, to investigate the causes, current status and damage extent of desertification via the analysis of environmental background data, to dynamically simulate, analyze and evaluate the study area at different periods with advanced evolution models of land desertification, to reveal the evolutionary trends of land desertification in the future, to develop control measures and strategies against land desertification based on the characteristics of occurrence and development of desertification, and finally, and to provide decision support for desertification control in northern slope of the Tianshan Mountains and the ecological security of the Eurasia Bridge.

Eligibility of applicants: Researchers in universities and research institutes of Xinjiang Uygur Autonomous Region.

The Department of Earth Sciences is responsible for handling applications: ( Application code 1 D0103)

### **3. Typical plant gene resources extravagation and important trait study of gistanche species**

This research project is focused on the typical medicinal parasitic plant of Cistanche species in Ningxia as its research object and aimed to protect and develop typical traits

resources and important functional genes, the clone of the genes from related traits, and the genetic and molecular mechanisms of properties formation for providing the theoretical basis to the genetic breeding of Cistanche species and the industrial development of traditional Chinese Materia Medica in Ningxia.

Eligibility of applicants: researchers from the universities and research institutions under the jurisdiction of Xinjiang Uyghur Autonomous Region.

The Department of Life Sciences is responsible for handling applications (Application code 1: C130410)

#### **4. The pathogenesis study of grain smut in sugar cane**

Grain smut is one important fungus disease in sugar cane. Along with the increase of sugar cane plant areas, grain smut is getting severe in the region. Currently, the prevention and treatment of this disease mainly use chemical agents, but the side effect could not be avoided. The clarification of the pathogenesis of Grain Smut has become the key scientific issue in the effective control of this disease. This research project is to screen related genes through gene sequencing, verify the pathogenic mechanism of disease-causative genes and its functions by using of the gene knockout and RNA interference techniques, and study the inter relationship of disease genes and host plant susceptibility for providing theoretical basis to the cultivation of the sugarcane of anti-grain smut varieties and the harmless control on the grain smut.

Eligibility of applicants: researchers from the universities and research institutions under the jurisdiction of Guangxi zhuang Autonomous Region.

The Department of Life Sciences is responsible for handling applications (Application code 1: C140202)

#### **5. Fundamental theory on in-situ leaching of rare earth ores**

Taking the weathering crust strain amass-type rare earth ores (ion-absorbed rare earth ores) in China as the research object, it is to seek the mechanism of *in-situ* leaching, its process, seepage rules, dynamical and hydrodynamics rules, etc., study the recycling ammoniated wastewater of rare earth ores, and explore the reaction rules among the medicament, of rare earth ores and other impurities, etc for offering a theoretical basis to increase the utilization ratio of rare earth ores and benefits for the society and environment.

Eligibility of applicants: Researchers from the universities or research institutions under the jurisdiction of Jiangxi Province.

The Department of Engineering and Materials Sciences is responsible for handling applications (Application Code 1: E041104).

### **6. Remote monitoring and mechanism of locust plagues in grassland**

Plague of locusts in grassland is an important eco-environmental problem in arid and semiarid regions of China. The following research directions should be focused on: ( i ) the methodology and technology for remote monitoring of locust plagues in grassland, which will contribute to reveal the relationship between outbreaks of grassland locusts and their habitat (environment); ( ii ) analysis on the genetic diversity and phylogenetic relationships of main types of locusts in Mongolian Plateau, which may be achieved by using of the method of karyotype analysis and gene sequence analysis of rRNA, and investigate the genetic variability of locusts; ( iii ) the mechanism of locust plagues outbreak in grassland, which may be revealed from the relationships between locusts and its habitat, as well as the genetic variability.

Eligibility of applicants requirement: Researchers in the university and research institute of the Inner Mongolia Autonomous Region.

The Department of Earth Sciences is responsible for handling applications. (Application code 1, D0106)

### **7. Study of abnormal development mechanisms of clone sheep embryo**

Clone embryo suffered with problems of the lower development rate, serious abortion, mortality and deformity. Even those, which are very few individuals survived, have diseases like obesity, etc. In consideration of a large population of sheep and a fine basis of clone breeding in Xinjiang, this research project is to explore the causes and mechanisms of abnormal embryo from cell and molecular point of view in comparison of the formation and development features of normal fertilized and clone embryos, which could use the techniques and means of anatomy, immunohistochemistry, cell and molecular biology, so as to provide scientific guidance for the increase of living rate of clone embryo and breeding efficiency.

Eligibility of applicants: researchers from universities under the jurisdiction of Xinjiang Production and Construction Corps

The Department of Life Sciences is responsible for handling applications (application code 1: C0602).