

Seven Billion Yuan for Basic Research in 2009

It is learnt from the Second Plenary Session of the Sixth General Assembly of the National Natural Science Foundation of China (NSFC) that the priority work for NSFC in 2009 will be focused on making a balanced and coordinated funding arrangement, so as to further strengthen the support for basic research. A budget of around 7 billion yuan is planned for the fiscal year of 2009 in accordance with the reform of the state financial budget system and the requirements from the development of basic research.

It is noted by Academician Chen Yiyu, President of NSFC, that the funding emphasis will be centered around the priority research areas, with a special focus on enhancing the support for key projects and strengthening the strategic planning for key basic research areas that bear direct influence on the national economy and major interests. Timely increase of funding will be planned for research fields such as agriculture, life and health care, new energy sources, new materials, information sciences, public security, etc.

At the same time, NSFC should play an active role in guiding strategically basic research by attaching greater importance to the top design for major projects and major research plans, with a view to providing knowledge reserves and S&T support for the nation's economic development reform and the reconstruction of industrial sectors. Based on the improvement of the joint funding mechanism, the National Natural Science Fund will play a key role in guiding and promoting the implementation of joint fund for research based on large-scale scientific facilities.

President Chen points out that greater efforts are to be made to enhance international cooperation in 2009 with the implementation of the Research Fellowship for International Young Scientists, which is intended to build up a favorable platform for the friendship and cooperation between Chinese and foreign young scientists. NSFC will promote unremittingly substantial cooperation with the U.S., Japan, South Korea, Germany, the U.K., France, Russia, the EU, etc. while exploring, expanding and strengthening collaborative partnerships with other foreign science funding agencies and international organizations.

It is reported that in 2008, NSFC, in line with the principle of "selecting the best to support", funded 17,283 projects conducted by 982 institutions across China, with a total budget of 6.309 billion yuan

Fossil Web Won World Summit Award

A science popularization web site “Fossil web” (www.uua.cn) built by Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences (CAS) won the 2009 World Summit Award (WSA) in the e-Science category in the contest held in India recently. This web site was supported by the Special Fund for Popular Science “Transforming popular science about achievements of paleontology in China based on Fossil Web”(40820005), and the National Fund for Fostering Talents in Basic Science under the subject of “Paleontology and Stratigraphy” (J0630967), which are all set up by the National Natural Science Foundation of China (NSFC).

In the framework of the United Nations’ World Summit on the Information Society (WSIS), WSA is the global initiative only sponsored by UN to select and promote the world’s best e-content and innovative Information and Communications Technology (ICT) applications. Its activities include national contests and selections of best practice, and a global contest held every 2 years. The winners are distributed over 8 categories. Five out of each category are selected as winners. More than 5,000 websites entered the competition in 2009 and 545 from 157 nations were selected for the final contest.

Fossil web won for its scientific popularization content, interactivity, knowledge pull & push, and virtual community construction. It was the sole candidate in China (including Hong Kong and Taiwan) for the final competition in the e-Science category.

Supported by the Special Fund for Popular Science set up by NSFC, the program emphasizes the continuity and interactivity in the popular science exhibition. Taking advantages of the popularity and interactivity of the internet and using the biological evolution as the backbone, Fossil web provides a comprehensive, systemic and scientific introduction on the achievements of decadal research work on paleontology that are funded by NSFC. It has been an instructive network platform for the public to understand the progress of research on paleontology and the knowledge on biological evolution, playing a very important role in transforming public understandable knowledge for people about important achievements on paleontology and developing scientific qualities of the public and especially of the youth.

Tsinghua Professors Publish Papers in *Nature and Science*

Prof. Wu Jiawei from Tsinghua University published a paper in *Nature* (June 25, 2009, Vol. 459, No. 7250), entitled “Structural insight into the autoinhibition mechanism of AMP-activated protein kinase”, shortly after her colleague Prof. Shi Yigong got his recent research findings published in *Science* (June 19, 2009, Vol. 324, No. 5934) titled “Structure and mechanism of an amino acid antiporter”.

By conducting an analysis of the structures of two AMPK (AMP-activated protein kinase) fragments that contain catalytic kinase domains, Wu’s research team completed a thorough investigation into the mechanical process through which the AMP regulates the activity of AMPK catalytic kinase, proposing a new regulatory model for AMPK activation by AMP. The research findings may lay a theoretical basis for developing new drugs for type-2 diabetes. Based on the research entirely completed in China, this article announces the debut of the Department of Biological Sciences and Technology of Tsinghua University in the arena of *Nature*, one of the world’s top academic journals, marking a great breakthrough in biological research by the Department after other research results obtained by the Department published in *Science* and *Cell* successively.

Being a professor of Tsinghua University since 2003, Wu won a project financed by the National Science Fund for Distinguished Young Scholars in 2004, and gradually built her lab into perfection with the aid of the second round of “985 Project” launched by the Ministry of Education. The publishing of the article displays the sound momentum of growth enjoyed by the discipline of biophysical sciences, a time-honored preponderant discipline of the Department of Biological Sciences and Technology of Tsinghua University. Greater achievements are still expected from Prof. Wu’s research team.

Prof. Shi Yigong and his team reported their study of the crystal structure of Adic, an arginine-aggmatine antiporter that plays an essential role in the acid-resistance system of virulent enteric pathogens. The study revealed the potential ligand-binding sites, and the transport route of the membrane protein zymolyte, and suggested a conserved mechanism for the antiporter activity. Soon after getting supported by the National Science Fund for Distinguished Young Scholars in 2008, Shi got his article published in *Nature-Structural & Molecular Biology* at the end of the same year, and less than 6 months later, his latest research results were reported by *Science*.

The research activities of both professors were supported by the National Science Fund for Distinguished Young Scholars.

Overview of Trends and Policies in International Collaboration for Science in National Natural Science Foundation of China

—Speech at the 7th Meeting of Asia Heads of Research Councils*

Wang Jie**

Mr. Chairman

Dear Colleagues,

Good morning.

It is a great pleasure and honor for me on behalf of Prof. Chen Yiyu, President of National Natural Science Foundation of China (NSFC) to participate in the 7th meeting of the Asian Heads of Research Councils (AHORCs).

I still have my very wonderful memories of the 6th meeting of the AHORCs two years before in China and also the 3rd meeting of the ASIAHORCs in Korea.

I am very pleased to see that AHORCs, which maintained good momentum of development and widely accepted by the scientific communities of three countries, has been playing significant roles for promoting the scientific collaboration in the north-eastern region, even in the region and the world.

In the recent years, the cooperative and dialogue mechanism among our three countries in the field of basic research has been gradually perfected and maintained, which provided a platform for collaboration and communication bilaterally and trilaterally.

NSFC appreciated very much the successful implementation of the A3 Foresight Program developed by AHORCs, particularly strengthened joint research activities in the frontier areas of biotechnology, nano-science and technology, global change and other themes mutually interested by the region.

According to the agenda, the theme of this meeting will be discussed is the policy for international cooperation. I would like first to take this opportunity to report the current development of NSFC this year, then to introduce the international collaboration of NSFC, and finally to say few words about the tentative idea of the NSFC policy for international cooperation in the future.

The Current Development of NSFC

The year of 2009 is very busy for NSFC in terms of funding and project management.

The number of application for funding, which is over 100,000 proposals in total, has been sustainable increased. During the period of acceptance in March, over 97,755 proposals were received. The grown rate of application for funding in 2009 reached to 22.4% which is greater than 13.48% in 2008 by comparison with that in 2007.

* 6 November 2009, Tokyo Japan.

** Vice President of NSFC

The research fund for young scientist is focused on young scientists who is under the age of 35 years old and may be junior researcher with PHD. The proposals for this fund have been increasing and the grown rate has been exceeded 25%. The grown rate even reached to 35% in this year. I think that outcome is integrated with the situation of extension of education system and the increase of government budget for R&D in China.

The General Research Program is a curiosity driven research fund which is established for Chinese scientists to apply for on their interests in basic research. 57,526 proposals had been received which increased 16.67 % by comparison with the number of last year. To the social and economic development in the developing region in China, NSFC provides special fund for scientists working in these provinces. The number of application for this special fund is also extended to 4,828 proposals which increased about 44% in comparison with that in 2008.

After the six months processing of peer review, 10061 research proposals of the General Research Program will be funded with 3.3 billion Yuan. 6079 research proposals of the Fund for Young Scientist will be funded with 1.2 billion Yuan. 922 research proposals of the Fund for Developing Region will be funded with 221 million Yuan. The total approved research proposals for abovementioned three categories of funds and program is occupied about 67 % of the annual budget of NSFC. In addition, 391 proposals of the Key Research Program are approved with 724 million Yuan and each of proposals will be funded with 1.8 million Yuan. 11 proposals of the Major Research Program are confirmed with 110 million Yuan and each of them will be funded with 10 million Yuan. 28 research groups of the Fund for Innovative Research Groups will be funded with 137 million Yuan.

As far as the development of NSFC I would like to report two important events in 2009.

Firstly the Department of Medical Science was established in the funding system of NSFC which is separated from the Department of Life Sciences to further promote the originality of medical research and the development of Chinese traditional medical science. The funding will be focused on the prevention and control of diseases with extra emphasize on basic research and talent training, for enhancing the quality of basic and applied medical research in China.

Secondly a special fund for big science facility was jointly established on the bases of 50 present each by NSFC and Chinese Academy of Sciences (CAS) this year. The Joint Fund is aiming to stimulate scientists and researchers from universities and research institutions to carry out their interdisciplinary and multidisciplinary research works, and in particular to forester research talent for new horizon based on the big facilities constructed and maintained by CAS.

The Development of International Collaboration of NSFC

The internationalization of scientific research is currently one of important features in the development of S&T. International collaboration has been one of the significant driving forces for science and innovation specially pertaining to key scientific issues from regional and international challenges of environment, energy and infectious disease and natural disasters and attached great importance by science funding agencies in various countries.

Since the establishment in 1986, NSFC, as one of the major science funding agencies for basic research in China, has been dedicating to develop and promote bilateral and multilateral scientific collaboration, encourage Chinese scientists to participate in the regional and international research programs and play active roles in the global science and technology innovation.

Up to now, 68 cooperative agreements have been signed with funding agencies and research institutions in the 36 countries which provide diversified funding opportunities for personnel exchange, bilateral workshops, summer school, training, and joint research. During the last 20 years, over 25,000 joint research and exchange

projects have been supported with the funds of about one billion Yuan by the foundation.

Under the support of the foundation both academically and financially, Chinese scientists participated in a wide scope of the international research programs, such as Human Genome Project, Asia Monsoon Research, Integrated Ocean drawing Program, and IPCC Programs, etc.

A new research fund, namely Research Fellowship for International Young Scientists, was designed by the foundation this year for international young scientists. 40 foreign young scientists, who are from US, UK, Germany, French, Japan and etc., were funded and now working for half year or one year in 27 Chinese universities and 13 research institutions of the CAS with their host researchers in areas of physics, chemistry, life and engineering sciences. Here I want to give my appreciation to JSPS and KOSEF that the fellowship is referred to your management and experiences for foreign young scientist.

I would like to emphasize that NSFC has been giving high priority to the collaboration with neighboring countries especially Japan and Korea. You may note that leaders from China, Japan and Korea recently met in China and expressed the satisfaction about the progress of the trilateral cooperation, and once again to confirm that the good-neighborly friendship among the three countries has been on the agenda of our respective foreign policies.

I am very confident that the collaborations both bilaterally and trilaterally including between funding agencies and scientific communities among our three countries are now active and productive.

I would like to use this opportunity to share NSFC's practice in the joint funding between NSFC and other funding agencies.

Joint Research Program on Health Science between NSFC and Canada Institute of Health Research (CIHR), which is one of the three science funding agencies in Canada, was established in 2005.

The working mechanism for this joint funding could be defined in the procedure including following steps.

1. The annual guideline for program is jointly announced by both sides.
2. Joint proposals are independently accepted.
3. The Information of acceptance is exchanged to confirm the application is jointly proposed.
4. The correspondent review is implemented independently and sort reviewed joint proposals.
5. The list of reviewed joint proposals is proposed by funding agencies for penal review.
6. Penal review is alternatively organized and experts are recommended by both sides.
7. The result of approved joint proposal is jointly announced at the same time.
8. Joint research projects are independently funded.

Two points of this joint funding are different from other joint funds. Firstly applicant is not necessary to present and interview at the penal. Penal reviewer is responsible to determine the funded projects by discussion and voting. Two penal reviewers for each joint proposal will be selected from each side and to be required to report and give their evaluation marks during the penal. The penal will give its final marks for each joint proposal and select joint proposals with higher marks for funding according to the annual budget. Secondly based on the mutual agreement between NSFC and CIHR, the penal review and evaluation of concluding reports will be held simultaneously. All principle investigators are required to participate in the concluding symposium and share their research results and development in the collaboration, as well as to give their comments and suggestions on the joint funding. One young researcher from each funded project could joint in the symposium. All PIs from 15 joint projects, which were funded in 2006, participated in the penal and symposium just held on the Sept. of this year in Beijing.

Fifty three joint projects has been jointly funded since 2005 in the areas of cardiovascular system, genetics, child and adolescent health, infection and immunity, neuroscience, diabetes and obesity and aging. Ten research

institutions in CAS and more than 20 universities are involved in the joint research program.

One more joint funding I would like to introduce there is the joint research program on environment and energy between NSFC and Japan Science and Technology Agency (JST). The theme of joint research, which is mutually confirmed by both sides, is the science and technology for environmental conservation and construction of a society with less environmental burden. Five joint projects are annually arranged for three years research with 1.5 million Yuan each.

Five points are emphasized during the cooperation in the evaluation and management of the joint funding as following.

1. Annual theme is alternatively proposed and confirmed on the mutually agreement in the areas of energy and environment.

2. A joint symposium is organized based on the selected theme in China and Japan in turns and the annual guideline to the program is proposed by participating scientists.

3. Independent peer review is carried out after the confirmation of mutual acceptance of joint proposals. Then the funded joint projects are decided in reference with the rating list of joint proposals from both sides.

4. Joint evaluation is jointly organization by NSFC and JST when the joint funded projects concluded.

5. Since 2008, both sides agreed to provide one more term of three years funding for two joint funded projects which are recommended from the five joint projects by the joint penal reevaluation.

Eighteen joint research projects have been jointly supported by NSFC and JST since 2004. The themes of joint funded projects are focused on the environmental friendly new energy, impacts of living environment on health, environmental impact evaluation and conservative technology related to the biology and ecosystem of rivers and basic research on sustainable renewable energy. Certain number of famous universities and research institutions are involved in the joint research.

Perspective on the Strategy for International Cooperation of NSFC

2009 is termed as the strategy year of NSFC for formulating the next five year plan of NSFC. The strategies for the development of 18 disciplines will be formulated in cooperation with CAS and Chinese Academy of Engineering Sciences before 2010. The strategy for international collaboration is an integrated part of the five year plan of NSFC.

Regarding the proposed strategy for international cooperation of NSFC, I would like to share some views based on the discussion and suggestions from scientific communities.

It is realized that three basic forms of international scientific collaborations include personnel exchange, joint research and cooperative planning.

Personnel exchange could be referred to the foundation for international collaboration including exchange visit and meeting, as well as conferences of various. Joint research is the basic form of international collaboration including joint proposal pertaining the same scientific issue, joint research according to the same research plan and mutually utilizing research facilities. Strategic cooperation is defined as the collaboration with a view of long term purpose including joint planning, joint priority setting and joint funding.

Therefore NSFC shall keep all necessary steps accordingly both academic and finance to provide constant and enough funding to personnel exchanges for grantees of NSFC and encourage them to work on the frontier of the discipline with outstanding scientists in the world. NSFC shall also make the funding and cooperation mechanism of joint research more prefect to encourage Chinese scientists for working together with international partners. NSFC will actively promote strategic collaborations with our international partners with the long term perspective like the exchange of views and coordination of funding policy in a regular way in the areas of priority setting, funding policy, planning and joint funding for regional and international research

projects.

In order to enhancing the capability of Chinese scientists and quality of basic research in China and more actively participate in the regional and international collaboration, NSFC will encourage Chinese scientists.

1. To organize and participate in the regional and international research programs and play active role in the discussion and formulation of policy and program for research and S&T development.

2. To initiate and plan regional and international research program in the frontiers of discipline especially of Chinese interests and strength.

3. To participate in the activities of the regional and international scientific organization and research plan.

The national science and technology innovation system is an open system oriented to international collaboration. NSFC will continue to stimulate resources sharing within the regional and international scientific community and particularly encourage Chinese scientists to cooperate with scientists in the Asian countries and contribute for the development of the regional and global science and technology innovation.

I believe that the national science and technology innovation system in China will be increasingly sophisticated which does not only elevate the capacity of indigenous innovation, but also greatly promote the contribution for international S&T innovation. NSFC would like to work together with research councils and science funding agencies for the establishment and development of S&T innovation in the region and the world.

Thank you for your kind attention.

(Chang Qin)

• News & Views •

Three China-Demark Joint Research Projects Approved in 2009

The National Natural Science Foundation of China (NSFC) and Denmark National Research Foundation (DNRF) started a new round of supporting joint research projects between Chinese and Danish scientists in the area of new nano structures and their functions in 2009. Through international review and joint discussions and decision made by both sides, the following three projects were finally approved for funding:

Chinese PI	Project Title	Home Institution of Chinese PI	Danish PI and Home Institution
Wang Chen	Self-assembly and function of molecular nanostructures on surfaces	National Center for Nanoscience and Technology	Flemming Besenbacher; University of Aarhus
Liu Yunqi	Self-assembled molecular electronic nanosystems: from basic science to novel applications	Institute of Chemistry, CAS	Thomas Bjornholm; University of Copenhagen
Lu Ke	Nanometals-bridging the length scales	Institute of Metal Research, CAS	Dorte Juul Jensen; Technical University of Denmark