

Science

The Sino-Danish Committee on Scientific and Technological Cooperation



**Danish Agency for Science
Technology and Innovation**

Ministry of Science
Technology and Innovation

A follow-up report on
the Committee's work
in the period 2000–2006



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Technological Cooperation

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The Danish Agency
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in the period 2000–2006**

The Danish Agency for Science, Technology and Innovation
August 2007

Contents



Introduction	3
The Sino-Danish Committee on Scientific and Technological Cooperation	5
Danida Fellowship Centre (DFC)	7
Application procedure	9
The focus and strategic aim of the Committee	11
Collaborative projects in 2007–2008	15
Statistics: Applications 2000–2006	17
Proposals submitted and approved, 2000–2006	17
Approved proposals by research field, 2000–2005	18
Approved proposals by research field, 2006	19
Approved proposals by partner institution	20
Chinese Danida researchers in Denmark between 2000 and 2006, by place of study	21
Regional distribution in China	22
Experiences of Chinese Danida researchers and their Danish collaboration partners	23
Introduction	23
Background to fellowship applications	24
The application process and contact with Danida Fellowship Centre	26
Benefits of the fellowships	27
Remarks in conclusion	31



The Sino-Danish Committee on Scientific and Technological Cooperation was established in 1985. Its core task is to assess proposals for Sino-Danish collaborative projects.

Inclusion on the Committee's list of approved projects enables application to be made for a Danida fellowship grant to fund a Chinese researcher in Denmark for ten months. Ten such fellowships are awarded each year.

When the Committee was originally set up, China was a developing country, and the grants were then regarded as development aid. Danida grants are still allocated through the Committee, but the nature of Danish interest in China is today different from what it was back in 1985.

Since the Committee was created, China has experienced extremely rapid economic growth, and is now regarded as a growth country with considerable potential for Danish researchers and enterprises. Today, one of the objectives on the Danish side is to establish Danish-Chinese cooperation on research and researcher training in areas where both countries are strongly placed.

At the root of this desire lies the recognition that it is not possible for Danish research to be at the forefront of all areas of research. Therefore researchers and research environments must draw knowledge from, and benefit from, research conducted in other countries.

China has a population numbering more than 1.3 billion, and is witnessing economic rates of growth of around almost ten per cent. Rapid strides are also being made in the area of research, and China now has a number of large and prestigious universities. Consequently, cooperation and exchange of knowledge with Chinese research and business environments is of great importance for Denmark's future success in global competition.

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The Sino-Danish Committee on Scientific and Technological Cooperation



The Danish representatives on the Sino-Danish Committee on Scientific and Technological Cooperation are:

- > Jørgen Kjems (Ørsted Department, Technical University of Denmark)
- > Lisbeth Valentin Hansen (Danish Toxicology Centre)
- > Jacob E. Holmblad (Danish Standards)

China is represented by the Chinese Ministry of Science and Technology (MoST).

The Committee meets formally once every alternate year. The next such meeting, which will be the sixteenth, is due to take place in Denmark in 2008. Interim meetings are held in the intervening years. Part of the purpose of these is to follow up on the annual allocation of Danida fellowships.

Secretarial services for the Danish members of the Committee are furnished by the Danish Agency for Science, Technology and Innovation's Centre for Research Policy, which took over this function from the Ministry of Foreign Affairs in 2002.

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Danida Fellowship Centre (DFC)



Danida Fellowship Centre (DFC) is a self-governing institution financed by Danida. It administers and implements Danida's fellowship programme.

DFC receives funding for about 800 fellowships a year, including those for the Chinese trainee researchers. The Centre performs a number of tasks connected with their arrival and period of study in Denmark.

Among these tasks may be mentioned:

- > Quality assurance of the study period
- > Arranging accommodation
- > Payment of monthly allowance
- > Personal advice
- > Arranging social events
- > Holding introductory courses about Denmark

A more detailed account of the tasks performed by DFC can be seen at www.dfcentre.com.

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Application procedure



A Danida fellowship finances a Chinese researcher for a ten-month stay in Denmark. Its value is DKK 7,500 per month, which covers study fees.

Application for a Danida fellowship is open to those whose projects have been accepted onto the approved list of the Sino-Danish Committee on Scientific and Technological Cooperation. A call to submit project proposals is issued before the Committee's formal meeting every second year.

When the applicant's proposed collaborative project has been approved by the Committee:

- > The Danish party sends a written invitation to the Chinese party.
- > The Chinese party sends the invitation together with the completed application forms to the Chinese Ministry of Science and Technology (MoST) in Beijing for approval.
- > MoST forwards the documents to the Danish Embassy in Beijing.
- > The fellowship application form, accompanied by an application for a residence permit and the result of an English-language test, is forwarded via the Danish Embassy in Beijing directly to DFC, where it must be received no later than three months before the commencement of the period of study.
- > Letter of Acceptance, Guide for Danida Fellows and Declaration of Health forms etc. are sent to the researcher via the Danish Embassy in Beijing.
- > Declaration of Health forms must be returned directly to DFC no later than one month before the researcher's arrival.

NOTE: All application forms can be downloaded from DFC's web site, www.dfcentre.com.

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The focus and strategic aim of the Committee >

As a result of the extremely rapid economic growth it has experienced in recent decades, China is now regarded as a growth country with considerable potential for Danish researchers and enterprises.

Denmark desires to increase Sino-Danish cooperation on research and development in areas where both countries are strongly placed.

With its many years' activity in the field, the Committee represents a good and strong link that can provide a solid basis for deeper Sino-Danish R&D cooperation.

Signing of a Sino-Danish R&D Cooperation Agreement

With the Committee's work as a starting point, Denmark has initiated negotiations with the Chinese Ministry of Science and Technology on the signing of a Sino-Danish Cooperation Agreement on research and researcher training.

The intention behind such an agreement is that it should lead to deeper collaboration in areas where both countries are strongly placed. As a point of departure, the focus is broadly defined in terms of a number of fields:

1. Biotechnology and biomedicine
2. Agricultural and food technology
3. Sustainable energy (particularly wind power, bio-energy and fuel cells)
4. Nanoscience and nanotechnology
5. Health
6. Information and communication technology (ICT)

The agreement is envisaged as a framework agreement at national level. The purpose is to supplement existing cooperation agreements between Danish and Chinese universities. More gene-



rally, it will also facilitate increased R&D collaboration between Danish and Chinese knowledge institutions and high-technology enterprises.

Implementation of a bilateral R&D Cooperation Agreement

The signing of a bilateral R&D cooperation agreement will be followed by the appointment of a Sino-Danish steering group. The initial impetus of the steering group will be provided by the existing Sino-Danish Committee on Scientific and Technological Cooperation.

Within the framework of the Sino-Danish agreement, the steering group will be charged with initiating a range of networking activities to inspire and motivate deeper R&D collaboration between Danish and Chinese researchers and enterprises.

Examples of such networking activities include:

- > Match-making events, aimed at identifying partners for technology-oriented industrial or research projects
- > Themed workshops and meetings on subjects of joint interest
- > Support for key persons' participation in activities that promote contacts between the two countries
- > Exchange of researchers and technical experts
- > Cooperation on researcher training
- > Exchange and sharing of equipment and materials
- > Joint R&D projects

The Danish Innovation Centre in Shanghai

On 1 September 2007, the Danish Ministry of Foreign Affairs, in association with the Ministry of Science, Technology and Innovation, will open an Innovation Centre in Shanghai. The Danish Agency for Science, Technology and Innovation will maintain a research and technology attaché at the Centre.



The principal task of the attaché will be to promote R&D collaboration between Danish and Chinese researchers and enterprises and consolidate the quality of Danish research through cooperation and mobility between Denmark and China.

Since the attaché's duties will in practice support the activities initiated by the steering group within the framework of the Sino-Danish R&D Cooperation Agreement, close cooperation is envisaged between the attaché and the steering group.

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Collaborative projects in 2007–2008



Following a call for proposals, approximately 40 collaborative projects were considered at the Committee’s 15th meeting, which was held in China in November 2006. 28 of these were accepted for the Committee’s list of approved projects for the period 2007–2008.

The list was published at the end of November 2006, after which it was up to the proposers to submit final applications to DFC.

Fellowships are allocated by DFC on a “first-come-first-served” basis. As yet there is no final list of fellowships awarded in 2007.

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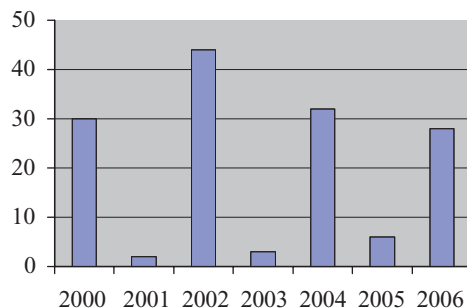
Proposals submitted and approved, 2000–2006

As seen below, a total of 228 project proposals was received in the period 2000–2006. Of these, 145 were accepted for inclusion on the Committee’s list of approved projects.

Since 2000, sixty-eight of the approved proposals have led to a Chinese trainee researcher spending ten months in Denmark on a Danida fellowship. This corresponds to a 47 per cent success rate for approved proposals.

Project-proposal	2000 12th meeting	2001 1th interim-meeting	2002 13th meeting	2003 2th interim-meeting	2004 14th meeting	2005 3th interim-meeting	2006 15th meeting	Total
Proposals	53	2	52	3	62	8	48	228
Approved projects	30	2	44	3	32	6	28	145
Fellowships in DK	1	9	14	18	5	9	12	68

Table 1a



■ Approved projects

Figure 1a

1) In this paragraph references to partner institutions will be made in line with the name the institution held before the realisation of the new map of universities and research in Denmark in 2006.



Approved proposals by research field, 2000–2005

In the below table and figure, it is seen that the breakdown of approved proposals by research field in the period 2000–2005 was as follows: veterinary and agricultural, 34 per cent; nanotechnology, 25 per cent; health, 19 per cent; technology, 18 per cent; social sciences, 4 per cent.

Subject area	2000 12th meeting	2001 1th interim- meeting	2002 13th meeting	2003 2th interim- meeting	2004 14th meeting	2005 3th interim- meeting	Total
Technology	7	2	3	0	8	1	21
Veterinary/Agriculture	10	0	17	0	11	0	38
Health	5	0	11	0	6	1	23
Nanotechnology	7	0	11	2	7	3	30
Social sciences	1	0	2	1	0	1	5

Table 2.b

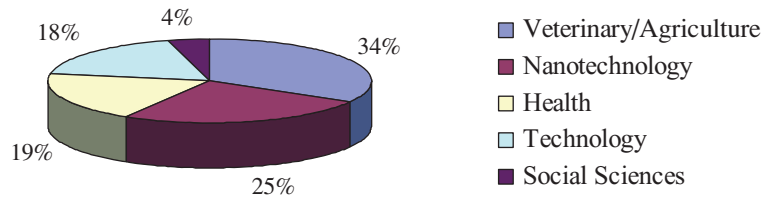


Figure 2.b

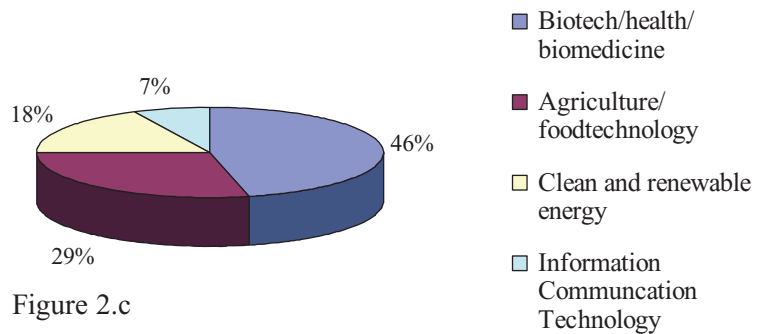


Approved proposals by research field, 2006

In 2006, the Committee adopted a new classification of subject areas into four fields in its allocation of Danida fellowships. The distribution of approved proposals in 2006 is shown in Table 2c and Figure 2c. It can be seen that interest was greatest in biotechnology/ health/ biomedicine, which accounted for 46 per cent of total applications.

2006			
15th meeting			
Biotechnology, health and biomedicine	Agriculture/ Food technology	Renewable energy	Information and Communication Technology (ICT)
13	8	5	2

Table 2.c





Approved proposals by partner institution

The Danish Institute of Agricultural Sciences and the Technical University of Denmark, with respectively 25 and 22 projects approved, had the largest number of approvals in the period 2000–2006. Close behind were the Royal Veterinary and Agricultural University, the University of Aarhus, the University of Copenhagen and Risø National Laboratory, with respectively 18, 15, 11 and 11 approved projects in the period.

Danish partner institution	2000	2001	2002	2003	2004	2005	2006	Total
The Danish Institute for Food and Veterinary Research	2		2		1		1	6
The Danish Institute of Agricultural Sciences			6		7	2	10	25
Enterprises	2							2
The Danish National Environmental Research Institute	2							2
Forskningscenter Risø National Laboratory	1		3		5	1	1	11
Roskilde University	1				1	1	1	4
Technical University of Denmark	6	2	6	1	3		4	22
Royal Veterinary and Agricultural University	4		9	1	4			18
University of Copenhagen	4		4	2	2		1	11
University of Southern Denmark					5		1	6
University of Aarhus	2		7		2	1	3	15
University of Aalborg	1		2		3	1	3	10
Others	5		5				3	13

Table 3



Chinese Danida researchers in Denmark between 2000 and 2006, by place of study

Below it can be seen that the Technical University of Denmark was host to the largest number of Chinese trainee researchers in the period 2000–2006, having received 14. The Danish Institute of Agricultural Sciences, the University of Aalborg and the University of Aarhus were host to ten, nine and nine respectively.

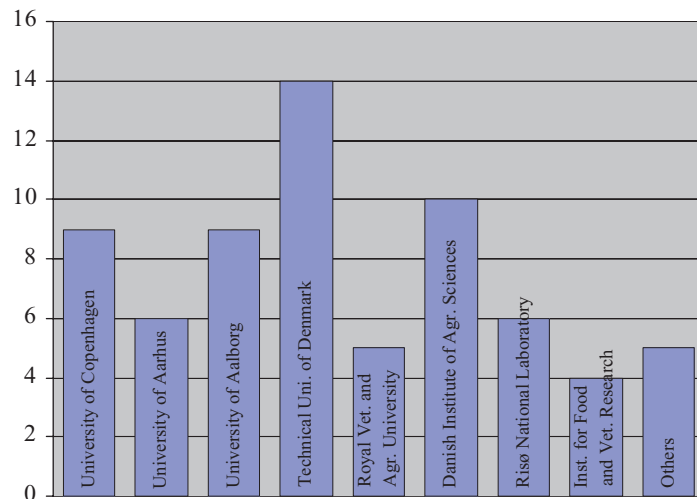


Table 4



Regional distribution in China

China is divided into 22 provinces. A breakdown by province of the 145 approved projects reveals that 30 per cent of the applicants came from Beijing. There were also good numbers of applicants from Zhejiang, Jiangsu and Shanghai.

Chinese provinces	2000	2001	2002	2003	2004	2005	2006	Total
Beijing	11		8	1	10	1	12	43
Gansu					1		1	2
Guangdong	1			1	1			3
Guanxi			3					3
Heilongjiang	2		1		1			4
Henan			1		1			2
Hubei			2		1		3	6
Hunan	1				1			2
Jiangsu	3		7		5			15
Jilin			2			1	2	5
Laoning			1		3			4
Other	2	2	7		2		5	18
Shandong			2		1	1	3	7
Shanghai	3		4	1	1	2	2	13
Shanxi	1		1					2
Zhejiang	6		5		4	1		16
Approved projects	30	2	44	3	32	6	28	145

Table 5

Experiences of Chinese Danida researchers and their Danish collaboration partners



Introduction

This section is based on interviews with three Chinese Danida researchers and their Danish collaboration partners. All three researchers received their grant in 2006.

Abudukade Wufu is participating in research at the Department for Mathematical Sciences at the University of Copenhagen. He is a postdoc from the College of Mathematics and System Sciences at Xingjian University in Xingjian Province, western China. His Danish collaboration partner is Associate Professor Hans Plesner Jakobsen of the Department for Mathematical Sciences at the University of Copenhagen.

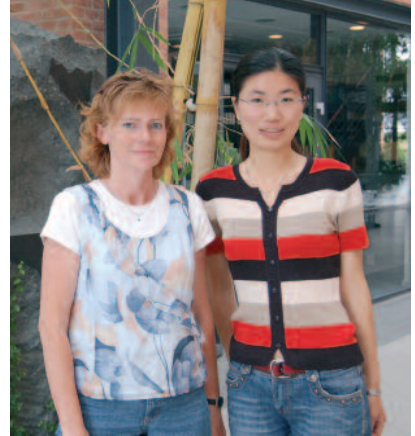


Jin Hua is participating in research at the Technical University of Denmark, at Risø National Laboratory. She comes from the Jilin Province Light Industry Design and Research Institute. Her Danish collaboration partner is researcher Mette Hedegård Thomsen, who is a member of the Biosystems Department at Risø National Laboratory.





Xia Zhang is participating in research at the Faculty of Agricultural Sciences of the University of Aarhus Flakkebjerg Research Centre. She is a PhD student from the Biotechnology Research Institute of the Chinese Academy of Agricultural Sciences in Beijing, but originally comes from Hei Long Jiang Province in north-east China. Her Danish collaboration partners are represented by Birte Boelt, who is head of a research unit at the Genetics and Biotechnology Institute of Flakkebjerg Research Centre.



Background to fellowship applications

All three trainee researchers had different backgrounds when seeking a Danida fellowship. However, one thing they had in common was that it was existing personal contacts between Danish and Chinese researchers that laid the foundations for the application.

Jin Hua's fellowship relates to a cooperation agreement between her research institute in Jilin, Dong Energy, and Risø National Laboratory (Technical University of Denmark). In 2005, two groups of guest researchers from Jilin came to Denmark within the framework of this agreement. This visit led to a desire for extended collaboration, and finally to an application for a Danida fellowship for Jin Hua.

"I think there are a lot of research advantages about fuel ethanol from lignocellulosic materials in Risø." Jin Hua



The background to Abudukade Wufu's application was an earlier collaboration between Hans Plesner Jakobsen and a Chinese researcher, Zhang Hechunhang, of Zinghua University in Beijing. Zhang Hechunhang held a postdoc position at the Department for Mathematical Sciences from 1995 to 1997, and since then has maintained close cooperation with Hans Plesner Jakobsen.

After they became aware of the possibility of applying for a Danida fellowship, Zhang Hechunhang recommended Hans Plesner Jakobsen to collaborate with the young, promising researcher Abudukade Wufu.

"I had seen the homepage of Copenhagen University and I got someone to send me information about the faculty. At that time I said 'yes, this is a good place to study'. The second thing is that me and Jakobsen has a common subject of interest and that constitutes a good chance for me because in my region it is very difficult to get in touch and meet with people with the same interest." Abudukade Wufu

The background for Xia Zhang's application was that a previous head of a research unit at Flakkebjerg Research Centre had taken part in a visit to China, where she had made the acquaintance of Xia Zhang's Chinese supervisor. The two researchers found they were interested in the same topics within the area of collaboration, and were immediately keen to extend Sino-Danish cooperation. As a result, Xia Zhang applied for a Danida fellowship in 2006 with a view to working with Danish researchers from the University of Aarhus Faculty of Agricultural Sciences.

"...her supervisor thinks Xia Zhang is the best student we have had. It is enormously positive for us. And it came out of that personal contact." Birte Boelt



The application process and contact with Danida Fellowship Centre

As regards the actual application process, there is a general impression that the application procedure is clear and that the application forms are easy to use. However, some of the persons interviewed felt the process to be both complicated and long drawn out. Hans Plesner Jakobsen mentioned that in one case this had meant a young and promising applicant had abandoned his application because he had been offered a bursary in Australia in the meantime.

With regard to the fellowship itself, Xia Zhang expressed the view that ten months was too short, and that she would like to see more than ten fellowships being awarded each year.

“Ten months is not enough to do research. But Danida only supports us for ten months. I really hope they can extend the period. And then there should be grants for more Chinese people. Ten grants a year is not a lot.” Xia Zhang

“When I came here it took some time to get used to the life. For the first 1–2 months it was difficult to work, because I needed time to get to know the place and the people.”
Xia Zhang

On the subject of the fellowship itself, Hans Plesner Jakobsen remarked that Danida fellowships perhaps were not the ideal vehicle for exchanges of postdocs. Postdocs are usually adults with an established family life in their own country. Since one of the conditions for receiving a Danida fellowship is that recipients must come to Denmark alone, it is a consequence that their family life must be put on hold for ten months.



In general there is no doubt that all three trainee researchers had been well received by DFC, and they all expressed great satisfaction with DFC's input.

"...it has been very nice to get into contact with different people. And Danida is very good at organizing those activities. So I do appreciate it." Xia Zhang

"I am grateful that the Danish government gave me this good opportunity to learn advanced technology and discuss with researchers in Risø. I think I have a good time in Denmark. DFC thought over and arranged everything considerately for me. I also thanks everyone in DFC." Jin Hua

"...they do everything very thoroughly for you. It is all taken care of – coming to Denmark, the daily living and also the study here. They arranged everything for me. So I have not had any difficulties here. The best thing might be the accommodation." Abudukade Wufu

Benefits of the fellowships

The three trainee researchers all consider their stay in Denmark to be very valuable.

Abudukade Wufu emphasised two things of particular importance. The first was that in Denmark he had the opportunity to work closely with an international team of researchers that were all working in his field. The second was the Internet. At the University of Copenhagen there is access to all relevant scientific journals in Abudukade Wufu's field. The majority of Chinese universities, including his own university in Xingjian Province, cannot afford to buy access to all these journals.



In this connection he pointed out that he came from western China, and that that region is still a developing country. He considers it important that it should be understood in Denmark that the great economic growth is taking place in eastern China, and that this leads to increasingly great inequality. Therefore there is still good reason to award Danida fellowships to people from western China.

“Now I have been in Denmark for eight months. I have done a lot of experiments and learned so much advanced technology, it enrich my experience with practice. It is very important and good for my future research work on bioethanol from biomass in China.” Jin Hua

“Before I came my major was about molecular biology, but this group focus much on the physiology. That is what I want to learn, and that is why I chose this group.” Xia Zhang

The Danish collaboration partners’ assessments of the Chinese trainee researchers’ period in Denmark all agree in attaching great importance to command of English. It is not enough that people are talented in their field, if they cannot communicate. It is described as difficult to integrate someone into a team who says nothing about him or herself because of the language barrier.

“The person we have is good at English and very open, but we have previously had Chinese visitors, in a different context, and then we sometimes got the impression that it could be difficult to engage with them, and it could be difficult to know whether they completely understood what you were saying to them, even if they answered ‘yes’ when you asked them. Sometimes we felt they were just saying ‘yes’ out of politeness.” Birte Boelt



Another problem referred to is that which arises if a Danida researcher does not have the skills one would expect in a trainee researcher. For example, ordinary Microsoft programs have turned out to be a new challenge for some in the past.

On the other hand, it is emphasised that the trainee researchers can make a constructive contribution to a field of research if they bring special competences that complement the work being done by the Danish researchers.

“Xia has had a positive influence on our work in that she has opened our eyes to some potential new areas of cooperation.”
Birte Boelt

“As you know, here in Denmark our research is very application-oriented, we are very involved with industry. But in China, it seems they are more focused on basic research, so in that way it looks as though we might complement each other extremely well.” Birte Boelt

The trainee researchers share with their Danish collaboration partners a common belief that their stay in Denmark will lead to continued cooperation between them and their departments. Specifically, both Hans Plesner Jakobsen and Birte Boelt are considering making a study trip to China. Moreover, Xia Zhang’s supervisor is coming to Denmark in the autumn to explore the possibilities of new areas of cooperation.

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Remarks in conclusion



A total of 228 project proposals was received in the period 2000–2006. Sixty-eight of these received support in the form of a Danida fellowship.

The Danish Institute of Agricultural Sciences and the Technical University of Denmark accounted for the largest number of approved project proposals in the period, closely followed by the Royal Veterinary and Agricultural University, the University of Aarhus, the University of Copenhagen and Risø National Laboratory.

In a breakdown by research fields, the majority of approved proposals in the period 2000–2005 were related to veterinary and agricultural sciences, nanotechnology, health and technology. After the introduction of new research field categories in 2006, the greatest numbers of applications were in the fields of biotechnology/health/biomedicine and agriculture/food technology.

The greatest number of applicants came from Beijing. There were also good numbers of applicants from Zhejiang, Jiangsu and Shanghai. The Technical University of Denmark, the Danish Institute of Agricultural Sciences, Aalborg University and Aarhus University received the greatest numbers of Chinese trainee researchers in the period 2000–2006.

It can be concluded from interviews with three of the Chinese trainee researchers and their Danish collaboration partners that personal contact between Danish and Chinese researchers is crucial to an application being made for a Danida fellowship.

The conclusion regarding the application process must be that it is seen as complicated and long drawn out. Moreover, the ten-month Danida fellowship is not felt to be the best possible option for postdoc researchers – partly because there is not enough time for actual research projects, and partly because of the stipulation that recipients must leave their families behind.



However, all three trainee researchers considered their stay in Denmark to be very valuable both for their work and at the social level. It was also emphasised that trainee researchers can make a constructive contribution to a field of research if they bring special competences that complement the work being done by the Danish researchers. In addition, there was generally great satisfaction with DFC's performance in connection with the Danida researchers' arrival and period of study in Denmark. Both the practical aspects and the social activities arranged by DFC were regarded as valuable by the Chinese guests.

From the point of view of the research work, it is consistently felt that a good command of English is vital if the period in Denmark is to be a success. It is also important that the Chinese guests have a high level of research skills when they come.

The indications are that in the long term the time spent in Denmark by trainee researchers on Danida fellowships will lead to continued Sino-Danish research cooperation.



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The Sino-Danish Committee on Scientific and Technological Cooperation was established in 1985. The core task of the Committee is to assess proposals for Sino-Danish collaborative projects, with a view to awarding Danida fellowships to fund Chinese researchers in Denmark.

The main purpose of this publication is to provide follow-up on the Committee's work in the period 2000–2006. The follow-up is both quantitative and qualitative in approach. Accordingly, basic statistics are provided on the allocation of fellowships over the period 2000–2006, and we learn how the trainees and their supervisors experience the fellowship programme and the cooperation across two very different cultures.

An introductory section provides a description of the fellowship application procedure, and the focus and strategic aim of future R&D cooperation between Denmark and China is outlined.
