



## FEATURE: JSPS's Scientific Outreach

# TOPICS

No.**22** 

2007 Winter

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# FEATURE JSPS's Scientific Outreach

To establish a comprehensive policy for implementing the government's strategy to make Japan a nation rooted in S&T creativity, a series of Science and Technology Basic Plans have been enacted. The most recent third Plan sets as a policy priority the fostering of researchers and technicians who will shoulder the next generation of S&T advances in Japan. It calls for outreach activities by researchers; that is, for Japan's research community to make a more concerted effort to disseminate scientific information to society.

Of particular concern is the tendency in Japan for junior and senior high school students to shy away from math and science studies. To curb this trend, proactive, not passive, measures will need to be taken to foster a passionate interest in young people for scientific exploration and discovery.

To promote scientific research, JSPS carries out a wide range of research-support activities. As a funding agency, it has also in recent years launched programs to disseminate to the public research results along with information on programs to advance them.

This article describes two such outreach programs, both aimed at secondary school students. They are JSPS's "Science Dialogue Program" and its program "Welcome to a University Research Lab—Science That Inspires and Inspirits (HIRAMEKI TOKIMEKI Science)."

### **Science Dialogue**

This program provides JSPS fellows with opportunities to give lectures on their research work at high schools in the vicinity of their Japanese host institutions. These talented young scientists volunteer to participate in this program. Their lectures are expected to stimulate the students' interest in research, while widening their international perspectives through interaction with the fellows.

Lectures are normally given in English. However, to enhance communications with the students, fellows may bring their host researcher or Japanese colleague with them to the school to provide commentary in Japanese.

Established in 2004, the program has year upon year received increasingly more requests from high schools for lectures. In

the 2007 fiscal year, 129 lectures were held or scheduled.

JSPS fellows who have participated as lecturers in the program say the experience was a rewarding one. They enjoyed the chance it gave them to share information on their research and their zest for the work with the Japanese students and to act as representatives of their countries in introducing the students to their respective cultures and societies.

JSPS continuously recruits both fellows and high school faculties who would like to participate in the Science Dialogue Program.

For more detailed information on the program, please visit its site at http://www.jsps.go.jp/english/e-plaza/e-sdialogue/

### Lecture Examples

Lecture at Wakayama Prefectural Koyo High School

By Dr. Sebastien Lemire (France), Osaka University *On 18 October 2007* 

Dr. Lemire gave a lecture titled "An Introduction on Bacteriophages— Bacterial Viruses" to about 80 freshman students studying math and science. First, he introduced the students to France's geography, language, culture, sports and education system. He then told them about his research on

phages (bacteriophages), viruses which

live and multiply within bacteria. He explained the results obtained by past researchers, and described the structure of phages; how they infect intestinal bacteria; their effect in cheese production; and how they are used in medicine.

During the lecture, Dr. Lemire enunciated his words clearly to make his English easy for the students to understand. Also to aid their understanding, he used slides and experiments; inserted several question times into his lecture, and had a graduate student from his lab provide commentary in Japanese.



Fellow and students culturing phages and intestinal bacteria

Lecture at Shizuoka Kita High School By Dr. Daniel T. D. Jeans (UK), Kobe University On 22 October 2007

Dr. Jeans delivered a lecture titled "What Are the Smallest Objects, and What Do They Do? Particle Physics and the International Linear Collider" to 40 sophomore students studying



math and science. After introducing himself, Dr. Jeans explained to the students just how small particles are and told them about future prospects for new discovery using the forthcoming linear collider. He also told them about the Royal Observatory in Greenwich and various museums in England.

To facilitate the students' understanding, Dr. Jeans used simple language and a lot of slides. He also gave the students advanced study material to familiarize themselves with the subject and related vocabulary before the lecture. He was accompanied by his host Prof. Kiyotomo Kawagoe, who provided a brief commentary on each slide in Japanese. With perked interest, the students asked many questions, such as "What will be the impact of this research in the future?" In reply, Dr. Jeans said it was uncertain how this research will unfold but that it would impact future research just as scientific advances over the past century have an impact on today's research. Understanding particles, he said, opens the door to understanding the universe.

This was the first time for Shizuoka Kita High School to participate in the Science Dialogue Program; right away they have applied for a second lecture. Excited about going another round, Dr. Jeans says that he will conduct experiments next time to kindle an even more burning interest in the students.

### **Science That Inspires and Inspirits**

Implemented since 2005, this program is aimed at today's students who will become tomorrow's scientists. Under it, university researchers who are conducting projects with government Grants-in-Aid for Scientific Research explain their work and its results in an easily understood manner to groups of mainly secondary school students visiting their labs.

By providing an opportunity for the students to learn about the meaning of science and the role it plays in their daily lives, the program seeks to stimulate intellectual curiosity and creativity in them. It furthermore demonstrates to them the value of science within both culture and society—the program's ultimate aim being to promote multigenerational, sustained advancement of scientific endeavor in Japan. The program's steering committee selects the lecture providers from among openly recruited applicants. The program, itself, is carried out collaboratively between JSPS and the implementing universities. By the end of this 2007 fiscal year, 241 lectures are scheduled to have been held.

Universities throughout Japan prepare their own uniquely tailored lecture programs, to which interested students in the local area are invited to attend.

For more information about this program, see http://www.jsps.go.jp/hirameki/

### **Lecture Examples**

Lecture at University of the Ryukyus By Dr. Akihiro Takemura and Dr. Kazuhiko Sakai (both associate professors in the Tropical Biosphere Research Center) *On 22 July 2007* 

A lecture was given to 18 high school students and 6 junior high school students on the theme "Symbiosis and Competition among Creatures in Coral Reefs." Eight parents of the students also attended. A lecture was held in the morning, followed by observation of the professors' research lab, and then a hands-on experience with coral and the reef's living creatures.

In the lecture, Dr. Sakai, who is a specialist in coral reef ecology, told the students about how the coral, an animal itself, is the most important component of the reef ecosystem. Then, Dr. Takemura, a specialist in ichthyophysiology, described the cyclical nature of fishes. In the afternoon, the students were given a firsthand look at research being carried out on coral reef organisms and related experimental facilities. Then, the students divided into two groups: One went out on a boat to observe the reef through glass-bottom boxes, while the other walked along the shore observing tide



pool creatures. Thereafter, they returned to the lab to receive a briefing on organisms being bred in it and perform an experiment with a coral ecosystem. Then, the groups switched activities.

# FEATURE

### Lecture at Tohoku University

By Dr. Ayumi Shinohara and Dr. Akira Ishino (professor and assistant professor in Graduate School of Information Sciences)

On 9 August 2007

Ten high school students participated in this program entitled "Programming a Robot—Making an Algorithm." The program was carried out with the cooperation of the university's Innovation Plaza and the help of 14 college students who assisted in the exercise. The program comprised two parts: a lecture and a hands-on exercise of making a robot algorithm. In the lecture, algorithms for string matching and processing were explained both in terms of their evolution and operation. The students were also introduced to state-of-the-art research being advanced in this field. Then, the students participated in a programming exercise with the robot dog AIBO, used in



the 4-leg RoboCup Soccer League. Teams were organized with one high school student and one college student, who carried out the programming exercise. They made algorithms to move AIBO's 15 joints in a way to create predetermined poses and movements. Having challenged this task with considerable struggle, the students cheered when AIBO moved as programmed.

Participating in teams with the college students gave the high school students a chance to also talk about university education and research while making friends.

## **F**ive Initial Projects Selected under World Premier International Research Center Initiative

On 29 March, a call was issued for applications under the newly established program "World Premier International Research Center Initiative," to which 33 were submitted from 22 institutions by the 29 May deadline. From among them, the Program Committee chose five outstanding center proposals from five different institutions, for an institutional selection ratio of 22.7%.

Applications submitted were first given a document review. Participating in this process were 155 referees inclusive of 46 overseas reviewers, each a specialist or leading authority in the subject field. Based on their results, the Program Committee, comprising nine Japanese authorities and six overseas experts, screened 13 short-listed proposals through panel reviews and selected five very highly promising awardees.

The program was launched in 2007 by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in a drive to build within Japan "globally visible" research centers that boast outstanding research environments of a top world level. These centers will be given a high degree of autonomy, allowing them to virtually revolutionize conventional modes of research operation and administration in Japan. During the funding period, the Committee will monitor the progress made by each of the centers. In both its selection and monitoring functions, JSPS serves as the program's secretariat.

### Specifics

- Funding period: Ten years, with a possible five-year extension for centers producing outstanding results. (Assessments are performed every five years.)
- *Funding scale:* From ¥500 million to ¥2 billion annually per center
- *Program budget:* FY 2007: ¥3.5 billion (half year)

### **Selected Projects**

Host Institution	Research Center	Center Director
Tohoku University	WPI Advanced Institute for Materials Research	Yoshinori Yamamoto (Professor, Graduate School of Science, Tohoku University)
The University of Tokyo	Institute for the Physics and Mathematics of the Universe	Hitoshi Murayama (MacAdams Professor of Physics, University of California at Berkeley; Faculty Senior Staff, Lawrence Berkeley National Laboratory)
Kyoto University	Institute for Integrated Cell-Material Sciences	Norio Nakatsuji (Director and Professor, Institute for Frontier Medical Sciences, Kyoto University)
Osaka University	Osaka University Immunology Frontier Research Center	Shizuo Akira (Professor, Research Institute for Microbial Diseases, Osaka University)
National Institute for Materials Science	International Center for Materials Nanoarchitectonics (MANA)	Masakazu Aono (Fellow, Coordinating Director of Key Nanotechnologies Field, and Managing Director of Nano System Functionality Center, National Institute for Materials Science)

- University-Industry Cooperation and Research Program Division

In the report "Graduate School Education in the New Age" issued by the Central Council for Education of Japan in September 2005, it was recommended that university graduate schools take stronger measures to optimize their potential as educational institutions. Based on this recommendation, in FY 2006 the Ministry of Education, Culture, Sports, Science and Technology (MEXT) instituted a 5-year systematic program for improving postgraduate education in Japan, while upgrading the "Standards for the Establishment of Graduate Schools." It inserted a provision in university regulations requiring graduate departments to foster young scientists and technologists, while newly requiring them to create programs for advancing academic development and criteria for evaluating academic performance.

Rooted in such MEXT initiatives, the JSPS-administered Support Program for Improving Graduate School Education gives priority support to creating educational programs at the master's and doctoral levels that are superbly tailored to foster talented young people capable of playing active roles in a wide spectrum of fields and sectors within society. By widely disseminating the results of their programs, the funded institutions will contribute to raising the overall quality of graduate education in Japan.

#### **Program Characteristics**

## 1. Strengthening the function of graduate education

By clearly defining the objectives of each graduate course, the program serves to chart a straight path to obtaining a graduate degree in the subject field. Carrying out this process in a well-tooled, highly transparent manner will make possible the enhancing of graduate education, especially through the systematic strengthening of course curricula.

## 2. Fostering young people who will go on to play active roles in society

The program boosts the function of graduate programs to foster students with a specialized knowledge of emergent academic fields and new technological innovations coupled with an ability to apply that knowledge to wide sectors of society.

#### 3. Disseminating information to society

Information on the good practices developed by the funded institutions is to be widely disseminated within Japan's higher-education community for the purpose of providing models for other universities to reference when enhancing their own graduate education programs.

### **Program Details**

### 1. Application

- *Eligible institutions:* University graduate department (master's/doctoral) or a combination of these departments *Application content:* 
  - 1) A clearly defined plan for strengthening the department's graduate education and fostering excellent graduate students.
  - 2) A curriculum that imbues students with specialized knowledge and an ability to utilize and apply that knowledge including interdisciplinary endeavors, coupled

with an ability to plan and manage projects. The education program should be innovated and of helpful reference to other universities.

3) The graduate education program is to be strategically positioned within the university's overall educational framework. After funding support ends, the program should be able to sustain its educational and research activities.

#### Funding period: Three years

- Applicable fields: All academic disciplines, divided into three categories: Humanities and Social Sciences; Science, Engineering and Agriculture; and Medical Sciences
- Project funding: Up to  $\pm 100$  million a year per project, of which up to  $\pm 50$ million is covered by a government subsidy
- Program budget: ¥3.5 billion for FY 2007

#### 2. Selection

Despite 2007 being the program's first fiscal year, applications were received from 154 national, public and private universities throughout Japan. Altogether, they submitted 355 proposals for a wide diversity of graduate education schemes. From among them 126 programs were selected at 61 universities through a rigorous screening process. Selection committees, comprising educators and experts, were established in each of the three program categories. They performed document and panel reviews of the applications based on such criteria as the future potential of the program plans and the degree to which they embody the distinctive characteristics of the applying institution.

#### Applications versus Selections under the FY2007 Program

	Humanities and Social Sciences			Science, Engineering and Agriculture			Medical Sciences				Total					
Categories	Applications		Selections		Applications		Selections		Applications		Selections		Applications		Selections	
	Universities	Applications	Universities	Applications	Universities	Applications	Universities	Applications	Universities	Applications	Universities	Applications	Universities	Applications	Universities	Applications
National universities	36	59	22	35	53	120	25	41	28	37	11	15	68	216	36	91
Public universities	8	12	3	3	11	16	3	4	8	8	1	1	20	36	5	8
Private universities	37	53	14	15	27	33	8	8	17	17	4	4	66	103	20	27
Total	81	124	39	53	91	169	36	53	53	62	16	20	154	355	61	126

- University-Industry Cooperation and Research Program Division

## 2007 Recipient Chosen for International Prize for Biology

On 4 September, at a meeting of the Committee on the International Prize for Biology (chair: Dr. Saburo Nagakura, then president of The Japan Academy), the Japan Society for the Promotion of Science (president: Prof. Motoyuki Ono) decided to award the 23<sup>rd</sup> International Prize for Biology (2007) to Dr. David Swenson Hogness, Munzer Professor of Developmental Biology and Biochemistry, Emeritus, at Stanford University School of Medicine, USA. The field chosen for the Prize this year was "Genetics."

#### **Brief Profile of Recipient**

Dr. Hogness was born in 1925. He studied chemistry and biology at California Institute of Technology, obtaining his doctorate in 1952. After doing genetic research using bacteria at Jacques Monod's laboratory at Institut Pasteur, Paris, he joined the faculty of Washington University; in 1959, he was appointed assistant professor of biochemistry in the School of Medicine, Stanford University. While holding various chairs at Stanford University, he has dedicated his career to studying gene structure and function and the regulatory mechanisms of gene expression in higher eukaryotes.

Dr. Hogness has been elected a member of the National Academy of Sciences (USA), an honorary member of the Japanese Biochemical Society, and an associate member of the European Molecular Biology Organization (EMBO), among other honors. He has also received many awards, including the Genetics Society of America Medal; Germany's Humboldt Research Award; the Darwin Prize of the University of Edinburgh; and the

### **Dr. David Swenson Hogness**

#### Nationality: United States of America

Present Position: Munzer Professor of Developmental Biology and Biochemistry, Emeritus, Stanford University School of Medicine, USA

#### **Curriculum Vitae:**

Munzer Professor of Developmental Biology and Bio-								
chemistry, Emeritus, Stanford University School of								
Medicine								
Professor of Developmental Biology and Biochemistry,								
Stanford University School of Medicine								
Professor, Department of Biochemistry,								
Stanford University School of Medicine								
Associate Professor, Department of Biochemistry,								
Stanford University School of Medicine								
Assistant Professor, Department of Biochemistry,								
Stanford University School of Medicine								
Assistant Professor of microbiology,								
Washington University School of Medicine								
Instructor of microbiology, Washington University School								
of Medicine								
Postdoctoral fellow, New York University								
Postdoctoral fellow, Institut Pasteur								
Ph.D. in biology and chemistry, California Institute of								
Technology								
B.S. in chemistry, California Institute of Technology								



Dr. David Swenson Hogness

Thomas Hunt Morgan Medal of the Genetics Society of America.

## Achievements Recognized by the Award

Dr. Hogness's numerous breakthroughs, including the techniques he developed for genome analysis, have been fundamental to our current understanding of genes. Among his many contributions, he found the TATA box which plays an important role in regulating gene expression: his analysis of Drosophila genes led to the discovery that the genes of higher eukaryotes consist of sequences of two kinds: exons, which code information for protein synthesis, and introns, which do not carry protein-encoding information. He established that the expression of many genes is controlled by regulatory regions or *cis*-elements located on the same strand, and demonstrated that genes play key roles in animal morphogenesis, so that the absence of a certain gene's function results in a developmental abnormality. These findings extended the frontiers of genetics, molecular biology, and molecular developmental biology; indeed, they laid the foundations for an entire field, which we know today as genomics.

Further, Dr. Hogness's laboratory has nurtured the careers of many younger researchers, such as Dr. Jeremy Nathans, who is known for his work with red and green opsins, or photoreceptive proteins, in mammals. These many contributions, which have benefited other areas of genetic science in addition to his own field of research, made Dr. Hogness a worthy recipient of the International Prize for Biology.

### **Process of Selection**

The Selection Committee, established by the Committee on the International Prize for Biology and chaired by Dr. Motonori Hoshi, professor, The Open University of Japan, distributed a total of 1,818 recommendation forms to Japanese and overseas universities, research centers, academic associations, individual researchers, and international academic organizations involved in the subject field of biology, and received a total of 61 recommendations in response. As some of these recommendations named the same individuals, the actual number of individuals recommended was 44, from 15 countries. The Selection Committee met a total of four times and very carefully reviewed all the candidates. Ultimately, the Committee decided to recommend Dr. Hogness as the recipient of the 23<sup>rd</sup> International Prize for Biology. The award was conferred on Dr. Hogness by the Committee on the International Prize for Biology.

## Ceremony and Commemorative Symposium

The award ceremony was held on 19 November at The Japan Academy. Their Majesties the Emperor and Empress attended the ceremony and a party in honor of the award recipient.

To commemorate the award to Dr. Hogness, the 23<sup>rd</sup> International Prize for Biology Commemorative Symposium on Genetics was held on 21-22 November at the Shiran Kaikan Conference Hall, Kyoto University. At the symposium, Dr. Hogness and his colleagues at the forefront of genetic research, both in Japan and overseas, gave lectures on their latest findings.

- General Affairs Division

## Gathering Held of Restart Postdoc Fellows

On 6 August, a get-together was held to commemorate the establishment of the Restart Postdoc (RPD) Fellowship under JSPS's Research Fellowships for Young Scientists Program. Among the guests of honor were Her Imperial Highness Princess Akishino and Ochanomizu University president Dr. Mitiko Go. Also attending were 20 of the 32 fellows who started their tenures in January 2007, having been selected under the program's first recruitment.

The meeting started with remarks by JSPS president Prof. Motoyuki Ono, followed by Princess Akishino, who offered warm words of encouragement to female fellows who are endeavoring to balance child raising with their research activities.

Speaking after Princess Akishino, Dr. Go said that female researchers in Japan are still way too few in number. Touching upon her own experience of child bearing and raising, she offered the fellows advice on how to pursue their research activities while rearing children. Then, each of the fellows spoke about her research work and own experience of raising children as a researcher. After a break, a freeconversation period, also attended by Princess Akishino and Dr. Go, was held in a warm and congenial atmosphere in which the fellows talked to each other about their research activities and exchanged views and information on childrearing as active researchers.

Attending members of JSPS's staff found this kind of opportunity for RPD fellows to meet and exchange views to be very meaningful.

The Restart Postdoc Fellowship was instituted in FY 2006. Its purpose is to support young Japanese researchers who had to interrupt their work for childbearing or infant raising to make a smooth transition back into the laboratory. The fellowship does this by providing its recipients with a stipend and research grant over a reentry period of two years. The ultimate objective of the program is twofold: To support scientist couples who wish to have children and to work toward equal



gender participation in Japan's scientific community. Over the past two years, more than 200 people have applied for this fellowship, of which a little over 30 have been selected each year. Both female researchers and male researchers with a childbearing spouse are eligible to receive a fellowship under the program. Up till now, however, only female researchers have been selected. Among the 201 applicants for the FY2008 fellowship, a number of male researchers have passed the screening process, so from next April there will be male RPD fellows for the first time.

- Research Fellowship Division

## **J**SPS Core-to-Core Program, Networking Research Hubs

The Core-to-Core Program was established in FY 2003 to meet research needs not covered under JSPS's conventional bilateral exchange programs amidst an intensifying environment of research being conducted through multinational, large-scale projects. This multilateral program supports projects to build and strengthen networks among leading research hubs in Japan, North America, Europe and Oceania. These projects are carried out in such cutting-edge fields as nano-science, genomics, stem cells, regenerative medicine, rare metals, virtual observatory, and high-energy density science as well as in various multidisciplinary areas. Currently, thirty-eight projects are being implemented by Japanese research institutions in collaboration with 32 counterparts in the US, 20 in Germany, 16 in the UK, and 40 in other countries.

For this article, we decided to ask Prof. Kaoru Yamanouchi, coordinator of the project "Ultrafast Intense Laser Science," about his project, which is presently in its fourth year under the program. He explained that the project is an initiative launched by The University of Tokyo and carried out in collaboration with counterpart institutions in six countries (listed in the block). The frontiers of this new and interdisciplinary field are, he said,

Core university: Graduate School of Science, The University of Tokyo Coordinator: Prof. Kaoru Yamanouchi Research topic: Ultrafast Intense Laser Science Project period: 2004-2009 Counterpart institutions: Laval University (Canada) French Atomic Energy Commission, Saclay (France) Friedrich-Schiller-University Jena (Germany) University of Palermo (Italy) University of Strathclyde (UK) Temple University (USA)

being pioneered around the world, with rapid advances being made using ultrashort laser pulse technology. We learned that his research group succeeded in controlling the dynamics of molecular systems by designing intense laser fields and, as a result, is the first to elucidate a large-scale deformation of the geometrical structure of molecules and also an ultrafast hydrogen migration within hydrocarbon molecules in such an intense laser field. Another highlight of the group's trailblazing work is its success in characterizing the shortest "attosecond" light pulses ever made by using the phenomenon occurring within 320 attoseconds through interaction between molecules and intense attosecond light pulses.

This fascinating research intersects a wide spectrum of disciplines including physics, chemistry and biology, making it very attractive for curiosity-driven young researchers. In fact, Prof. Yamanouchi has established a school within the framework of the project to amplify in young researchers a zest for cutting-edge pursuits while grounding them in research trends in frontier fields

In 2002, the group also launched a series of meetings called "International Symposium on Ultrafast Intense Laser Science" to introduce and explore the latest research trends across a widely expanding spectrum of related fields. These ISUILS symposia have been complemented with a book series called Progress in Ultrafast Intense Laser Science, which compiles review-style articles written by researchers at the forefront of sub-fields in this domain.

This multifaceted project led by Prof. Yamanouchi has made tremendous strides in taking on new research challenges, achieving a critical mass of international research collaboration and fostering the next generations of talented scientists. With many more milestone-setting objectives currently being pursued, this international research project under JSPS's Core-to-Core Program promises to advance the field of ultrafast intense laser science to even greater heights in the future.

-Research Cooperation Division II

## Japan-India Dialogue of Vice Chancellors/Presidents on Academic Exchange

On 21 August, a gathering, entitled "Japan-India Dialogue of Vice Chancellors/Presidents on Academic Exchange," was held in New Delhi. This was the first meeting of its kind, and it took place on the occasion of then

Japanese Prime Minister Shinzo Abe's visit to India.

Number of counterpart institutions by country



The first part of the meeting opened with remarks from the cochairs: Prof. Yuichiro Anzai, president, Keio University and Prof. Sukhadeo Thorat, chairman, University Grants Commission. Following them, representatives of the Ministry of Education, Culture, Sports, Science and Technology (Japan) and Ministry of Human Resource Development (India) described the present state of inter-university exchange and scientific collaboration between the two countries. Then, JSPS president Prof. Motoyuki Ono and Prof. Thorat introduced the representatives of the participating universities (13 on the Indian side and 12 on the Japanese side), and briefed them on the various programs in place to support Indo-Japan scientific exchange. Looking back over the 30 years of JSPS's cooperation with the Department of Science and Technology (DST) and the Indian National Science Academy, Prof. Ono noted that these collaborations not only support joint research, Asian Science Seminars and Core University Projects between research institutions in the two countries but also implement bilateral programs for inviting and dispatching researchers between Japan and India. Great pleasure was expressed in the fact that over 100 former JSPS fellows are now actively engaged in the Indian JSPS Alumni Club, which Indian researchers organized on their own initiative. This part of the meeting concluded with an agreement to consider the periodic holding of similar dialogues between the top administrators of Japanese and Indian universities, as close communication between them can play a pivotal role in promoting scientific exchange between the two countries.

Prime Minister Abe and Indian Prime Minister Manmohan Singh attended the second part of the meeting where they were handed a Chairpersons' Summary of the preceding discussions



by the cochairs. Mr. Abe expressed his delight over the holding of this epochal meeting aimed at strengthening the Indo-Japan partnership, and told how the Japanese government is proactively supporting student exchanges between the two countries.

At the meeting, it was pointed out that the exchange of researchers between Japan and India is far less than with Japan and other Asian countries, and suggested that promoting closer liaison between universities of the two countries can help to improve this situation. —Asian Program Division

## $\mathbf{E}$ ast Asia Round Table Meeting of Engineering Academies

On 27-28 September, JSPS hosted an East Asian symposium among the Engineering Academy of Japan (EAJ), Chinese Academy of Engineering (CAE), and National Academy of Engineering of Korea (NAEK).

This annual "East Asia Round Table Meeting" has been held by the three academies over the past ten years. With a view to expanding their tri-national framework to forming a network covering more countries of the Asia-Pacific, the participants in this year's meeting discussed issues shared by the region's countries with particular emphasis on innovation and human resource development.

The event featured an open symposium



EAJ president Dr. Tsuneo Nakahara

on "innovation," kicked off by remarks from representatives of the three academies and a keynote address by CAE vice-president Prof. Hequan Wu. They were followed by four presentation-cum-reporting sessions: (1) Cultivating Engineering Talent, (2) Innovation Cooperation, (3) Innovation Design, and (4) Technology Management. An impressive introduction was made of steps being taken to spur innovation in Japan, while the present state and future direction of innovation creation in China and Korea were illuminated. The discussion also clarified differences in the situations on the ground and ways of thinking among the three countries regarding human resource development, particularly the education, training and employment of young researchers and engineers.

The symposium provided an excellent platform for strengthening innovationrelated exchange between academic and industrial sectors of the three countries, while expected to stimulate an increase in the number of young researchers and technicians in the region. —Asian Program Division

## **B**onn Office Celebrates 15<sup>th</sup> Anniversary with Exhibition and Abend

On 15 August, the JSPS Bonn Office held a JSPS Program Exhibition and *Abend* (reporting meeting) at La Redoute, a rococo mansion where Beethoven once performed, in Bonn's picturesque Bad Godesberg neighborhood. Though it was raining cats and dogs that day, over 100 invited guests braved the elements to attend the event.

The JSPS Abend is held every summer to report on the office's activities during the past year and to express appreciation to JSPS's German partners and colleagues who have lent the office their support in carrying out those activities. At the same time, the gathering is held to expand the depth and breadth of office's friends and affiliates with an eye to enlisting even greater support for JSPS's programs with Germany.

As this year marked the office's 15<sup>th</sup> anniversary, a number of highly distinguished guests were invited. They included Dr. Michael Stückradt, permanent secretary, Ministry of Innovation, Science, Research and Technology of the State of North Rhine-Westphalia, and Prof. Dr. Matthias Kleiner, president, German Research Foundation (DFG), who started off the meeting by offering congratulatory remarks. Then, a greeting message from JSPS president Prof. Motoyuki Ono was read, followed by remarks from JSPS Bonn Office director Prof. Yasuo Tanaka, who presented the annual report, revisiting the office's evolution and accomplishments over the past 15 years. Briefing the attendees on the office's new slate of activities, he thanked them for their sustained cooperation.



Prof. Tanaka

Dr. Georg Schütte, secretary general, Alexander von Humboldt Foundation (AvH), offered a toast to kick off the following reception. Prof. Dr. Matthias Winiger, rector, University of Bonn, and Prof. Dr. Heinrich Menkhaus, chair, JSPS Club, offered brief remarks, praising the office for its consequential mission and activities.

Preceding the meeting, a JSPS Program Exhibition was held to introduce JSPS's latest program initiatives to support the building of centers of excellence, namely the Global COE Program, World Premier International Research Center Initiative, and JSPS Core-to-Core Program. Also introduced were JSPS's inter-institutional programs for fostering young researchers, particularly the Japanese-German Externship Program and International Training Program (ITP). Poster exhibits were used to describe these programs and engage the attendees in discussions. Further explanation of the programs was provided in the center director's report and in the JSPS brochure and Exhibition program pamphlet, which were distributed during the event.

JSPS Bonn Office



Poster exhibits

## ${f S}$ tockholm Office Holds Colloquium on Frontiers in Plant Biotechnology

On 4 October, the JSPS Stockholm Office held its eighth colloquium, this time on the theme "Frontiers in Plant Biotechnology." It was co-organized by Stockholm University, which hosted the event, and Nara Institute of Science and Technology (NAIST).

The purpose of this colloquium series is to deepen exchange between young researchers of the two countries with the hope of expanding working networks among them at ensuing stages of their careers.

Over recent years, preservation of the earth's environment has become a topic of mounting urgency. Important research is being conducted on environment restoration, particularly with regard to food supply. With the countries of northern Europe actively engaged in both environmental preservation and restoration, this year's colloquium explored how solutions to environmental problems are being sought through research in plant biotechnology.

The colloquium started with short talks



Prof. Shinmyo giving lecture

from the two advisors: Prof. Birgitta Bergman, Stockholm University, gave a welcoming address, and Prof. Atsuhiko Shinmyo, NAIST, offered leadoff remarks on the theme. He spoke about the possibilities the research in plant biotechnology holds for creating an eco-friendly society, one sustainable through resource recycling that is made possible by developing plant-based materials and fuels.

Following them were presentations by three researchers from Sweden and three from Japan, who spoke on the latest developments and results in their respective research activities. Concurrently, the participating young researchers held a poster exhibit, illustrating in a viewer-friendly manner the content of their various research projects. The presentations covered plant biotechnology research from wide-ranging angles, including plant functions, immune-response mechanisms, biotechnological characteristics, and susceptibility to environmental factors. They evoked a spirited response from the young participants, who asked volleys of questions. Stockholm Office director Prof. Hiroshi Sano wrapped up the event with concluding remarks, in which he said that he looked forward to collaborations kindled by the colloquium and hoped they would produce good results that he could later read about in scientific journals.

After the colloquium, the participants made an observation tour of the university's research labs and botanical gardens, culminating a very successful day of interchange between the many researchers and graduate students gathered for the event.

- JSPS Stockholm Office

## Introducing JSPS Overseas Offices: Beijing

### By Prof. Hiroshi Fukunishi, Office Director

The JSPS Beijing Office was established in April of this year. Its initial programs are now on track and have been showing results over the last eight months. First of all, we produced a pamphlet, printed in both Chinese and Japanese, to introduce the office's activities. To help as many people as possible understand the office's mission, we distribute the pamphlet to visitors of the office and at the events I will describe below. To date, 2,000 Chinese copies of the pamphlet and 350 Japanese copies have been handed out, playing a significant role in the office's PR activities. We are also in the process of updating the office's homepage. When this project is completed, we will be able to disseminate information worldwide in English, Chinese and Japanese on the latest developments in Sino-Japanese scientific exchange and joint research

The office has also carried out a number of activities to support the internationalization efforts of Japanese universities and to advertise JSPS's programs. On 15-18 September, it participated in the Japan Fair in Guangzhou, which attracted some 300



Japan Fair in Guangzhou

thousand people. The staff operated a booth with displays and conducted a questionnaire survey. China Education Expo 2007, a large-scale event assembling nearly 500 universities from around the world, was held in Beijing on 20-21 October and in Shanghai on 27-28 October. In both places, the office again set up a booth from which the staff introduced JSPS's programs and conducted a questionnaire survey of college students' interest in studying in Japan.

Thereafter, the office sponsored and cosponsored symposiums and seminars. On 2 November, it cosponsored the 150<sup>th</sup> Anniversary Symposium of Keio University along with the university and Renmin University of China. Held on the theme "Future Direction



of Chinese Economy—Comparison between Japan and China," the symposium enjoyed high appraisal. The office also cosponsored a seminar with Hiroshima University on 4 December, and is scheduled to cosponsor another one with Tohoku University on 12 January. The staff is currently preparing to hold the office's first Japan-China Science Forum on 5-6 March. It will tackle the theme "Environmental Changes, Bio-Resources and Global Warming." On the following day, an "Academia Summit" will be held to build cooperative Sino-Japanese networks in the fields addressed at the forum.



Keio University president Prof. Anzai offering remarks



### San Francisco Office

JUNBA 2008 Hyatt Regency Santa Clara, 10-11 January 2008

#### **Bonn Office**

JSPS-DFG Round Table on "Climate System Research—Status and Perspective" Hamburg, 16-18 January 2008

#### **Beijing Office**

The 1<sup>st</sup> Japan-China Science Forum "Environmental Changes, Bio-Resources and Global Warming" *Beijing, 5-6 March 2008* 

The 1<sup>st</sup> Academia Summit "Toward the Building of Academia Networks in Environmental and Agricultural Sciences" *Beijing, 7 March 2008* 

#### Strasbourg Office

JSPS-CNRS Colloquium for 150<sup>th</sup> Anniversary of France-Japan Relationship "Energy Supply and Demand in 21<sup>st</sup> Century" *CNRS, Paris, 6-7 March 2008* 

#### London Office

Opening Ceremony for New JSPS London Office "International Diversity of Higher Education in the UK & Japan" JSPS London Office, 10 March 2008



#### For FY 2008

 $\ensuremath{\mathsf{JSPS}}$  Postdoctoral Fellowship (Short-term) for North American and European Researchers

- For 3<sup>rd</sup> recruitment, application deadline from host institution: 4-8 February 2008
- For  $4^{\rm th}$  recruitment, application deadline from host institution: 7-11 April 2008
- JSPS Postdoctoral Fellowship for Foreign Researchers (Standard)

JSPS Invitation Fellowship for Research in Japan (Short-term) Application deadline from host institution to JSPS: 1-9 May 2008

For details, ask a prospective host researcher or visit our website.



The following fellows participated in JSPS's Science Dialogue Program during the period from August through October 2007. For details about the program, please see its webpage at: http://www.jsps.go.jp/english/e-plaza/e-sdialogue/ — Overseas Fellowship Division

### **Fukushima Prefectural Soma High School**

Date: 23 October Dr. Subhendu S. Bag (India) Host institution: Nihon University Title: "DNA: From the Basic— The Present Research Trend"



### Ikeda High School (Kagoshima)

Date: 15 October

**Dr. Ahmad Mujahid** (Pakistan) Host institution: Kyusyu University

Title: "Nutritional Regulation of Skeletal Muscle Mitochondrial ROS Production in Chickens Exposed to Acute Heat Stress"



### Kochi Prefectural Ozu High School

Date: 15-17 September **Dr. Nirmal K. Pahadi** (Nepal) Host institution: Tohoku University Title: "Glance at Nepal and Re-

search in Japan"



Dr. Pradeep Sharma (India) Host institution: Tohoku Univer-

Title: "My Research and Home Country at a Glance"

### **Niigata Prefectural Niitsu High School**

Date: 23 October **Dr. Dominika P. Kanikowska** (Poland) Host institution: Aichi Medical University Title: "Seasonal Variation in Neuroendocrine System"



### Osaka Prefectural Tennoji High School

Date: 25 September Dr. Rajamanickam Vijayalakshmi (India) Host institution: Osaka University Title: "Education of Mathematics in India"



### Saitama Prefectural Warabi High School

Date: 31 October **Dr. Christian Harkensee** (Germany) Host institution: Tokai University Title: "Immunology of Bone Marrow Transplantation"



### Sapporo Sacred Heart High School (Hokkaido)

Date: 26 September **Dr. Sachindra M. B. Nakkarike** (India) Host institution: Hokkaido University Title: "Carotenoids—Health with Colors; India—Unity in Diversity"



### Shizuoka Kita High School (Shizuoka)

Date: 22 October Dr. Daniel T. D. Jeans (UK) Host institution: Kobe University Title: "What Are the Smallest Objects, and What Do They Do? Particle Physics and the International Linear Collider"



### Shizuoka Prefectural Iwata Minami High School



Date: 27 September Dr. Jan Hannemann (Germany) Host institution: The University of Tokyo Title: "Programming Languages— Telling Computers What To Do"

**Dr. Babu D. Padullaparthi** (India) Host institution: Tokyo Institute of Technology Title: "Light Emitting Devices: Fundamentals and Applications"



### Wakayama Prefectural Koyo High School

Date: 18 October **Dr. Sebastien Lemire** (France) Host institution: Osaka University Title: "An Introduction on Bacteriophages—Bacterial Viruses"



#### Yamanashi Prefectural Kofu Minami High School

Date: 23 October

**Dr. Jan Jurcak** (Czech Republic) Host institution: National Institutes of Natural Sciences Title: "Solar Atmosphere as Observed by the New Japanese Satellite HINODE"



### Yamanashi Prefectural Tsuru High School

#### Date: 28 August Dr. Tanja Sobko (Sweden) Host institution: Kyorin University Title: "Influence of the Microflora on Gastrointestinal Nitric Oxide Generation"



### **JSPS Fellows Plaza Website**

JSPS Fellows Plaza is continually in the process of updating its website, which provides information for present, past and prospective JSPS fellows. Please give us a visit at:

http://www.jsps.go.jp/english/e-plaza/

You'll find pages on "How to Apply," "Experiences and Messages from JSPS Fellows," "Program Guidelines," "e-Orientation," "Find Nearby Fellows," "Science Dialogue," and "Alumni Associations." The site also carries current and back copies of our newsletter "JSPS Quarterly" and the booklet *Life in Japan for Foreign Researchers.* 

If you have any opinions or impressions you wish to share regarding our website, please contact us at the JSPS Fellows Plaza.

— JSPS Fellows Plaza







Date: 16 October Dr. Md. Khademul I. Molla (Bangladesh) Host institution: The University of Tokyo Title: "Introduction to Bangladesh and My Research on Audio Source Separation"

#### Date: 19 October **Dr. Ghanashyam Sharma** (India)

Host institution: Kyoto University Title: "Community, Culture and Conservation of Biodiversity in the Sikkim Himalayas"





## **To Past and Present JSPS Fellows:**

We are in the process of updating our mailing list. If you have changed your address or would like to add your name to the *JSPS Quarterly* mailing list, please mail your full name and address (including country) to JSPS Fellows Plaza, 6 Ichibancho, Chiyoda-ku, Tokyo 102-8471 or fax it to us at +81-3-3263-1854. Please indicate whether you are a current or former JSPS fellow.

Hailing from Harbin, China, Dr. Guangping Han has been conducting research at the Graduate School of Agriculture, Shizuoka University under a JSPS postdoctoral fellowship since last October. She is very knowledgeable about Japan as she had lived in Kyoto for five years, where she received her doctoral degree from Kyoto University. She met her host researcher, Prof. Shigehiko Suzuki, at the Forest Products Society (FPS) Annual Meeting in Seattle in 2003 while she was doing postdoctoral research at Louisiana State University. They later met again and exchanged views in Yokohama at a meeting of the International Association of Wood Products Societies (IAWPS). Prof. Suzuki's lab, to which Dr. Han in affiliated, comprises about 15 members. Dr. Han says that Prof. Suzuki's bright and thoughtful nature influences the students and young researchers, giving the lab a convivial, considerate atmosphere.

## What sort of research are you doing under the JSPS fellowship?

My research is on "thermoplastic composites reinforced with natural fibers and inorganic nano-particles." The major aim of this work is to find technologically feasible approaches for commingling fibers and waste plastics in producing construction materials. Under the JSPS fellowship, I have been focusing on bamboo/plastic composites. Abundantly available in many countries, bamboo is one of the fastest growing renewable plants and has excellent mechanical properties vis-à-vis its weight. Environmental problems caused by white pollution from incinerating waste plastics and from the depletion of forestry resources are of serious concern these days. I am



Dr. Han with her host Prof. Suzuki

working on practical solutions to such problems by developing technologies that use annually renewable or fast-growing natural fibers and recycled plastics to make new bio-composite materials.

## How did you become interested in your research field?

In China, I grew up in a typical family in which both my parents worked. Therefore, I was raised by my grandparents who lived in the countryside about 200 kilometers from Harbin. I really loved that area with its rich natural environment. I especially liked the forest, and have fond memories of running about through the trees. My interest in doing forestry research stems from those early childhood days.

## Why did you choose Japan as the place to pursue your research?

I always think of Japan as being my second home, having spent five years in Kyoto doing my PhD study. At that time, I came to Japan with my family, and we enjoyed our associations with all the Japanese people we met. I studied Japanese at the Uji Community Center in Kyoto. My instructor there would invite my family to join hers for dinner and other activities. She gave me an opportunity to experience the tea ceremony. Of course, tea is very popular in China, but we do not have a ceremony to appreciate it. So, I was very interested in a culture that embodies such a custom. I was very happy to be able to live surrounded by such wonderful people. By his example, my PhD supervisor at Kyoto University taught me the value of determined effort. Through these relationships, I developed a close affinity for Japan and its people. I am very happy that the JSPS fellowship has allowed me to come back to Japan to pursue my research with great Japanese colleagues.

## What merits are there for you in conducting your research in Japan?

Japan's technology in the field of wood science is very advanced, providing an excellent research environment both in terms of literature resources and experimental apparatus, as well as excellent researchers and technologists. I appreciate very much my host professor's effort to



Dr. Guangping Han

Ph.D. (Forest and Biomaterials Science), Kyoto University, Japan, 2001
M.Eng. (Wood Science and Technology), Northeast Forestry University, China, 1991
B.Eng. (Wood Science and Technology), Northeast Forestry University, China, 1988

provide me with an optimum research environment, and am thankful to the other professors and students for the support and kindness they always accord me. The people in the neighborhood are also very kind to me, making my stay in Shizuoka all the more enjoyable.

## What plans do you have for after your fellowship?

I plan to go back to my home country, China, where I will continue to teach and do research as a professor at Northeast Forestry University. I will also continue to conduct collaborative work on natural fiber/plastic materials with my host Prof. Suzuki and Prof. Qinglin Wu of Louisiana State University.

## What activities do you engage in outside of your research work?

I love traveling, cooking and shopping. Every winter and summer vacation, if I have time I try to take trips with my family to enjoy the pretty natural sights. My happiest thing is to cook a good meal and watch my family eat. I also love shopping with my daughter, which is the best way for me to take a rest from my research work.

## What advice would you give to new JSPS fellows?

I would have two pieces of advice for them: Work hard and play hard during your one- or two-year stay in Japan. The JSPS fellowship provides foreign researchers with a really good research opportunity, so we have no excuse not to work hard. This is a great time to improve one's research skills and advance one's work. What I hope to hear from my host professor when my tenure ends is "You've done a good job." I wish the same for you. The other important thing is to play hard, by which I mean don't stay in the lab all the time. Go out and communicate with people; learn the Japanese language and culture. There are a lot of great things in Japan including its history, customs, and proprieties. Learning more about this country will help you to build enduring relationships with the Japanese.

Dr. Han completed her postdoctoral fellowship in October.

## Introducing Japan: Shizuoka

The Graduate School of Agriculture, where Dr. Guangping Han is doing her research, is located on the Shizuoka campus of Shizuoka University. Situated about an hour southwest of Tokyo on the *Shinkansen* bullet train, Shizuoka is the seat of government of Shizuoka Prefecture.

In Japan, Shizuoka is well known for its tea growing, with the prefecture accounting for about 45% of Japan's tea production. Looking from the window of the *Shinkansen* as it whizzes through Shizuoka, one sees vast fields of dome-trimmed tea bushes lining the hillsides. These, interspersed among groves of mandarin oranges.



Mt. Fuji seen from a tea plantation

Association

What Shizuoka Prefecture may be even better known for is Japan's highest mountain, the dormant (not extinct!) volcano Mt. Fuji. Shizuoka commands an unobstructed view of Mt. Fuji soaring picturesquely from a low plain. We hear that on clear days, Dr. Han has enjoyed Fuji viewing with her colleagues from the roof of their building.

The city of Shizuoka was once a castle town, located at the 19th stage of the Tokaido Road, which ran from Edo (Tokyo) to Kyoto. The great shogun Tokugawa leyasu loved Shizuoka and spent the last years of his life there in his "Castle of the Floating Isle." All but the moat of the castle vanished over the centuries, but with the recent restoration of its turret tower and gate, some vestige of the ancient structure can be experienced. The castle grounds have been made into Sumpu Park ("Sumpu" being the name of Shizuoka when it was a castle town), where the townspeople go to play and relax.

Just east of the city is Kunozan (hill), known for its Toshogu Shrine, built by the second

Tokugawa *shogun* Hidetada in commemoration of his father leyasu, whose remains were kept on the hill for one year before being taken to the now-famous Toshogu Shrine in Nikko for permanent entombment. A funicular ride from this hill takes one to the high plateau of Nihondaira, which commands a panoramic view of Mt. Fuji to one side and a vast stretch of the Pacific Ocean to the other.



### **JSPS Alumni Associations**

At present, alumni associations with homepages have been established in Germany, the UK, Sweden, France, the US and India.

- JSPS Club (German alumni association) http://www.jsps-club.de/
- UK JSPS Alumni Association http://www.jsps.org/alumniassociation/aboutus/index.html
- JSPS Alumni Club in Sweden http://www.jsps-sto.com/site.aspx?id=548

- French Alumni Association http://assoc-jsps.u-strasbg.fr/
- US JSPS Fellows Alumni Association http://www.jspsusa.org/Alumni association/alumni.htm
- Indian JSPS Alumni Club
   http://www.indianjspsalumni.org/

JSPS Fellows Plaza's Alumni Association homepage: http://www.jsps.go.jp/english/e-plaza/20 alumni.html



#### **Cover photo:**

February gathering of the snow monsters on Mt. Hakkoda, Aomori Prefecture. Supercooled fog particles whipped about by the wind stick in white bubbly layers on alpine trees.

## About JSPS

The Japan Society for the Promotion of Science (JSPS) was established as an independent administrative institution to perform the following main functions: fund scientific research, foster researchers, and promote international scientific exchange.



## Crowing Rooster, Emblem of the Japan Society for the Promotion of Science

From days of old in Japan, it has been the belief that the vigorous cry of the rooster in the gray of the morning augurs the coming of a new and bright day. As the crowing rooster can therefore be thought of as a harbinger of the kind of new knowledge that promises a brilliant future for humankind, it was chosen as the emblem of the Japan Society for the Promotion of Science. This emblem was designed in 1938 by Professor Sanzo Wada of Tokyo Fine Arts School to depict the rooster that symbolizes the breaking dawn in a verse composed by Emperor Showa.

# Request for Reader Comments

We are taking a survey with an eye to reflecting reader interests in the *JSPS Quarterly*. If you have an opinion of our newsletters, we would like to hear from you. We would also like to know your impressions of the JSPS Fellows Plaza webpage. Please e-mail your comments to the JSPS Fellows Plaza at

fellowsplaza@jsps.go.jp or fax them to us at +81-3-3263-1854. For further information on JSPS's organization and programs, please visit our website [www.jsps.go.jp/english/], or mail or fax inquiries to JSPS Fellows Plaza using the address or fax number given below. JSPS Quarterly and our brochure may also be downloaded.

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