



This electronic bulletin is designed to keep subscribers updated on developments in Sigma Xi's international activities and to provide links and topics of interest to researchers around the world. Send an e-mail to international@sigmaxi.org to submit an item to the newsletter. You can also read the newsletter online at <http://sigmaxi.org/programs/international/newsletter.shtml>.

A. SCIENCE AND TECHNOLOGY NEWS

Nanomagnets Can Clean Arsenic-Contaminated Water

New technique generates great promise for the treatment of millions of wells currently believed to be contaminated with dangerous levels of arsenic. Scientists at Rice University, in Houston, USA believe the properties of magnetic nanoparticles of rust tend to bind to arsenic and make them ideal for removing arsenic from contaminated well water using little more than a magnet. Arsenic sticks to rust, says Vicki Colvin, a chemist at Rice's Center for Biological and Environmental Nanotechnology. And since rust is essentially iron oxide, it tends to be magnetic, so it can be drawn back out of the water using a low-powered magnet.

According to the World Bank, nearly 65 million people are at risk from arsenic-related health problems, largely due to contaminated wells. The situation is so dire that it has led to the creation of a \$1 million cash prize, called the Grainger Challenge, to be awarded to whoever comes up with a practical solution to removing arsenic from wells in many developing countries. Until now it was thought that such particles, which are around 10 nanometers in diameter, would need powerful electromagnets to generate fields strong enough to overcome local forces acting on the tiny particles. But Colvin's team, which published its results in the journal *Science*, shows that even low-power magnets can do the trick. "The particles magnetically interact," she explains. This allows them to behave, at least magnetically, like a larger magnet, and therefore be influenced like one. The Rice technique could provide a far more practical approach. While Colvin's experiments used relatively expensive nanoparticles, she is confident that ultra-small rust particles can be easily and cheaply generated. As for the magnets, these can be recovered from the hard drives of old computers, many of which end up in Southeast Asia, she says. For more information, please see: <http://snipurl.com/13f4y>.

Low-cost Broadband from High Altitude

Broadband communications may be about to get a whole lot faster and cheaper, thanks to high-altitude platforms (HAPs) that can relay wireless and optical communications to remote areas. The revolutionary CAPANINA project is the brainchild of a consortium drawn from Europe and Japan and led by the University of York, UK. HAPs are essentially airships or aircraft operating in the stratosphere, and due to their altitude (17-22 km) they have the potential to deliver services over a wide coverage area. The CAPANINA project is focusing on development of low-cost broadband technology from HAPs aimed at providing efficient ubiquitous coverage to users who may be marginalized by geography, distance from infrastructure, or those traveling inside high-speed public transport vehicles. Users in rural and other 'hard to reach' areas will benefit thanks to the unique wide-area, high-capacity wireless coverage provided by HAPs.

Additionally, use of "smart" roof-top antennas on trains will provide the moving user with high speed internet connectivity.

Whatever a user wants to do, be it browse the internet, download a movie or song, select video on demand or use any other bandwidth hungry application, HAP broadband delivery systems will ensure more cost effective availability to all. The new innovative communications system, say scientists, could provide inex-

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pensive broadband connections to isolated areas, with data rates expected to be 2,000 times faster than traditional dialup and 100 times faster than current "wired" ADSL broadband. "The potential of the system is huge, with possible applications ranging from communications for disaster management and security, to environmental monitoring and providing broadband for developing countries," said Dr David Grace, CAPANINA's Principal Scientific Officer. Source: <http://snipurl.com/13r3n>.

Cheap Ethanol from Wood Chips

Efforts are on the way to produce commercially viable ethanol from cellulosic sources such as cornstalks and wood chips. This was found through the research of Lee Lynd, professor of engineering at Dartmouth College and a cofounder of Mascoma Corporation, based in Cambridge, Massachusetts, USA. Experimental methods for converting wood chips and grass into ethanol will soon be tested at production scale. The company is building demonstration facilities that will have the capacity to produce about one-half to two million gallons of ethanol a year from waste biomass. The optimized process shows enough promise to invest in scaling up the technology, says Colin South, Mascoma's president. If the fuel is to replace a sizable fraction of the huge amount of gasoline currently consumed each year all over the world, ethanol producers will need to turn to biomass such as wood chips and grass. These resources are cheaper and potentially much more abundant, and they can be converted to ethanol much more efficiently than corn can because they require less energy to grow. Gregory Stephanopoulos, professor of chemical engineering at MIT also agrees to this viewpoint. He says some experts estimate that with gains in efficiency and high yields of ethanol, all the gasoline for transportation could be replaced; the most conservative estimates say that about 20 percent could be replaced. For more information, please visit Web site: <http://snipurl.com/13f3g>.

Peer Review Practice in Europe Needs Changes

Experts have expressed concerns that peer review, the internationally accepted form of scientific critique, may no longer be receptive to the novel approaches that lead to valuable scientific advances. In an international conference organized jointly by the European Science Foundation (ESF), the Czech Science Foundation, and the European Heads of Research Councils (EuroHORCs), the speakers have indicated that the

current system of peer review could at times be considered 'tyrannical' in its approach and it needed to evolve. Over the course of the two-day event, held on 12-13 October 2006, some 150 experts from the European scientific community and institutions throughout the world (including China, Japan and Korea) convened to discuss the growing need for access to the best quality expert reviewers and the provision of suitable incentives for these scientists, including financial remuneration.

The president of the ESF, Ian Halliday, suggested that the future of European peer review lies in the creation of international expert review panels. He concluded that many research areas would benefit from a common pool of international referees. He also referred to the good examples set by the US National Science Foundation (NSF). It was agreed that overall, peer review remains the best method of judging scientific quality both in research proposals and publications, but that its inherent subjectivity and variability can cause problems. Further workshops and a final meeting will take place in 2007 to implement the findings of this ongoing activity. Please see: <http://snipurl.com/13f8h>.

EuroDYNA Conference Searches Answers to Human Disease

At a recent EuroDYNA conference in Brno, Czech Republic 60 scientists from nine European countries came together to present their research. A number of highly prominent researchers in the field of genetics and cell nucleus architecture discussed and debated their recent findings in details. Discussion ranged from the understanding of gene silencing in zebrafish to investigating the scaffolding of the nucleus. It is hoped that understanding the intricate processes of the body could lead to a better way of combating human disease. Gene silencing is of great importance in both plants and animals as it is essential for regulating genes and participates in the defense against viral infections. Leonie Kamminga, Hubrecht Laboratory, Utrecht, Netherlands has found that a protein called ziwi is linked to the presence of reproductive cells in zebrafish. When ziwi is silenced in zebrafish, the reproductive cells are absent. Understanding cellular processes are important in understanding the cause of disease. No cellular process is 100 per cent efficient and cell division failure is harmful and can lead to tumours. Kim Nasmyth, University of Oxford, spoke about the structure of cohesin, the substance which hold the genetic material together in the

nucleus. Nasmyth described how cohesin is made up of two protein arms joined with a hinge. DNA is held in place in between the two arms. Nasmyth is working on developing a model to picture the interactions between cohesin and DNA during cell division. The conference demonstrated that there is still much to learn about the body's small components but that scientific synergy and pan-European collaboration could help to achieve this goal. Sources: <http://snipurl.com/13spf>; <http://snipurl.com/13spb>.

B. INTERNATIONAL COOPERATION, FELLOWSHIPS AND SCHOLARSHIPS

IFS Research Grants for Young Scientists from Developing Countries

The International Foundation for Science (IFS) invites research proposals from the young scientists of developing countries in the areas of biological, chemical, physical, socio-cultural or economic science fields, and that should be relevant for the conservation, production or renewable utilisation of biological or water resources. IFS awards research grants with a maximum value of USD 12,000 are earmarked for the purchase of equipment, expendable supplies, fieldwork activities, etc. Grants cannot be used to cover the grantees own salary. An applicant for an IFS Research Grant must be a citizen of a developing country and at the beginning of his/her research career, preferably be less than 40 years of age, and hold at least an MSC (MA) degree or have equivalent research experience. Researchers who are working towards a PhD or have completed their PhD studies are also eligible for the grants. The researcher must be affiliated to or employed by a national university, research institute or research-oriented NGO in a developing country. Applications are accepted by the IFS Secretariat throughout the year with two session deadlines of 30 June and 31 December. IFS is a research council with international operations and the mission to build the scientific capacity of developing countries in sciences related to the sustainable management of biological and water resources. Since 1974, IFS has provided support to more than 3500 IFS Grantees in some 100 countries in Africa and the Pacific, and Latin America and the Caribbean. For more information, including eligibility criteria, list of eligible countries, grant application form and others, please see: <http://snipurl.com/13hxd>.

Postdoctoral Fellowship in Germany

Ernst Schering Foundation of Germany is offering postdoctoral fellowship to scientists of any nationality who have completed their doctoral degree with outstanding results. Furthermore the applicants should have at least one published article in a peer-review journal as principle author. Support will be given to projects that deal with subjects from the area of basic research, particularly from the areas of cell or development biology, molecular diagnostics (molecular imaging), endocrinology, immunology, neurosciences, oncology, reproduction biology and chemistry. The fellowship includes monthly subsistence allowance, material costs, travel allowance and monthly child supplement for a period of two years. The applicants should not be older than 33 years of age on the deadlines, which are 31 January and 31 July of every year. Application should be submitted in English and follow a specific format. For details, please visit Web site: <http://snipurl.com/13i3l>.

Three-Year Postdoctoral Fellowship in Panama

Applications are invited for the Earl S. Tupper three-year postdoctoral fellowship to conduct research in the Republic of Panama on ecology, anthropology, paleontology, evolutionary biology, molecular phylogenetics, biogeography, animal behavior, soil sciences and physiology of tropical plants and animals. The fellowship is offered by the Smithsonian Tropical Research Institute (STRI) in Panama which is a division of the Smithsonian Institution in Washington D.C., USA. Annual stipend is \$35,000 with yearly travel and research allotments. Before submitting their final application, applicants are advised to consult with the STRI scientific staff member about who will serve as their host. Awards are based upon merit, without regard to race, color, religion, sex, national origin, citizenship or age of the applicant. The deadline for submission of application is 15 January 2007. For more information, please visit: <http://snipurl.com/13ia5>.

Funding for Indo-US Joint Research Project

Indo-US Knowledge R & D Networked Center invites research proposals from Indian and American scientists on science, technology and engineering disciplines. This project funded by Indo-US Science and Technology Forum (IUSSTF) aims at enabling Indian and American scientists from academia and laboratories (both public and non governmental) to carry out joint research activity by leveraging already existing

infrastructure and funding available with the partners at both sides through a linkage established by a virtual networked centre. A research topic should be of high scientific quality, originality and relevance. Research topic should cover thematic and basic science areas of topical and mutual interest. Under this program, proposals can be submitted more than once a year. For more information on eligibility requirements, program requirements, proposal deadlines, review process and how to apply, please see: <http://snipurl.com/14cy8>

Malaysia-Indonesia Cooperation on Education and Science

A 10-member delegation headed by the Hon. Datuk Dr. Zulkurnain Haji Awang, Secretary-General of the Ministry of Education of Malaysia and Vice President of the Malaysian National Commission for UNESCO visited Jakarta, Indonesia on 5 - 8 November 2006 for consultations with their counterparts at the Indonesian National Commission and the UNESCO Jakarta Office. The objective of the visit was to gain more in-depth knowledge of the UNESCO Jakarta Office, its strategies, programs and activities in every sector of UNESCO, as well as administrative procedures and issues relevant to the operation of a National Commission. Additionally, the mission also aimed to exchange experiences and views with the Indonesian National Commission, and to explore opportunities where the two countries may have joint activities under the auspices of UNESCO. The discussions among the various groups resulted in consensus on a number of activities and projects to be pursued further. All concerned parties considered the meeting very effective and suggested such visit becoming regular, perhaps once each year, in the future. For more information, please see: <http://snipurl.com/13f8p>.

Singaporean University Hires Europe's Top Science Executive

Professor Bertil Andersson, the Chief Executive of the European Science Foundation (ESF) has been recruited by the Nanyang Technological University of Singapore as its Rector. He will take up this top position from 1 April 2007. Professor Andersson considers that his responsibility at the Nanyang Technological University represents very different challenges but it also gives him opportunity a return to his roots in academia. He hopes that with his extensive experience in European Science, he will be able to assist in develop-

ing ties between Singaporean and European researchers. In a comment, ESF President Professor Ian Halliday thanked Professor Andersson for his major contribution to the development of ESF. He said that Prof. Bertil Andersson had led by example, not sparing himself, to develop and increase the role of ESF. For more, please see: <http://snipurl.com/13f9f>

C. SIGMA XI NEWS

Sigma Xi Annual Meeting Ended Successfully

The 113th Annual Meeting and Student Research Conference (AMSRC) of Sigma Xi, held from 2 - 5 November 2006 in Detroit, Michigan, USA, has ended successfully. Nearly 500 attendees, including Sigma Xi leaders, delegates and representatives of chapters, awardees of Sigma Xi prizes, undergraduate and high school students, participated in the event. In addition to the delegates from USA, representatives from Canada, Costa Rica, Germany, Hungary, India, Mexico, South Africa, Spain and Switzerland participated in the meeting. Delegates from Sigma Xi chapters discussed and decided key governance issues of the Society within Regional and Constituency Caucuses and general Assemblies. More than 200 students from more than 100 institutions presented their research works, attended career-focused workshops, met graduate school recruiters and networked with Sigma Xi members. This included 41 posters by high-schoolers from Harlem Children Society, who are involved in taking science to the streets. The Annual Meeting started with a delegate information session, followed by three assemblies of delegates, regional and constituency caucuses, chapter and science sessions, lectures dedicated to different Sigma Xi prizes and awards, and students' posters competition. In the third and final assembly, Sigma Xi's current President announced the names of the newly elected President and other leaders of the Society. The meeting ended in a very festive mood and with new hopes and commitments. The next AMSRC will be held in November 2007 in Orlando, Florida, USA



New President-elect of Sigma Xi

Ann Houston Williams has been elected new president of Sigma Xi. Her election came at the society's annual meeting and student research conference, held from 2-5 November 2006 in Detroit, Michigan, USA. She is cur-

rently the field studies coordinator for the U.S. Environmental Protection Agency's Human Studies Division in Chapel Hill, North Carolina. She has been a member of Sigma Xi for 31 years and has served as a chapter officer, on the society's board of directors and on the Sigma Xi's staff as director of chapter programs. Williams will resume her duty as Sigma Xi president in July 2008. For more information about Williams, please visit Sigma Xi Web site at: <http://snipurl.com/13ngo>

Claudia Dreifus and Richard Hill Inducted as Honorary Sigma Xi Members

In its annual meeting in Detroit on 2-5 November 2006, distinguished journalists Claudia Dreifus and Richard Hill have been inducted to Sigma Xi as the newest honorary members. Since 1983, leading science journalists, as well as others who have made important contributions to science but who are ineligible for Sigma Xi membership, have been elected honorary members. A science writer for *The New York Times*, Dreifus collected many of the interviews for which she is famous in a book called *Scientific Conversations*. Hill is an award-winning science writer for *The Oregonian* and a leading advocate for increasing public awareness about science. Sigma Xi has posted short biography of Dreifus and Hill on its Web site which can be seen at: <http://snipurl.com/13nha>

Speakers Emphasized to Make Sigma Xi Truly International

Sigma Xi should put in more efforts to make the Society truly international - this was agreed by all discussants in one of the chapter sessions of Sigma Xi's Annual Meeting in Detroit. In the session, named "Is Sigma Xi Really an International Society?", one of the panelists, Dr. Antonio Pita, Director of the Canadian/International Constituency Group mentioned that although Sigma Xi has endeavored to build its international membership, only a few active chapters and partners currently exist. He raised a question whether Sigma Xi should strive to be truly an international scientific society. If so, how should its efforts be directed, and how could Sigma Xi be a driving force in promoting international S&E partnership. Another panelist Dr. Michael Crosby, Executive Director, U.S. National Science Board informed that NSB was examining the role of the US Government in supporting international science and engineering (S&E) research partnerships and how such partnerships might be

used to achieve benefits beyond just doing "good" science. According to him, Sigma Xi, as an international interdisciplinary honorary S&E research society, should be uniquely positioned to facilitate international partnerships. The session was attended by current and future presidents of the Society, its executive director and a host of other leaders of the society. All of them stressed the need for more involvement of the society internationally and expressed their full support in spearheading this mission in the coming years.

D. UPCOMING EVENTS

African Science Communication Conference (updated); Port Elizabeth, South Africa; 4 - 7 December 2006; <http://snipurl.com/13t1n>

The American Society for Cell Biology 46th Annual Meeting; San Diego, California, USA; 9-13 December 2006; <http://snipurl.com/13k28>

Respiratory Viruses of Animals Causing Disease in Humans; Singapore; 10-15 December 2006; <http://snipurl.com/13k2c>

33rd Annual Conference of the International Embryo Transfer Society; Kyoto, Japan ; 7-9 January 2007; <http://snipurl.com/13qzu>

International Dialogue on Science and Practice in Sustainable Development; Chiang Mai, Thailand; 23-27 January 2007; <http://snipurl.com/13qzj>

ONE Spine: Controversies in Spine Surgery; Cancun, Mexico; 3 - 4 February 2007; <http://snipurl.com/13qzm>

International Symposium on e-Learning and Emerging Digital Technologies; London, UK; 12-13 February 2007; <http://snipurl.com/13r3c>

Winter Programme Seminar on Allergy and Clinical Immunology; Trieste, Italy; 12-15 February 2007; <http://snipurl.com/13tft>

Cardiology Update 2007; Davos, Switzerland; 12-16 February 2007; <http://snipurl.com/13qzh>

American Association for Advancement of Science 2007 Annual Meeting; San Francisco, California, USA; 15-19 February 2007; <http://snipurl.com/13tg5>

POLYCHAR-15 World Forum on Advanced Materials;
Rio de Janeiro, Brazil; 16-20 April 2007;
<http://snipurl.com/13qzs>

World Congress of Nephrology 2007; Rio de Janeiro,
Brazil; 21-25 April 2007 <http://www.wcn2007.org>

ISMARM-ESMRMB Joint Annual Meeting; Berlin,
Germany; May 19-25, 2007; <http://snipurl.com/13k2f>

International Conference on Computational Science;
Beijing, China; 27-30 May 2007;
<http://snipurl.com/13k2k>

*Fourth Canadian Conference on Computer and Robot
Vision;* Montreal, Canada; 28-30 May 2007;
<http://snipurl.com/13k2n>

International Conference on Climate Change; Hong Kong;
29-31 May 2007; <http://snipurl.com/13r20>

*Nanoscience & Nanotechnology for Biological, Biomedical
and Chemical Sensing;* Hong Kong; 3-8 June 2007;
<http://snipurl.com/13r1y>

13th International Metrology Congress; Lille, France; 18-
21 June 2007; <http://snipurl.com/13qzd>

*International Conference on Agile Manufacturing ICAM-
2007;* Durham, UK; 9-11 July 2007;
<http://snipurl.com/13r3e>

*12th International Symposium on Novel Aromatic
Compounds (ISNA-12);* Awaji City, Japan; 22-27 July
2007; <http://snipurl.com/13qzp>

*The 10th International Conference on Medical Image
Computing and Computer Assisted Intervention;*
Brisbane, Australia; 29 October - 2 November 2007;
<http://www.miccai2007.org/>



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