

## CORRESPONDENCE

5% contribution financially, Celera's claims to sequencing can only be justified by their unshakeable belief in the innovative use of supercomputers to sequence faster.

There are also important issues that were not very well debated in the conference because of disproportionate representation. Notwithstanding the hype about a Biotech boom in India, the country's delegation was limited to two Professors, and a couple of executives from a Hyderabad-based company. In contrast, the Chinese contingent made an impact with its English-speaking delegates that included a Minister and a Dean of Science who raised several issues on behalf of Asia and the Developing World. It is not clear if the diseases of the Third World are on the list

of the Western priorities when it comes to potential benefits of gene sequencing to healthcare. K. P. Gopinathan of the Indian Institute of Science, Bangalore, delivered a speech on the promises of Biotechnology for India's future, and rightly pointed out the adverse effects of misplaced priorities of the Indian Government and 'militarisation' of Indian Science at the expense of other important sectors. However, unlike the Chinese delegation that had a minister, or the hosts who included President Chirac, there was nobody from the Indian political establishment to make a note of Gopinathan's points.

### Related internet links:

- *Nature* Genome Gateway

- <http://www.nature.com/genomics/>
- *Science* Genome 2001  
<http://www.sciencemag.org/genome2001/>
- Biovision website  
<http://www.biovision.org/>
- Human Genome Project Information  
<http://www.nhgri.nih.gov/HGP/>
- Sanger Centre  
<http://www.sanger.ac.uk/HGP/>
- Celera Genomics  
<http://www.celera.com/>

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## NEWS

# World Academies join hands – A new voice for global science concerns

Globalization has prompted new linkages that would strengthen existing knowledge systems. Such linkages are possible today with the help of modern communication networks. Through Academies, scientists worldwide are to cross-link for spreading knowledge. The Academies, would jointly function as a formal advisory body funded on a project-to-project basis for international bodies such as the United Nations, and would address common concerns of science and society with a unified voice. New science melodies are being fine-tuned with the birth of the 'Inter Academies Panel' (IAP) and the 'Inter Academy Council' (IAC).

S. Ramaseshan, Editor, *Current Science* had in 1994, written in this journal referring to a possible (but today still elusive) unified Academy of Sciences in India, as 'an apex body with representatives from all the academies which will increase coordination and cooperation in Indian science, advise Government and serve as a unified voice of scientists

on issues of national importance'. These words ring true as well for the global basket made up of several world Academies going to operate in unison. Academies of Science around the world reflect the 'pick' of the best scientists. There is an increased necessity and pressure on scientists all over the world, to speak out their views, helping their respective nations and the public to understand the implications of science and for setting sound policy frameworks.

The President of the US National Academy of Sciences, Bruce Alberts was in India recently on a quest to promote 'activist' academies. He delivered two lectures in New Delhi, one on the 'Role of science in modern societies and the role of international scientific collaborations' at the Jawaharlal Nehru University and the other, the 5th Jawaharlal Nehru Birth Centenary Memorial Lecture, 'Spreading science through society: A new opportunity for all the world's scientists', at the Indian National Science Academy (INSA).

Alberts, a biochemist, is known for his work on protein complexes and has co-authored *The Molecular Biology of the Cell* and his most recent text is *Essential Cell Biology*. He holds improvement in science education close to his heart. He has helped to create, a programme called 'City Science' aimed to better the quality of teaching in elementary schools in San Francisco, USA.

In his lectures Alberts highlighted the role of science academies, that have a 'special status in the eyes of its own nation', but whose 'opportunities for national service' have been underutilized so far in several academies around the world. The US National Academy of Sciences is an exception, whose outlay is in its charter of 1863 which states that 'The Academy shall, whenever called upon by any department of the government, investigate, examine,... and report upon any subject of science or art,...'. The National Research Council (NRC), the operating

arm of the Academy, by active endeavour, today publishes 'more than 200 reports every year on matters of science and policy and they are used to influence a wide range of vital issues', he stated.

Speaking on the role of the IAP, he said that IAP is a 'consortium of 80 national science academies that would meet periodically to examine issues of global concern'. The co-chairs of the IAP on International Issues Steering Committee are F. Sherwood Rowland, Foreign Secretary, US National Academy of Sciences and P. N. Tandon, Former President, INSA. An important function of the IAP is 'to increase the visibility and policy-making role of scientists everywhere, with a focus on helping each academy become more effective as an objective and independent adviser to its own government'.

After the Tokyo conference in May 2000, a joint statement by sixty-three of the world's scientific academies had been brought out on the subject of sustainability, titled 'Transition to sustainability in the 21st century'. This statement outlines future challenges, and what can and must be done by the scientific and technological community.

IAC has been created as a formal advisory body to the United Nations system and other international organizations, with its headquarters at the Royal Netherlands Academy of Arts and Sciences in Amsterdam. The Council's governing board has representatives from Brazil, China, France, Germany, India, Israel, Japan, Malaysia, Mexico, Russia, South Africa, Sweden, Third World Academy of Sciences, the United Kingdom and the United States. It is co-chaired by Bruce Alberts and G. Mehta, the President of INSA. Both of them are optimistic about the role that IAC will play 'in producing a more effective voice for science in world affairs', but feel there is a long haul ahead. The first report of the IAC is scheduled to be on global Science and Technology capacity building.

In May 2000, Kofi Annan, UN Secretary General, in a statement about IAC had said that 'I welcome your initiative to create an Inter Academy Council for providing advisory studies and reports on issues of concern to the United Nations system and other international organizations'.

Alberts stressed that the need of the hour for the scientific community is to build a stronger overlap between the public and their respective governments. Misinformation, he said, was spreading via the Internet. He called for the community of scientists to allay the fears of the public and play a 'critical role by engaging more deeply with societies'. Here, the Academies could help in spreading rationality and keeping the public well informed. This century 'would see an explosive growth of science and technology and a "scientific temper" was therefore important to nurture', he added.

Alberts spoke on his involvement and support for designing a detailed strategy for science education. The NRC had done an interesting experiment on course contents for teaching in different disciplines of science in USA. This was necessitated because the present syllabus was highly loaded with definitions and facts. For coming to a consensus on what needs to be taught, experts in biology, for example, decided the content of the physics syllabus and vice versa. This novel approach resulted in a 250 pages report by the NRC on what science education should be like. The three most important points emerging from this report are: science be a core subject, science for all and inquiry-based learning, not just memorizing definitions.

Academies can provide the right impetus for a new dynamism, in furthering science education, he said. Science teaching methodology should be reconsidered. Globalization and the information revolution would help in easy accessibility to science courses as taught around the world, since science

is universal. For parents, it was necessary to spread the message 'every child, a scientist' and finally achieve a scientific literacy for all. The child, parent, teacher and the public at large should be *en masse* educated in science and be better informed. Here the role of the science communicator or writer to interface between the researcher and the public cannot be underestimated, he added. Among the several reports published by NRC, for disseminating information to a target audience are 'Preventing reading difficulties in young children' meant for the teachers and 'Every child a scientist - Achieving scientific literacy for all' meant for parents.

Then comes the role of international cooperation to strengthen science itself. The US National Academy of Sciences has felt the need to promote the electronic connectivity of scientists. Developing countries, he felt have limited access to scientific literature due to resource constraints. To help, the US National Academy of Sciences is providing free access to the world wide web version of their own scientific journal, the *Proceedings of the National Academy of Sciences*, after a brief delay of a month. He informed that now more than 50 scientific journals have similar policies, with delay time of between 2 and 18 months, in order to protect their subscription base.

Finally, with regard to the responsibilities of scientists, Alberts emphasized that they 'must become much more engaged in the everyday life of our governments and our communities'. In the 21st century, 'science and scientists will be judged on how well they help solve local and world problems, not only on how well they generate new knowledge', he said.

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