

NEWS

Science academies target G8 agenda

In a demonstration of how international negotiations should be done, 12 national science academies have issued two joint statements to the leaders of the G8 countries, who will meet at their annual summit in Russia next month. One endorses a reinvention of the world's disease surveillance system; the other calls for a major expansion of energy research to address a looming global crisis in energy supplies.

The statements were announced on 14 June by the academies of the G8 countries plus Brazil, China, India and South Africa. They follow the first such exercise at last year's Gleneagles summit in Britain, when Britain's Royal Society coordinated joint academy statements on climate change as well as capacity building for Africa.

The academies' stronger role in international advocacy is a "new and extremely positive development", says Martin Rees, president of the Royal Society. "It's a step towards the international scientific community having a more effective voice at the political level."

Rees believes the academies' input influenced the outcome of last year's G8, which

included greater debt relief for Africa. And he hopes the string of recommendations for disease surveillance and the energy crisis from the 12 academies (see box) will translate in firm pledges from this year's G8 meeting.

The academies argue that the size of global efforts in both infectious diseases and energy sourcing are out of touch with the scale of the problems. They lament the inadequacy of the current systems of national and international disease surveillance, which they describe as "multi-component and uncoordinated". The threat of avian flu, they argue, should be a catalyst for investment in a more tightly coordinated global system, that in particular would see animal and human health experts working more closely together.

Likewise, Rees says the G8 must address what he describes as serious inadequacies in funding and incentives for energy research: "In relation to the scale of the problem, the R&D effort worldwide is unduly low."

Although the G8 and other international political meetings are important for setting agendas and funding priorities, the academies

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recognize their shortcomings, says André Capron, foreign secretary of France's Académie des Sciences. In particular, he criticizes the "disappointing" habit of states in neglecting to honour pledges once they get home. At an avian-flu summit in Beijing in January, for example, countries pledged US\$1.9 billion in grants and loans to a global action plan, but so far only \$1 billion has been committed, and of that just \$286 million has been spent. Donors also often insist that funds

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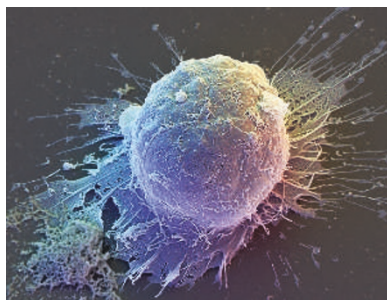
Koreans admit disguising stem-cell lines

Federally funded US researchers were supplied with a prohibited stem-cell line, disguised as an approved line by researchers at Seoul's MizMedi hospital. Allegations that a cell line had been switched surfaced earlier this month (see *Nature* 441, 680; 2006). Sung-il Roh, chairman of the board of trustees at MizMedi Women's Hospital, has now admitted to *Nature* that this was indeed the case.

Research with the unapproved cell line has been halted. But the incident highlights how hard it is for researchers to know what they are working with. And in this case the problem was not only scientific but

political: US president George W. Bush announced in 2001 that because of ethical concerns over human embryonic stem cells, only such cell lines established before 9 August 2001 would be eligible for federally funded research. One line established by researchers at MizMedi Hospital, Miz-hES1, was created before that date, and approved by the US National Institutes of Health (NIH). But the cell line sent out in its place, Miz-hES5, was created later.

The NIH has paid the hospital US\$930,000 since 2002 to grow,



Identity crisis: stem cells all look the same.

characterize and distribute Miz-1. But Roh told *Nature* that in December 2003, researchers at the hospital identified a chromosomal abnormality in that line. In April

2004 they switched to Miz-5, but pretended they were shipping Miz-1.

The subterfuge came to light during the police investigation into the research fraud committed by cloning expert Woo Suk Hwang (see *Nature* 439, 122; 2006). The human eggs used by Hwang were harvested at MizMedi. Roh admitted in November 2005 to paying for the eggs that he passed to Hwang, despite previously claiming they were from volunteers.

Roh says he knew nothing about the stem-cell switch, and only found out from the police report. But he says: "It's a healthy line. From a research perspective, it wouldn't

D. SCHARF/SPL



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G8 leaders: will they be in the mood to listen to the world's scientists?

go to particular countries or projects, making it hard to organize a global plan that targets areas in greatest need.

But Capron says scientists can only be “deliberately optimistic” about such realities, and hope to influence decisions “through constantly repeating the same messages, and making the scientific communities’ positions

WHAT THE ACADEMIES WANT

Reinventing disease surveillance

- Efforts to coordinate disease surveillance across national and international agencies and research bodies
- Independent audit to recommend how to develop global surveillance
- Research into more rapid vaccine production methods
- Greater cooperation between human- and animal-

health communities

- Better collection and sharing of clinical and epidemiological data

Investing in energy R&D

- Highlight ‘reality and urgency’ of global energy supply
- Big, long-term infrastructure investments in cheap, clean, sustainable energies
- Boost developing countries’

capacity in innovative energy technologies

- Incentives to develop clean fossil, nuclear and renewable technologies
- Focus public research and technology efforts on energy efficiency, non-conventional hydrocarbons and clean coal, innovative nuclear power, distributed power systems, renewable energy sources, and biomass production

known”. Rees agrees: “For 12 academies of leading countries to emphasize the importance of these issues is an important signal to governments that they need to be addressed.”

Consensus building

So how does one go about getting scientists from 12 countries to agree on hot topics such as avian flu and energy? Capron says two to three members of each academy met a few months ago in Moscow to thrash out ideas and produce draft statements. They took these home for discussion, then after much e-mailing about wording, joint texts were agreed. There was a “spontaneous consensus” on the major steps needed for infectious diseases, according to Capron, with a “more protracted” discussion on energy.

All Capron is prepared to say about initial disagreements on energy is that the United States differed with Europe (France in partic-

ular) on the degree of support for research into nuclear energy, compared with other technologies such as carbon sequestration. France is highly dependent on nuclear energy, and lacks the coal reserves of the United States. But these were “divergences” rather than “aggressive differences”, he says diplomatically.

This kind of collaboration among the academies will improve with time, he adds, in particular by better involving academy members in the process. Lack of consultation marred the first joint statements on climate change last year, when the Royal Society issued a press release with its own interpretation of the consensus statement, leading to cries of foul play and spin by its partners. Such teething troubles won’t occur this year, assures Capron. He has now written rules on the procedures, which include requiring any press releases to be jointly agreed by all. ■

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cause any trouble.” According to Roh, around 80 Korean groups and more than 30 foreign groups were shipped the Miz-1 line. NIH spokesman John Burklow says three dozen US researchers received what they thought was Miz-1. But Roh says about 16 groups were shipped Miz-5 disguised as Miz-1.

The NIH has suspended research on MizMedi’s cell line, and insists no one used it in federally funded work. But the episode raises the question of what can be done to ensure the integrity of stem-cell lines.

James Battey, head of the NIH Stem Cell Task Force, says that when the agency receives a stem-cell line, it checks that the cells have normal chromosomes, are free of contamination, and replicate in

culture. These tests confirm a line’s health but do not check its identity. As the two MizMedi lines were both male, “the NIH would have no easy

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way of knowing that Miz-5 was substituted for Miz-1”, he says.

Extensive DNA analysis would tell cell lines apart but is time-consuming, and reference information for the original line is often not available. Scientists at the Burnham Institute for Medical Research in La Jolla, California, working with a large group from the NIH and the DNA-analysis company Illumina of San Diego, have recently

made a dent in this problem.

The work was spearheaded by Mahendra Rao, who left the NIH in October 2005 and is now at the company Invitrogen. While at the NIH, Rao offered to perform detailed genetic profiles of all president-approved stem-cell lines for free. He says suppliers weren’t always eager to share their resources, but he has analysed the lines he could get agreements on, using bead-based microarrays developed by Illumina to compare single nucleotide polymorphisms (SNPs). Rao has published his analysis of 7 of 22 cell lines included in the NIH registry (www.biomedcentral.com/content/pdf/1471-213x-6-20.pdf), and says a paper in press covers ten more.

Rao says a quick, cheap profiling

method is essential: “You need to know what you are working with, because mix-ups are possible.” The NIH says it knows of no other cases of deliberate fraud, but there have been accidental switches. Rao says he uncovered a case in which a US company was shipping out wrongly identified cells after a technician accidentally mislabelled vials: “We were able to inform the few people who got the mislabelled line.”

SNP analysis also reveals the genetic basis of different cell types. The work heralds a breakthrough in that respect, says Burnham’s Evan Snyder: “Only now is the research evolving to the point where people are starting to profile these lines and compare them.” ■

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