

A new direction for HUGO

Washington

WALTER Bodmer, director of research at the Imperial Cancer Research Fund in Britain, was elected last week to replace Victor McKusick of the Johns Hopkins Medical School as president of the Human Genome Organisation (HUGO). The hope is that Bodmer will provide the leadership and political acumen necessary to inject some life into HUGO, which has come under fire for being slow and ineffective.

HUGO was launched a year ago to coordinate international efforts to map and sequence the human genome but has made little progress towards raising the several million dollars a year needed to support its activities. It now has only \$25,000 in the bank. The best prospect for immediate funding appears to be the Howard Hughes Medical Institute, which is considering making a donation of about \$1 million now that HUGO has acquired status as a charitable foundation in Europe and the United States. Initial hopes that HUGO would receive government funds have so far come to nothing and charitable institutions are being looked to for early support.

Bodmer rejects criticisms of HUGO, insisting that there has been "a lot going on behind the scenes" over the past year. While he is president, HUGO's main office will be in London — when the money can be raised to pay for it. The Wellcome Trust is one possible source of support. Other HUGO offices are planned for Washington and Tokyo. Later, there might also be an office in Moscow.

As well as a human genome workshop

to be held in Oxford, HUGO will next year carry out a study of the ethical, legal and social implications of the human genome project under the direction of McKusick. The study will be similar to that being carried out by the US National Institutes of Health (NIH) human genome office but will bring together the views of different countries and different cultures, says Bodmer.

A main aim of HUGO is to encourage international collaboration and the unrestricted exchange of data from the human genome project, an aim somewhat at odds with the views of council member James D. Watson, who heads the NIH

genome office and advocates that data should be kept from countries that do not contribute to the project. Bodmer is quick to point out that Watson is not an active council member and his views do not represent the views of HUGO. Bodmer says that even if restrictions on access to data were desirable, there is no way they could be enforced.

Two new vice-presidents were also elected at HUGO's council meeting last week in Bethesda, Maryland: Charles Cantor, head of the genome programme at Lawrence Berkeley Laboratory and Andre Mirzabekov of the Academy of Sciences of the USSR. Kenichi Matsubara of Osaka University in Japan will serve as the third vice-president for another year.

Christine McGourty

Japan still seeking a role

Tokyo

ON 1 December, Japan's molecular biologists debated their role in the human genome project at the annual meeting of the Molecular Biology Society of Japan in Sendai. It was the first public debate of a major science project by Japanese scientists and comes at a time when Japan has been criticized by Nobel prize winner James Watson for an apparent failure to commit sufficient funds to the international project (*Nature* 342, 463; 1989). The debate revealed the anxieties of some scientists and a growing rift between Japan's leading molecular biologists over which government agency should lead the project.

Kenichi Matsubara, Japan's representative and vice-president of the Human Genome Organization (HUGO), opened the debate by describing the goals of the project and its present status in Japan. Then Michio Oishi, another member of HUGO, voiced some of the concerns of society members. The debate was then opened to the floor.

Michio Oishi, a member of the international HUGO committee, says that MESC officials have given him no clear answer on whether the project will have an effect on other research funds. Oishi stresses that he is a supporter of the project. But it is his personal opinion that the project has many technological aspects and should be led by the Ministry of International Trade and Industry (MITI) or some other technology-oriented agency rather than MESC. He feels that Japan's greatest contribution can be made in the area of robotics and sequencing technology rather than in the area of basic biological research, such as cloning where he says the United States is far ahead.

But Kenichi Matsubara, vice president and Japanese representative of HUGO, says that he is "optimistic" that the human genome project will provide MESC with an opportunity to re-evaluate its system for supporting research and it will not necessarily drain off funds for other subject areas. Matsubara heads a MESC taskforce on the project. He fully recognizes, however, that the project must be an inter-ministry and inter-agency effort. And, earlier this year, he suggested that an "invisible" committee of scientists, like the MESC taskforce, could play a coordinating role (see *Nature* 339, 648; 1989).

The taskforce was recently established by MESC with about ¥600 million (\$4 million) to set up a project over the next two years (*Nature* 340, 667; 1989). Long before this, in the early 1980s, the Science and Technology Agency (STA) began investing about a million dollars a year in the development of automatic DNA sequencing machines in a collaborative programme with industry (*Nature* 325, 771; 1987) and STA is now directing about the same amount into projects at the agency's Institute of Physical and Chemical Research (RIKEN) to sequence a small yeast chromosome and to map and eventually sequence human chromosome 21. STA this year also launched the Genosphere Project under the auspices of its ERATO programme which will provide a few million dollars a year to genome-related research (*Nature* 339, 572; 1989).

The Ministry of Agriculture, Forestry and Fisheries has a tiny project to sequence the rice genome (*Nature* 340, 491; 1989). The Ministry of Health and Welfare has requested about \$2 million for next fiscal year to sequence genes that cause human disease. And other ministries are soon expected to initiate genome projects.

Some of those attending the meeting

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Walter Bodmer: office hunting in Central London?

LOMA PRIETA EARTHQUAKE

Safer structures take priority

San Francisco

IN the wake of the Loma Prieta earthquake, Congress has already provided an extra \$20 million for seismic research and more seems sure to follow. Now the debate is over how best to spend new funds: early indications are that the emphasis will be on applying existing knowledge to making buildings safer, rather than on rushing to improve the art of earthquake prediction.

Last week, the debate surfaced when scientists, engineers and emergency-response officials testified before a congressional subcommittee that convened at the annual meeting of the American Geophysical Union (AGU) in San Francisco. The mission of the subcommittee on science, research and technology was to help to assess the lessons learned from the 17 October earthquake and plan future funding for the National Earthquake Hazards Reduction Program (NEHRP).

For the most part, testimony was along predictable lines, with seismologists and geophysicists wanting more research on earthquakes and earthquake prediction

other high risk areas as well. Such a project would cost about \$50 million over 10 years in California alone, he estimated.

Taking the other tack was Chris Poland, senior principal of H. J. Degenkolb Associates, Engineers, a San Francisco-based company. Poland argued that there is already a wealth of seismological information that has not been applied in engineering design and that new funds would be better spent in this area. He said this is especially true after the Loma Prieta earthquake, which provided a real-life, strong-motion test of existing theories.

By all yardsticks, NEHRP has received short shrift over the years. The programme was established by a 1977 Act of Congress to advance scientific understanding of earthquakes and drive the practical application of that understanding. Initial funding was \$53 million, equivalent to \$94 million in 1989 dollars. Yet funding for 1989 was just \$66 million, meaning the budget has fallen almost 50 per cent in real terms. No change was expected in 1990. But in the wake of the Loma Prieta earthquake, Congress approved an additional \$20 million, bringing the total appropriated to just over \$87 million.

"All funding for NEHRP has been disappointingly small in comparison to what the original plans were for the programme", said Representative George Brown Jr (Democrat, California), one of the original architects of the programme and a longtime supporter of seismological research. Brown said that he interpreted the field-hearing testimony as indicating that the applications aspect of seismological research had lacked support. Structural research and the development of new building codes and other regulations have not been given as much emphasis as they should, he said.

The principal agencies receiving NEHRP funding are the Federal Emergency Management Agency, the US Geological Survey (USGS), the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST). Traditionally, the prediction-oriented USGS has dominated the budget, receiving about half of all NEHRP funds. At the other end of the spectrum is NIST, which undertakes a variety of structural research projects. For the past three years NIST has seen its budget frozen at \$525,000 — less than one per cent of the total NEHRP budget.

That percentage is something Congress looks set to change. Of the \$20 million in additional funding approved after Loma Prieta, NIST received \$2 million. NSF, which is also involved in some earthquake engineering research projects, received another \$3 million — the same as the allocation for USGS.

Robert Buderl

were greatly concerned about the recent suggestion by James Watson, director of the US National Institutes of Health Center for Genome Research, that countries failing to contribute financially to the project should be denied access to US genome data, a criticism clearly directed at Japan.

Last month Matsubara replied to Watson's criticisms in *Nature* (*Nature* 342, 463; 1989). But Yoji Ikawa, head of the RIKEN genome project and another HUGO member, says that the Japanese government should issue an official reply to Watson, because he is both a scientist and a representative of the US government. And it is Ikawa's opinion that the Japanese government should first come forward with funds for an international organization that scientists will then run. Others, including Matsubara, think that the scientists themselves must take the initiative.

Behind these arguments lies a battle between scientists and the various government ministries and agencies over who should take the lead in the Human Genome project. Itaru Watanabe, vice-president of the Science Council of Japan, an elected body of 200 academics, says he is greatly concerned about this growing factionalism which he says shows that Japan has no coherent science policy. The Science Council has recently suggested that a new organization should be established to coordinate the human genome research effort. But the council has lost a great deal of its political power since it was re-organized by former Prime Minister Yasuhiro Nakasone.

Younger researchers at the meeting were more concerned about who will actually do the sequencing. As one young scientist said, they are the ones that will probably have to do "the road construction work" and they are worried they will be ordered by their superiors to look at sequences in which they have no interest, a legitimate concern in Japan where professors wield considerable power over their junior staff.

But Oishi and others attending the meeting in Sendai think that much of the sequencing can be carried out by system engineers and companies using new sequencing technology. This is the key philosophy behind the STA project initiated by Professor Akiyoshi Wada in 1981 who believes that sequencing is a job for machines not scientists. Matsubara hopes that MESC will establish new funds for such contract research.

But it is uncertain just how soon such companies will be established in Japan. Matsubara noted that while he has been approached by many US companies since he became vice-president of HUGO, not one Japanese company has come to him to enquire about the project.

David Swinbanks

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Unsafe structure: a Highway Patrol officer surveys the Oakland Bay bridge soon after the collapse (AP)

and engineers seeking to shore up the structural lines of defence. "We really have not measured enough things with enough instruments", AGU president Don L. Anderson, a geophysicist at the California Institute of Technology, said after the hearing. He said it might be foolish to focus new research moneys on building design and reinforcement, "because the engineers cannot really design a safe structure unless they know what the earthquake is going to do and what the geology is going to do". Anderson testified before the subcommittee in favour of what he called a "research array", a series of up to 100 broadband digital seismometers around California — and eventually in Alaska, Hawaii and