Sequencing funds 'must remain focused'

[WASHINGTON] Some of the leading US researchers involved in genome sequencing under the Human Genome Project have urged their major source of funding not to become too distracted with other activities which, they argue, could slow progress towards completion of the project.

Principal investigators funded by the National Human Genome Research Institute (NHGRI) to carry out large-scale sequencing made their comments shortly before Christmas at a workshop with members of an NHGRI advisory council subcommittee that is planning strategy for completing the sequencing of the human genome.

The meeting also addressed other thorny issues involved in efficiently completing the sequencing by the target date of 2005. The concerns of both institute planners and researchers include recruiting and training dozens of investigators every year, and keeping those they have in the face of attractive offers from industry.

Institute officials, led by Francis Collins, the director of NHGRI, laid out a scheme that projected institute spending of $60 million a year to finance the sequencing of 60 per cent of the human genome by 2005. (The other major funding body is the Department of Energy.)

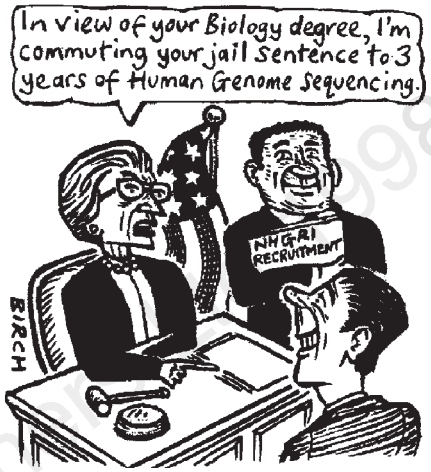
But some investigators suggested that the institute is not being sufficiently ambitious. Robert Waterston, director of the Genome Sequencing Center at Washington University in St Louis, Missouri, referred to NGHRI's planned investment of $60 million out of a total extramural grant budget of $145 million in 1998, and said that the figure indicates "a significant amount of distraction" by the institute.

Waterston said that "it's possible to spend too much money too fast and cause people to become inefficient," especially as the project expands. But the institute, as the sole funder of genomic sequencing at the National Institutes of Health (NIH), had to be "very careful to maintain focus". For instance, he said, it should ensure that the funding for applications of genome sequencing is shared by other NIH institutes.

In response, institute officials said that the spending plan represents only a 'baseline' for planning purposes. Collins says that, although he is unable to promise money from government budgets not yet written, "the sequencing part of the genome project is our highest priority. Nothing else assumes pre-eminence."

Collins says the money spent by the institute on human sequencing has more than tripled in two years, from less than $20 million in 1996. At the same time, he says that other "very important" projects deserve the support they are receiving. These include projects to advance sequencing technology, to develop databases that will allow the efficient use of sequence information, and to create a public catalogue of variations in human DNA known as single nucleotide polymorphisms.

"If we need to diminish [non-sequencing activities] to make sure we get the sequence done, we will," Collins says. But he expressed



uncertainty about how the question of funding would develop over the next two or three years.

Collins says that gauging future costs is difficult as it is not clear how quickly the US sequencing laboratories will gain capacity. Nor can it be predicted how quickly or how far sequencing costs will fall. But "no one should make the mistake of assuming that we have locked in this $60 million a year and that's all there's going to be. If we have to find more, we will."

With fewer than 3 per cent of the genome's 3 billion bases sequenced so far, institute officials are also facing the complex challenges of recruiting scientists and of increasing at least tenfold the country's sequencing capacity in order to complete the job in time.

Eric Lander, director of the Whitehead Institute at the Massachusetts Institute of Technology, told last month's meeting: "I'm concerned that, the way the major sequencing is going, we're not going to be attracting any new young blood."

Those present at the meeting debated strategies for establishing sequencing centres and expanding existing ones while improving quality and efficiency. Another problem discussed was how to cost accurately the sequencing of a base pair to allow budget planning and comparisons of competing grant applications. **Meredith Wadman**

Indian guidelines allow limited gene screening

[NEW DELHI] The Indian Council of Medical Research has released draft ethical guidelines on biomedical research. These would allow genetic screening in employment with the consent of employees, but prohibit life insurance companies from making tests a prerequisite for insurance.

The guidelines would also allow medically terminated fetuses to be used for transplanting to "patients for whom no other form of treatment is available". But a strict ban on animal-to-human transplants is proposed.

The panel, headed by M. N. Venkatachalaiah, a former chief justice of the supreme court, has updated guidelines issued in 1980. It has included regulations for research into areas such as human genetics, organ transplantation and assisted reproduction.

Employee screening is justified for genetic disorders that might jeopardize the safety of others. Thus airline companies can screen pilots for sickle-cell anaemia, which can affect an individual's actions when "exposed to atypical atmospheric conditions", endangering the lives of passengers.

But family members should not be entitled to know one another's genetic diagnosis because in India "revealing the information that the wife is a carrier of a recessive disease may lead to the husband asking for a divorce". But if a person has AIDS, it should not be kept secret, the report says.

Genetic screening is at present voluntary in India (although screening newborn babies at risk may be made compulsory). Prenatal diagnosis is permitted only where it is relevant to the health of the fetus or mother – not to select for sex.

The guidelines allow research on human embryos up to 14 days old and also the creation of 'abnormal' embryos using sperm and eggs taken from high-risk parents to study the transmission of genetic disorders.

But the transfer of any manipulated embryo to a human uterus, and the commercial exploitation of embryo research, would be banned.

All international collaborations involving human genetic research would be subject to regulations laid down by the Indian government. No DNA samples are allowed to leave India without adherence to previously established guidelines. **K. S. Jayaraman**