

Helping Europe compete in human genome research

■ More coordination needed ■ A role for the ESF?

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With the United States stepping up its financial commitment towards sequencing the human genome, European genome researchers are realizing that something must be done to ensure that Europe does not fall behind.

Just what should be done to improve the European effort was discussed in two reports published last week. Two studies commissioned by the German Research Minister Heinz Riesenhuber, from the Strasbourg-based European Science Foundation (ESF) and the London-based Academia Europaea suggest that many of the weaknesses of European genome research could be mitigated by better coordination of existing national programmes — coupled with more money.

Europe currently has six large human genome initiatives, run by the European Communities (EC), Denmark, Germany, France, Italy and the United Kingdom. The ESF and Academia reports agree that US spending is roughly three times that in Europe (although some European researchers say that the US budget includes old initiatives that have been pulled into the human genome project, so it is not all 'new money').

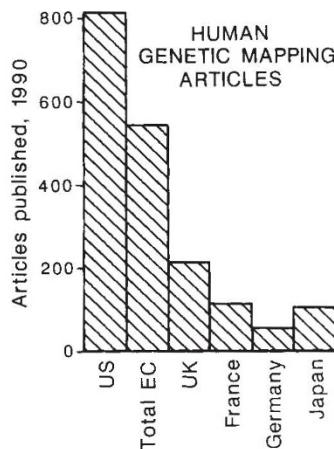
But Europe does not necessarily need to treble its genome budget to keep pace with the US effort. The ESF, an umbrella organization for European research councils and academies, offers one prescription that would cost little but could mean a lot: more cooperation, collaboration and coordination.

That however leaves the question of who should do the coordinating, and here the ESF study ventures into controversy. The Human Genome Organization (HUGO) was set up in 1988 with the express aim of improving the coordination of the international efforts to sequence the human genome. But the ESF report says that HUGO "has still to publicly articulate its role" and charges that HUGO has too broad a mission to deal with many of the specifically European problems of coordination that will arise. Instead, the ESF might provide the best forum for discussing the coordination of European genome research, the report suggests.

Sir Walter Bodmer, president of HUGO, has reservations about the proposed role for the ESF. Because HUGO is an organization of scientists involved directly in genome research, it is best placed to provide 'bottom up' coordination of the European effort, he says. He also rebuts ESF's lack-of-articulation charge, contending that HUGO's aims are well known in the genome research community. Bodmer admits that ESF could

"play a helpful role on the funding side" by arguing the case for increased support for genome research with national governments and the EC, but he warns that the proposed role for the ESF should not conflict with HUGO's activities.

Besides chiding HUGO, the ESF report has some specific criticisms of the current EC effort. EC support for genome research is divided between a number of different programmes, with work on other species, including the mouse, *Drosophila* and yeast, funded separately from the two-year, 15 million ECU (about £10.5 million) human genome analysis programme. The ESF working party says that EC genome research



Despite worries about the funding and coordination of the European contribution to the human genome project, European genome researchers at present seem to be performing well. An analysis of the MEDLINE database included in the ESF report shows that US researchers accounted for the largest single share (46.8 per cent) of scientific papers on human genetic mapping published during 1990. But researchers from the European Communities came a close second, publishing 31 per cent of the total, dwarfing the output of Japanese researchers.

should be "integrated under a single umbrella".

But Bronwen Loder, who divides her time between running HUGO's London office and the EC human genome analysis programme, does not agree that there is a strong case for placing all EC genome research into one programme. The separate strands of EC genome research are well coordinated through a European Commission committee she says.

In contrast to the ESF report, which concentrates on research management, the Academia Europaea study focuses on the scientific aspects of studying the human genome.

The Academia, a fellowship of eminent European scientists, urges European groups to focus on four areas: genetic and physical mapping of human and other genomes; the identification of new methods to identify potentially important regions of the genome that may play a role in identifying the genetic basis of disease; the sequencing of single genes and the development of better sequencing technologies; and the setting up of databases to cope with the 'avalanche' of sequence information.

In commissioning the reports, Germany seems to be attempting to take the lead in organizing European genome research.

This development is ironic in two ways. First, (West) Germany was the main objector to the original EC human genome research programme, which carried the unfortunate title of "Predictive Medicine". That programme was withdrawn in 1988 after a storm of protest from the German government and from left-of-centre parties in the European Parliament. Both groups objected to what they saw as 'eugenic' tendencies in the original programme and a lack of sensitivity to ethical considerations (see *Nature* 336, 416; 1988). Riesenhuber hopes that the left wing will be mollified by the Bundestag's (German parliament) promise to address such uses of genomic data as employee screening and prenatal diagnostics in the current four-year legislative session.

The second irony is that Germany, despite having a national programme for genome research has devoted a relatively paltry sum to it. With a total 1991 commitment of DM27 million (about \$16 million), the amounts invested in Germany are "not comparable to what's going on in France or Britain", says John Collins, head of cell biology and genetics at the Institute for Biotechnological Research in Braunschweig.

One problem for Germany is the lack of qualified research personnel. Pohl puts it diplomatically when he says, "The number of first-class people doing this kind of work in Germany is not very large." Pohl was one of a group of researchers who in 1988 proposed a five-year, DM100 million programme for genome analysis in Germany, which was cut by the ministry to DM25 million and incorporated into an existing "Priority Programme" of the granting agency DFG.

Riesenhuber told *Nature* that the suggested programme was so badly slashed, in part because it seemed to come from a small group of researchers with little support from the general scientific community. But he asserts that there are plenty of good groups working on "problem-oriented" genome research, that is, sequencing single genes or gene complexes. And he promises that if having enough qualified personnel should turn out to be a problem, he would initiate a programme for young researchers to improve the situation.

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