

organization is preparing a series of protests.

The committee says the government promised to borrow US\$5 million from abroad to transfer to scientists, but nothing has been received.

The critics also point out that a revised budget stipulates that only two per cent of state expenditure should be devoted to science, although legislation requires four per cent. Yet military spending is set to increase by 33 per cent.

## Japanese bid to end confusion on dioxin limits

[TOKYO] The Japanese parliament last week approved legislation stipulating permissible levels of dioxins — known endocrine disrupters and suspected carcinogens — in air, soil and water. The law, which takes effect early next year, sets standards for the levels of dioxins released from waste incinerators, the main source of emissions, and from factories.

The maximum tolerable daily intake (TDI) of dioxin is set at four picograms per kilogram of body fat. It is hoped that this will help the Environment Agency and the Ministry of Health and Welfare, which currently set different TDI values, to decide on a common standard. The government aims to reduce dioxin emissions by 90 per cent from 1997 levels by 2002 (see *Nature* 398, 362; 1999).

## Euro parliament member warns US on trade wars



[STRASBOURG] The newly elected president of the European Parliament's committee on environment, public health and consumer protection has warned the United States not to appeal to 'pure science' alone in trade disputes

over products such as bovine growth hormone and genetically modified crops.

British Conservative Caroline Jackson said last week that there is "a big difference between Europe and the United States on this type of thing". She said her committee may decide to address the extent to which the World Trade Organization is required to use judgements on scientific validity as a basis of adjudicating on trade disputes.

Jackson is an active member of the European People's Party, a grouping of centre-right candidates which won the largest number of seats in last month's parliamentary elections. During the allocation of committee responsibilities last week, Carlos Westendorp Y Cabeza, a Spanish socialist, was elected chair of the

parliamentary committee that oversees the European Commission's Framework research programmes.

## Nobel laureate Mullis hangs up his surfboard

[SAN DIEGO] Nobel laureate Kary Mullis, the inventor of the polymerase chain reaction (PCR) used to amplify DNA, has joined a medical diagnostic firm in Irvine, California. Since winning the prize in 1993, Mullis has led a peripatetic life, consulting for biotech firms, writing, surfing and skating.

Mullis, now director of molecular biology at Burstein Laboratories, is overseeing the development of laser-disc technology for medical analysis. "Everyone has to take a job sometime," says Mullis, who had been living off the Nobel award. When he devised PCR, Mullis was a researcher at Cetus Corp., which reaped virtually all the economic benefit.

### correction: French genome research

Our article on funding for French genome research stated incorrectly that money allocated to a public/private consortium would be used to develop a national network of 'genopôles' (*Nature* 400, 199; 1999). In fact, these clusters of genome-related labs and companies will be supported through a separate initiative.

# France losing genome race, says report ...

[PARIS] The gap between France and its competitors in genome research will widen even further unless research is stepped up, particularly in bioinformatics, according to a report published last week by the French Academy of Sciences.

In particular, it calls for the strengthening of the Génopôle biotechnology park at Evry near Paris, and wants a national network of similar initiatives to be built "as fast as possible" in cities such as Lille, Strasbourg, Marseille and Montpellier.

The report points out that, although France had a head start on genome research by publishing the first physical and genetic maps of the human genome in 1992 (see *Nature* 359, 794–801; 1992), it has failed to keep pace with American and British efforts.

"France cannot catch up in the realm of sequencing, but at the post-genome level there are steps that can be taken," says François Gros, the permanent secretary of the academy and a former director of the Institut Pasteur, who coordinated the 230-page report.

This isn't the first report in recent years that has questioned France's approach to biotechnology research. A report commissioned last year by Claude Allègre, the minister for national education, research and technology, and Dominique Strauss-Kahn, the industry and finance minister, touched on similar issues (see *Nature* 392, 214; 1998). The findings lamented the fact that archaic



Gros: 'steps can be taken' to help France catch up.

state industrial policies and a dearth of start-up companies were holding France back in the international arenas of biotechnology and computing.

The new report, drawn up by 22 scientists, was also commissioned by Allègre. It calls for a rapid overhaul of genome research in France if the country is to continue to make significant advances. And it describes the

French genomics industry as insufficient, calling for more support for start-up companies along the lines of Genset and Transgène.

Panel member Jean-Michel Claverie, director of the Information Génétique et Structurale unit at the Centre National de la Recherche Scientifique, who was responsible for the report's section on bioinformatics, argues that this is one of France's greatest weaknesses in genomic research. While this science has been developing rapidly in the United States and the United Kingdom, France has been slow to update its more theoretical approach to computer

sciences, he says.

The limiting factor to the development of bioinformatics is a lack of trained professionals, he adds. Heavy recruitment by large companies such as Glaxo and Merck have "just created a vacuum. There aren't enough professors to start programmes and teach courses."

Other underdeveloped areas, the report concludes, are academic programmes geared towards genomics and collaboration between laboratories and clinicians. Research into plant and agricultural genomics and structural biology also needs strengthening.

With these tools at France's disposal, the report indicates, the country could become involved in some of the applications of post-genome research, in medicine, pharmacology and agriculture. If it does not, the report warns, the country may find itself technologically incapable of taking the next step in the genomic revolution.

Citing the example of bioinformatics, the report states: "Not having enough bioinformaticians in France or in Europe means that the sequences we produce at great cost will be analysed, interpreted and exploited by others, principally the United States".

The document, entitled *Development and Applications of Genomics, After the Genome*, is the first of a series of biannual reports on the state of science and technology to be commissioned from the academy.

Heather McCabe

## ... as government announces creation of genome research consortium

[PARIS] The call for an overhaul of genome research in France (see above) coincided with the announcement last week by the Ministry of Science, Education and Technology of the creation of a consortium for genome research.

The consortium will link private companies, public research units and university groups, and is set to receive FF1.5 billion (US\$235 million) of government funding over the next three to five years.

The money will go towards research at France's genome laboratories, and towards building a national network of 'généopôles' – clusters of genome-related laboratories and companies – similar to that being built at Evry, near Paris. How the companies will contribute to the consortium – either financially or by releasing some of their results for use by other members of the consortium

– is still under negotiation.

It is widely accepted that French genome research could benefit from increased government support. But early proposals for the use of the extra money kindled controversy over reports that up to half would be earmarked to support the company Genset, France's main hope in industrial genome research, which has seen the value of its stock-market shares halved in the past 12 months (see *Nature* 399, 185; 1999).

No announcement has been made on how the money is to be allocated. But geneticists close to the issue say that, since the allegations of a possible government subsidy to Genset, the ministry has broadened the consortium to include more companies and research centres.

Plans now call for the involvement of Synthélabo, Sanofi

and Rhône-Poulenc, as well as France's Institute of Genetics and Molecular Biology near Strasbourg, Génopôle and the Evry-based National Sequencing Centre (Genoscope) and National Genotyping Centre.

Regardless of whether Genset will be a major recipient of the funding, some scientists criticize the decision, saying that taxpayers' money should fund public research units whose budgets are inadequate, rather than companies.

"The government should give money to public research units such as CNRS (Centre National de la Recherche Scientifique) and INSERM (the national biomedical research agency), who in turn could invest in contracts with the private sector," says Jean-Michel Claverie, director of the Information Génétique et Structurale unit at CNRS.

Claverie says the consortium raises questions of who will publish research data and who will have access to it. "I think a merger between public and private interests is confusing a lot of issues, and may be considered unfair competition by companies outside the consortium and in the United States and United Kingdom," he says.

Others note that the consortium is an example of France's tradition of using public funds to support private industry. In France, "if the state does nothing, no one will do it," says Bernard Dujon, professor of molecular genetics at the Institut Pasteur in Paris.

Claverie points out that, although the report from the Academy of Sciences calls for an overhaul of genome research, such a consortium was not what the authors had in mind. **H.M.**