

science capability from the country's chief scientist, Robin Batterham. The review will measure the needs of public and private sectors. It will look at what characteristics the country's science base needs if it is to support the development of leading-edge industry.

Minchin says the review will examine "what contribution science can and should make to economic development and wealth creation," and expects it to influence an 'Innovation Summit' next February. Some believe the review will endorse moves to transfer responsibility for university research from the education ministry to Minchin's department.

## Lawrence Livermore in the clear on radar technology

**San Diego** An outside task force last week cleared the Lawrence Livermore National Laboratory in California of breaking regulatory and statutory requirements in patenting and licensing a micro-impulse radar technology (see *Nature* 400, 6; 1999).

But the panel, examining a long-running dispute over the valuable technology, recommended new policies to address shortcomings in the laboratory's business and communication procedures. The task force was appointed last spring after complaints by a small Alabama firm, Time

Domain Corp., and Democratic members of the House of Representatives Committee on Science, who questioned the laboratory's handling of the technology.

## \$2m boost for work on xenotransplants

**London** Xenotransplantation research at the company PPL Therapeutics has been awarded \$2 million from the US Advanced Technology Program to support the cloning of transgenic pigs with organs likely to be accepted by human recipients. The National Institute of Standards and Technology in the United States is funding the programme, which aims to reduce the risk of rapid rejection of transplanted pig organs.

The rejection of non-human organs means xenotransplantation cannot yet address the shortage of human organs for transplants. A recipient's immune system can often be triggered into rejecting a graft by the product of a single gene in donor cells, and PPL is trying to knock out the gene causing such hyperacute rejection.

## Catalonia plans to put its academic know-how online

**Barcelona** The vice-chancellors of eight public and private Catalan universities have

agreed on a regional project for the electronic management and certification of their academic processes and the digitization of their scientific and teaching assets. The initiative, 'Digital University in Catalonia 1999–2003', has been put forward by the Information Society Commission of the Catalanian government, with a Ptas111 million (US\$740,000) budget. It aims for complete digitization within the four year period.

Universities will be able to share information needed for undergraduate teaching, and to set up an Internet platform to facilitate access to university publishers. The move, approved by the Universities and Research Commission, will include digitization of university libraries, including the provision of a single server to act as a repository of doctoral theses. International Internet connections will also be improved to reach a minimal flow of 34 Mbps.

### Correction

An article on restructuring within the Natural Environment Research Council's Centre for Coastal and Marine Sciences incorrectly stated that redundancies have been identified in the areas of numerical modelling and Southern Ocean dynamics (see *Nature* 401, 515; 1999). In fact, redundancies will occur in ocean/shelf dynamics. The centre is continuing to support core research in numerical modelling and Southern Ocean dynamics.



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# Terms of access to cloned mice comes under researchers' fire

## San Diego

A powerful 'gene-trapping' technology, first described in a paper published in *Nature* last year, has become the focus of a battle for access to proprietary molecular tools, with academic researchers pitted against the company that owns the technology.

The dispute, which sets researchers from universities and the Howard Hughes Medical Institute (HHMI) against the privately owned Lexicon Genetics of Texas, has highlighted a growing source of tension between the academic world and corporate interests. Academics want reasonable access to discoveries published in the scientific literature, while companies such as Lexicon seek to profit from their proprietary technology.

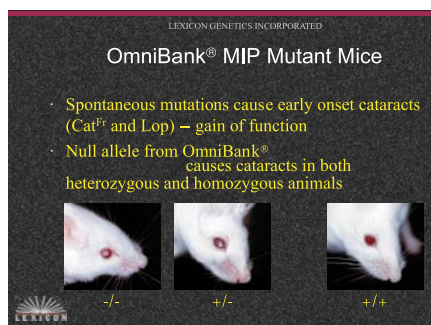
Some academics say the case illustrates the need for stricter rules to make researchers — whether from academia or industry — who publish in the open literature provide reagents and molecular tools to non-commercial investigators without restrictive provisions in material-transfer agreements.

In April 1998, six scientists from Lexicon published an article (*Nature* 392, 608–611; 1998) describing a high-throughput mutagenesis method in which 'gene trapping' provides an automated way of identifying sequence tags from mutated genes.

The Lexicon scientists reported that they were creating a library of mouse embryonic stem cells, called Omnibank. They noted that sequence-tagged mutations in 2,000 genes had initially been placed in Omnibank. The library now includes around 70,000 mouse genetic clones. The paper concluded: "Lexicon will distribute the [embryonic stem] cell clones described here to requesting investigators for non-commercial research."

But when Lawrence S. B. Goldstein, an HHMI geneticist at the University of California at San Diego, tried to obtain a particular mutated embryonic stem cell line last summer, he ran into what he termed "onerous" terms that became a "roadblock" to receiving the cell line. Lexicon sought at least \$15,000 for the stem cells, Goldstein says, as well as 'reach-through rights' to any commercial product from his use of the cells.

Pointing out that he believed his planned



**Mouse trap? Some scientists claim Lexicon's embryonic stem-cell library has 'excessive' costs.**

experiments "had no commercial value", Goldstein describes Lexicon's open publication of the technique and subsequent restrictions as a type of "shell game" in which the company used the journal for "an advertisement". Goldstein says he has no objections to a company placing tough restrictions on its unpublished materials. But he adds: "If you aren't going to send materials out, don't publish and take the credit."

Michael Green, a HHMI molecular biologist at the University of Massachusetts

Medical School at Worcester, said he had a similar experience when asking Lexicon for a retroviral vector referenced in the same paper. After his inquiries to the company had gone unanswered, he says, he obtained a response from Lexicon only by enlisting the assistance of a *Nature* editor.

But Lexicon then set restrictions on the transfer of the vector that neither HHMI nor his university would agree to, says Green. After months of delays, he finally received an ill-defined description of the sequence for the vector. But because of the insufficient quality of the sequence description and the delay, Green reluctantly used another vector obtained from an academic researcher.

Arthur Sands, the chief executive and a founder of Lexicon, denies that his company has violated *Nature's* policy on sharing materials. A physician with a PhD in molecular biology, and a co-author of the paper, he says the company "operates in good faith" and has "very liberal agreements" on sharing resources. "We have distributed clones from the publication very broadly," he says.

Sands attributes Goldstein's difficulties to a "misunderstanding" and "confusion" ▶

## UK marine centres face job losses

### London

Forty-nine research and technical jobs are to be lost at Britain's Centre for Coastal and Marine Sciences (CCMS), because of what its core funding agency, the Natural Environment Research Council (NERC), describes as "severe financial difficulties".

Twenty-seven redundancies will be compulsory. Most will come from the Plymouth Marine Laboratory, and four from the Proudman Oceanographic Laboratory.

The redundancies have been blamed on declining support from government and industry. Over the past three to four years, CCMS has seen a 30 per cent decline in government contracts and a deterioration in support for long-term research.

The Institute of Professionals, Managers and Specialists — the union that represents many research council scientists — has expressed concern over the job losses.

But it welcomed a £7 million (US\$11.6 million) rescue plan from NERC. This will cover the centre's deficits from the past two years, and the estimated cost of the redundancies.

NERC has approved a package that cancels an extension to the Plymouth Marine Laboratory and privatizes some of its work. After a review of CCMS science programmes, it has been decided that redundancies will occur in the research areas of lipid membranes, larval fish biology, numerical modelling and southern ocean dynamics.

Natasha Loder

regarding material-transfer agreements, although when contacted by *Nature* he said he was unaware of Green's claimed difficulties. Sands says that he subsequently contacted Goldstein to try to "clear up any misunderstanding", but at the time of going to press Goldstein said he had not received the material.

Sands says that, since the publication of the paper, his company has transferred materials to 41 non-commercial investigators at 27 institutions. He declined to provide a list of the investigators, but named half a dozen researchers at four universities. Interviews with some of these showed a substantial fee was paid for unpublished material, while one institution was asked to cede reach-through rights to Lexicon.

These concerns prompted HHMI officials to circulate a memorandum to its 300 researchers. HHMI spokesman Robert Potter issued a statement: "Several HHMI investigators have expressed interest in having access to Omnibank and related resources owned by Lexicon for their research. So far, we have been unable to come to terms on an arrangement for such access."



Goldstein: faced with "onerous" terms.

To researchers, the conflict shows that enforcement is needed to make material from the published domain more readily available. Such problems remain, says Green, because "no one wants to take responsibility for the enforcement".

Green argues that the National Institutes of Health, which last spring issued suggested guidelines for making materials available from its own funded research (see *Nature* 399, 291; 1999), should take a greater responsibility for the situation. NIH director Harold Varmus, a champion of ready access to published research materials, was unavailable for comment.

Several scientists said major journals that have policies on access to materials from published research should prohibit authors from publishing if they break the rules on material transfers. **Rex Dalton**

*Nature's* policy is that materials should be made freely available. This is made explicitly clear to all authors as a condition of publication. Where the conditions are subsequently broken, *Nature* reserves the right, as one possible sanction, to refuse to consider further papers from the authors or even, where necessary, the institution or company concerned. We are contacting the authors at Lexicon and will inform readers of the outcome. **The editor**

## Company to use advertising to cover Pubmed Central costs

### Baltimore

A private company that provides researchers with information about funding opportunities and other activities announced last week that it will provide 'front end' services on Pubmed Central, the free repository for research results which the National Institutes of Health (NIH) plans to launch in January.

These services will enable societies and individuals to publish peer-reviewed research and are to be provided by Community of Science (COS), based in Baltimore, which keeps profiles of 500,000 researchers globally.

Huntington Williams, COS's president said his company was trying to formulate an economic model for publishing on Pubmed Central. The costs of processing and reviewing manuscripts would be covered by online advertising and direct marketing aimed at the scientists who select the reviewers and the reviewers themselves.

COS is the first organization to propose a business model that would allow electronic journals which publish on Pubmed Central — and therefore have no subscription revenue — to cover the costs of arranging for the review of scientific papers, and editing the text and illustrations into a standard format ready for publication.

These costs would be covered by selling web advertising and web marketing targeted at the reviewers themselves and at the boards of researchers that select them. The existing COS database would enable such advertising and marketing to be tightly targeted at these scientists' interests and personal habits.

Williams refused to speculate over how much money could be raised in this way, but

I've just agreed to review someone's research, bought a new centrifuge, and booked a week's holiday in Beautiful Baltimore...



the newsletter *Science and Government Report* quotes COS officials as saying that, while unspecified journals spend \$4000 to process each paper, the new system might do it for \$250. The model assumes that this amount, plus profit, could be generated by advertising and marketing aimed at referees.

Williams said the model would enable COS subscribers, as well as societies who wanted to publish their journals on Pubmed Central, to publish results in the new repository. COS and the societies would revenues from the advertising and marketing, he said.

David Lipman, director of the National Center for Biotechnology Information at the NIH and one of the architects of Pubmed Central, said that COS's plans were one of "a wide variety of business models" which the repository would accommodate. He adds that plans for PubMed Central's launch are focusing mainly on the part incorporating peer-reviewed content. **Colin Macilwain**

## Optical society vote sees off merger

### San Diego

Members of the Optical Society of America (OSA) voted last week not to merge with the International Society for Optical Engineering (SPIE), ending months of contentious campaigning at the two societies.

The result was announced last week at the society's annual meeting in Santa Clara, California. SPIE had voted by mail earlier in the summer, with the result to be announced on Tuesday of this week. But the response from the OSA membership kills the merger, which was first mooted in early 1998.

OSA's leadership had sought the merger to create a more powerful organization. But criticism of the merger proposal grew as vocal dissidents expressed concerns that the

research-orientated OSA might be threatened by SPIE and its focus on applied research (see *Nature* 398, 547; 1999).

The OSA voted against the merger by 51 per cent (2,551 votes) to 49 per cent (2,420 votes). A two-thirds majority of voting members was needed to approve the merger.

"The members have spoken," said Anthony E. Siegman, OSA's president and a leading proponent of the merger. "In their view, a merger of OSA and SPIE is not in the best interests of the society at this time."

Daniel V. F. James, a theoretical physicist at Los Alamos National Laboratory in New Mexico and a critic of the merger proposal, said of the vote: "We are happy; it was the correct decision." **Rex Dalton**