statement on the RIAA Web site insisting that the consortium never intended to sue and that the association "strongly believes in academic freedom and Freedom of Speech." He has declined further comment. In an unusual twist, a French group that cracked three of the four watermarks also presented a paper at the workshop but was never contacted by RIAA. Felten says it's because his team had cracked all four watermarks, including the one chosen to be SDMI's technology.

In the digital video case, the Motion Picture Association of America successfully argued in court that publishing a few lines of code that remove the encryption from DVDs is prohibited by a clause in the DMCA that outlaws disseminating information that aids circumvention of technological copy-protection measures. The appeal of that ruling by a computer magazine, *2600*, is being heard this week in federal circuit court in New York.

Jessica Litman, a law professor at Wayne State University in Detroit, Michigan, says the Felten case highlights the overbroad nature of the act. "One of the things that is surprising is that the free speech and academic freedom implications are coming up so quickly," she says. Princeton University president Harold Shapiro believes that the music consortium's actions could have a chilling effect on researchers. "If it is interpreted narrowly, then it might not be a problem," he says. "But if interpreted broadly, there would be very serious concerns for academic freedom."

Felten says the researchers had hoped that the industry would learn from the results and improve its security measures. "Instead they tried to suppress it," he says. He worries that RIAA's actions will inhibit "a large body of research ... [with] very serious consequences for progress in computer security."

–DAVID VOSS

ORIGINS OF BSE

Intriguing Clues to a Scrapie–Mad Cow Link

PARIS—Apart from scandals involving the royal family, few stories are better at firing up the British press than the latest in the sad saga of bovine spongiform encephalopathy (BSE), or "mad cow disease." In the 27 April issue of *The Independent* newspaper, a headline suggested that the mystery of BSE's origins was solved, proclaiming that "Tests Show BSE Caused by Infected Sheep." The truth is far more complex, say scientists, who nonetheless laud the unpublished research described in the article as a possible step toward understanding how the puzzling disease got started.

The human form of BSE, variant Creutzfeldt-Jakob disease (vCJD), has killed nearly 90 people in the United Kingdom and three in France. Uncertain about how many more people may be incubating the invariably fatal disease, scientists are anxious to understand the relation between BSE, vCJD, and scrapie, which afflicts sheep. All three fatal neurodegenerative diseases have been linked to abnormal proteins called prions.

Scourge? Scrapie-BSE link may get a boost.

The new work is by a team led by veterinarian Danny Matthews, chief of prion disease research at the U.K.'s Veterinary Laboratories Agency in Weybridge. In July 1999, his team injected the cerebrums of 10 calves with brain tissue from sheep that had died from scrapie before 1975, well before the BSE epidemic got going in the early 1980s. A second group of calves was injected with brain matter from sheep that had died after 1990. So far, one calf from each group has died from a neurodegenerative disease resembling BSE. However, Matthews told *Science*, tests to unmask the disease-causing agent are still under way.

If it turns out that the scrapie agent is the killer, says prion researcher Moira Bruce of the Institute for Animal Health in Edinburgh, it would strengthen the hypothesis that BSE arose from cattle feed that included ground-up sheep carcasses. But, Bruce cautions, "it would not prove" the link. Indeed, says epidemiologist Peter Smith, acting chair of the U.K.'s Spongiform Encephalopathy Advisory Committee, "it is going to be very difficult to sort out the origins of the epidemic."

Last October, the so-called "scrapie hypothesis" was dismissed in a major report from a U.K. panel chaired by Lord Andrew Phillips (*Science*, 3 November 2000, p. 911; www.bse.org.uk). The report threw its weight behind the hypothesis that BSE arose from a spontaneous mutation in cattle, creating a new form of prion. Among the evidence for this scenario, it cited experiments by U.S. Department of Agriculture scientists showing that while some cattle infected with scrapie-infected brain extracts displayed neurological symptoms, these did not resemble BSE. Matthews speculates that the U.S. experiments may have used extracts harboring different scrapie strains from those in his experiments.

Several scientists believe the Phillips report discarded the scrapie hypothesis too

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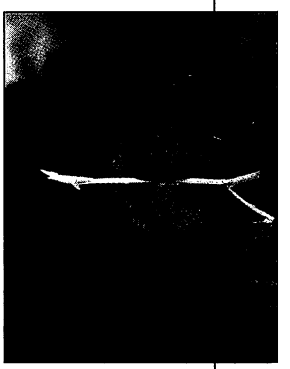
ScienceScope

Life-and-Death Decisions Heads may soon roll at Paris's Pasteur Institute, a topflight research center that has produced eight Nobel laureates in the past century. Over the next few months, director-general Philippe Kourilsky and the Pasteur's scientific council will decide whether to ax several research units that failed to pass muster in a recent evaluation.

When Kourilsky took the helm in January 2000, he promised to subject the institute's 39 research units to much tougher scientific scrutiny and to limit the terms of their directors (*Science*, 28 January 2000, p. 567). In February, the scientific council put 22 of the units under the microscope: Fourteen passed with flying colors, and several others were renewed pending changes in their research priorities. But four units received a thumbs down. Although Pasteur officials decline to name the failing labs, Kourilsky told *Science* that "there will be some closures."

Chimp Reprieve Europe's only chimpanzee research facility will be closed. Dutch officials last week said they will follow an expert panel's recommendation to end chimp research at the Biomedical Primate Research Center (BPRC) in Rijswijk.



Animal-welfare groups have criticized the facility for its cramped cages and obsolete facilities. And the Royal Netherlands Academy of Arts and Sciences panel—led by cancer researcher Anton Berns of the Netherlands Cancer Institute in Amsterdam—found that few academic researchers were using it. In 1999, for instance, just seven of the center's 100 chimps were involved in experiments. The panel said that the animals should be retired to zoos or sanctuaries, and that researchers needing chimps could look to the United States for subjects.

Dutch officials say research on the BPRC's 1000 rhesus monkeys will continue and have not yet set a timetable for ending the few ongoing chimp experiments.

Contributors: David Malakoff, Andrew Lawler, Michael Balter, Gretchen Vogel

readily. "I was shocked," says one prion researcher. "It's a lot more plausible than any of the other explanations." But the University of Cambridge's Malcolm Ferguson-Smith, the sole scientist on the three-member Phillips panel, defends its conclusions. "The question that bothered the committee was why scrapie had not previously passed into cattle during the past century, and why it only happened in the U.K." Nevertheless, Cambridge neuroscientist Gabriel Horn, who chairs a U.K. panel that will report later this month on BSE's origins, says his committee is so far "not ruling out" any of the half-dozen or so hypotheses put forward to explain the BSE epidemic.

Matthews says his findings do not necessarily rehabilitate the scrapie hypothesis. Echoing Smith, he says, "we may never be able to come to any conclusions about the origins" of the BSE epidemic. On the other hand, Matthews says, insights into the possible relation between scrapie and BSE could help prevent future epidemics: "The nearer we get to finding the origins, the better we can refine future policy." **–MICHAEL BALTER**

SCIENCE AND COMMERCE

Few Authors Disclose Conflicts, Survey Finds

Despite heightened sensitivity to the subject, a new report finds that few journals publish information about their authors' ties to commerce. Explicit guidelines are rare, the survey found, and many authors may feel the rules don't apply to their situation.

The survey, reported in the April issue of *Science and Engineering Ethics*, found that a mere 327 (0.5%) of the 61,134 papers appearing in 181 peer-reviewed journals in 1997 contained statements about authors' financial ties. Two-thirds of the journals published no disclosures; only three did so in at least 10% of their articles. Those journals were the only ones, out of 1396 "high-impact" journals surveyed—most of them covering biomedical research—that had any rules regarding disclosures of potential conflicts of interest. The policies ranged from detailed questionnaires to a request for authors to declare any ties that might be construed as a conflict of interest.

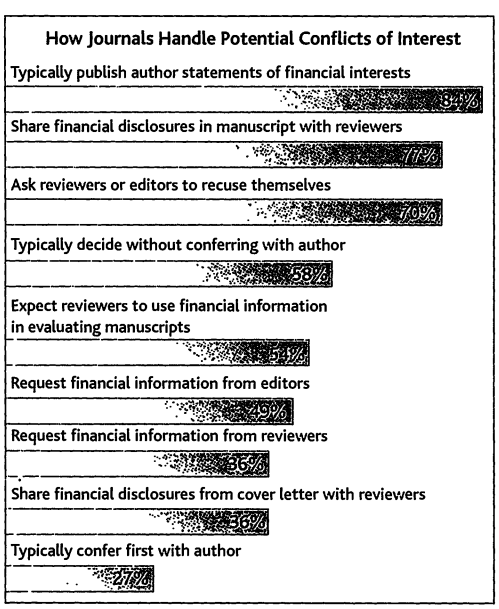
"I would say 0.5% is incredibly small when you look at all the information about the rise of patenting and commercial ties. I would expect at least 20%," says co-author Sheldon Krimsky, a professor of urban and environmental policy at Tufts University in Medford, Massachusetts. He says an earlier survey of Massachusetts biomedical scientists found that one-third of those who published in 1992 had financial interests related to their research—from patents to advisory positions in biotech companies.

Krimsky thinks a lot of scientists "are looking at these policies and saying, 'Sure, I have interests, but they're not conflicts of interest.' " Marcia Angell, former editor of *The New England Journal of Medicine* [which admitted to a failure to divulge potential conflicts among authors of several papers in recent years (*Science*, 3 March 2000, p. 1573)], says the survey demonstrates that journals need to tighten up their policies. Many have a qualifying clause, as in financial ties "that may bias your work," that are "big enough to drive a truck through," she says.

At the same time, it's not clear how well the 1997 data reflect the current situation. The study is "probably already dated because this is such a fast-moving area," says John Parrish, head of dermatology at Massachusetts General Hospital in Boston, who believes financial disclosure is "getting to be the cultural norm." A group of medical school deans, led by Harvard's Joseph Martin, have drafted new conflict-of-interest guidelines for biomedical researchers, and the Association of American Medical Colleges has just established a committee to look into clinical research.

Krimsky and others don't think things have changed that much. While clinical trial mishaps have spurred universities to reexamine conflict-of-interest policies, he says, "journals have not had the same impetus for change." Angell agrees, although she believes that the issue for journals extends beyond self-reporting. "Research institutions [as well] need to have far more stringent regulations," she says.

–CONSTANCE HOLDEN



Showing interest. The few journals with such policies take various approaches to conflicts.

CREDITS: (TOP TO BOTTOM) MICHEL EULER/AP; SOURCE: S. KRIMSKY AND L. ROTHENBERG, *SCIENCE AND ENGINEERING ETHICS* (APRIL 2001)

FRENCH UNIVERSITIES

Reform Plan Seen as Halting Step

PARIS—A sweeping reorganization of France's higher education system could soon give the nation's 1.7 million university students greater freedom to plan their courses and study in other European countries. But the proposed reforms, unveiled last week by education minister Jack Lang, have so far drawn a tepid response.

Lang. University system is "too congealed."

The ministry intends to bring France into the European Credit Transfer System, developed by the European Union in the 1990s to help standardize course credits between E.U countries and to encourage student exchanges. In a 23 April speech before France's National Council of Higher Education and Research, Lang also argued for a greater emphasis on multidisciplinary studies, especially in the sciences. The current system is "too congealed," he said. "It is not possible, for example, to award a [joint] diploma in biology and computer sciences."

However, some professors and students say the plan fails to address the root of their woes: stagnant funding. Tight university budgets have driven a steady rise in the student-teacher ratio, eroding the quality of science education, says Michel Verdaguer, a chemistry professor at the University of Paris's Jussieu campus. "We have 200 or 250 students in a chemistry class," he says. French students and professors have staged several strikes for better funding since December, most recently at the University of Brittany's campus in Brest. Aware of the deteriorating teaching conditions, the education ministry is creating 4000 new teaching posts over the next 4 years.

Other critics contend that Lang's promise to create 1000 scholarships for foreign study by the end of 2001 falls short of the mark. Currently only about 15,000 French students study abroad each year. "What we want is a real democratization of European study," says Stephen Cazade, president of the Federation of General Student Associations in Paris, "so that each student can do one or more years in another European country." His organization will push for such measures at next month's meeting of E.U. education ministers in Prague. **–MICHAEL BALTER**