

that don't contain the full-length Ebola genome," says Vincent Deubel of the Pasteur Institute in Paris, who announced the group's findings at an institute retreat.

Virologist Albert Osterhaus of the Erasmus University Hospital in Rotterdam notes that it is still unclear whether these particles, if confirmed to be Ebola, indicate that the animals could harbor the infectious virus. But the study suggests that "animals in a much more accessible habitat [than the deep rain forest] have definitely been in contact with Ebola," says Osterhaus.

Others say the study raises more questions than it answers. The researchers "have found traces of Ebola in about 3% of the most common species around. Yet when an epidemic occurs it can usually be traced back to a single [infection]. So why don't we see more [human or primate] outbreaks if so many animals are infected?" asks Clarence Peters of the Centers for Disease Control and Prevention in Atlanta. But Peters welcomes any contribution that may help pin down the elusive Ebola hideout. "People are continually testing various hypotheses. And they should be, because it's an extremely important issue," he says.

—MICHAEL HAGMANN

SCIENCE PUBLISHING

PNAS to Join PubMed Central—On Condition

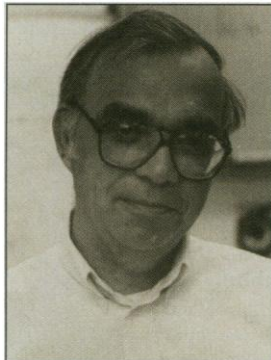
PubMed Central, a free archive of research reports planned by the National Institutes of Health (NIH), reached a milestone last week when it signed up an important contributor: the *Proceedings of the National Academy of Sciences* (PNAS). PNAS's overseer—the governing council of the National Academy of Sciences in Washington, D.C.—voted on 13 October to donate full-text research articles to PubMed Central starting next year. The move follows a similar decision in September by the American Society of Cell Biology, which publishes *Molecular Biology of the Cell*. Both will allow PubMed Central to release their papers on the Internet after a brief postpublication delay. The academy council also added important conditions, one of which is that everything else in PubMed Central be peer reviewed, contrary to NIH's original plan to include unreviewed material.

PNAS editor Nicholas Cozzarelli, a molecular biologist at the University of California, Berkeley, says "PNAS is proud to be one of the charter members of PubMed Central,"

which he views as "a major advance for science." Cozzarelli was an early supporter of the project, conceived by NIH director Harold Varmus and several colleagues earlier this year (*Science*, 3 September, p. 1466). Although some other journal editors are concerned about the possible loss of journal income, Cozzarelli says: "We have an obligation to take a leadership role for the good of science," and "we do not foresee a significant economic impact on PNAS for the next few years." In addition to releasing its reports 4 weeks after publication, Cozzarelli says, PNAS aims to give PubMed Central copies of "all of our research content back to 1990."

The academy council placed several restrictions on the agreement, however. It set a 1-year limit on the experiment, ruled out any commercial use of PNAS material, and insisted that authors not be charged fees for participation in PubMed Central. In addition, the academy said that participation "is contingent upon [PubMed Central] not including" unreviewed submissions or "reports that have been screened but not formally peer reviewed," a phrase Varmus used earlier in describing how some of the material would be vetted for publication. The outlet for non-peer-reviewed reports, according to the academy, "must be completely separate."

David Lipman, director of NIH's National Center for Biotechnology Information and developer of the PubMed Central plan, sees this as no big problem: "We had always planned" to build a wall between the peer-reviewed and the non-peer-reviewed parts of the Web site, he says. He adds, "Virtually all of the potential participants that have contacted us have been interested in the peer-reviewed component." He aims to come up with a name for the unreviewed section soon.



Charter member. PNAS editor Nicholas Cozzarelli.

As planning for PubMed Central continues, a private company has announced plans to launch a Web-based biomedical publication in an unspecified field that would use PubMed Central as its distribution network. Huntington Williams III, CEO of the Community of Science, a private outfit sponsored by Johns Hopkins University in Baltimore, says the proposed journal will conduct all of its editorial work, including peer review, through the Internet.

Rather than making money on author charges or subscriptions, the company plans to sell Web-based advertising that will "frame" the contents on the Community of Science Web site, which will include reviewer access to papers under review. Final reports would be deposited on PubMed Cen-

ScienceScope

Crozemarie Guilty A French court this week sentenced Jacques Crozemarie, former president of France's Association for Cancer Research (ARC), to 4 years in prison and a \$250,000 fine for his role in a scandal that nearly bankrupted one of Europe's leading medical charities. The 74-year-old defendant will remain free while his lawyers mount an appeal.

Crozemarie and two dozen other defendants allegedly siphoned off \$50 million from the charity, which once spent about \$60 million a year on research (*Science*, 9 February 1996, p. 750). But after the scandal broke in 1996, grants nearly dried up, rebounding to \$40 million this year. The guilty verdict may help boost that total, ARC president Michel Lucas, a former government inspector who exposed the scandal, told French TV station LCI. "Donors have told us they would start giving more once there was a judgment," he said.

Diamond Desire Tension is rising as researchers in the United Kingdom compete for DIAMOND, a next-generation synchrotron source. Most scientists had assumed the \$290 million machine, which will allow researchers to study the atomic structure of everything from proteins to ceramics, would replace the current Synchrotron Radiation Source at the Daresbury laboratory near Manchester. But this summer the Rutherford Appleton Laboratory near Oxford surfaced as a contender.

The competition marks the newest twist in DIAMOND's 6-year history. Financing problems had put the project—the biggest single investment in British science in 15 years—on hold. Then, last summer, the charitable Wellcome Trust pledged \$184 million to get construction started, with the British and French governments supplying the rest (*Science*, 6 August, p. 819). But instead of speeding things up, Wellcome's involvement "opened up the site issue again," says Susan Smith, a scientists' union representative at Daresbury. If DIAMOND ends up in Oxford, she fears her lab could close. Where Secretary of State Stephen Byers will decide to place the scientific jewel, however, won't be known for at least a few more weeks.

Contributors: Pallava Bagla, Constance Holden, David Malakoff, Michael Balter, Michael Hagmann



tral. The advertising will be “exquisitely” targeted to specific groups of readers, authors, and peer reviewers who use the company’s services. Williams hopes to name an editor and editorial board soon.

—ELIOT MARSHALL

TRANSGENIC FOOD DEBATE

The Lancet Scolded Over Pusztai Paper

For more than a year, a study claiming to show that transgenic potatoes may make rats sick was at the center of a furious debate, even though its findings had never been published. Now, part of the controversial study by protein biochemist Arpad Pusztai has finally made it into the pages of *The Lancet*—only to drag the prestigious journal down into the trenches of the British war over genetically modified food.

Critics—including the Royal Society, which after a review of the raw data called the work “deeply flawed” in May—contend that *The Lancet* is exploiting the study’s notoriety for its own publicity and that publication in a top journal lends the paper credibility it doesn’t deserve. The U.K.’s Biotechnology and Biological Sciences Research Council called the journal “irresponsible.” But *The Lancet* editor Richard Horton says that giving Pusztai’s data a public airing finally allows all parties to draw their own conclusions. Besides, he says, the paper survived an even stricter scientific scrutiny than normal.

The study made headlines around the world in August 1998, when Pusztai, a scientist at the Rowett Research Institute in Aberdeen, announced in a television interview that a diet of genetically modified (GM) potatoes could stunt rats’ growth and impair their immune system. Just days later, the institute suspended Pusztai and banned him from speaking to the media, saying his claim lacked a scientific basis—a verdict later repeated in an internal review. But an international group of scientists, after examining data provided by Pusztai, demanded his exoneration (*Science*, 19 February, p. 1094). Their stance fueled the British media frenzy over transgenic crops and turned Pusztai, who is now retired, into a hero for the anti-GM movement. But what his study had or hadn’t shown, remained unclear.

In their paper in the 16 October *Lancet*, Pusztai and co-author Stanley Ewen, a pathologist at Aberdeen University, don’t mention stunted growth or suppressed immu-

nity. Instead, they focus on abnormalities in the intestines of rats fed only potatoes equipped with the gene for GNA, a natural insecticide found in snowdrops. GNA and other lectins are thought to be potentially useful in helping crops fight off insects, but products engineered to express the gene haven’t made it to the market yet. The researchers found that rats on the transgenic spud diet for 10 days had a thickening in the mucosal lining of their colon and their jejunum, a part of the small intestine, which didn’t occur in animals fed nontransgenic potatoes or nontransgenic potatoes spiked with GNA at levels comparable to the transgenic ones. The findings suggest that the genetic modification of the potatoes—not GNA itself—is somehow responsible for the changes seen in the rats, the authors say. “Perhaps by introducing a gene you will activate or silence other genes in the plant as well,” Pusztai explains.

But in a commentary in the same issue, three scientists from the National Institute for Quality Control of Agricultural

Products in Wageningen, the Netherlands, say the study has several flaws. For instance, the effects could have stemmed from nutritional differences between the potatoes that had nothing to do with genetic modification; with just six rats in each group, the sample size was very small; and the monotonous diet had made all the rats protein-starved—not a good basis to assess a substance’s toxicity, they argue. As a result, the Dutch scientists say, the data don’t warrant the paper’s conclusion. Pusztai, however, points out that the diets were comparable in protein and energy content and that a sample size of six is perfectly normal in studies like this.

Nevertheless, critics say the shortcomings should have caused the journal to reject the paper. John Pickett of the Institute of Arable Crops Research in Rothamstead, one of the experts asked by *The Lancet* to assess the paper, last week cast off peer reviewers’ traditional cloak of secrecy and publicly denounced the journal for ignoring his advice. “If this work had been part of a student’s study, then the student would have failed whatever examination he was contributing the work for,” Pickett railed in a BBC interview.

Horton responds that the journal put the paper through an unusually rigorous review, asking six instead of the usual three experts to examine it. Of those, only Pickett squarely opposed publication, he says; four others raised criticisms that Pusztai and Ewen addressed, while a fifth deemed the study

flawed but favored publication to avoid suspicions of a conspiracy against Pusztai and to give colleagues a chance to see the data for themselves. “When we had five out of six reviewers in favor of publication ... we felt we had very strong grounds to go ahead and publish,” says Horton, who also justified his decision in a commentary. Horton denies that *The Lancet* sought to get mileage out of the media hype, insisting that he would have printed the paper even if it hadn’t been mired in controversy. But Marcia Angell, editor-in-chief of *The New England Journal of Medicine*, a competing journal, finds that hard to believe. “When was the last time [*The Lancet*] published a rat study that was uninterpretable?” she asks. “This really was dropping the bar.”

Horton says he sees nothing wrong with publishing a provocative paper: Arguments over a scientific study are “perfectly normal.” “The problem is we are disagreeing about interpretation in this incredible crucible of public debate,” he says. “I think everybody needs to cool it.”

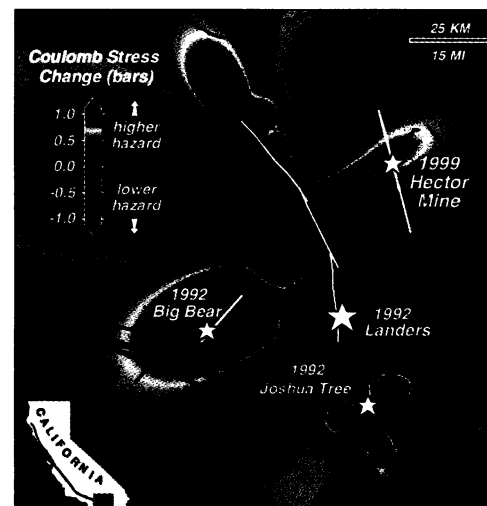
—MARTIN ENSERINK

SEISMOLOGY

Did One California Jolt Bring on Another?

No crustal fault is an island, seismologists are learning. Last weekend’s Hector Mine earthquake, which struck the desert 160 kilometers northeast of Los Angeles, seems to support the idea that faults feel what happens to their neighbors. The magnitude 7.1 temblor—which did minimal damage because of its remote location—appears to have been triggered by the magnitude 7.3 Landers quake of 1992, which struck 160 kilometers to the east of Los Angeles. “There’s clearly a relation” between the Landers and Hector Mine quakes, says seismologist Lucile Jones

SOURCE: R. STEIN/USGS MENLO PARK



Nattering faults. The Landers quake may have set off both the Big Bear and the Hector Mine quakes.