the LGN axons had linked up with the cortex but before the columns had formed. The doubters were wrong again: These ferrets still formed normal-looking ocular dominance columns.

Even that finding has not closed the case against neural activity, however. Shatz points out that the Duke scientists did not check to see whether the columns they saw after they removed one eye alternated in responding to either the right or left eye as they should. Thus, it could be—as Shatz has found in the past in cats—that removing one eye altered the visual system such that seemingly normal ocular dominance columns formed, but they all responded to the remaining eye. And Stryker points out that the study did not rule out the very real possibility that activity in the brain—say, from the LGN—is necessary for column formation even if that from the eye isn't.

Katz concedes that these arguments are valid, although he doesn't believe they explain his findings. He's now aiming to identify the molecular signals that he thinks guide the formation of ocular dominance columns. Says Katz: "My gut feeling is that we need to look in a different direction."

–INGRID WICKELGREN

NEUROSCIENCE

An Antibiotic to Treat Alzheimer's?

NEW ORLEANS—An antibiotic once used to treat traveler's diarrhea might battle Alzheimer's disease as well, researchers announced here last week at the Society for Neuroscience's annual meeting. The drug dissolves Alzheimer's-like plaques in mouse brains, apparently by trapping the copper and zinc that stud these deposits. A clinical trial to test whether the drug helps people with Alzheimer's is already under way.

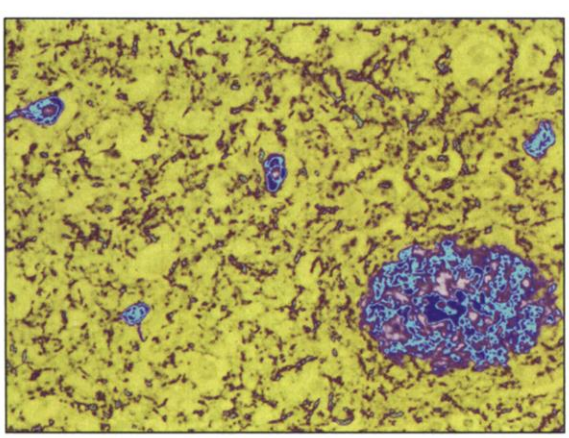
Deposits called amyloid plaques riddle the brains of people with the disease—who now number about 4 million in the United States and may reach 14 million by 2050. The plaques' primary ingredient is a protein called β amyloid (Aβ) that occurs normally in the body and doesn't appear dangerous in its soluble form. "We're not trying to stop [Aβ] from being produced—we're trying to stop it from being accumulated," says Ashley Bush of Massachusetts General Hospital in Boston.

To do so, Bush has been studying the effects of copper and zinc on Aβ. About a decade ago, he found that these metals allow enzymes to cut Aβ from a larger protein; he later discovered that they influence the properties of Aβ itself. Adding zinc to the protein in a test tube, for instance, can cause clumps of Aβ to form, and compounds that bind to copper and zinc can dissolve amyloid plaques in postmortem brain tissue from people who died with Alzheimer's disease.

In search of a candidate drug, Bush's team screened dozens of antibiotics and anti-inflammatory drugs known to bind metals. An antibiotic called clioquinol proved the most potent, efficiently dissolving plaques in postmortem tissues and reducing amyloid's ability to clump together. To test whether clioquinol could clear up amyloid plaques in the brain of a living animal, the team gave the drug to young mice engineered to develop Alzheimer's-like deposits. The drug appeared to inhibit plaques from forming: The animals developed fewer plaques overall, and some 30% developed no detectable plaques. In a second study, the drug appeared to clear up plaques in mice old enough to have developed substantial deposits. Those given the drug for 9 weeks had 50% less amyloid deposited in their brains than untreated animals had.

The mouse studies are "very impressive," says Alzheimer's researcher David Morgan of the University of South Florida in Tampa, showing "a dramatic reduction [of plaques] in a very short time." Other approaches, including vaccinating mice against Aβ, also clear plaques from mouse brains (*Science*, 9 July 1999, p. 175).

The Food and Drug Administration approved clioquinol decades ago as an antibiotic. The drug was used for about 500 million patient days, Bush says, but was pulled from the market after a few people developed an acute vitamin B-12 deficiency while taking the drug. Although the B-12 deficiency can be addressed with supplements, Morgan cautions that the drug has not been tested for the long-term use necessary to help people with Alzheimer's.



CREDITS: (TOP TO BOTTOM) FRED CHARTRAND/AP; SIMON FRASER/PHOTO RESEARCHERS

Dissolved. Extracting metal shrinks amyloid plaques (in purple and blue).

ScienceScope

On the Stump Canadian scientists are being promised wheelbarrows of cash if the governing Liberals are returned to office in the 27 November election. Prime Minister Jean Chrétien (below) last month unveiled a campaign platform that calls for doubling annual federal research spending to $3.95 billion within a decade.

Hoping to put more distance between his Liberals and the right-wing Alliance Party, Chrétien promised to make Canada "a hotbed of research and investment." In particular, the Liberals call for boosting annual research outlays by at least $670 million within 4 years. The Canadian Institutes of Health Research would get an unspecified "major increase," while a quarter of the new monies are pegged for environmental research on toxins and children's health; clean air; and soil, water, and food safety. The remainder would be disbursed among the granting councils and in-house labs like those at the National Research Council.

The opposition Alliance also vows to increase granting council budgets by an unspecified amount and would appoint a "Chief Scientist of Canada to coordinate science activities in all government departments and ensure that science, not politics, prevails."

Mad About the Cow Concern about a surge of "mad cow disease" in France has proved a boon to the country's prion researchers. Prime Minister Lionel Jospin announced this week that the government will triple funding for research into prions, the abnormal proteins that are suspected of causing mad cow disease and its fatal human version, vCJD.

The move came after the agriculture ministry reported that there have been 80 cases of mad cow disease in France so far this year. That is equal to the number of cases over the previous 11 years, but still far short of the 170,000 cases recorded in the United Kingdom since 1988. And although France has documented just three human cases of vCJD, compared to 85 in the United Kingdom, news of the surge sparked what the press has called "a national psychosis." Jospin's package to calm fears, according to the newspaper *Le Monde*, includes an indefinite ban on giving livestock feed that contains animal bone and tissue, which is believed to spread the disease, and boosting the prion research budget to $27.5 million, starting next year.

A phase II clinical trial of the drug in people with mild or moderate Alzheimer's, coordinated by Colin Masters of the University of Melbourne in Australia with technical assistance from Bush, should start to answer questions about both the safety of long-term use and, perhaps, the drug's efficacy. The team expects to have the results from the trial in about a year. **–LAURA HELMUTH**

PARTICLE PHYSICS

The Final Tally Leaves LEP a Probable Loser

LONDON—The future of research at CERN, the European particle physics laboratory near Geneva, is proving only slightly easier to resolve than the identity of the next occupant of the White House.

Due to be dismantled in September, the lab's Large Electron-Positron (LEP) collider was granted a 1-month reprieve to continue experiments suggesting it had found evidence for the Higgs boson, a theoretical particle that physicists have coveted for decades. Last week LEP scientists presented the new data to CERN's management, saying the case for the Higgs was strong enough to merit another, longer reprieve. But management didn't budge. On 8 November, CERN's director-general announced that LEP would be scrapped to make room in the 27-kilometer-long tunnel to begin installing the Large Hadron Collider (LHC).

With LHC waiting in the wings, LEP scientists this summer had pushed the machine's beam energies to the max. On 2 November, after a month of extra operation, the team crammed into CERN's auditorium to review the latest evidence. The scene was not unlike a recount. One event once seen as evidence for the Higgs was withdrawn, while another event was added. Evidence gathered last summer was recalculated and revealed to be less significant than thought. But the new evidence was clearly stronger. Summing up the case for the Higgs, Peter Igo-Kemenes drew loud laughter and prolonged applause when he dryly remarked that "all this is very exciting." The four experimental teams jointly called for another year's operation to settle the matter.

But the elation evaporated at a private meeting straight after of the committee of scientists from CERN and elsewhere who oversee LEP. "It was subdued," one committee member told *Science*. "Nobody banged on the table. And that reflects the data, which is 50–50." Although models gave the combined results only about a 1% probability of being due to chance, the LEP committee knew that such statistics do not tell the whole story (*Science*, 29 September, p. 2260). The signal was getting stronger with time, the panel agreed, but there was no guarantee that the trend would continue.

The committee did agree that spending $62 million to keep LEP running for another year was worth it. But not at the cost of delaying the LHC by a year—a decision with financial and political ramifications, because the LHC program includes partner countries with no stake in LEP. Thus the committee split on LEP's future. This came as a blow to rank-and-file LEP scientists, who argued that the LEP committee should have focused on the machine's scientific potential and disregarded the impact on LHC.

CERN's senior management—the directorate—then took up the issue. A consensus favored moving ahead with LHC, but the decision was not final. Four days later, the lab's research board, of which the directorate forms a subset, was convened.

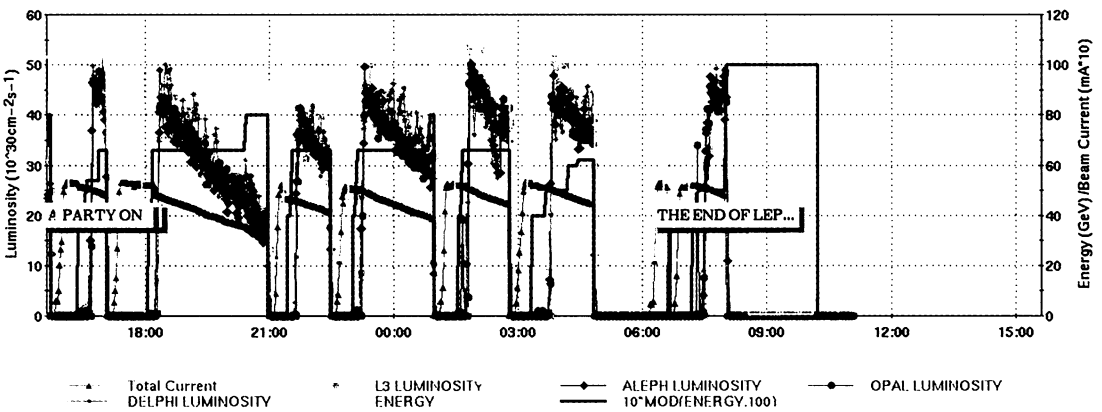
According to LEP experimentalist David Miller of University College, London, one of two outside scientists on the board, this panel, too, was split. CERN's management team opposed an extension, whereas many of those representing the lab's various experiment committees and specialist divisions were in favor. "It was a painstaking meeting," Miller says, in which every aspect was scrutinized. "In no way was the directorate trying to rush through its own ideas."

But in the end the research board remained split, leaving the decision in the hands of director-general Luciano Maiani. George Kalmus, chair of the Science Policy Committee that advises CERN's ultimate masters, the council of delegates of the member states, told the director-general that an e-mail poll of his top-level committee revealed a small majority in favor of shutting LEP down. And that is what Maiani decided to do.

Originally, the director-general left the final ratification of that decision to a council meeting scheduled for December. Then, perhaps to head off further discussion, a special committee of the council was called for 17 November, presumably to sign the death warrant. In a very unusual move, the executive committee of CERN's staff association spoke out against the decision, expressing "astonishment and incomprehension" and saying that the case against LEP had not been made clearly enough. So although LEP looks dead, it's not over till it's over—as they say in Palm Beach County, Florida.

–OLIVER MORTON

Oliver Morton is a writer in Greenwich, England.



Flatlined. LEP's beam intensity at four experimental stations before the plug was pulled at 8:00 a.m. on 2 November.

CREDIT: CERN

GEOPHYSICS

Core Takes a Page From the Sea Floor

There's probably no stranger place in all Earth's layered interior than the intersection of the molten iron of the core with the bottom of the rocky mantle, 2900 kilometers down. This boundary produces the most dramatic effects on seismic waves traveling below the near-surface. Exactly what the core and mantle might be doing to each other to affect seismic waves so powerfully, however, has remained a mystery. Now one group of geophysicists is suggesting that the boundary most resembles an inverted sea floor, with liquid-iron–laced sediments collecting on the roof of the core.

The case is made on page 1338 of this issue by geophysicist Bruce Buffett of the University of British Columbia in Vancouver, seismologist Edward Garnero of Arizona State University in Tempe, and mineral