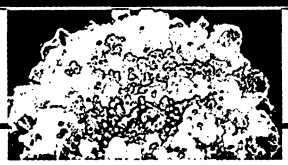
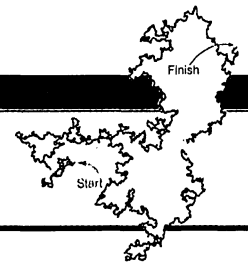




TOXICOLOGY

Panel Urges Further Study of Biotech Corn

This fall, when genetically modified corn that had not been approved for human consumption was found in taco shells in the United States, all hell broke loose. The corn, produced by Aventis CropScience for animal feed, was soon found in a range of foods, prompting product and grain recalls countrywide. Last week, the U.S. Environmental Protection Agency (EPA) convened a scientific panel to review evidence on whether this StarLink corn could harm sensitive people by causing allergic reactions. The panel found that the overall probability is "low," but the EPA appears intent on investigating further before allowing the corn in foods, as Aventis has requested.

At the center of the controversy is a bacterial protein known as Cry9C, the gene for which was added to StarLink corn to make it resistant to insects. Cry9C is one of several so-called Bt proteins, but it is more heat stable and harder for humans to digest than its kin—qualities that are typical of such allergens as peanuts. Although comparisons of Cry9c's structure with known food allergens turned up no signs of allergenicity, EPA's scientific advisers don't consider those tests conclusive. In 1998, when Aventis asked EPA to approve StarLink for human consumption, the agency limited its sale to animal feed and industrial uses.

Then came the September scare when a coalition of activist groups detected the DNA coding for Cry9C in taco shells. Aventis soon pulled its seeds off the market. But facing the multimillion-dollar costs of tracking StarLink corn already in grain elevators and silos, the company asked EPA to allow it in food for the 4 years it will likely remain in the food supply.

To bolster its case, Aventis gave EPA new studies showing that the blood of people with food allergies doesn't cross-react with Cry9C. They also presented evidence that the amounts of the protein showing up in contaminated food would be perhaps 1/100 the level needed to sensitize people to allergens such as peanuts. But the review panel didn't find these arguments persuasive. It's unknown exactly what makes a protein trigger allergic reactions, they argued, and allergists don't know whether there is a safe level for the protein. "Unfortunately, there are no valid animal models that will tell you that something's an allergen" in people, says Hugh Sampson, a New York University allergist on the panel.

Evidence on Cry9C's allergenicity may be coming soon, however. Following the flurry of press reports over StarLink, at least 34 people reported to the U.S. Food and Drug Administration (FDA) that they had allergic reactions after eating corn products. The panel concluded that up to 14 of these 34 reports merit further investigation. The cases "have not been corroborated medically or scientifically," notes allergist and panel member Marc Rothenberg of the University of Cincinnati. To begin to do that, FDA and the U.S. Centers for Disease Control and Prevention hope to test the blood of these 14 or so people for the presence of antibodies to Cry9C. "If even two have them, then that sort of gives you the answer" that Cry9C has the potential to cause allergies, says Sampson. But developing the protocol and test could take several months, says Karl Klontz of FDA.

GMO sleuth. Larry Bohlen of Friends of the Earth discovered biotech corn approved only for animals in taco shells.

CREDIT: LINDA SPILLERS/AP

Whether EPA will grant Aventis the 4-year exemption is anyone's guess, but some observers don't expect a quick decision. Despite the panel's finding that the overall risks from Cry9C appear low, it urges agencies to follow up on illness reports and get better data on protein residues in foods. "A thorough assessment" will continue, says an EPA statement. "It's clear that EPA is going to sit on this petition for a while," says Rebecca Goldburg of Environmental Defense. Whatever EPA decides, the agency will likely be cited in lawsuits now proliferating by people who allege allergic reactions from StarLink; some corn growers have also filed a class action suit, claiming they weren't warned about mixing StarLink corn with other corn. Last month, Cry9C did turn up in another variety, for reasons Aventis can't yet explain.

–JOCELYN KAISER

INFECTIOUS DISEASES

Polio Outbreak Raises Questions About Vaccine

The oral vaccine designed to protect children from polio has been fingered as the possible culprit in a recent outbreak of the devastating disease in the Dominican Republic and Haiti. The small cluster of cases marks the first polio outbreak in the Western Hemisphere in more than 9 years. It is also the first reliable report that a vaccine-derived polio strain may have reverted to a virulent form and spread contagiously. Although a massive vaccination campaign already in the works is expected to contain the outbreak, the unusual incident raises troubling questions about a vaccine that has been in widespread use for nearly 40 years.

Three children in a rural area of the Dominican Republic about 80 kilometers from the Haitian border came down with paralytic polio in July and August. A single case has also been confirmed in Haiti, where the disease struck a child who lives 3 hours' hike from the nearest road. None of the children had been vaccinated; that means they acquired the vaccine-derived virus from someone who had. Although both regions are remote, there is enough traffic between them that person-to-person transmission could have occurred, says Ciro de Quadros, who directs the vaccines and immunization program for the Pan American Health Organization (PAHO).

The oral polio vaccine is highly effective and easily administered. But because it employs live but weakened strains of the virus, its use results in vaccine-associated paralytic polio in about 1 of every 750,000 people who receive it, usually those with compromised immune systems. But there has been no evidence that this vaccine-induced form of the disease can be spread from person to

person. The new outbreak demonstrates that the vaccine can indeed mutate to a virulent form and spread from person to person.

When the laboratory that conducted the routine surveillance tests of one of the Dominican Republic cases found a virus that was unsettlingly similar to wild poliovirus type 1, health officials quickly sent samples to the U.S. Centers for Disease Control and Prevention in Atlanta. There, scientists sequenced the virus—and later samples from the three other victims—and found that they all significantly diverged from the vaccine strain and now clearly resembled the virulent wild-type. It's not yet known how this reversion occurred. PAHO has convened a group of scientists this week to study the data and recommend subsequent action.

Although 73% of children under age 1 were vaccinated in the Dominican Republic in 1998, only about 20% of children had been vaccinated in the region where the outbreak occurred, says de Quadros. The World Health Organization (WHO) is striving for at least 90% coverage in its efforts to eradicate polio from the world by 2005. Whether this incident will delay the timeline remains to be seen, says Donald Henderson, an epidemiologist at Johns Hopkins University in Baltimore, Maryland, who led WHO's successful global eradication of smallpox. "We really want to zero in on this and check it out in great detail," Henderson says. "It's now 9 years since we've detected any circulating wild virus in the Americas. This comes as a great surprise to everybody."

–LIESE GREENSFELDER

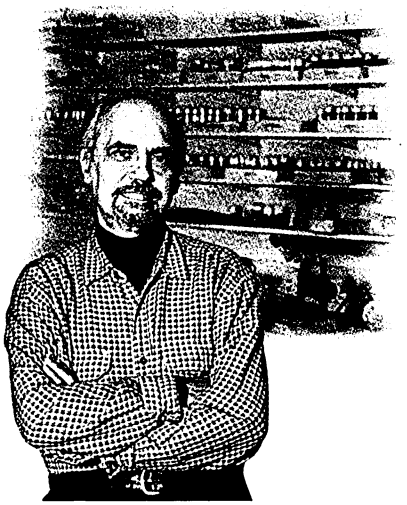
Liese Greensfelder is a writer in Nevada County, California.

MOLECULAR BIOLOGY

EMBL Rescued From The Financial Brink

COPENHAGEN—Scientists at the European Molecular Biology Laboratory (EMBL) were breathing a sigh of relief last week after the topflight center in Heidelberg, Germany, announced a 25% budget increase for the next 5 years. The boost eases months of uncertainty over how the lab would comply with an order to pay employees back salary and provides a measure of stability to its renowned but embattled European Bioinformatics Institute (EBI).

EMBL's governing council has approved a spending increase of $10 million a year, raising the lab's budget to nearly $50 million in 2001. "This is a major vote of confidence for EMBL," says director-general Fotis Kafatos. Much of the money goes to bailing out EBI. The bioinformatics institute in Hinxton, U.K., has struggled to pull in enough funding under unfavorable European Union guidelines that tend to be more generous to investigator-initiated projects and to neglect research infrastructure. Some $6 million a year—60% of EMBL's budget increase—will go to EBI, covering 40% of its costs. Kafatos says he's confident that "the rest will come from outside," citing possible collaborations with the U.K. Medical Research Council and other European funding agencies. The budget boost also will allow EMBL to establish a full-fledged center for mouse biology at its outstation in Monterotondo, Italy.



Flush. Fotis Kafatos calls EMBL's 25% budget boost "a major vote of confidence."

Long a center of basic research, EMBL now is trying to find ways to market its findings for income. Enthusiastically endorsing this new direction, the council of 16 member states approved the establishment of an externally managed venture-capital fund and the construction of a 6600-square-meter International Technology Transfer Center in Heidelberg that will serve as an incubator for start-ups from EMBL and member states. "EMBL has not made the best possible use of technology transfer in the past," says council chair Peter Gruss, a biologist at the Max Planck Institute for Biophysical Chemistry in Göttingen. Kafatos insists that EMBL's "academic culture will not be negatively impacted" by teaming up with industrial partners.

The council's benevolence eases jitters over a court ruling last year that forced EMBL to pay back salary to dozens of employees, prompting fears that the lab might have to make deep cuts in research or even shut down (*Science*, 5 November 1999, p. 1058). In the wake of the generous budget increase, "people are much more optimistic," says scientific coordinator Iain Mattaj. Indeed, adds Kafatos, "the outlook is not as unstabilizing as last year."

–LONE FRANK

Lone Frank is a writer in Copenhagen, Denmark.

CREDITS: (TOP TO BOTTOM) EMBL; WILLIAM R. GOODWIN/U.S. NAVY PHOTO

ScienceScope

Gifted Santa Claus has paid an early visit to 28 top university labs across the United Kingdom. The U.K. government, in concert with the Wellcome Trust charity, earlier this week announced it would distribute $180 million for projects across the sciences. Specific grants are still being negotiated, but the presents include a Center for Post-Genomic Virology at University College London; 900-megahertz NMR facilities at the universities of Birmingham and Oxford; a lab for studying cancer-causing viruses at Imperial College; and a Center for Fundamental Physics at the University of Durham.

Parting Present Retiring Representative John Porter (R–IL), a major player in boosting the budget of the National Institutes of Health over the last few years, will donate his unused campaign funds to biomedical science. Porter announced this week that he will give about $325,000 to Northwestern University Medical School in Evanston, Illinois, as part of a $2 million campaign to create a professorship bearing his name. Porter is a graduate of the school, which is a first-time beneficiary of leftover campaign cash, says Northwestern president Henry Bienen.

Defense Posture Congress still hasn't finished work on spending bills for the 2001 budget year, which began 1 October. But researchers are raring to go on the 2002 budget. For instance, the 40-member Coalition for National Security Research is calling on the White House and Congress to boost the Pentagon's science and technology budget by $900 million, to $10 billion. "A dynamic, merit-based military research enterprise" is essential to both universities and national security, the academic group argues in a statement released last month.

That message is echoed in a recently surfaced report by a Defense Science Board task force. It calls for a 30% boost over 3 years in basic research at universities, even if it means diverting funds from applied work. The panel, chaired by Walter Morrow of the Massachusetts Institute of Technology's Lincoln Laboratory, says that a hike in the current $1 billion budget is "judged necessary to counter the increasingly short-term focus of industrial R&D." The first reaction will come in the new president's proposed budget to Congress, due out in February.