

## Briefings

edited by CONSTANCE HOLDEN

### Animal Rights Vet Wins a Round

Nedim C. Buyukmihci won't be punished for refusing to require that his students euthanize dogs as part of a veterinary eye surgery lab. A tenured professor of ophthalmology at the University of California at Davis, Buyukmihci is also president of the Association of Veterinarians for Animal Rights.

He has long been a vocal critic of procedures that ultimately require euthanizing animal subjects. Unhappy with his unauthorized attempts to change course requirements, university officials asked him to relinquish his leadership of the team-taught course, and were considering denying him a merit pay increase. But Buyukmihci fought back, filing suit against the university in 1989, and now he has won.

First, a Sacramento federal court issued a preliminary injunction halting disciplinary action pending a trial, which was scheduled for February 1992. Then, on 9 August, the university decided to accept a permanent court injunction prohibiting it from taking any action against Buyukmihci. Furthermore, in what sources say is a highly unusual if not unique instance of reparations, it agreed to pay him \$75,000 in damages as well as reimburse him for legal expenses. "This is a critical victory for the First Amendment as well as for the animal rights movement," he proclaimed.

University officials profess themselves "pleased" with the outcome of the case, according to a Davis press release. "The university prefers to reach an agreement with members of the university community rather than solve problems through litigation," says the statement.

A spokesperson for the veterinary school adds that the faculty is now evaluating the possibility of offering alternative

courses for surgery instruction. To Franklin Loew, dean of the Tufts University School of Veterinary Medicine, that kind of thinking could have saved the school a pile of trouble. If UCD had been more responsive to the winds of change in the veterinary world, he told *Science*, the Buyukmihci episode could have been prevented. He says that although a very small percentage of veterinary students have qualms about traditional courses, one-third of the nation's 27 veterinary schools now offer alternatives to introductory surgery courses.

### EMF and Male Breast Cancer?

Many studies have suggested a link between occupational exposure to electromagnetic field (EMF) radiation and leukemia, lymphoma, and nervous system cancers. Now, recent research suggests yet another peril: male breast cancer.

In the latest study, published in the August *American Journal*

*of Epidemiology*, scientists at 10 cancer registries surveyed the occupations of 227 men diagnosed with breast cancer from 1983 to 1987. Of these, 33 had been exposed to EMF radiation on the job as electricians, welders, electric equipment repairmen, and broadcast workers. Compared with a control population of men without breast cancer, the researchers estimated that EMF-exposed workers are nearly twice as likely to develop breast cancer. Electricians alone were estimated to be six times as likely to develop the disease.

Scientists, however, are not sure how much importance to attach to the findings. Male breast cancer is exceedingly rare—about one case per 100,000 men is diagnosed each year—and the measurement of EMF exposure is fraught with unknown variables. "The study suggests an association; that's about it," says biochemist Earl F. Walborg Jr., a consultant who prepared a report on the subject for the National Electrical Manufacturers Association.

Johns Hopkins epidemiolo-

gist Patrick Breyse, co-author of a study that appeared in the 23 March *Lancet*, has reported two cases of breast cancer in 50,582 telephone linemen. He agrees that scientists have a long way to go to establish a causal relationship between male breast cancer and occupational EMF. And what about females? "Now that more and more women are holding jobs [where they are exposed to EMF]," Breyse says, "it's possible to do this kind of study on women, too."

### Aerosol Gene Therapy

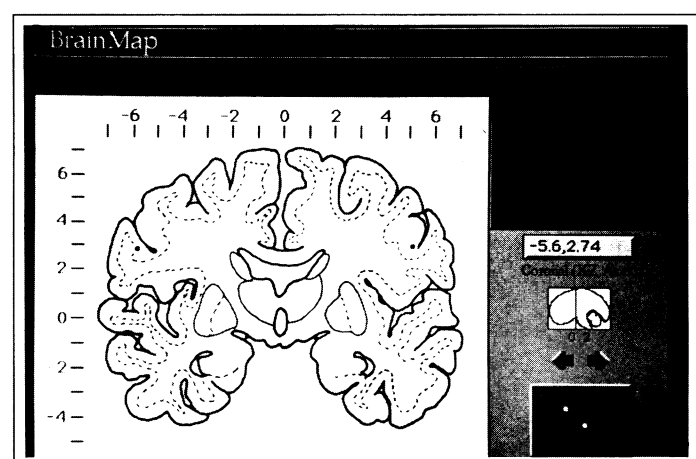
Another gene therapy first has been reported by Vanderbilt University lung specialist Kenneth L. Brigham, who has been using positively charged liposomes to introduce novel genetic material into rabbits' lungs.

Liposomes are those fatty globules that cosmetic manufacturers tout as skin moisturizers. They can also, according to pharmaceutical manufacturers, target drugs to particular cells. And now, the tiny micrometer-sized globules have taken on yet another clinical role: As biological couriers, they deliver a gene to prevent certain lung disorders.

In the May issue of *Clinical Research*, Brigham reports that the new genes were coded for the production of alpha-1 antitrypsin, a protein that inhibits the kind of protein breakdown associated with adult respiratory distress syndrome. It is thought that gene treatment works better than conventional medication because it does better at targeting the protein inside cells.

The experiment, says Brigham, marks the first time that liposomes have been delivered by a simple noninvasive technique—an aerosol device—to transform cells genetically in living animals. If the gene-carrying liposomes can be easily sprayed into patients' lungs, thousands of deaths might be avoided, according to Brigham.

As with other gene therapies,



**Touring the brain.** This plot of lip area sensations projected onto a brain slice is displayed by the new BrainMap program, the first comprehensive database of the human brain. One of the major advances embodied in the program is the generation of a standardized three-dimensional coordinate system covering the entire brain. The user can enter the coordinates for a specific area and retrieve all available information, including literature citations and high-resolution color images. The program can also process data from brain scans and warp them to fit into a standardized image, thus enabling lesions to be located precisely. The system was initiated at Johns Hopkins by neurobiologist Peter Fox, who is now at the University of Texas at San Antonio, and is expected to be available to scientists within a couple of years.

Peter Fox

a major challenge is to ensure that the inserted gene is well regulated, producing enough of the enzyme at the right time, and that it does not disrupt normal cell activities.

This work complements that of Ronald Crystal of the National Heart, Lung and Blood Institute, who in April reported squirting a viral vector—without liposomes—into rats' lungs to transform cells to produce alpha-1 antitrypsin. At this early stage of research, it is a matter of debate which transformation technique might have more clinical value.

## Passion-Pop?

Look out grapefruit juice, step aside OJ: Researchers at the U.S. Department of Agriculture (USDA) are developing a new kind of fruit, as yet unnamed, that is a cross between a wild flower and the passion fruit, is able to withstand freezes that ordinarily wipe out groves of citrus, and, like passion fruit, is suitable for juice.

The saga of the new hybrid began in the mid-1970s, when horticulturist Robert J. Knight of the USDA's Agricultural Research Service in Miami heard of an ornamental fruit-bearing hybrid of the maypop, a Maryland wild flower. Realizing the rich potential of a northern-growing plant that could yield edible, citrus-like fruit,



USDA's Knight poses passionately with new hybrid.

Albert Coya/The Miami Herald

Knight in 1979 began crossing the maypop (*Passiflora incarnata*) with the tropical passion fruit (*Passiflora edulis*).

Early hybrids failed to reproduce well. But after sprinkling seedlings with the hormone colchicine, which doubled the hybrid's chromosomes, the researchers started to see more and more viable plants every year. Now Knight will be publishing the results of a decade of work in a forthcoming edition of *HortScience*. Knight and USDA plant geneticist A. Ann Amis have begun punching up the fertility of the cold-hardy hybrids. "Ann's been busy as a bee pollinating," Knight says.

Commercial cultivation of the yellow or purple fruit, the size of a large orange, probably won't happen for another few years, Knight says. But to a \$3.3 billion-a-year juice industry that loses many millions worth of fruit to winter freezes every year, the prospect of planting the new fruit on land ranging from northern Florida up to the Carolinas must seem, well, quite appealing.

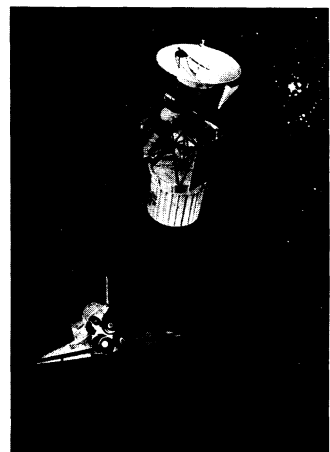
## APA Boycotts DOD

Psychologists struck a blow for gay rights at the American Psychological Association (APA) meeting in San Francisco last month. They vowed to spurn advertising from one of their regular employers, the Department of Defense, so long as DOD continues to maintain that homosexuality is "incompatible with military service."

The DOD does not admit known homosexuals for military service and, according to APA estimates, discharges about 1500 a year. Psychologists' written complaints to the DOD having been rebuffed earlier this year, the APA Council of Representatives resolved to ban all military advertising from APA publications starting in January 1993. The military employs both research and clinical psychologists, and contributes a small but steady stream of classified ads.

## Serendipitous Fix

A ground test gone slightly awry has helped reveal why the gaze of the Magellan spacecraft's antenna has repeatedly wandered off on its own since Magellan went into orbit around Venus a year ago. Engineers had been left scratching their heads after each "walkabout." But now they believe that one problem at least



Artist's rendering of Magellan after being launched from the space shuttle.

has been pinpointed: an error in the design of Magellan's computer software.

The discovery came in late June during a ground-based verification test that was intended to duplicate the spacecraft system. The test system missed an electronic "heartbeat," as has happened four times on the spacecraft. That sent Magellan retreating into a protective mode of operation that took many hours of maneuvering to undo. But on the ground this time, a hardware glitch prevented complete fault protection, which on the spacecraft had always included wiping out all memory of how Magellan got into trouble in the first place. On the ground, the memory was left intact.

The preserved memory revealed that a software design error left Magellan vulnerable for the instant it took to switch from routine chores to top priority operations such as turning the spacecraft. If certain commands intruded at that moment, the computer would go into an "infinite loop" that cut

off the essential electronic heartbeat and led to adoption of the backup mode.

The software error has now been corrected. But there remains the fifth walkabout, which came last September, that did not fit the pattern of the other four. The computer jumped from one kind of memory to another, something it was not supposed to be able to do. Magellan engineers are still working on that one.

## Indigo for Computer Graphics Blues

Say you'd love to have three-dimensional, interactive graphics with animation capability, but these toys are a bit too pricey for your home or office computer and it's not really feasible for you to dash over to your nearby national supercomputer center.

A solution may be on its way: Indigo, a desktop workstation that offers complex three-dimensional capabilities and an easy-to-use visualization environment—all for less than \$10,000. The system was the talk of the floor at a recent gathering in Las Vegas sponsored by the Association for Computing Machinery. The price of Indigo, which is produced by Silicon Graphics Computer Systems of Mountain View, California, puts it within reach of a substantial number of would-be users. And the visualization environment makes it easier for scientists who are not computer gurus to build applications. "The horsepower's there for people who don't want to become specialists," said Kelly Booth, director of the media and graphics center at the University of British Columbia. And, she adds, "you can use off-the-shelf solutions."

Larry Smarr, director of the National Center for Supercomputing Applications at the University of Illinois, hailed the new system as having "broad applications for science....Indigo will take three-dimensional interactive graphics from pioneering to routine use over the next 5 years."