

Scientist Convicted for Monkey Neglect

Judge finds six monkeys had inadequate veterinary care; NIH has yet to decide on reinstatement of suspended grant

Edward Taub, the psychologist charged with mistreating the monkeys at his Silver Spring, Maryland, laboratory, was found guilty on 23 November of six counts of animal cruelty. A district court judge determined that he failed to provide adequate veterinary care to six of his animals. The fine of \$3015 was suspended pending an appeal. Taub was exonerated of charges that he inflicted unnecessary suffering and pain on his 17 monkeys and that he supplied inadequate food, ventilation, and cage space.

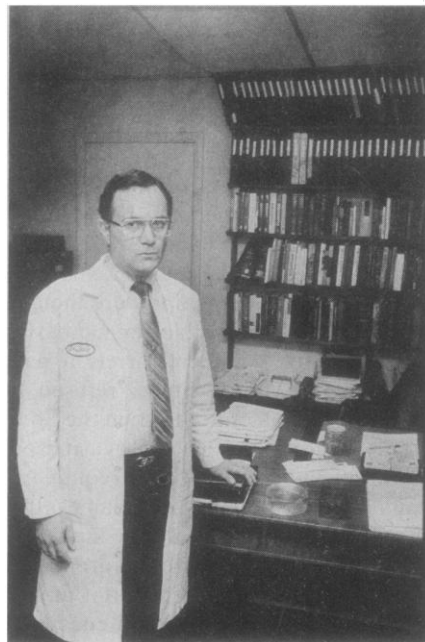
The monkey trial has already earned a prominent place in the history of the animal welfare movement and drawn support from animal lovers across the country. The affair has set at least two precedents: it is believed to be the first time that local law enforcement officials have seized animals from a research laboratory, and it is the first time the National Institutes of Health (NIH) has suspended a grant because of questions relating to the treatment of experimental animals.

The monkey story began last May when Alex Pacheco, 23, a part-time undergraduate at George Washington University, presented himself at the Institute for Behavioral Research (IBR) and asked for a job that would give him experience in an animal laboratory. Unaware that he was an animal welfare activist, Taub took him on as a part-time volunteer.

The laboratory monkeys—16 crab-eating macaques and one rhesus macaque—were being used in research related to the rehabilitation of stroke victims. Twelve had undergone dorsal rhizotomies resulting in total denervation of a forelimb. Such monkeys are notoriously difficult to take care of because they treat the deafferented limb as a foreign object, pick at it, and frequently chew off fingers. Because the limbs have no sensation they are also vulnerable to injury. It was Taub's practice to bandage the lesions on the limbs, but the bandages can cause more lesions. Many deafferented monkeys have continuous sores in various stages of healing.

Pacheco was put in charge of a project where he tested two monkeys' abilities to use their deafferented limbs by getting them to pick raisins off a "dexterity board." It did not take him long to

become concerned about the lot of the monkeys. He started taking pictures and keeping a daily log. At one point during the summer, thinking of some sort of public exposé of the situation, Pacheco traveled to Manhattan where he showed pictures to actress Gretchen Wyler, vice chairman of the Fund for Animals. After learning that Maryland's anticruelty law covers laboratory animals (in most states



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Edward Taub

Scapegoat for antivivisectionists?

laboratories are exempted from such laws), he consulted with Michael Fox, a veterinarian who works at the United States Humane Society.

In late August, while Taub was away on vacation, Pacheco led four animal experts, including Fox, on clandestine tours at IBR. The visitors agreed with Pacheco that the monkeys were held in what Fox called "appalling" conditions and needed veterinary care. They signed affidavits to that effect and on 11 September the Montgomery County police arrived and seized the animals, as well as stacks of records.

The ensuing month was a hectic one for the monkeys. Housed in the basement of a private home in Rockville, they were examined by two court-ap-

pointed zoo veterinarians who claimed some of them needed antibiotics, radiographs, and vitamin C supplements. Taub meanwhile obtained a court order for the return of the animals to IBR, and this precipitated a kidnapping by persons still unidentified. After the monkeys disappeared, frantic negotiations went on between the police and members of Pacheco's group, People for Ethical Treatment of Animals (PETA). Five days later the monkeys were delivered to their Rockville quarters unharmed. Shortly afterward, Taub was indicted on 17 counts of animal cruelty (*Science*, 2 October, p. 32; 9 October, p. 165).

During this time NIH had also been conducting an investigation. Staff from the Office for Protection from Research Risks had visited IBR and found that it "failed in significant ways" to comply with guidelines for the care and use of laboratory animals. Among the complaints were that IBR did not provide adequate veterinary care, that its animal care committee was not properly constituted, and that the physical facilities for housing the monkeys were inadequate and "grossly unsanitary." NIH thereupon suspended what was remaining of IBR's 2-year grant of \$221,932.

The monkeys were supposed to be returned to the IBR for the duration of the trial, but they did not stay long. During a midnight cage cleaning conducted by Taub's assistant and co-defendant John Kunz, two of the monkeys were put in a cage together. They had a fight in which one was injured and died the next day. The remaining 16 were moved again, this time to the NIH's animal quarters in Poolesville, Maryland.

The 5-day trial, which began on 27 October, featured a parade of experts summoned by each side. Roger Galvin, the lawyer for the state, dwelled at great length on the alleged filth of the monkeys' surroundings, repeatedly referring to the buildup of feces and calling attention to a dirty discarded bandage which, judging from Pacheco's photographs (taken over a 3-month period), had lain untouched in one cage for a month and a half. Galvin also sought to show the monkeys were badly nourished, unable to feed themselves properly because of

missing fingers, and in danger of infection from eating food that had mingled with urine and feces. But the strongest evidence was supplied by the veterinarians who had examined the animals and found, among other things, several bone fractures and a case of osteomyelitis.

Central to the defense's case was the argument that people who have not worked with deafferented monkeys—including the veterinarians who testified for the prosecution—are not qualified to assess their problems. Monkeys are messy creatures, the defense added, and can mess up their quarters and dirty their bandages within moments after they have been cleaned. Shown photographs of lesions on the monkeys' arms, the defense expressed the belief that IBR operated within respectable limits. Two experts from the University of Pennsylvania found it difficult to defend the dirty cages and piles of feces shown in the photographs. But another Pennsylvania expert, neuroscientist Michael Goldberger, who worked with Taub on his last grant application, was unperturbed by conditions in the laboratory, which he said should be judged by whether the animals are healthy. "I saw nothing I wouldn't expect to see if I went around the country looking at primate colonies," he said. Psychologist Solomon Steiner from the City University of New York, who is on the board of directors of IBR, was also satisfied. He last visited the laboratory on 5 June and said he saw only "very good specimens of deafferented monkeys."

Taub himself admitted to a housekeeping problem at the laboratory during his 2½-week vacation: no one showed up to feed the monkeys or clean up on seven different days. Taub, like the other defense witnesses, maintained that the health of the animals is the only true indicator of whether conditions are adequate. Taub and his lawyers repeatedly insisted that aside from their deafferented limbs the monkeys were "remarkably healthy."

Judge Stanley Klavan, however, professed himself "deeply concerned" about the matter of veterinary care, noting that no veterinarian had checked the animals for 2 years prior to their confiscation. At the time of the verdict, four of the animals were still getting medical treatment at the NIH center. One monkey had a fractured arm amputated to prevent the spread of osteomyelitis. Doctors were considering amputation for another monkey whose fractured arm was not healing. A third monkey had two fractures in one arm; since both arms were deafferented he was being consid-

ered for euthanasia.

Science asked Taub after the trial why one can call animals with fractures and infections "healthy." Taub said that the fractures were healing properly before the monkeys were seized, and that for a deafferented monkey it is not proper to put a bandage or splints on a fracture. As for the osteomyelitis, Taub said there was no way of determining that the animal had the disease at the time of the

Alex Pacheco

His actions led to unprecedented animal seizure.

seizure. He contended that when the zoo veterinarians examined Nero (the monkey whose arm was subsequently amputated) the evidence for infection was equivocal, but that a month later, at NIH, it had become fulminating. Taub was asked why his lawyers did not argue in court that infections might have occurred after the monkeys were seized, and he replied "they didn't have a chance."

Taub plans in his appeal to use some statistical evidence that was not allowed in his trial, a study of the attendants' absences during Taub's vacation which was prepared by psychologist Edgar E. Coons of New York University. The study shows that, based on attendance records over the prior 14 months, there were only seven chances in a trillion that the usually conscientious lab attendants would be absent so much. Furthermore, on three of those days, Pacheco brought people in to look at the laboratory. This is a coincidence whose statistical probability is less than 2 in 1000, Taub said in a telephone interview with *Science*.

Scientists throughout the country have been shocked by the Taub case, initially perceiving it as a bid by antivivisectionists to procure a court ruling against animal experimentation. Taub himself has fostered this impression by attributing his problems to a conspiracy of those who want to eliminate the use of all animals in research. In fact, the nature of the research was never questioned in

court. Although some observers have questioned its validity, rehabilitation expert John Basmajian of McMaster University in Ontario says Taub's work "clearly is leading the way to new therapies in stroke patients."

The issues in the trial all had to do with animal care. The main repercussions will probably be felt at NIH, which is looking for new ways to ensure that its grantees take proper care of their animals. Wil-



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liam Raub, director of extramural research and training at NIH, says, "we are planning to introduce a series of visits to awardee institutions" both to check animal facilities and forestall erosion of public confidence in NIH's sense of responsibility. Changes are also being considered in the makeup and responsibilities of animal care committees which are required for grantees who have not received accreditation from the American Association for the Accreditation of Laboratory Animal Care.

The Department of Agriculture, which is responsible for ensuring the humane care and treatment of laboratory animals under the Animal Welfare Act of 1966, is also reviewing its procedures. An inspector from Agriculture visited IBR last April, a month before Pacheco arrived, and found nothing out of order except a few floor tiles. Now as a result of an internal review conducted last month, inspectors will be rotated on a random basis; violations will be pursued with renewed zeal, and training and monitoring of inspectors will be upgraded.

Taub may get both his monkeys and his grant back. The monkeys are still at NIH, pending a new hearing on their disposition. NIH will consider reinstating the grant after Taub has made improvements following NIH recommendations and submitted a special scientific and financial report.

NIH officials are still puzzled as to how a reputable investigator, his work

sanctioned by government support for over 20 years, could have allowed such neglect of his expensive subjects. But Taub says NIH is trying to hold him to

unrealistically high standards. He says none of the five violations NIH identified affected the humane care of the monkeys. Furthermore, he adds, "I suspect

that there is almost no primate or animal facility in this country that you could not go through and find five violations."

—CONSTANCE HOLDEN

Cline Loses Two NIH Grants

*Tough stance meant as a signal
that infractions will not be tolerated*

The National Institutes of Health (NIH) has stripped a researcher of two of four grants because he prematurely conducted the first gene therapy experiment in humans. The withdrawal of funds—totaling \$190,000—is the second set of sanctions that has been issued by NIH against Martin J. Cline, a professor at the University of California at Los Angeles (UCLA), on the same matter. Last spring, the agency announced several restrictions on Cline's research. Together, institute officials say, NIH's actions send a clear signal to other researchers that violations of rules governing recombinant DNA research and human experimentation will not be condoned.

On 17 November, acting NIH director Thomas Malone accepted recommendations made by the advisory councils of three institutes that some, but not all, of Cline's federal grants be terminated.

- The National Heart, Lung, and Blood Institute advisory council voted 14 to 1 to terminate a 3-year, \$240,000 grant at the end of its first year of support this spring.

- The National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases advisory council reached a general consensus to continue funding a 3-year, \$118,000 grant for nonclinical research.

- The National Cancer Institute advisory board struck a middle course. It cut Cline off from \$30,000 that is part of a larger program project grant that supports several researchers conducting clinical investigations. The board, however, recommended that the institute maintain Cline's \$100,000 grant for nonclinical research. That grant expires this spring.

Cline may appeal the NIH decision, but told *Science* that he is "uncertain" whether he will do so. He may continue to apply for grants involving recombinant DNA research and human experimentation but, according to the NIH decree last spring, he must obtain sever-

al more levels of approval from UCLA and NIH committees that oversee such research and also provide written assurance that he is complying with federal regulations. The sanctions are in effect until May 1984.

Cline found himself in trouble with UCLA and federal authorities after he introduced recombinant DNA material into two terminally ill thalassemia patients in Israel in July 1980 (*Science*, 31 October 1980, p. 509, and 12 June, p. 1253). Although he had approval to insert two genes separately, Cline went further and introduced them in combined form, which was not permitted. Cline has contended that the separated genes tend to recombine within the cell so that there is no substantive difference between the approved experiment and the one he actually conducted. Critics of the experiment said that more animal tests were needed before the clinical test could be authorized. The patients apparently suffered no ill effects from the inserted genes, nor has Cline reported that the patients received any substantial benefits. Last February Cline resigned as chief of the hematology-oncology division, but remains a tenured professor at UCLA. He wrote to NIH, "I greatly regret my decision to proceed with the recombinant DNA experiment . . . I exercised poor judgment in failing to halt the study. . . ."

Members of the advisory councils and observers of the meetings said that hardly anyone disputed NIH's first course of action last spring against Cline. But they were ambivalent to what extent he should be punished further. George T. Brooks, associate director for extramural activities for the arthritis institute, said, "There was recognition of good research [by Cline] and the desire to see him continue. But there was concern about poor judgment. It was a delicate balance. The decision wasn't easy." In the end, the final recommendations reflected a range of opinions.

The heart institute council declared in its recommendations that it considered Cline's actions "to be reprehensible and to warrant disciplinary action." An official in NIH's office of extramural affairs, Mary Miers, said that the council was "extremely concerned about the effect of this case on other blood research. Cline's experiment was most closely related to this institute's program, so that the council members were more inclined to be tougher on him."

The arthritis council said that, while it recognized the "seriousness of Dr. Cline's transgressions," NIH's previous sanctions were "sufficient chastisement."

The cancer institute was not as convinced that Cline warranted further castigation and reportedly cast a split vote on whether to fund the two grants. One board member said that part of the group's concern was recent congressional scrutiny of the cancer program and the need "to satisfy legislators" that the institute was acting responsibly. But, the member said, there was also "legitimate concern that Cline had broken rules in important ways." When votes were finally cast, some members voted differently on each of the two grants, reflecting their ambivalence, the member said.

Another member said that "by the time the issue got to us, it had taken on much more significance in the public eye and in the biomedical community. It meant we couldn't make the most impartial decision. Some people were calling for his head. I would have preferred less punishment than more."

Some researchers and observers were surprised that the advisory boards went beyond the earlier NIH penalties. Cline himself said he did not expect such a judgment. "I'm upset," he said. "The cutoff limits my abilities to continue research." Cline said he is still submitting grant applications to NIH but is turning more often to nonfederal sources for money.—MARJORIE SUN