Malaysian authorities fogged thousands of pig farms and nearby houses with insecticide and inoculated tens of thousands of people at risk with a vaccine for JE.

But the disease kept spreading. By late December, when several dozen cases had been reported, it reached the southern state of Negeri Sembilan. Scientists also began to notice that the outbreak wasn't behaving like JE. For one, it was killing pigs, which are carriers of JE but rarely its victims. For another, it was felling adults, whereas JE mostly kills children. Third, it seemed to affect only those who had been in close contact with pigs while their family members stayed healthy, which didn't fit the pattern of a mosquito-borne disease. Furthermore, some people contracted the disease after being vaccinated for JE. And finally, scientists were unable to isolate live virus from any of the patients whose blood contained JE antibodies.

At the time, the investigations were still handled by the country's Institute for Medical Research, a part of the Ministry of Health, which stood by its initial diagnosis. But when all prevention measures failed and the epidemic spread, the government sought help from Lam Kai Sit, head of the University of Malaya's department of medical microbiology. Five days after they obtained the first patient blood and cerebrospinal fluid samples on 1 March, Lam and his colleague Chua Kaw Bing had isolated a virus that, judging by its appearance, belonged to the Paramyxoviridae, a family that doesn't include the JE virus. They noticed that the virus caused cells to clump together in giant multinucleate cells or "syncytia." Mackenzie then suggested that the Malaysian samples be tested for Hendra, which also produces syncytia and causes encephalitis in humans, and for Menangle-virus, a paramyxovirus that was recently isolated from Australian pigs.

Chua took the samples to the CDC in Atlanta, and tests showed that Mackenzie's hunch was correct. The new virus reacted with antibodies to the Hendra virus, indicating a similarity between the two. The CDC then sequenced the viral genome and showed the new virus to be about 20% different from the Hendra virus, says Brian Mahy, director of CDC's Division of Viral and Rickettsial Diseases. The Nipah virus was found not only in the tissues of patients, but also in sick pigs and in 11 abattoir workers from Singapore who had fallen sick in March after contact with Malaysian pigs.

Although there have been no cases of human-to-human transmission, the CDC classified the new virus as a P4-pathogen. That meant samples can be collected and handled only by researchers clad in space suits and examined only in high-level safety labs. As for the virus's mode of transmission, one theory is that it is present in pig lungs and urine and that humans can get infected by inhaling aerosols. What is particularly worrying, says Mahy, is that one of the Australian victims of the Hendra virus died 14 months after he was infected. If the new virus has a similar lag time, he says, the current fatalities may only be the beginning.

Another riddle is how the virus entered the Malaysian pig population. Scientists have shown that four species of Australian fruit bats normally harbor the Hendra virus, and they suspect horses could become infected if they ingest bat urine or part of a bat placenta, both of which contain the virus.

> "The ministry made an early presumptive diagnosis, and they have difficulty admitting it was a mistake."
>
> —Jane Cardosa

As for any link to JE, most researchers now think that a few cases of JE may have occurred simultaneously when the outbreak began but that JE didn't cause the widespread epidemic. The presence of antibodies in some patients, they say, is not surprising given JE's prevalence in Malaysia, and because many people—especially pig industry workers—may have been exposed to JE without getting sick. "I don't think the JE virus has been involved in any significant way in this current epidemic," says Mahy.

But Malaysian health authorities remain convinced that JE is involved. Lam says he alerted the ministry immediately after the CDC informed him on 18 March about the new virus. But 5 days later, a press release by the ministry's director-general summed up the arguments behind the initial diagnosis and repeated that "the present outbreak is confirmed as JE." The release briefly mentioned the discovery of the Hendra-like virus but said "we are not sure if the virus is a pathogen."

This week, Mohamad Taha Arif, director of the Disease Control Division of the Malaysian Ministry of Health, said that "currently the [Nipah] outbreak is more prominent," but insists there is a dual epidemic and that measures to prevent the spread of JE need to remain in place. He says there wasn't enough proof on 18 March to say that the new virus had caused the epidemic.

Some Malaysian scientists say they are not

ScienceScope

Sold! Elsevier Science of the Netherlands has bought Cell Press, publisher of the journal *Cell* and its sister publications *Immunity*, *Neuron*, and *Molecular Cell*. Clearly regarding the acquisition as a coup, outgoing Elsevier CEO Herman Bruggink told shareholders this week that the purchase will help the journals move strongly into electronic publishing.

Benjamin Lewin, *Cell*'s editor since 1974, will stay at the helm. "Ben Lewin is *Cell*," says George Yancopoulos, a reviewing editor for the journal. It "is dominated by [his] view of what is hot."

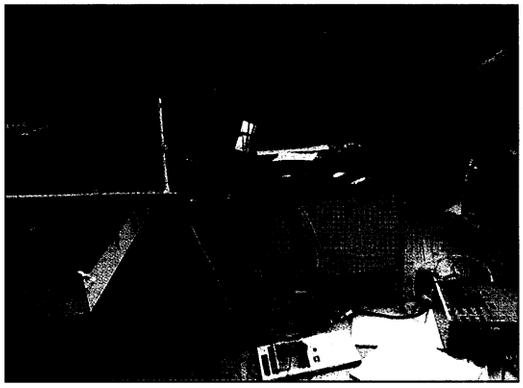
All in the Family Astronomers have discovered another star that is orbited by more than one planet. Two teams announced this week that a pair of giant planets is circling the star Upsilon Andromedae—bringing the number of known planets in this "stellar system" to three. The find means that three stars, including the sun and a distant pulsar, now have confirmed planetary families (*Science*, 17 January 1992, p. 290).

The researchers, who have submitted their findings to *Astrophysical Journal*, also estimated the planets' temperatures. The middle planet is probably above the boiling point of water, says Timothy Brown of the National Center for Atmospheric Research in Boulder, Colorado, whereas the most distant one is below freezing. As for the scorched innermost planet, which whirls around its sun in just 4.6 days, Brown says it is "undesirable real estate."

Bucket Brigade A 20-liter plastic bucket may not be high-tech, but California engineer and former nuclear weapons designer Bill Wattenburg says it's a cheap, clean, and mobile way for Kosovo refugees to dispose of their waste. Wattenburg, who has an enviable track record of promoting the creative use of everyday materials to confront crises, including airdrops of food to help Bosnian refugees, was stirred by recent images of squalor to propose that refugee families be given buckets to use as latrines.

The idea is winning over former colleagues at Lawrence Livermore National Laboratory in California. "There's often a giggle factor to his ideas, but they work," says Milton Finger, a senior Livermore administrator. And it may even be implemented. According to the Pentagon's Colonel Jay Erb, military brass have passed the plan along to relief teams in the Balkans.

neurosciences programs, where they ransacked 12 labs, destroying microscopes, computers, and other equipment. In neuroscientist Walter Low's lab, for example, they damaged incubators, resulting in the loss of several cell lines used to test compounds that might block neuron death in diseases such as Alzheimer's and Parkinson's. Low's group also may have lost a hard drive full of preclinical data on a vaccine therapy for brain cancer being tested on human tumor cells. "We were just completely devastated," says Low, whose grad student discovered the damage around 6 a.m.



Aftermath. Computer equipment was among the items vandalized in neuroscience labs.

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Although some of the animals, such as Hsiao's Alzheimer's mice, are irreplaceable, insurance will cover much of the damage. In addition, the Minnesota Medical Foundation has set up a $25,000 fund to help researchers rebuild their labs. And a local cancer survivor has offered a $10,000 reward for tips on the perpetrators. **–JOCELYN KAISER**

GRADUATE FELLOWSHIPS

Fewer Minorities Under New NSF Rules

Last month the National Science Foundation (NSF) selected 900 aspiring young scientists to receive its prestigious graduate research fellowships. But the news was tempered by the fact that the number of minorities chosen had dropped by more than half from last year's total, from 175 to 76. The decline, following the cancellation of a separate competition for underrepresented minorities begun 20 years ago, is the latest fallout from legislative and judicial rulings prohibiting the use of race as a selection criterion in education.

"I'm not surprised," says biologist Joel Oppenheim, head of the Sackler Institute of Graduate Biomedical Sciences at New York University, which aggressively recruits minority students. He notes that the elimination of affirmative action programs has also had a chilling impact on minority enrollment in college and graduate schools.

The drop comes in the midst of declining interest in the fellowship program, which received 13% fewer applications this year (from 5548 to 4796). For minorities, however, the decline was an even steeper 20%—from 697 to 559—despite an increase in NSF's outreach efforts to schools with sizable minority populations. "There is a feeling among minorities that they didn't stand as good a chance once NSF dropped its sheltered fellowship program," says Rice University mathematician Richard Tapia, a member of NSF's oversight National Science Board.

NSF has traditionally used targeted programs to accomplish its congressional mandate to increase participation in science by members of all segments of society. But officials are reviewing some two dozen programs to see if they still satisfy both the law and the current political climate. They revamped the 47-year-old graduate fellowship program last year after being sued for discrimination by a white student who was denied the chance to apply to the minority component of the program (*Science*, 2 January 1998, p. 22). The agency paid $95,400 in a pretrial settlement and soon after announced that it would no longer set aside 15% of the total number of slots for a competition reserved for African-American, Hispanic, and native American students. Under the new rules, all applicants for the 3-year, $15,000 a year awards were funneled into one competition.

Hoping to minimize any negative impact of the new rules, NSF officials dispensed with an initial numerical rating of each applicant—based on such quantitative factors as Graduate Record Exam scores, undergraduate grade point average, and a ranking of the baccalaureate institution—that was thought to put some minority candidates at a disadvantage. The change was designed to give more weight to less tangible factors such as persistence and commitment. Officials also ended the practice of assigning only one reviewer to applications that had received a low rating. "This year we heavily emphasized that reviewers needed to look at all the material in the application," says Susan Duby, head of NSF's division of graduate education. Every application was read by at least two reviewers, she says. But these measures apparently weren't enough to avert the sharp drop in awards to minority students.

Duby says NSF plans to be even more aggressive next year in spreading the word about the fellowship program and counseling potential applicants on how to improve their odds. But Tapia, who has successfully boosted minority participation in graduate programs at Rice, cautions that NSF should not expect to see the number of minority

ScienceScope

Skating to Extinction Marine researchers want international action to save the barndoor skate, which they fear could become the first saltwater vertebrate to be fished to extinction. Last year, Canadian biologists Jill Casey and Ransom Myers concluded that trawlers targeting other seafood had unintentionally wiped out most of the North Atlantic's barndoors (*Science*, 31 July 1998, p. 690).

Now, after reaffirming the fish's plight at a 19 March technical workshop at the New England Aquarium in Boston, 10 scientists are calling on U.S. and Canadian authorities to restrict bottom fishing in the skate's few known strongholds. They also tacitly endorsed a bid by two environmental groups to get the U.S. National Marine Fisheries Service (NMFS) to list the skate as endangered. "Without strong measures," says Myers, "I doubt the species will survive."

Commercial fishing interests are promising to fight any proposed listing. NMFS officials, meanwhile, have a year to ponder the issue.

Mob Rule In an 11th-hour campaign to tip the scales in their favor, supporters of a controversial new data-access law flooded the White House Office of Management and Budget (OMB) in early April with letters supporting its implementation. Many scientists oppose the provision, pushed by Senator Richard Shelby (R–AL), which would force taxpayer-funded researchers to hand over raw data to the public on request (*Science*, 2 April, p. 23). But when a public comment period closed on 5 April, supporters appeared to have cranked out the majority of more than 10,000 comments sent to OMB, although no exact count was available.

Stacks of pro-rule comments were identical letters from members of Gun Owners of America, which says the rule will help it "expose all the phony science used to justify many restrictions on firearms." Members of English First also backed the plan en masse, saying it will open to scrutiny studies supporting bilingual education.

Whether OMB will give greater weight to the mass-produced missives or to the fewer personal appeals from researchers detailing how the law could disrupt their work was unclear. A spokesperson said that both the "amount of interest" and "substantive arguments" will influence a revised proposal due later this year.

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