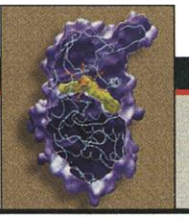
PAGE 2229
Hopeful signs on U.S. budget



2231
How cancer cells evade a wonder drug

NATURAL DISASTERS

Texas Medical Center Staggered By Deadly Tropical Storm

HOUSTON—Building on a Houston floodplain is a dicey proposition, and last week the dice came up snake eyes for the Texas Medical Center (TMC). Years of scientific work were destroyed, millions of dollars' worth of equipment crippled, and thousands of lab animals drowned when the region was hit with a second burst from Tropical Storm Allison. All research at TMC was shut down as scientists set to the grisly task of clearing out carcasses before they rotted in the sweltering Houston heat.

The TMC is the largest collection of medical research facilities in the world, including the University of Texas M. D. Anderson Cancer Center (MDACC), the University of Texas Medical School at Houston (UTMSH), and Baylor College of Medicine. It also sits at the bottom of an 8-kilometer-square bowl-like depression in the Houston landscape bordered to the south by the Braes Bayou.

Under water. Massive flooding like this wreaked havoc on biomedical facilities in Houston's bayou region.

Rains from Allison's first assault on 7 June had already filled the bayou to the brim. So when Allison unexpectedly returned from the Gulf of Mexico on 9 to 10 June to drop another 36 centimeters over the research complex—an event that occurs on average less than once per century—the water had nowhere to go but into the TMC buildings. "There is no way any [flood prevention] system could survive that amount of rain," says Rice University flood expert Philip Bedient.

A full accounting of the disaster, which claimed up to 24 lives and cost the region billions of dollars, may take months, but the flood's toll on TMC research is already staggering. "We had 2500 animals, from mice to large animals, and we believe we have lost all of them," says UTMSH dean Maximilian Buja, adding that the floods and resulting power outages probably also destroyed the school's new experimental nuclear magnetic resonance facility, ruined a cyclotron used for positron emission tomography scans, and shut down freezers that preserve valuable tissue samples and antibodies.

Flooding at Baylor damaged at least three multimillion-dollar electron microscopes, possibly irrevocably, and killed animals in the older of their two vivariums. "We got everything from the cows down to the rabbits out in time," says Claire Bassett, vice president for public affairs at Baylor. But 30,000 mice and rats may have drowned, she says. The MDACC miraculously escaped serious damage, however, and its researchers worked through the weekend to help others save perishable materials, says MDACC Chief Academic Officer Margaret Kripke.

Insurance and federal aid money should replace most of the lost material, but researchers can never get back the time they have invested. For example, some of the drowned transgenic mouse colonies at UTMSH took a decade to build, and only a minority can be regenerated from breeding pairs sent to other universities. "This is a devastating loss," says George Stancel, dean of the graduate school of Biomedical Science at UTMSH.

But it could have been even worse. Only four of the nine stacked racks of mouse cages in the Baylor vivarium were underwater, says Baylor molecular biologist Joe Bryan. "We lost critical experiments," says Bryan. "But we still have breeding stock for most of the lines." Bryan estimates that it will take 6 to 8 months to regenerate his mouse herd.

A higher priority is the cleanup. Last week Bryan and other scientists donned hazard suits, rubber boots, and gas masks before descending into the basements to gather dead animals and dump them into biohazard bags destined for the incinerator. Dehydration from the intense Houston summer heat forced most people back to the surface within 45 minutes. And the smell? "I'll leave that to your imagination," says Bryan.

Emergency power and communications systems have now been restored to almost all of the buildings, but the air conditioning was expected to take a few more days. All research remains on hold as faculty members join forces with relief workers to dig out—and dry out—after the disaster.

–MARK SINCELL

Mark Sincell writes from Houston.

HUMAN SUBJECTS

Volunteer's Death Prompts Review

Clinical researchers at the Johns Hopkins University Bayview Medical Center in Baltimore braced for a round of public investigation last week after reporting the death of a volunteer in a study of lung function. The study, funded by the National Institutes of Health (NIH), was directed by Hopkins asthma researcher Alkis Togias, with Solbert Permutt as co-investigator. Healthy volunteers in the experiment inhaled two chemicals that have contrasting effects on the lungs' airways—one constricting and the other relaxing them—yielding data that may shed light on the causes of asthma.

Hopkins made public a short summary of the case on 13 June, saying that an investigation was still under way, but that details would be withheld to protect the volunteer's family. Hopkins later released a copy of the research protocol and consent form. A university official then confirmed press reports that the volunteer, who died on 2 June after several weeks in the hospital, was a 24-year-old Hopkins lab technician named Ellen Roche.

CREDITS: PAT SULLIVAN/AP; (INSET) L.M. OTERO/AP