

# SciTech Developments to Watch

EDITED BY  
CATHERINE ARNST

## INNOVATIONS

### Of Lice and Sleeping pills

» Scientists have identified the genes in blood-sucking body and hair lice that control how they break down human blood into energy and waste. After screening 1,152 louse genes, researchers from **Purdue** and **Harvard** universities say they have also pinpointed a gene that helps lice fight off potentially deadly infections. Interfere with such genes, and you may get a new method for controlling the disease-spreading insect.



» The first long-term study of a new sleeping pill has found that it is just as effective in helping chronic insomniacs get some shut-eye after six months of use as it was in the first week. In addition, study participants developed no major side effects. Doctors generally discourage long-term use of sleeping pills on the grounds that many such medications, even when nonaddictive, tend to lose their efficacy over time. But patients taking the experimental drug Estorra, made by **Sepracor**, slept an average of 30 to 40 minutes longer per night than those on placebos, both at the beginning of the study and after six months. The longest study of a sleeping pill prior to this was five weeks. Doctors at **Duke University** carried out the Estorra study. The treatment will be reviewed by the Food and Drug Administration in 2004.



## DISEASE

### GUAM'S FLYING FOX BAT: A DEADLY DELICACY?

**SCIENTISTS HAVE LONG** tried to learn why the Chamorro people of Guam develop a brain disorder called ALS-PDC—closely linked to Parkinson's, Alzheimer's, and Lou Gehrig's disease—at 50 to 100 times the incidence elsewhere. The answer could lie in the diet of the flying fox bat, say researchers led by Paul Alan Cox of the **National Tropical Botanical Garden Institute**. Their discovery may shed light on the development of some neurodegenerative diseases.

Guam's flying fox bats are

a prized food of the Chamorro. And the bats are known to eat cycad seeds, which contain a neurotoxin called BMAA. The amount of toxin in the seeds is too small to be dangerous to humans. But the researchers found that BMAA accumulates and becomes more potent as it moves up the food chain—a process called biomagnification. When autopsies were performed on Chamorro patients who died of ALS-PDC, high concentrations of BMAA were found in their brains.

## DRUGS

### A NEW WAY TO FIGHT HEPATITIS C

**MORE THAN** 170 million people worldwide are infected with hepatitis C, a virus that can cause liver cancer. Patients are commonly treated with a drug called ribavirin. But it's less than ideal, triggering anemia in more than 20% of patients, and leaving some so debilitated they are forced to abandon treatment.

An experimental drug called Viramidine may eventually provide an alternative. It is a close

chemical cousin of ribavirin, but while the older drug can pool destructively in red blood cells, Viramidine is better at bypassing the blood cells and going straight to the liver.

**Valeant Pharmaceuticals**, formerly ICN Pharmaceuticals, developed both drugs. And it announced in early November that results from a Phase 2 clinical trial had shown that Viramidine may be as effective as ribavirin against hepatitis C but can slash the patients' risk of developing anemia in half. The company will begin late-stage trials this year, hoping to have the drug on the market by 2007. —Arlene Weintraub

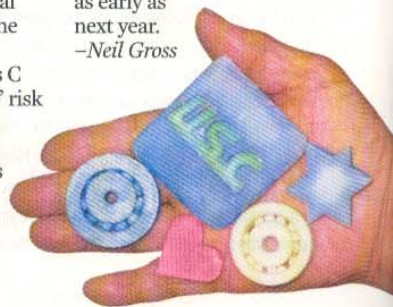
## ENGINEERING

### RAPID PROTOTYPING GETS FASTER AND CHEAPER

**SINCE THE LATE** 1980s, rapid prototyping (RP) has evolved from a tool for making factory molds and dies to a low-volume technique for making finished parts, and even consumer product prototypes. One type of RP machine turns computer models into functional parts by creating thin layer upon layer of powdered metal or plastic, fusing each layer into a solid. This so-called sintering is done by scanning a laser back and forth within the part's often-intricate outline. But with most such machines, it takes hours to build a large 3-D shape.

Behrokh Khoshnevis, a professor of industrial and systems engineering at the **University of Southern California**, says he has a better idea. Instead of sintering a layer by scanning it with a laser beam, his system quickly fuses the whole layer under an oven-like electric or gas heater. The powder outside the part's outline doesn't solidify because it gets treated in advance with a special liquid. Khoshnevis says his patented approach can polish off each layer in less than 15 seconds. And it doesn't need a laser, which can cost tens of thousands of dollars. He has licensed the process and hopes to see products as early as next year.

—Neil Gross



(LEFT) SPL/PHOTO RESEARCHERS INC.