# RANDOM SAMPLES

edited by CONSTANCE HOLDEN

## Errant Spacecraft Found in Ghana

When tribespeople in northern Ghana's bushlands found a re-entry capsule attached to billowing parachutes last year, no one knew quite what to make of it. Last week the mystery was finally solved: The capsule was identified as a German-Japanese satellite that disappeared after its launch a year ago (*Science*, 27 January 1995, p. 447).

The 400-kilogram EXPRESS capsule, which contained equipment for materials experiments, was launched from Japan on 15 January 1995. The rocket veered off course and the probe, scheduled for a 5-day orbit, fell silent after two Earth orbits and was presumed lost at sea.

Instead, it was lost in Ghana. The probe's parachutes deployed, letting it down relatively unscathed. The Ghanians, seeing Cyrillic lettering on the Russian-made chutes, first feared the object might be some radioactive military hardware. Eventually, after the Russian embassy denied any connection with the capsule and a special commission of Ghanian scientists found no threatening radioactivity, the probe was trucked to a nearby airport for storage.

It was only after a German diplomat read a magazine article about the mystery capsule that scientists at Germany's space agency, DARA, took another look at the flight plans. "Ghana matched the flight line," says DARA spokesperson Vanadis Weber in Bonn. "So we sent a DARA team there this month. It's definitely the lost EXPRESS capsule." Apparently the craft never attained its full orbiting altitude and was sucked back into Earth's atmosphere over Africa. DARA officials—who endured considerable heat when the $42 million mission apparently bombed—are now negotiating with Ghanian authorities for return of the craft.

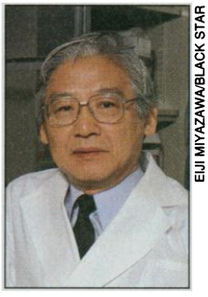
If its interior is undamaged, scientists may yet get data from some of the probe's six experiments, according to Klaus Berge, DARA's managing director. Weber says that at least one experiment may have produced results: A layer of ceramic "supertiles," designed to withstand extremely high temperatures, "seemed to have survived re-entry with little damage." There's not much hope, though, for experiments involving low-gravity conditions, because the craft only spent 3 hours in low gravity. More will be revealed in the spring after scientists have checked out the capsule.

## Japan Prize

Signal transmission was the theme for this year's two Japan Prizes—transmission through brain cells and through optical fibers. The $500,000 prizes, seen by some as precursors to Nobels, are among the world's richest science awards.

Masao Ito, 67, a neurobiologist at the Institute of Physical and Chemical Research outside Tokyo, is being honored for his work elucidating the "functional principles and neural mechanisms of the cerebellum." That includes discovery of the inhibitory action of the Purkinje cells, the only output neurons in the cerebellar cortex, and discovery of synaptic plasticity in the cerebellum. At an 18 January press conference in Tokyo, Tsutomu Hiroshige, professor emeritus at Hokkaido University and chair of the neuroscience selection panel, described Ito as a rare scientist whose achievements span the brain from the molecular level to the level of higher brain function.

Kao



Ito

EIJI MIYAZAWA/BLACK STAR

The other prize went to electrical engineer Charles Kuen Kao, 62, president of the Chinese University of Hong Kong, cited for his work in optical fiber communications—especially early theoretical work estimating the potential signal transmission capacity of optical fibers. These fibers are now at the heart of the world's high-capacity communications networks, and Kao's work spurred their development.

Each laureate will receive approximately $500,000 at an awards ceremony in Tokyo in April. For those interested in guessing next year's winners, the 1997 prize categories are "Systems Engineering for an Artifactual Environment" and "Biotechnology in Medicine."

### WHERE ARE THE TROOPS?

**15 January 1996**

**"One thing that has been striking during this year of budget battles ... is the perceived stony silence of the science and technology community [both in universities and private industry]. ... And I can assure you that this perceived lack of concern has not gone unnoticed in Washington."**

**—Neal Lane, director of the National Science Foundation, at the American Astronomical Society meeting in San Antonio, Texas**

## More on Ashkenazi Cancer Gene

Last year genetic screens revealed that 1% of Ashkenazi Jews carry a specific mutation in the tumor-suppressor gene *BRCA1*—a finding suggesting a cause for a sizable portion of breast-cancer cases among Jewish women (*Science*, 29 September 1995, p. 1819).

Now researchers report in last week's *New England Journal of Medicine* that they have homed in on the size of that proportion. Among young Jewish women of Eastern European descent, the mutation accounts for some 20% of breast cancers. But whether or not Jewish women should undergo genetic screening is still open to question.

The researchers, led by cancer geneticist Daniel Haber of Boston's Massachusetts General Hospital, collected blood samples from 418 women diagnosed with breast cancer at age 40 or younger. Of these, 39 were Jewish. The mutation, called 185delAG, was found in eight of the Jewish women, or 21%.

The result "confirms what had been suggested by the earlier population-based study," says Jeff Boyd, a molecular geneticist at the University of Pennsylvania. Because the early onset of cancer indicates genetic susceptibility, "we would certainly expect that a significant fraction of Jewish women with early breast cancer should have the mutation."

The Boston researchers have not shared their test results with their subjects, but have invited Jewish participants and their families to be tested for the mutation again and, if found posi-

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tive, to receive genetic counseling and help designing a "cancer surveillance program." These women should consider starting frequent breast exams by age 30, says Haber.

Most researchers say it's too soon, however, to think about expanded genetic screening programs. While the test is technically simple, its reliability has still not been well established, says cancer geneticist Ken Offit of Memorial Sloan Kettering Cancer Center in New York. Adds Dimitrios Trichopolous, a cancer epidemiologist at Harvard's School of Public Health: "Genetic screening is useful only when you can do something about it. Right now we can do very little to prevent breast cancer."

## Alzheimer's and Programmed Cell Death

Among the most intriguing genes discovered in 1995 were two called *STM2* and *S182*. The genes code for two very similar proteins, and both genes, when mutated, cause inherited forms of Alzheimer's disease. But how? Clues gained to date have been vague at best.

Now comes a tantalizing new piece of data. Luciano D'Adamio and his colleagues at the National Institute of Allergy and Infectious Diseases have found that one of these Alzheimer's genes, *STM2*, may be involved in apoptosis, or programmed cell death.

On page 521 of this issue, the scientists report isolating two new suspects in a screen for apoptosis-related genes—including the mouse counterpart of *STM2*. In their experiment, they put random pieces of DNA representing fragments of mouse genes into cultured mouse cells in order to get the DNA expressed as protein. The researchers then triggered the cells to go through apoptosis and looked for any cells that survived. Among the surviving cells were some that contained DNA representing part of the mouse *STM2* gene.

The potential linkage of *STM2* to apoptosis is "extremely exciting," says Rudolph Tanzi, a Harvard researcher who was involved in the discovery of *STM2* and *S182*. Some researchers argue that the death of neurons in Alzheimer's disease could be the result of the inappropriate triggering of apoptosis, and the new finding, says Tanzi, "will get a lot of people thinking about apoptosis and Alzheimer's disease."

In addition to a lot of thinking, more questions must be answered as well. The *STM2* DNA codes for a fragment of the *STM2* protein, but the researchers haven't yet proven that the protein fragment is actually present in the surviving cells. If it is, they will need to find out whether that fragment, in blocking apoptosis, mimics the role of the full-size *STM2* protein or whether it does the opposite, blocking the normal protein's effects. To answer that question, the researchers plan to put the full-sized protein into cells to see its effects on apoptosis.

## Rooting Out the Reason for Russetting

Fruit growers slave to produce the polished apple and the picture-perfect pear for the picky U.S. consumer, who will avoid fruit with any blemishes—even the harmless but unsightly brown streaks often seen on pears. The streaks, known as russetting, have been blamed on excess moisture early in the growing season, which was thought to disrupt normal skin-cell development. But plant pathologist Steven Lindow at the University of California, Berkeley, suggests that russetting is only indirectly related to the weather—and that micro-organisms are the real cause.

Lindow reported, at a recent lecture at the University of Wisconsin, that large numbers of various types of bacteria colonize fruit trees during wet weather in spring. The more bacteria, he found, the more severe the russetting at harvest time. So he and his colleagues treated pear trees with a bacterium that produces indole-3-acetic acid (IAA), a plant hormone that produces diverse effects. Sure enough, trees treated with IAA-producing bacteria experienced more russetting than untreated trees. The researchers also say they have fingered the most common IAA-producing bacterium on trees in the field: *Erwinia herbicola*, a member of a genus of troublemakers known for producing blights, wilts, and rots.

It's "really interesting ... that so many things in nature we think are physical phenomena are now turning out to be microbial," says Joyce Loper, a plant pathologist with the U.S. Department of Agriculture's Agricultural Research Service in Corvallis, Oregon. Indeed, in the mid-1980s, Lindow showed that frost damage on plants was helped by bacteria that encourage ice formation—work that led to one of the first environmental releases of a genetically engineered organism, the ice-minus bacterium.

The russetting solution can be very low-tech, however. Loper says that as the bacteria that colonize the trees get there from adjacent ground cover, all farmers have to do is more weeding.

S. LINDOW

**Out damned spot.** Russetted pears at right.

## Miniworld on the Big Screen

Long the Rodney Dangerfield of scientific endeavors, Biosphere 2 faces yet another challenge in its ongoing quest for respect. Less than 2 weeks after Columbia University's Lamont-Doherty Earth Observatory took over management of the $150 million miniworld north of Tucson, Arizona—a move supporters hope will bring new credibility to the project (*Science*, 17 November 1995, p. 1111)—along comes *Bio-Dome*, a movie spoof. The project's new scientific management is giving the film a definite "thumbs down," but former Biospherians think it's a hoot.

GENE PAGE

**Bio-dumb.** Actor Pauly Shore plays klutz who strays into eco-experiment.

The film is about a pair of goof-offs (played by Pauly Shore and Stephen Baldwin) who are motoring through the Arizona desert when they come across what appears to be a new shopping mall. Once inside, they're stuck for a year. Fortunately, the Domers include two lovely young scientists to nurture the guys' appreciation of environmental research.

Columbia geochemist Wallace Broecker, who heads Biosphere 2's science committee, told *Science* he didn't want to discuss the film, saying "it's just a lousy movie." Earlier he told *The Arizona Daily Star*: "We're trying to build up the reputation of the Biosphere and turn it around and make it a serious campus for education and science. ... So this is a step in the wrong direction."

Steve Bannon, former acting CEO of Biosphere who arranged for Columbia to take over its management, had a more laid-back reaction: "If you're going to be associated with the Biosphere you've got to have a sense of humor." Indeed, bionauts Jane Poynter and Taber MacCallum, who spent 2 years inside Biosphere 2, said they cracked up all the way through the movie.