RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Immunity for Breakfast

Scientists have been keen to harness edible plants as cheap, low-tech vehicles for delivering vaccines against common ailments in developing countries. Now a team has reported the results of the first edible vaccine trial in people, which suggest that raw potatoes can deliver immunity against a major food-poisoning bacterium.

Charles Arntzen and his colleagues at the Boyce Thompson Institute for Plant Research at Cornell University in Ithaca, New York, targeted one of the most common causes of diarrhea, a strain of *Escherichia coli* that kills 2 million children a year in developing countries. They inserted a gene for part of an *E. coli* toxin into the potato genome. Next, they fed chunks of raw potato to 11 volunteers once a week for 3 weeks and compared their immune reactions to those of three people fed unaltered potatoes. (Cooked spuds won't work because heat destroys the toxin.) In the May issue of *Nature Medicine*, the researchers report that all but one of the vaccinated subjects produced antibodies to the toxin. The antibodies block the toxin from attaching to cells in the gut, the scientists explain.

"This paper is another step ahead in proving that plant vaccines will work in humans," says molecular biologist William Langridge of Loma Linda University in California, who earlier this year reported breeding potatoes that elicit anticholera antibodies in mice. "Probably the only thing really lacking is to demonstrate protection from a challenge with the pathogen itself," he says.

Arntzen says his ultimate goal is to get this technique to work in what he considers the ideal vaccine vehicle in tropical countries: the banana—widely eaten, popular with babies, and unlike potato, good raw.

Plant-based vaccines should hit the market in just a couple of years, predicts Langridge.

RICK KOZAK

The mentor. Albert Einstein may soon have the company of some eager pupils on the shaded grounds of the National Academy of Sciences (NAS) in Washington, D.C. Thanks to a donation from academy member and former *Science* Editor-in-Chief Daniel Koshland, plans are under way to build a science center near the great physicist's monument, NAS President Bruce Alberts announced at the academy's annual meeting last week. The center, which is to include hands-on educational exhibits, will be a memorial to Koshland's wife Marian, who died last year. The amount of the donation is being kept confidential at Koshland's request. No date has yet been set for the project's completion.

New Ethics Code for German Scientists

German physicists meeting in Regensburg in March approved a new code of research ethics that is expected to be applied to all fields of science in Germany. The action was spurred largely by a spectacular case of data falsification last year.

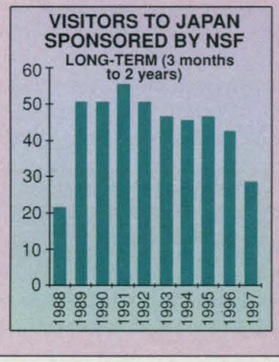
The new rules of the German Physical Society were worked out by an international commission formed last year following a case in which two German biomedical researchers were accused of manipulating or making up data in dozens of published research papers (*Science*, 15 August 1997, p. 894). Public confidence in science was shaken after the scandal, says physicist Rudolf Klein of the University of Konstanz, Germany's first "ombudsman" for good scientific practice. Now, he says, "we have to prove before the public that the scientific community is capable of self-regulation."

In addition to strictures on documenting experiments and preserving raw data, the rules aim to tighten up authorship requirements. All authors listed on a scientific publication must be responsible for its content—that means no more "honorary authorship," even for the head of a lab in which research is conducted. That's a significant change, particularly in the biomedical research arena.

University rectors, who met in Bonn last month, are now preparing guidelines for German universities based on the recommendations. The code is in line with proposals made by the DFG, Germany's main research funding agency. The agency is expected to require all recipients of federal money to adhere to the new code, slated for publication this month.

Japan's Flagging Appeal

U.S. researchers are snubbing programs designed to lure them to Japan as visiting scholars, according to a new report from the U.S. National Science Foundation (NSF). Observers blame the downturn on the brightening U.S. employment scene.



In June 1988, the United States and Japan signed an agreement that, it was hoped, would spur a stream of U.S. researchers to tap into Japan's growing scientific capability. Although the new policy more than doubled the number of NSF-sponsored U.S. researchers coming to Japan for long visits, the numbers have been dropping since 1991, according to a report issued last month by NSF's Tokyo Regional Office (see chart). The booming U.S. economy appears to be the cause, says office head Edward Murdy. He adds that Japan's economic stagnation has probably also tarnished the country's image as a global pacesetter in science and high-tech.

Japanese officials say the NSF numbers reflect a larger trend. According to Daisuke Tezuka of the Japan Science and Technology Corp., "we understand that, given current conditions, there is a feeling there is no need for young researchers to go outside of America."

Earth's Deep Thinkers Win Crafoord Prize

The Royal Swedish Academy of Sciences announced last week that two U.S. geophysicists—Don L. Anderson of the California Institute of Technology and Adam Dziewonski of Harvard University—will split this year's $500,000 Crafoord Prize in geosciences.

Since the 1960s, the two have used different approaches to the same problem, which is to better understand how Earth's deep interior influences its surface geology. They joined forces temporarily in the early 1980s to produce a now-classic model of how seismic waves pass through Earth. Dziewonski has since pursued this technique of seismic tomography to explore Earth's mantle, while Anderson, an eclectic maverick, has been synthesizing theory and data from fields as diverse as geochemistry and seismology.