RANDOM SAMPLES

edited by CONSTANCE HOLDEN

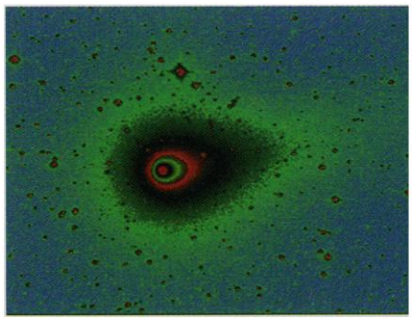
Tamoxifen Labeled Carcinogen

Tamoxifen—a hormonelike drug that's prescribed to halt or prevent breast cancer—seems to provoke controversy whenever it comes up for review. Most recently, the International Agency for Research on Cancer (IARC), based in Lyon, France, formally ruled on 22 February that there is "sufficient evidence" to conclude that tamoxifen causes endometrial cancer in humans. But in a highly unusual move, the IARC added a footnote saying that for breast cancer patients, there is "strong evidence" that the benefits of the drug outweigh the risks.

The IARC, set up 30 years ago as the ultimate international arbiter of carcinogenicity, usually doesn't comment on risks or benefits. This time, though, director Paul Kleihues says he received an "unusual" flood of letters from oncologists urging IARC not to condemn the drug. Oncologists have argued that tamoxifen's benefits to breast cancer patients outweigh their increased risk of developing endometrial cancer. Labeling the drug a carcinogen, they fear, will cause patients to stop taking it.

Kleihues defends IARC's action, saying "We thought the time had come and that there were sufficient data to evaluate tamoxifen now." Women should have a complete picture of the risks, and IARC should not withhold judgment simply because a compound has good qualities. In fact, he is planning to start a series of IARC monographs this year focusing on the carcinogenicity of various pharmaceutical compounds.

The IARC controversy echoes a similar scuffle in California last fall when oncologists convinced a state agency to delay making an official judgment on tamoxifen's carcinogenicity (*Science*, 10 November 1995, p. 910). But now, according to a staffer at the state Office of Environmental Health Hazard Assessment, IARC's action is likely to prompt the state to move ahead.



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Making the rounds. False-color image of comet taken from Australia last month shows progressive brightness toward center.

Another Comet Coming Up

Coming soon to the sky over you: a comet discovered in Japan a little over a month ago that promises to be, in the words of astronomer Charles Morris of Caltech's Jet Propulsion Lab in Pasadena, California, "potentially the first great comet that we've had since 1976 when Comet West graced our skies."

"Great" in comet talk means you don't have to be an astronomer to see it. "A truly great comet hangs like literally a ghost in the sky, which is why the ancient peoples were so terrified of them," says Morris.

Hayakutake, named after the amateur comet-hunter who discovered it with powerful binoculars in Japan on 31 January, is scheduled for a close brush with Earth—as close as 15 million kilometers away—and will be visible to Earthlings in the Northern Hemisphere starting around 21 March to mid-April. It will look to be the size of the full moon, says Morris, only much dimmer with a sharp brightness in the center at the middle of its coma. It also "has the potential for having a very bright and potentially long tail," he says. In the Southern Hemisphere, people will be able to view the glowing blob in mid-May, shortly after it reaches its perihelion when it gets as close as 35 million kilometers from the sun.

Hayakutake will then fade quickly, as it heads back to the

(continued on page 1369)

Company Secrets Don't Stop Science

Conventional wisdom has it that companies stifle the free and easy exchange that researchers thrive on. But a team from the University of California, Los Angeles, says its research shows that corporate affiliations, at least in molecular genetics, actually promote scientific publication.

Sociologist Lynne G. Zucker and economist Michael R. Darby studied some 4000 articles written by "star" researchers—337 gene-sequencers, selected because of the large number of gene sequences or publications they had in GenBank, an international database of gene sequences. In 1990, these stars made up less than 1% of researchers listed in GenBank, but had contributed 17.3% of the field's articles. They then examined both corporate and noncorporate co-authors, and the success of the co-authors' companies.

Zucker and Darby found that these already very active researchers became even more productive once in the corporate environment. Those with patented discoveries were cited nine times as often as were their peers who had no patents or commercial connections.

The pair, who presented the work last week to congressional science policy staffers in Washington, D.C., said they were themselves surprised by the results. "Initially we felt there would be a lot more secrecy," Zucker says. "But the more deeply involved with commercialization the scientists were, the more productive they were."

"Clearly, [industry affiliation] is not showing up as an impediment to research," says Wendy Baldwin, deputy director of extramural research at the National Institutes of Health in Bethesda, Maryland. Zucker and Darby think that the resources provided by the company freed these scientists from having to raise money. Indeed, some scientists told them that was why they wanted to work at a company.

Steven A. Rosenberg of the U.S. National Cancer Institute agrees that the study is a testament to the value of reliable research funding, but he worries that the degree of openness documented by Darby and Zucker is a special case and will be short-lived. It does not alter his opinion that, as he wrote in the 8 February *New England Journal of Medicine*, "the [secrecy] problem has escalated dramatically in the past decade and is impeding the progress of medical research."

ROUGH GOING

"The presidential candidates like to say how each community knows what's best for its children. But it took the NAS 4 years of agony to come up with these [science] standards, so it's beyond me how they expect local communities to do it on their own."

—Bruce Alberts, president of the National Academy of Sciences, addressing the National Science Board on 23 February about science education standards published in December 1995

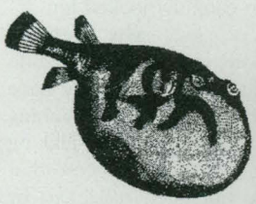
(continued from page 1367)

deep freeze of the outer reaches of the solar system, not to return again for several thousand years.

Gene-Hunters Choice: Fish or Fowl?

Want a shortcut to finding human gene sequences? Look in other organisms first, according to two recent studies. One bolsters the case for using a Japanese delicacy, the pufferfish or *Fugu*. And the other has demonstrated a new use for an old favorite: the chicken.

The value of these animals as genetic models is that they have about the same repertoire of genes as do mice and people, but pack them into a much smaller amount of DNA, with much less "junk" in between. Thus, sequencers can expect to find seven or eight of the animal's genes along a length of DNA that in humans would yield only one. "You get more genes for your money," says geneticist Ben F. Koop, of the University of Victoria, British Columbia. Once a sequence is located, it's easier to find a similar sequence in the human genome, especially if the animal genes line up in the same order as do their human equivalents, a property called synteny.



ROOSTER: K.G. VOCK/OKAPIA

Models for gene-seeking. Puffer and clucker.

Synteny has just recently been found to occur in the pufferfish, which molecular biologist Michael K. Trower and colleagues at Glaxo-Wellcome Medicines Research Centre, U.K., have used to hunt for the gene for familial Alzheimer's disease. While that gene eluded them, the stretch of DNA they studied did contain three neighboring genes in the same order that they appear in human chromosome 14, the group reports in the 20 February *Proceedings of the National Academy of Sciences*. "I think this is going to be an important addition to the disease gene hunter's arsenal," says Trower.

The exotic puffer may soon have competition from the homely chicken, whose genes are distributed among six very large and 29 very small chromosomes. The latter were thought to hold few if any genes. But now a team at the University of Edinburgh reports in the March *Nature Genetics* that microchromosomes are chock-full of short DNA stretches called CpG islands, which are usually indicative of genes.

"In these pathetic wee dot things that don't look like they are good for anything, the density of genes must be rather similar to the density of genes in *Fugu*," says Edinburgh geneticist Adrian P. Bird. If that proves true, he says, then chickens, because so much is known about their development and biology, may prove even more useful than pufferfish for some gene studies.

Trower agrees. With Bird's finding, he says, "it sounds like *Fugu* isn't the only fish in the pond, so to speak."

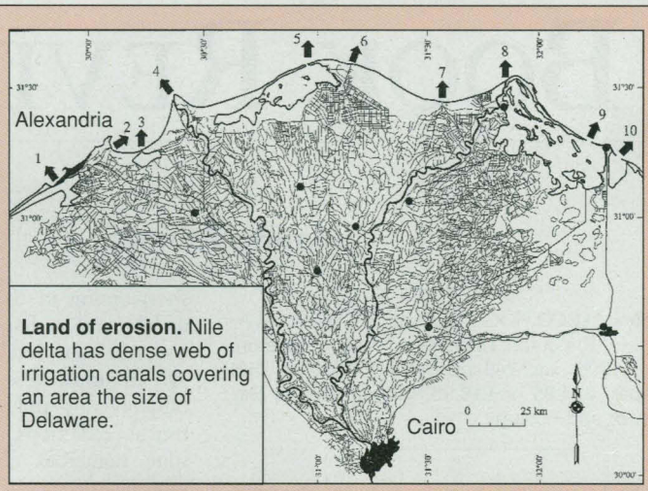
AAAS Gets Caught in Numbers Game

Last June, after Congress passed a resolution designed to balance the budget by 2002, science policy-makers were up in arms about the implications for research. Indeed, the American Association for the Advancement of Science (which publishes *Science*) calculated that the plan, if implemented, would result in a 34% drop in nondefense R&D spending by 2002. That figure became a rallying cry for the scientific community, and was widely cited as proof of Republican hostility to science.

But in January, when AAAS projected 1996 science budgets based on appropriations bills signed to date, it found a striking difference between rhetoric and reality: R&D actually seems likely to increase by 1.5% over 1995.

To some, the new number appeared to signal a retreat from the AAAS's earlier call to arms. Indeed, last week former National Academy of Sciences head Frank Press, the author of a recent NAS report on federal R&D spending, told the House Science Committee that AAAS "may be backing away from that 30% [sic] figure." In response, Representative Robert Walker (R–PA), chair of the science committee, said he was "delighted to hear that AAAS may be rethinking its projection."

But AAAS is doing no such thing, says Al Teich, the association's director for science policy programs. Rather, what many people overlooked is the distinction between a nonbinding budget resolution (a declaration of intent) and an appropriations bill (which sets actual spending levels). "We stood behind [the 34% figure] then, and we stand behind it now—as an analysis of the implications of the FY 1996 budget resolution," says Teich.



Land of erosion. Nile delta has dense web of irrigation canals covering an area the size of Delaware.

Irrigation Speeds Nile Delta Erosion

The 60 million people living in the delta of the Nile, Egypt's main artery, have developed a vast system of capillaries in the form of irrigation canals. One of the most extensive irrigation systems in the world, it is also one of the most efficient.

Too efficient, says Daniel J. Stanley, an oceanographer at the Smithsonian Institution, who says the system—more so than dams—is responsible for the alarming erosion which is stealing land from farms and towns along Egypt's north coast. The Egyptian government over the years has built more than 10,000 kilometers of canals in the delta. As a result, hardly any of the river water, or its silt, now reaches the Mediterranean, says Stanley. A century ago, the Nile was constantly adding to the coast with sediment deposits. But these days, the river is at a virtual standstill in some delta channels and lagoons, and the sediment settles there. Parts of the delta coastline are now receding at rates of 50 to 100 meters per year, says Stanley.

Until now, researchers have attributed the coastal erosion to the settling of sediments behind the low and high Aswan dams south of Cairo. But Stanley found, through analyzing Nile samples, that the downstream water still carried a good deal of silt. "I knew there was a lot of sediment moving," he says, and because little water makes it to the coast, it must be staying in the canals.

Stanley, who presents his theory in the latest (1996) issue of *Marine Geology*, has some scientists wondering why someone hadn't thought of it sooner. "Sometimes the really simple things seem so obvious, people just miss them," says Charles W. Finkl, a marine geologist at Florida Atlantic University. "They're all looking for the complicated explanation."

It's unlikely the Egyptian government will take steps to stem the erosion, says oceanographer James Coleman, executive vice chancellor at Louisiana State University in Baton Rouge. The eroding land is very saline and of low worth. So in their eyes the investment needed "is probably not justifiable."