# Briefings

*edited by* CONSTANCE HOLDEN

## SOS From Russian Scientists

Seven members of the USSR Academy of Sciences—now the Russian Academy of Sciences—have sent an urgent plea to U.S. scientists asking for help in acquiring scientific journals.

The group, which includes physicists Vitalii L. Ginzburg and Vitalii I. Goldanskii, asked the editor of *Physics Today* to send their imploring letter to major journals. In it, the scientists write that "the absence of hard currency completely deprives scientific institutions of Russia and other states of the former USSR of the subscriptions for foreign scientific periodicals in 1992.... At the present time, when scientific progress is simply inconceivable without the tightest international cooperation of scientists...the isolation of hundreds of thousands of our scientists from the outside world...will have pernicious consequences for the scientific community all over the world."

SOVFOTO

*Goldanskii*

The letter asks for help in keeping incoming subscriptions at the same level as in 1991. Specifically mentioned are the central scientific libraries of Moscow, St. Petersburg, Novosibirsk, Ekaterinburg (formerly Sverdlovsk), and Vladivostok, as well as the capitals of other former USSR states, and the largest institutes of the Russian Academy of Sciences. No addresses are given. But Goldanskii is director of the academy's N.N. Semenov Institute of Chemical Physics, Ulitsa Kosygina, 4, 117334, Moscow.

## Alcoholism: Modest Role Seen for Genes

Molecular biology's feverish hunt for the alcoholism gene has been a Now-You-See-It, Now-You-Don't affair (*Science*, 11 October 1991, p. 200). Nevertheless, the heavy publicity recent scientific papers have received has had an effect on the citizenry. Says psychologist Matt McGue of the University of Minnesota, "The lay public has this notion now that alcoholism is a genetic disorder." And that's the notion McGue and his colleagues want to temper: They have just published the results of a twin study that may restore some balance to the public's perceptions.

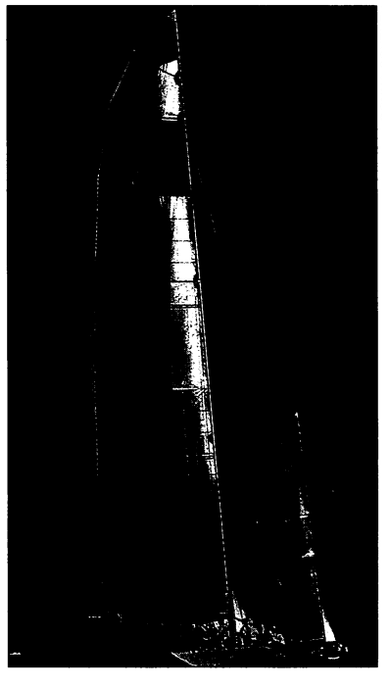
The twins-and-alcoholism study, one of the largest ever, and one of very few to include female subjects, is based on 356 patients drawn from a treatment program who along with their twins (both identical and fraternal) filled out mail questionnaires. The researchers assessed the genetic contribution to the disorder by comparing concordance rates between fraternal and identical twin pairs.

As expected, the researchers found substantial heritability for alcoholism among early-onset males—that is, those who experienced their first symptoms before the age of 20. But, according to the researchers' report in the current issue of the *Journal of Abnormal Psychology*, the "single most remarkable finding" was the "modest genetic influence on alcohol problems in women and late-onset men." The magnitude of the genetic influence, they wrote, "may be more modest and age-gender specific than is currently and widely believed."

McGue says the study doesn't conflict with any prior findings. But psychologist and behavioral geneticist Robert Plomin of Pennsylvania State University points out that it carries an unfamiliar message: that for most alcoholics "there's no evidence for significant heritability." Plomin says, "In contrast to psychology, where there has been great resistance to [theories about] genetic influence," the alcoholism field "has been caught up in the medical establishment and everybody assumes it's a genetic disorder." As a result, write McGue and colleagues, "researchers may be ignoring the significant influence that the environment has in the origins of alcoholism."

## MIT High Tech Goes After America's Cup

Chemical engineer and entrepreneur William Koch (B.S., M.S., and Ph.D. from the Massachusetts Institute of Technology) is in hot pursuit of sailing's coveted America's Cup. And his alma mater—along with $40 million from sponsorships, donations, and from Koch himself—is providing a technological edge that thus far seems to be proving decisive.



DONNA COVENEY

**The sailing is academic.** *MIT engineering bolstered* Defiant's *speed.*

The design team leader of Koch's America³ syndicate is Jerome Milgram, a member of MIT's ocean engineering faculty. "Bill Koch likes to investigate things using the scientific method more than the other [syndicate] leaders," says Milgram. "He's paying for much of it, so he gets what he wants."

What Koch wants is the most sophisticated design strategy of any team going for the Cup. He had some financial resources—family oil money—but he only discovered his passion for sailing in 1984, so he went to the experts. "But when I talked to a bunch of yacht designers about what makes a boat go fast, I got some really strange answers. No scientific answers," he told *MIT Tech Talk*. Koch got some of his own answers after Milgram's 10-member team and assorted faculty members, graduate students, alumni, and MIT staff put together designs drawing on the power of a VAX 9000 supercomputer for modeling the forces acting on a boat and data from a unique test boat that directly measures sail forces.

Although any radically different design features are below the waterline or shrouded behind tight security at America³'s compound on San Diego Bay, the end result of Koch's scientific approach is strutting its stuff in the early races for the right to defend the Cup against a foreign challenger next May. His boat *Defiant*, the second built of an eventual four, is undefeated after five races.

## Another Stanford Resignation

It looks as though beleaguered Stanford University is being swept clean of its highest ranking officials. In the latest aftershock following the resignation of president Donald Kennedy, provost James Rosse announced last week that he too will resign—as of April—to become chief executive officer for Freedom Newspapers, a Southern California newspaper chain.

Rosse, an economist who specializes in the economics of newspapers and media, has been Kennedy's second in command for the last 7 years. But Stanford spokesmen do not link Rosse's departure to the university's indirect cost difficulties. In fact, Rosse told *Science* he would have left his post a year earlier had he not been needed to help stabilize "financial planning" in

the wake of the troubles.

Still, this latest departure appears to be part of a general changing of the guard, which includes the replacement last summer of chief financial officer William Massey, and a subsequent reorganization of the university controller's office that unseated both controller Frank Riddle and assistant controller Janet Sweet.

## Rat and Mouse Care

A federal district court judge ruled on 8 January that mice, rats, and birds must no longer be excluded from the protection given research animals in the Animal Welfare Act of 1971. In response to a suit brought by the Animal Legal Defense Fund and the Humane Society of the U.S., Judge Charles R. Richey ruled that the Department of Agriculture had been "arbitrary and capricious" in excluding such animals from protection.

Animal welfare groups have argued for years that failure to cover rats, mice, and birds has been one of the most serious flaws in the act. Valerie Stanley, attorney for the plaintiffs, said the decision "marks a watershed for the animal rights movement."

Other observers see it less dramatically. They say the ruling will increase the paperwork load for animal users but will not have a great impact on the treatment of research animals. Barbara Rich of the National Association for Biomedical Research notes that scientists who get money from the Public Health Service (PHS) have to abide by PHS guidelines, and these already cover housing and treatment of birds and rodents. Veterinarian Richard Simmons of the University of Nevada adds that "small [non-PHS funded] labs that have never used anything but rats and mice" will have to set up animal care and use committees and gear up for more paperwork.

Another possible repercussion of the ruling, says Simmons, is that scientists could find themselves facing much higher prices for rats and mice—which are about 85% of all research animals—in the future, since some breeders may have to enlarge housing facilities.

But Simmons says, "The biggest economic impact will be on the USDA." And indeed the agency has argued that such regulations could double demands on its already overstrained enforcement capabilities. But as of 23 January, USDA officials were still considering whether to appeal the ruling.

## Shock Therapy Helps Kill Cancer Tumors

No, it's not a miracle cure for cancer, but French researchers working for the National Scientific Research Center (CNRS) in Paris believe they are on the way to cracking a major conundrum of cancer chemotherapy: how to use a high enough dose of drug to kill the cancer cells but not the patient. Getting the drug right inside the tumor cells could be one way around the problem. But as Luis Mir of the CNRS team found, some of the best anticancer drugs, like bleomycin, can't get past the membranes of certain cancer cells. "You only need a few hundred molecules of bleomycin inside the cell to destroy it, but the cell membrane can be a formidable barrier," says Mir.

The team has found, however, that zapping human cancer cells in culture with short bursts of electricity will open the membranes long enough to allow drug molecules to enter and do their lethal work. And in mice, an intravenous injection of bleomycin, followed by 100-microsecond electrical pulses delivered through electrodes, killed drug-resistant tumors.

Now the Paris team has announced, in the proceedings of the French Academy of Sciences, the results of what they believe is the first human trial of "electrochemotherapy." Seven elderly men with untreatable cancers of the head and neck were given intravenous bleomycin followed by electrical pulses delivered directly to the tumors. Of 34 "shocked" tumors, 17 disappeared completely within a few days and seven more showed partial regression.

Unfortunately, it was too late to save these patients—the cancers had already spread to other parts of the body. But the CNRS researchers, buoyed by the results, are now planning larger trials of their novel treatment.

## Homosexuality and Cognition

The hypothesis that there is a neurobiological basis for sexual orientation has received substantial attention recently—examples being the anatomical difference found in the brains of some male homosexuals; new evidence of a strong genetic role in homosexuality, and the association found between homosexuality and left-handedness. Now, the hypothesis has gotten a boost from yet another direction—research bearing on sex differences in cognitive abilities.

Scientists at McMaster University in Ontario report in the latest issue of *Psychoneuroendocrinology* that on measures of visual-spatial ability where consistent differences have been observed between males and females, male homosexuals fall between the two sexes. "It is as if, in some cognitive respects, they are neurologically a third sex," says neuroscientist Sandra Witelson, who co-authored the paper with psychologist Cheryl M. McCormick (now at McGill University).

MICHAEL DISMATSEK

**Sandra Witelson.** *Are homosexuals in some ways neurologically "a third sex"?*

The researchers administered three tests of spatial ability (where males excel) and two measuring verbal fluency (where females show a small advantage) to three groups of 38 subjects each: homosexual men, heterosexual men, and heterosexual women. "The cognitive pattern of homosexual men was significantly different from heterosexual men but not significantly different from that of heterosexual women," says Witelson. The results—like those from other studies on homosexuality—are consistent with the hypothesis that homosexuals are exposed to atypical levels of prenatal sex hormones.

In the spatial tests, heterosexual males had the highest scores, followed by homosexual males, and then females. This pattern was particularly pronounced among right-handers in a test where subjects had to visualize the water level in a tilted glass. In a measure of verbal fluency, the order was reversed: Women scored highest, followed by the homosexuals, and then the heterosexual men.

Witelson believes that evidence from anatomical, genetic, hormonal, and neuropsychological research is converging to suggest that "sexual orientation... is part of a larger constellation of cognitive attributes." She adds that all this may lead to an explanation for "the apparently greater prevalence and ability of homosexual men compared to heterosexual men in some professions." But the bewilderingly complex relationships between brain anatomy, prenatal sex hormones, handedness, and homosexuality still need a lot more sorting out.