

RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Mouse Withdrawal Genes

Trying to pinpoint some of the many genes involved in human alcoholism has so far been an unsuccessful endeavor. But scientists are finding some clues in mice that they say should help them figure out where to look in humans.

A team at Oregon Health Sciences University in Portland has identified several chromosome regions in mice associated with alcohol-induced withdrawal symptoms. One of these regions sports genes for GABA receptors (GABA is a neurotransmitter), which soak up central nervous system depressants such as Valium. Because alcohol and other central nervous system depressants are believed to occupy many of the same niches in the

brain, it suggests that GABA-receptor genes could be implicated in risk for alcohol dependence, according to the team's leader, behavioral neuroscientist Kari Buck.

John Crabbe, an Oregon geneticist, explains that researchers bred multiple generations of mice to determine which gene regions were associated with susceptibility to acute withdrawal. The trait itself is ascertained by giving an animal a single high-dose alcohol injection, and then holding it up by its tail to see if it reacts with characteristic convulsive movements. The researchers found "very strong evidence" that three regions—on chromosomes 1, 4, and 11—are associated with withdrawal susceptibility, says Crabbe, whose team

reports on the research in the 15 May *Journal of Neuroscience*.

Locating alcohol-related gene regions in mice "is a very exciting development," says geneticist David Goldman of the National Institute on Alcohol Abuse and Alcoholism, because most mouse genes have their counterparts in the human genome. And the fact that two of the mouse loci are also associated with withdrawal from pentobarbital, another central nervous system depressant, makes for "a very interesting convergence" between mouse and man, says Goldman. He notes that his research team has found—in a yet-unpublished study—that, in humans, one of the loci associated with alcoholism withdrawal "was at a chromosome region rich in GABA [receptor] genes."

EPA Research Chief Steps Down

After 3 years as head of the Office of Research and Development (ORD) at the U.S. Environmental Protection Agency, two of them as EPA's science adviser, Robert Hugget is returning to academia. He will return to the College of William and Mary in Williamsburg, Virginia, on 1 June. "I had a 3-year leave of absence, and it's up," Hugget says.

Hugget's efforts to beef up research at an agency often criticized for lax science have won widespread praise. "I think he's done very, very well," says environmental scientist Bernard Goldstein of the Robert Wood Johnson Medical School in New Jersey, a former ORD director. Hugget has overseen a major reorganization of the agency's labs and developed a risk-based strategic plan for ORD's \$500 million research budget. He has also taken steps to bolster peer review of EPA research, and launched a \$95 million program for graduate fellowships and extramural grants that quadrupled the agency's extramural funds. Observers hope the position will be filled soon, as they fear a long time lag could rob Hugget's reforms of momentum.



Warm and dry. Test slab.

Canadians Create Conductive Concrete

Canadian scientists have developed a new recipe for concrete that could enhance the safety of bridges, airport runways, and other surfaces that need to be kept free of snow and ice.

Since the 1920s, scientists have been trying to make concrete that conducts electricity so as to be able to heat concrete surfaces by running current through them. Past attempts have included laminating carbon-fiber paper impregnated with cement, which created a conductive but structurally weak material; and coating concrete with conductive materials, which resulted in a strong but not very conductive material. So at present, the only way to heat concrete is with buried electrical cables or tubes carrying heated

antifreeze, which are costly to install and maintain.

Now, materials scientists at the National Research Council's Institute for Research in Construction in Ottawa have devised what they believe is a winning formula. The scientists mixed various sizes of conductive materials—like carbon fibers, graphite, and coke breeze, a steel-industry waste that looks like black sand—into cement paste. These create a continuous network for electricity to penetrate, allowing for conductance while maintaining concrete's strength. An outdoor test slab 6 by 24 meters stayed ice- and snow-free during Ottawa's severe winter. Production costs are modest, and heating costs are "encouragingly cheap," says team leader Jim Beaudoin, although he's not yet ready to talk numbers.

Beaudoin says the team has gotten about 300 queries so far, most from people—many of them in Scandinavia—who want to use the stuff to heat basement floors and walls. At least one airport, the Metropolitan Airport in Detroit is in-

terested in installing a test section of runway made of conductive concrete. Allan Tomlinson of Superior Graphite Co. in Chicago, whose company would do the engineering, says heated runways would not only be safer, but cheaper to operate because costs from delays and snow removal would be eliminated.

Vintage spacewear. This Soviet moon suit, made more than a quarter of a century ago, has leather boots and a control panel that pops out of the front like the screen of a laptop. But the cosmonaut wearing the suit never made it to the moon because his spacecraft's rocket malfunctioned on the launch pad. The suit is part of a new exhibit on the Soviet-U.S. race to the moon, "Space Race," at the Air and Space Museum in Washington, D.C. The exhibit was made possible by Texas billionaire H. Ross Perot, who acquired a bundle of Soviet space memorabilia, including a Soyuz landing module, a chess set, and boxes of notebooks, at an auction at Sotheby's in 1993, 21 years after the last trip to the moon. These goods, which supplement the museum's holdings, are on long-term loan to the museum, which last week held a big party attended by Perot and a dozen retired astronauts and cosmonauts. They included Thomas P. Stafford, commander of the Apollo spacecraft in the 1975 Apollo-Soyuz space rendezvous, and his counterpart Aleksei Leonov, the first man to walk in space.



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