RANDOM SAMPLES

edited by GRETCHEN VOGEL

Icelandic Isolation Pays Off

Hoping to mine a gene pool isolated for a millennium, the Swiss pharmaceutical company Hoffmann-La Roche inked a deal last week to track down new disease genes in Iceland's population. The agreement, which could bring a small Icelandic biotech company more than $200 million over 5 years, may be the biggest ever in human genomics.

Because Iceland has had almost no immigrants since Vikings settled the island in the 9th century, its 270,000 citizens are a rare resource for gene hunters, who look for disease-causing mutations by comparing the DNA of patients with that of healthy people. The Icelanders' overall genetic similarity means that their DNA produces less background "noise" than the DNA of outbred populations. That is especially valuable for studies of common diseases such as asthma, which are likely caused by several genes.

Realizing that Iceland has detailed medical records going back to 1915 and a cultural interest in genealogy, former Harvard geneticist Kari Stefansson founded a company called deCODE some 18 months ago to collect and index the family histories, clinical records, and DNA of the population for genetic studies (*Science*, 24 October 1997, p. 566).

Under the agreement, Hoffmann-La Roche will sponsor deCODE's research on up to 12 diseases, including schizophrenia, Alzheimer's disease, and adult-onset diabetes. deCODE will retain the rights to any resulting antisense or gene therapies, Stefansson says. Hoffmann-La Roche, meanwhile, will have exclusive rights to develop and market traditional drugs and diagnostic products based on new genes.

Tim Harris of AxyS pharmaceuticals in La Jolla, California, says the agreement is a good deal for both partners, but he cautions that disease-causing genes found in Icelanders may not be relevant to other populations.

Hoffmann-La Roche also went along with a key deCODE stipulation: that it provide Icelanders, for free, any drugs that come from the research deal. No wonder, then, that many Icelanders are welcoming the collaboration "with joy," Stefansson claims. But he says the celebrations at deCODE won't start until the company succeeds in hunting down its quarry: "We're going to celebrate gene by gene."

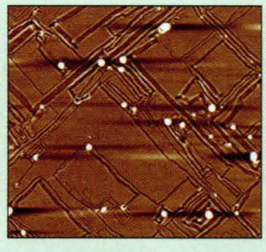
Drinking Studies Lite?

Claims that a glass of wine a day will help you live longer may be all wet. A reanalysis of data from previous studies suggests that there's no clear benefit from moderate drinking.

In reviewing several years' worth of studies touting a link between moderate drinking and longer life, sociologist Kaye Fillmore of the University of California, San Francisco, says she found "all kinds of potentially serious problems." One of the most egregious, she says, was that researchers had often lumped together two kinds of nondrinkers—those who never drank ("abstainers") and those who had quit ("former drinkers"). And several studies seemed to ignore factors such as a person's socioeconomic status or overall health.

Fillmore and colleagues pooled raw data from 10 studies with detailed information on people's drinking habits and reanalyzed them, separating the abstainers from the former drinkers. They found no significant difference in life expectancy between abstainers and moderate drinkers, they report in this month's issue of *Addiction*. The team also found that abstainers and former drinkers were both more likely to be in poorer health and of a lower socioeconomic status than light drinkers were.

But Fillmore's study has some problems of its own, asserts one epidemiologist who studies the influence of alcohol on mortality. Jian-Min Yuan of the University of Southern California in Los Angeles notes that Fillmore's study includes only about 6000 adults over 25—not enough for such a complex analysis, he asserts. "Based on these numbers, it's very difficult to analyze using as many variables as they did," he says. But Yuan agrees that his colleagues need to design their studies more carefully.

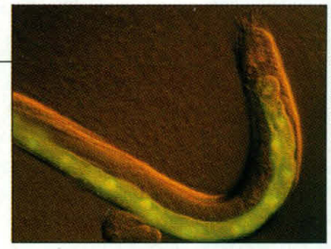


M. KRISHNAMURTHY *ET AL.*

Quantum Etch-A-Sketch. A group of materials scientists has unleashed atomic-scale earthworms, which eat meandering trenches a few atoms wide through a semiconductor. Such "quantum wires" could lead to improved sensing devices or lasers.

Under the right conditions, the wires assemble themselves. Mohan Krishnamurthy, a materials engineer at Michigan Technological University in Houghton, and his colleagues made a thin film from an alloy of germanium and tin—two semiconductors that don't mix well. Predictably, the tin separated out as the mixture cooled, but what happened next was unexpected. "Like an earthworm, the globs of tin eat up the [alloy], spit out the germanium, and keep the tin," Krishnamurthy says. In their wake, they left wiggly trenches of germanium.

Materials scientists say the technique—reported in last week's *Physical Review Letters*—is interesting, but they caution that most applications will have to wait until scientists can corral the droplets into straighter paths.



D. ZARKOWER *ET AL.*

Confused about sex. A male nematode with a mutant *mab-3* gene produces yolk proteins (green) normally found in females.

Similarities Among the Birds and the Bees

Although nearly all animal species come in two sexes, the cascade of genes controlling the differences between males and females is completely different from one phylum to the next. But now, for the first time, researchers have found related genes involved in sexual development in two very different organisms—fruit flies and nematodes—and may have spotted a similar gene in people.

Developmental biologist David Zarkower and his colleagues at the University of Minnesota Medical School in Minneapolis report in this week's issue of *Nature* that the *mab-3* gene in nematodes has the same DNA-binding structure as the fruit fly gene *doublesex*. Both genes code for proteins that help direct the development of sexual features. The proteins are so similar, the researchers found, that when they injected the male version of the fruit fly's *doublesex* into male worms lacking *mab-3*, it restored the growth of male sense organs.

Zarkower's group has also found a "tantalizing" link to people, he says. A computer search revealed that a human gene called *DMT1* shares the same DNA-binding structure. Although *DMT1*'s function is a mystery, it is located in a region on chromosome 9 that, when missing, causes genetic males to develop as females. A people connection, says Barbara Meyer, a geneticist at the University of California, Berkeley, might make it possible to use lab animals to hunt for other human sex-development genes.