RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Farming Tubeworms

Scientists have long puzzled over how to get tubeworms—strange fauna that live near deep-ocean vents—to grow in the lab. That's no mean feat, because the worms are designed to live 2.5 km deep at pressures equivalent to 300 times that at sea level. But now scientists at the University of California, Santa Barbara (UCSB), have managed to keep a bunch of displaced tubeworms going for 2 months—which makes them available for new types of research.

The mouthless, gutless tubeworms (*Riftia pachyptila*), discovered in the 1970s, are of great scientific interest because unlike most living things, they don't need sunlight. Like plants, they rely on the conversion of carbon dioxide, but while plants use sun to do the job, the worms use sulfide from the vents that is oxidized by symbiotic bacteria in their tissues (*Science*, 17 January 1997, p. 305). Little else is known about the critters: "The problem always was that you had to go down with a sub, collect them, and quickly do experiments in situ," says marine physiologist Horst Felbeck of the Scripps Institution of Oceanography at the University of California, San Diego.

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Domesticated. Worms, which live in flexible tubes, on the ocean floor and *(inset)* moving into pressurized quarters.

Last Christmas day, however, some 30 tubeworms collected from the Pacific Rise 800 km off Central America were trucked to UCSB. This time, ecological physiologist James Childress's team found the right mix—pressure, temperature, pH, and chemicals (CO_2, oxygen, and sulfide)—for a comfy habitat. The worms have already grown by about 40%—to 10 cm—since their arrival, says UCSB grad student Peter Girguis, who claims their presence "has created quite a stir in the vent community."

Scientists are eager to learn the worms' life-span, which is estimated at a few years. Felbeck notes that extended experiments are now possible. He, for example, has developed a catheter for drawing blood—a tricky undertaking because the worms' blood doesn't clot—that will allow him to monitor continuously blood responses to environmental changes.

California Science Compromise

Two groups vying for the chance to design California's science education standards are going to have to cooperate: The state's standards commission voted 15 January to use both contestants.

Last November, the commission awarded a $178,000 contract to the Institute for Science Education at California State University, San Bernardino. But Associated Scientists, a group that boasts several Nobel laureates, objected to being snubbed after offering to do the job for free. The group has also claimed that the institute would go light on scientific facts (*Science*, 12 December 1997, p. 1885).

Commissioners said the scientists didn't have enough experience writing standards but agreed to rerun the bidding. After getting revised proposals from both groups, they diplomatically decided to ask a member from each to spearhead the standards effort.

Harvard Nobel chemist Dudley Hershbach, who has offered his services to both groups, says "I hope when all the fuss is said and done, we'll end up with better standards than we otherwise would have."

Mozart for Georgia Newborns

Georgia Governor Zell Miller has generated so much enthusiasm with his proposal to harness the "Mozart effect" for Georgia's newborns—that is, playing classical music to spur brain development—that he won't need public money to fund the project, his office says.

Miller, a Democrat, proposed that the state allocate $105,000 next year to buy a classical music tape or CD for every baby born in Georgia—more than 100,000 a year. "No one questions that listening to music at a very early age affects the spatial, temporal reasoning that underlies math and engineering and even chess," Miller explained to the legislature on 15 January.

His ideas about infant brain plasticity draw heavily on a February 1997 *Time* cover story, says press secretary Rick Dent. Miller's faith in the power of music is based on work done at the University of California, Irvine. One study, reported in *Nature* in 1993, found that listening to Mozart briefly raised the IQs of college students. Another (*Science*, 11 November 1994, p. 968) found that keyboard music lessons boosted the spatial skills of 3-year-olds.

The Irvine researchers, who were not consulted by the governor, have doubts about the plan. "None of our studies show that listening casually [as opposed to taking lessons] has any effect at all for children," says psychologist Frances Rauscher, now at the University of Wisconsin, Oshkosh.

Dent, however, says the governor's office has been "flooded with calls," and four recording companies have offered donations for the project. Says he, "We think we can get it up and running by April 1."

Son of No-Doz?

Will caffeine one day be obsolete? Heralded in Europe as a breakthrough for narcolepsy, a novel drug—Provigil—which appears to keep non-narcoleptics awake as well, could soon be available in U.S. pharmacies.

Narcolepsy strikes roughly 1 in 5000 people, causing sudden sleep attacks lasting from seconds to more than an hour. Stimulants such as amphetamines are the usual treatment, but they can become addictive and cause patients to "crash" after the high wears off.

But Provigil appears to be nonaddictive and to have few side effects, says Dale Edgar, a researcher at the Stanford Sleep Disorder Center in California. "There's no euphoria; it just holds sleep at bay," says Edgar, whose lab did some of the research for the drug's manufacturer, Cephalon Inc. of Westchester, Pennsylvania. Indeed, in one trial, narcoleptics taking Provigil stayed awake roughly 50% longer than those given placebos. Scientists are unclear how the drug works, although Edgar says it raises FOS protein levels in cells near the brain's circadian clock.

"It's not a magic bullet," says Sharon Merritt, director of the Center for Narcolepsy Research at the University of Illinois, Chicago. Still, she says, it could find a big market among people—from shift workers to students—who simply wish to fight sleep. Indeed, the drug has already caught the eye of military researchers. Ross Pigeau of the Defense and Civil Institute of Environmental Medicine in Toronto, Canada, kept 14 military reservists working for 64 hours on Provigil and found that although they did worse on cognitive tests than well-rested subjects, they did as well as those on amphetamines.

A Cephalon spokesperson says product labeling discussions are in the works, and that the company hopes to get approval from the Food and Drug Administration this year.