RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Hyperactivity Tied to Gene Defect

Scientists at the National Institutes of Health say they have, for the first time, found an association between a specific genetic defect and a behavioral disorder. The disorder in question is ADHD, or attention deficit hyperactivity disorder, which afflicts about 5% of children and many adults as well. The culprit? In at least some cases, it's a gene coding for a defective thyroid hormone receptor that causes generalized resistance to thyroid hormone.

The news comes from a study, reported in the 8 April *New England Journal of Medicine*, that is based on a small and select population—104 adults and children belonging to 18 families, half of whose members have the defective gene. Among those with the defect, 70% were diagnosed with ADHD. Project director Bruce Weintraub of the National Institute of Diabetes and Digestive and Kidney Diseases says the nature of the connection has yet to be clarified, but that "thyroid hormone is essential to normal brain development."

While Weintraub says the defect probably accounts for no more than 5% of ADHD cases, he believes that the study opens the way for investigators to look for the roots of ADHD in other hormones as well as neurotransmitter receptor systems. The scientists do not rule out environmental causes for some cases of ADHD. But for the most part, says co-author Alan J. Zametkin of the National Institute of Mental Health: "It's not bad parenting, overcrowded schools, or unmotivated kids. ADHD is a neuropsychiatric problem based on brain physiology."

Wistar Settles With Koprowski

A year ago immunologist and vaccine pioneer Hilary Koprowski, now 78, sued Philadelphia's Wistar Institute contending that he had been removed as the institute's director only because of his age. Last week Wistar announced that an out-of-court settlement has been reached. A Wistar press-release says the terms of the settlement are confidential but that the institute is happy to "heal the relationship" with Koprowski.

Koprowski is happy too, according to one of his Philadelphia attorneys, Hugh J. Bracken. Bracken says Koprowski will promptly be made a member of the Wistar board of directors, that he will continue his research there, and that there are also "financial aspects" to the settlement.

JANE LUU AND DAVID JEWITT

Cometary pearls aglow. A comet's disruption produced at least 17 pieces, 10 of which can be seen in this false-color reproduction—suggesting that comets are indeed piles of rubble.

Did Jupiter Make a Comet Go to Pieces?

Comets take their bows as fuzzy balls of light—usually. But on the night of 24 March, Carolyn Shoemaker, one of history's premier comet finders, along with her husband, Eugene Shoemaker of the U.S. Geological Survey in Flagstaff, and noted amateur comet hunter David Levy of Tucson, found themselves looking at a most peculiar comet image from an 18-inch survey telescope on Mt. Palomar: A body was registering as a broad band of light.

Word of the find, dubbed Comet Shoemaker-Levy, flashed around the world, courtesy of the astronomers' alert network. Comets had been seen in as many as five pieces, but 2 nights later James Scotti and David Rabinowitz of the University of Arizona, observing at Kitt Peak, resolved the long blur into a string of first five and then 11 individual bodies. Next came Jane Luu of the University of California, Berkeley, and David Jewitt of the University of Hawaii, using the 88-inch telescope on Mauna Kea. They detected 17 fragments. Everyone agreed that this was a comet like no other. So what had broken Shoemaker-Levy into a train of what look like glowing embers?

No one is sure yet, but Brian Marsden of the Harvard-Smithsonian Center for Astrophysics suspects the culprit was Jupiter. Backtracking along the cometary trajectory, he found that Shoemaker-Levy had swept by the giant planet last summer, possibly so close that Jupiter's gravity tore apart the chunk of ice, rocky dust, and organic goo. That would jibe with an idea put forth in recent years that comets are "rubble piles" that only loosely agglomerated when they came together at the formation of the solar system.

Marsden figures that the sun's heat will drive off the ice of the smaller pieces and thus end their brief careers. In fact, all the debris from Shoemaker-Levy may disappear from sight, says Marsden. Whatever its fate, though, the comet will not threaten Earth—its orbit brings it no closer than Jupiter.

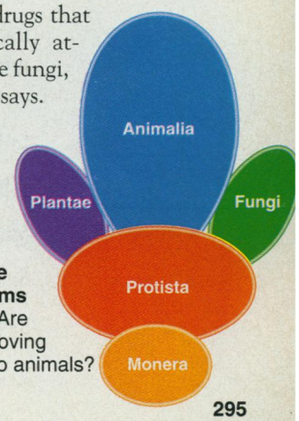
A Fungus on Our Family Tree

What's the most distant living thing from a human being you can imagine? Does a virus come to mind? How about a fungus? If that's your answer, you're barking up the wrong tree—according to a paper published in this issue of *Science* (see page 340).

It's generally been assumed that fungi, one of the five kingdoms of life, are more closely related to plants than they are to animals. But now Mitchell Sogin, a molecular evolutionist at the Marine Biological Laboratory in Woods Hole, has found evidence that fungi share a common ancestor with members of the animal kingdom.

After analyzing sequences of ribosomal RNA, Sogin's team found that the ancestor in question appears to be an ancient one-celled creature similar to choanoflagellates, a kind of protist. Sogin's work adds a certain yeastiness to a speculation, aired a decade ago by Smithsonian Institution biochemist Kenneth Towe, that the similar biosynthetic pathways of animals and fungi might make them cousins—at least distant ones. "Sogin's work is beautiful to me, it supports what I saw as an off-the-wall suggestion," Towe says.

Sogin's research has generated an infectious enthusiasm among his colleagues. The close ancestry between animals and fungi "may explain why fungal pathogens are so hard to control," says Berkeley mycologist John Taylor. The reason: Antifungal drugs target a complex biochemical cascade also found in humans. The similarities make it hard to develop drugs that specifically attack the fungi, Taylor says.



The five kingdoms of life. Are fungi moving closer to animals?