

receptor gene, including those studied by Uhl's group, uncovered no chemical differences thought to alter protein production, he maintains.

"If a connection exists between this gene and drug abuse, it needs to be demonstrated by finding specific mutations that occur more often among abusers," Gelernter contends.

Such a study is under way at the National Institute of Mental Health (NIMH) in Bethesda, Md. Researchers take individual DNA samples, amplify the D2 dopamine receptor gene, make copies of it, and pinpoint chemical mutations using a recently developed molecular scanning procedure.

The project now includes more than 100 DNA samples from alcoholics and healthy controls. Gelernter, Blum, and Noble have contributed DNA from their own experiments to the NIMH study.

A preliminary analysis failed to identify any mutations that distinguish the D2 dopamine receptor genes of alcoholics from those of controls, says NIMH psychiatrist Pablo Gejman, who heads the study. Mutations refer to random changes in specific chemical building blocks along a gene. Studies such as Uhl's target mutations along a small portion of the D2 dopamine receptor gene, whereas the NIMH researchers can identify chemical

changes along the entire gene.

"This is a very hot topic," Gejman says. "My personal feeling is that it's improbable we'll find an important D2 gene mutation in alcoholics. The genetic locus for a predisposition to alcoholism may lie elsewhere."

Wherever that predisposition site lies, the genetics of alcoholism continues to tantalize researchers. In the Oct. 14 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, a research team led by psychiatrist Kenneth S. Kendler of the Medical College of Virginia in Richmond asserts that genes account for about half of a woman's tendency toward alcoholism, a figure comparable to that previously reported for men.

The researchers base their conclusion on a study of 1,030 pairs of identical and fraternal twins, each pair consisting of two women. Alcoholism occurred far more often among both identical twins than among both fraternal twins, the researchers report.

Kendler says he suspects the D2 dopamine receptor gene may indeed play a role in male alcoholism, although the way in which it contributes to uncontrolled alcohol consumption remains a matter of speculation. Alcoholism-related genes among women remain even more mysterious, he notes. □

Biomedicine

Carol Ezzell reports from Anaheim, Calif., at the annual meeting of the Society for Neuroscience

For a good memory, dream on

You've been asleep for about an hour, and you're having a really great dream about piloting the space shuttle. There's just one problem: The control panel keeps making a ringing sound, and you can't find the right button to shut it off. Slowly, as you emerge from layers of sweet slumber, you realize that the ringing isn't occurring in your dream — it's the phone on your bedside table.

Beware, you may have just lost some of your memory.

A new study suggests that rapid eye movement (REM) sleep — the sleep stage during which you dream — plays an important role in consolidating the day's events into memory.

Avi Karni of the Weizmann Institute of Science in Rehovot, Israel, and his colleagues have found that people don't remember a learned task as well if they are awakened each time they enter REM sleep. In contrast, waking someone during non-REM sleep — which constitutes roughly three-fourths of sleeping time — has no effect on their ability to remember the task, the researchers determined.

Karni — now on a fellowship at the National Institute of Mental Health in Bethesda, Md. — and his colleagues trained four volunteers to recognize patterns of horizontal and diagonal lines portrayed on a computer screen a few hours before the subjects went to bed. The researchers found that the volunteers could perform the task faster the next morning if they'd had a good night's sleep.

However, when Karni's group awakened the subjects each time they entered REM sleep, they did no better on the pattern-recognition task the next day than they had the night before. Conversely, the morning after they were awakened during non-REM sleep, they did just as well as when they had slept

undisturbed, the Israeli researchers discovered.

Karni and his colleagues conclude that REM sleep, and perhaps dreaming itself, cements memories in the brain. Next, they plan to study whether some psychoactive drugs that are known to disrupt REM sleep may also impair memory.

A peppery preventive for pain

Capsaicin, the chemical that puts the zing in chili peppers, can block a person's ability to feel pain without producing numbness, according to a new study. The finding suggests that physicians may one day slather capsaicin-like compounds on the skin of burn patients or smear it into the incisions of individuals undergoing surgery.

Richard A. Meyer of Johns Hopkins University School of Medicine in Baltimore and his colleagues injected a capsaicin analog under the skin of one inner forearm of each of eight volunteers. The volunteers received a control injection of an inactive substance in the other inner forearm.

The volunteers reported reduced pain in the capsaicin-treated forearm immediately after receiving a burn on each arm equivalent to touching a hot stove. Moreover, on the day after the burns, the subjects said the treated arm was much less sensitive to touch and heat than the control arm.

Meyer says capsaicin works by killing small-diameter nerve fibers, the ones responsible for pain. However, it has no effect on large-diameter nerve fibers, he says, and so does not totally numb a treated area. Capsaicin has also proved beneficial in treating cluster headaches (SN: 7/13/91, p.20).

Meyer and his colleagues are working with Procter & Gamble scientists to develop drugs based on capsaicin analogs.

Aha...



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