

BEHAVIOR

Brain damage: Sprouting to recovery

Evidence that the hippocampus—a brain area thought to be involved in learning and memory—repairs itself after injury has been reported by researchers Rebekah Loy and Teresa Milner of the University of California at San Diego. After experimentally destroying cells in the hippocampal region of rat brains, the scientists found an expected degeneration of neurons; they discovered, however, that neighboring neurons sprouted new axons in an apparent attempt to connect with hippocampal cells.

Perhaps most significant, Loy and Milner found that the brains of female rats sprouted more new connections than did the male brains. One possible explanation for the sex difference “is that before injury, the adult hippocampal portion of the brain was different in the males and females because of an early exposure to hormones,” Loy says. “Another possibility is that in adults, circulating hormones may enhance sprouting in females or depress sprouting in males, in response to injury.”

Whether or not the post-destruction sprouting may actually contribute to memory and other functional recovery is not known at this point. However, Loy hopes that eventually “we can apply that knowledge to the recovery of motor and learning skills after a brain injury.... There have been numerous studies indicating that men and women learn differently and have different spatial abilities. After a brain injury, men and women are known to differ in their ability to recover certain skills. Our studies provide an anatomical model for these observations.” The findings were reported in *SCIENCE* (Vol. 208, No. 4449).

Oil execs and Vietnam vets

Public attitudes toward oil executives fall far short of Bo Derek's rating—2.9, to be exact, on a scale of 10. By contrast, Vietnam veterans rate above 8, according to a survey conducted by Louis Harris Associates for the Veterans Administration. Among the veterans surveyed, nine of 10 said they are glad to have served their country, and two-thirds would do it again. About half, though, still see themselves as highly alienated.

The ups and downs of drug use

Although certain types of drug use have leveled off in recent years, two studies released by the Department of Health and Human Services indicate substantial increases in use of and experimentation with marijuana, cocaine, heroin and hallucinogens. The surveys show that over the past 18 years (1962 to 1980) the proportion of persons between 18 and 25 years of age who have tried marijuana has increased from 4 percent to 68 percent; the figures in the same age group for those who have tried cocaine, hallucinogens and heroin have risen from 3 percent to 33 percent during that period. But while the proportion of those who say they are “current users” of marijuana has risen from 27 percent to 40 percent from 1977 to 1979 among 18-to-25-year-olds, that figure has remained constant among 12-to-17-year-olds since 1977—about 17 percent.

Since 1972, the rate of increase of cocaine use across all age groups has been “noticeably larger than the rate of increase for marijuana,” according to HHS officials. Among young adults, 28 percent have tried the drug and 9 percent use it, compared with 1977 figures of 19 and 4 percent, respectively. Although use of hallucinogens by young adults has more than doubled in the past two years, self-reported use of PCP, or angel dust, by 12-to-17-year-olds has dropped from 6 to 4 percent since 1977. In addition, illicit use of stimulants, tranquilizers and sedatives by adolescents and those over 25 years of age has remained constant during the past decade; the same drugs showed large increases among young adults until 1977, leveling off in 1979.

BIOLOGY

Joanne Silberner reports from Washington at the annual meeting of the Endocrine Society

Another day, another hormone mediator

Pity the poor hormone-hunter, faced with filtering through entire organ systems searching for a handful of molecules whose presence is sometimes only conjecture. Often as soon as one hormone is identified, another mysterious substance is found that modulates or is modulated by the first hormone.

Currently teasing endocrinologists are the somatomedins, a family of small peptides similar in structure to insulin. First postulated as a mediator of growth hormone (GH) more than 20 years ago to explain why GH alone is unable to stimulate growth in cell cultures, an accurate assay was developed only a few years ago. It is still not known how or where in the body they are produced, how many types of somatomedins exist or what their precise roles are, according to Judson J. Van Wyk of the University of North Carolina, one of the developers of the assay. It is known that they are stimulated by GH to induce growth.

Measurement of the somatomedins has proved to be an important clinical advance, says Van Wyk. It provides an alternate to GH measurement as a preliminary test for diagnosing height disorders. GH concentration in the blood varies with physical activity, time of day and nutrition, so for accurate measurements children have to submit to many tests.

A single somatomedin measurement, says Van Wyk, is “much more reliable,” though if the level is abnormal, GH assays are needed to pinpoint the problem. Somatomedin measurement is also valuable as a simpler, more accurate indicator of the effectiveness of medical intervention, says Van Wyk.

Somatomedin measurement is proving to be a bonus on the research front as well, by allowing scientists to identify the level at which a child's growth has gone awry. Van Wyk reports that he and his colleagues have identified five patients with acromegaly—a syndrome marked by large stature, usually ascribed to excess GH—with normal GH concentrations but elevated levels of somatomedin.

FSH bites the dust?

Among the many possible routes to a male contraceptive, the attempt to suppress follicle stimulating hormone (FSH) has been a road better traveled than others. But recent findings by researchers at the University of Washington indicate that FSH deserves a more critical look.

FSH is a hormone secreted by the pituitary gland. Its exact role in the male has yet to be defined, but some researchers have held that FSH is vital for spermatogenesis and that suppression of the hormone will prove an effective contraceptive.

To suppress FSH, the researchers gave five men weekly testosterone injections, which also suppressed production of sperm and luteinizing hormone (LH), another pituitary hormone. They then injected the men with a hormone similar to LH to make up for its absence. The net result was that the men's blood had testosterone and an LH-like substance, but no FSH. Their sperm counts returned to normal. The researchers' conclusion—sperm production can occur despite the absence of FSH.

“It raises questions as to the role of FSH, and raises the possibility that selective suppression of FSH may not prove to be a useful contraceptive in males,” says Alvin Matsumoto, who presented the results.

However, C. Alvin Paulsen, another researcher on the project, feels the findings do not eliminate FSH as a possible male contraceptive. “Two laboratories have shown that immunizations against FSH suppresses sperm counts, and this data can't be ignored,” he says.

One possible conciliation pointed out by William Bremner, author of the study, is that spermatogenesis may be affected by the length of time before LH activity is reinstated.