

tibodies that bind to each one.

"These peptides are present in an extensive system throughout the brain," Bloom reports. The system includes a pathway between two different brain areas that plays a role in signalling the brain to initiate body movement. No neurotransmitter had previously been identified in these connections.

Although, so far, assays for these peptides are not sensitive enough to document release from activated brain areas, Bloom reports that they exhibit some other characteristics of transmitters. They are associated with structures involved in chemical signal release, and the substances can alter the electrical activity of some nerve cells.

A novel aspect of DNA structure also has been detected during these studies on genes active only in the brain. A common sequence of 82 nucleotides has been determined in eight genes—every one examined so far—in regions called intervening sequences (or introns) that do not carry information about making protein. Bloom, Sutcliffe, Milner and Richard Lerner of Scripps Clinic call this segment the "iden-

tifier (ID) sequence," suggesting that it is a signal carried within genes to specify that they are to be expressed in the brain.

The scientists predict different ID sequences will be detected in other types of tissue. The brain ID sequence is also found in short pieces of RNA, of unknown function, that are present in brain but not in liver or kidney cells. This is the first specific signal to be found in intervening sequences. Scientists had proposed their only role was to allow more recombination between different parts of proteins during evolution (SN: 7/7/79, p. 12).

The unconstrained approach to studying the nervous system should allow scientists to discover unexpected rules about how genes function and how the brain operates. "We are looking with our eyes open," Bloom says. He and his colleagues propose that "since the brain-specific proteins are chosen at random, these studies are not biased by preconceptions as to what sort of proteins one ought to study to define brain function. Many experimental avenues not currently apparent may be illuminated by such an unbiased approach."

—J.A. Miller

More evidence for volcanoes on Venus

Besides the earth, the only object in the solar system that is known to be volcanically active at present is Jupiter's moon Io. A growing list of observations and analyses, however, is pointing tantalizingly at the same possibility for Venus. There are no Venus data as conclusive as the Voyager spacecraft photos of Io, showing the bizarre moon's eruptions taking place even as the cameras looked on. But the hints about Venus continue to accumulate, ranging from radar scans of areas resembling volcanic regions on earth to measurements of lightning discharges that seem concentrated over these same, apparently young areas.

The latest addition comes from measurements made over half a decade by the orbiting Pioneer Venus spacecraft, which has been looking down at the planet's atmosphere from on high since December, 1978. Ultraviolet spectra taken over that span, says Larry W. Esposito of the University of Colorado in Boulder, show that the amount of sulfur dioxide at the top of the Venus clouds has declined by more than 90 percent since the orbiter started taking its measurements. In addition, he says, so has the amount of fine (sub-micron) haze particles seen above the clouds. When the spacecraft first arrived, Esposito says, both of these constituents were found in concentrations far greater than even the maximum amounts derived from previous earth-based observations, and they have been declining ever since. Venus had, however, revealed a similarly hazy appearance in polarimetry data from the late 1950s.

A possible message from all this, according to Esposito, is that major volcanic eruptions, decades apart, have taken place on the surface of Venus. Such a blast, he suggests, could send a column of hot, sulfurous gases high into the clouds. The SO₂ in this gas would rapidly form into small aerosol particles of sulfuric acid, which would eventually grow into larger particles and fall out into the main cloud deck, leaving decades-long periods when neither the small aerosols nor SO₂ would be visible. Esposito's implication is that just such a major eruption may have taken place shortly before the orbiter got to Venus, and that another occurred in the late 1950s. The thermal energy required for such an ejection, he says, is about 10 times greater than even "the largest of recent earth eruptions." By the same token, the amount of haze in the Venus middle atmosphere at the orbiter's arrival was about 10 times more than has been found in earth's stratosphere following major terrestrial eruptions.

In addition, Ronald G. Prinn of the Massachusetts Institute of Technology in Cambridge notes that analyses of the Venus surface by the Soviet Venera 13 and 14 landing craft show "free calcium" to be considerably more common than calcium sulfate. Since free calcium would react readily with SO₂ and remove it from the atmosphere, he says, the fact that abundant SO₂ remains in the presence of free calcium suggests that the SO₂ must have been a recent addition—perhaps, he suggests, as recent as 10 to 1,000 years ago. Esposito's analysis is certainly not "proof" of volcanism on Venus, but it changed Esposito's mind from "possible" to "likely."

—J. Eberhart

Aluminum cutback to prevent senility

A possible preventive against senility (senile dementia or Alzheimer's disease) is being proposed by a Washington, D.C. toxicologist. The technique involves reducing levels of aluminum in one's diet, since there is increasing evidence that aluminum can accumulate in the brain and cause several kinds of dementia, including the senile type (SN: 11/6/82, p. 292).

Armond Lione, a toxicologist and president of Associated Pharmacologists and Toxicologists in Washington, D.C., writes in *FOOD CHEMISTRY AND TOXICOLOGY* (Vol. 21, No. 1), that nonprescription drugs containing substantial amounts of aluminum include a number of antacids, buffered aspirins, anti-diarrheal products, douches and hemorrhoidal medications. Foods that contain ample amounts of aluminum include many household baking powders, individually wrapped sliced process cheeses, pancake mixes, frozen dough and self-rising flours as well as some pickled cucumbers. Aluminum cookware, he has found, can also add to people's daily aluminum intake, especially when salty, acidic or alkaline foods are cooked in it.

Although no studies have yet shown whether aluminum reduction can prevent senility, Lione told *SCIENCE NEWS*, some scientists are now trying to see whether reducing the aluminum intake of senile patients can counter their disease.

—J. A. Treichel

Laser clears clogs

An experimental laser treatment that may replace bypass surgery for clogged arteries in the heart and legs has successfully burned away cholesterol blockages in the leg of a 62-year-old man, Stanford University Medical Center announced this week. The patient walked away from the hospital 24 hours after the operation.

Robert Ginsburg, a cardiologist who helped develop the procedure, says, "To our knowledge this is the first successful use of laser angioplasty as a treatment for vascular disease. ... Once we feel more comfortable with this technique in diseased legs, we'll move on to our ultimate goal of attempting the procedure on coronary arteries." He added that the risks of burning a hole in the artery and the chance of blood clotting keep the technique "a long way off from being an everyday procedure."

The clinical trials at Stanford, ongoing since March, come after several years of experiments with animals, human cadavers and optical physics research at Stanford and other places (SN: 10/2/82, p. 213). Ginsburg adds that much more work is needed before the procedure can become generally available. □