Biology

Finding a partner for fusin at last

Earlier this year, researchers identified a protein on the surface of immune cells that allows HIV, the AIDS virus, to infect the cells (SN: 5/11/96, p. 293). The protein, called fusin, turned out to be the portal for only some strains of HIV, mainly those found in the late stages of AIDS. But what role does fusin play in an uninfected person?

Fusin binds to a molecule called stromal-cell-derived factor 1, or SDF-1, two research groups now report. That well-known molecule is a chemokine, a compound released at a site of infection to attract immune cells. The discovery of fusin's role is described in the Aug. 29 NATURE by a group led by Estelle Oberlin of the Pasteur Institute in Paris and another group led by Conrad C. Bleul of the Dana-Farber Cancer Institute in Boston.

The result isn't surprising, considering that another molecule which HIV uses to infect cells binds to other chemokines. This immune cell surface protein, CC-CKR-5, is commandeered by the most common strains of HIV (SN: 6/22/96, p. 390). In test-tube studies, chemokines that bind to CC-CKR-5 seem to prevent some HIV strains from infecting cells. In similar studies, investigators have now shown that SDF-1 can block the HIV strains that depend on fusin.

New twigs on the third branch of life

The single-celled microorganism *Methanococcus jannaschii* made headlines last month when scientists announced that they had fully sequenced its genes (SN: 8/24/96, p. 116). Interest in the microbe stems largely from its membership in a little-known group of microscopic organisms called the archaea. Neither bacteria nor eucarya (plants, animals, fungi, and any other organisms with a nucleus in their cells), archaea represent a third branch of life, many scientists contend.

This branch, relatively bare compared to the other two, has recently sprouted more twigs. In studies of a Yellowstone National Park hot spring called the Obsidian Pool, Susan M. Barns of Indiana University in Bloomington and her colleagues have unearthed signs of more than a dozen previously unknown archaea.

The researchers, who describe their work in the Aug. 20 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, have not yet isolated the microorganisms. While studying sediment from the spring, the researchers discovered novel versions of a gene that encodes a subunit of ribosomes, the protein-making factories of cells. The genes resemble closely those of other archaea, but subtle differences in their DNA sequences indicate that they belong to new members of the archaean family, say the biologists.

Monkeying with fetal alcohol syndrome

As many as 1 woman in 500 who drink alcohol during pregnancy gives birth to a child afflicted with the physical facial abnormalities and mental retardation typical of fetal alcohol syndrome. To study how maternal alcohol consumption harms a fetus, researchers have generally turned to rodents. They have almost invariably found that pups of rodents given alcohol while pregnant suffer loss of many types of brain cells, including the Purkinje cells of the brain's cerebellum.

Babies of pigtailed macaques given large doses of alcohol once a week during pregnancy have similar losses of Purkinje cells, James R. West of the Texas A & M University in College Station and his colleagues now report in the August TERATOLOGY. In addition to confirming the rodent results in animals more similar to humans, the study found several normal-looking baby macaques that nevertheless had lost Purkinje cells. Consequently, notes West, some children who do not display the facial defects typical of fetal alcohol syndrome may nonetheless suffer alcohol-induced brain damage.

Biomedicine

Husband's liaisons put wife at risk

A husband's extramarital affairs may put his wife at risk of cervical cancer, a new study finds.

Researchers had previously shown that exposure to certain types of human papillomaviruses (HPVs) heightens a woman's risk of developing cervical cancer. They also knew that HPVs are transmitted sexually. Now, Keerti V. Shah, a virologist at the Johns Hopkins Medical Institutions in Baltimore, and his colleagues have explored the male role in this story of a virally induced cancer in women.

The team interviewed the husbands of women who had cervical cancer and of women who were cancerfree. The researchers asked the men about a variety of lifestyle factors, including extramarital sexual affairs. The team also conducted a test that looks for viral DNA in a sample obtained from the outside of the penis.

The researchers discovered that the presence of viral DNA on a husband's penis increased the wife's risk of cervical cancer fivefold. The study also shows that the prevalence of the viral DNA and the wife's risk of cervical cancer increase with the number of the husband's extramarital affairs. The risk is especially great when a husband has trysts with prostitutes. Indeed, wives of men who reported having seen a prostitute at least 10 times during their marriage had 11 times the risk of developing cervical cancer as the wives of men who had no contact with prostitutes.

Shah and his colleagues report their findings in the Aug. 7 JOURNAL OF THE NATIONAL CANCER INSTITUTE.

The number of sexual partners a man reported before marriage didn't appear to influence his wife's risk of cervical cancer, Shah says. "The HPV infections do not last indefinitely," he says, adding that the body's immune system usually clears the viruses within several years.

Hypertension drug linked to cancer?

A drug commonly used to treat high blood pressure increases the risk of cancer in the elderly, according to the latest study on the controversial treatment.

Beginning in 1988, Marco Pahor of the University of Tennessee in Memphis, researchers at the National Institutes of Health (NIH), and their colleagues studied 5,052 men and women age 71 and over who live in Massachusetts, Iowa, and Connecticut. Of this group, 9 percent were taking the short-acting form of calcium-channel blockers. The researchers did not look at the newer, longer-acting versions of these drugs.

During the 4 years of the study, cancer was diagnosed in 420 participants. After adjusting for numerous other risk factors, such as smoking, alcohol use, and age, the researchers concluded that people taking calcium-channel blockers face a 72 percent greater risk of developing cancer than those not taking these drugs.

The team notes in the Aug. 24 LANCET that other research has shown that calcium-channel blockers may interfere with mechanisms that limit cancer cell growth. Some researchers theorize that such drugs block apoptosis, a process in which a cell destroys itself.

An editorial accompanying the LANCET report notes that some of the researchers involved in the debate have received death threats, which are being investigated by the FBI.

NIH says the new findings are preliminary and advises patients who are taking the drugs to talk to their physicians. Several different types of drugs are effective in lowering blood pressure.

The LANCET study and a report in the Sept. 11 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION have intensified the debate over calcium-channel blockers. The latter study finds a calcium-channel blocker called isradipine may cause cardiovascular problems. Earlier research had linked these drugs to increased risk of heart attack (SN: 9/9/95, p. 164).

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