Biomedicine

New addition to herpes family

The herpesvirus family may have gained a new member last month. Researchers from the National Cancer Institute and five other institutions isolated a novel herpesvirus from six patients who had unusually high levels of a type of white blood cell known as a B lymphocyte.

Electron microscopy of the patients' blood revealed large, short-lived cells containing a virus that by size and shape belongs to the herpes family. Unlike its relatives, the virus *in vitro* infects only fresh B cells. Antibodies against the other herpesviruses didn't attach to the new one.

In the Oct. 31 SCIENCE, the discoverers describe isolating the virus from two people who had also been infected with the AIDS virus and four people who had not. They also report finding no evidence of the new virus in 12 other AIDS patients, indicating it is not a necessary factor in AIDS.

Just what sort of problems the virus causes remains to be seen. The four non-AIDS patients in the study had lymph node abnormalities or white-cell cancers. But the virus can also infect with no outward signs – the researchers found it in four of 220 healthy people tested.

Because of its association with high levels of B cells, its discoverers, S. Zaki Salahuddin, Robert C. Gallo and others, have named it human B-lymphotropic virus (HBLV). If that name sounds familiar, it's because of its similarity to HTLV-III (for human T-lymphotropic virus type III), the AIDS virus discovered by Gallo's laboratory.

As the first new herpesvirus in more than 20 years, the virus is likely to receive a lot of attention. It may be responsible for one or more of the many apparently infectious illnesses whose agents have not yet been identified, says Stephen E. Straus of the National Institute of Allergy and Infectious Diseases. And it may shed light on other members of the herpes family, he says.

Henry H. Balfour Jr., a herpes expert at the University of Minnesota in Minneapolis, says he was impressed with the research. But he was not impressed with the name, since there already is a B-lymphotropic herpesvirus, the Epstein-Barr virus. Time will tell whether HBLV will go through the name changes of HTLV-III (SN: 4/26/86, p.265; 5/25/85, p.328).

Health budget '87: The final chapter

Two and a half weeks into fiscal year 1987, the National Institutes of Health got its bottom line – $6.18 billion. The money was included in a continuing resolution signed by President Reagan on Oct. 18. Congress pushed for and got NIH about $1 billion more than the President wanted to give.

Included is $247.9 million for NIH-directed AIDS research, up from $134.7 million in FY 1986. The total 1987 Public Health Service appropriation for AIDS is $411 million, including $71 million for education and risk reduction.

AIDS: More education, money needed

Despite the effort and progress in AIDS research, at the moment the only sure way to avoid dying from the syndrome is to avoid getting it. Two reports recently released, one by the U.S. Surgeon General and the other by the National Academy of Sciences, emphasize the importance of prevention. In addition, the academy calls for a big increase in federal funding.

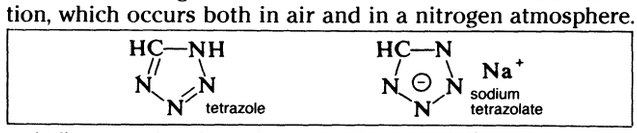
Surgeon General C. Everett Koop called for personal responsibility in avoiding "high-risk sexual and drug-related behaviors," and has made his report available to the public. Copies can be obtained by writing to: AIDS, P.O. Box 14252, Washington, D.C. 20044. Koop also said schools should begin educating students about the syndrome "at the lowest grade possible." For its part, the National Academy of Sciences called for an additional $1 billion a year for research and another $1 billion for education.

Chemistry

Burning with a liquid flame

The word "burning" usually evokes an image of incandescent gases and flickering flames. Now Soviet scientists have discovered a material that burns with a liquid flame – a ball of light-red, glowing fluid that steadily grows as it skates across the material's surface while the material burns. Eventually, the ball reaches its maximum diameter and settles in the hollow created by its motion. Only traces of a white vapor that appear where the liquid ball touches the material's surface show that combustion continues. No gas flame is visible.

As reported in the Oct. 23 NATURE, the material is a compressed mixture of two substances: tetrazole and sodium tetrazolate. The experiments were done by a group of researchers at the Byelorussian State University in Minsk. Each sample consists of a solid cylinder, 20 millimeters in diameter and 30 mm in height. A red-hot wire is used to initiate combustion, which occurs both in air and in a nitrogen atmosphere.



At first, a molten layer forms on the material's surface, which gives off gaseous combustion products. Explosive sparking punctuates this layer. Then a 1-mm glowing liquid ball appears and, as it quickly skims the molten surface, gradually grows to 15 mm or more in diameter. The ball's internal temperature reaches 760° C, although tetrazole and sodium tetrazolate themselves are unstable at temperatures above 320° C.

The researchers found that they could stop the burning by turning the sample over or by blowing the ball off the surface. A cooled ball hardens into a light-gray, porous bead, indicating that the liquid ball contained gas bubbles. Analysis reveals the presence of sodium carbonate and complex nitrogen-carbon compounds. Nitrogen is the main gaseous product.

"The chemistry of the combustion process is unusual," the researchers say. The glowing ball seems to dissolve the starting substances and absorb the tetrazole vapor. Conditions within the liquid ball allow the synthesis of heat-resistant sodium salts and polycylic nitrogen-carbon compounds.

"The liquid flame . . . allows substances to remain in the combustion zone for a long time," say the scientists. "As a result, comparatively slow [chemical] processes, in particular polymerization, may take place in a liquid-flame reactor."

More carbon-cage molecules

Buckminsterfullerene is a recently discovered, stable cluster of 60 carbon atoms, which may have a geometric structure like the pattern on a soccer ball (SN: 11/23/85, p.325; 12/21&28/85, p.396). Now theoreticians are coming up with more possible carbon-cage molecules. A group at Texas A&M University at Galveston predicts that 180- and 240-atom carbon clusters may also be especially stable. Neither has yet been observed experimentally. Their report is in the Oct. 23 NATURE.

Extending the route to optical purity

Chemist Herbert C. Brown and his colleagues at Purdue University in West Lafayette, Ind., have extended their novel method for synthesizing only one member of a pair of mirror-image molecules (SN: 4/14/84, p.229). This method can now be used with nitrogen-containing compounds called amines. Using the method, Brown's group has been able to synthesize "optically pure" forms of drugs like the antidepressant cypenamine.

The key step was discovering a way to replace the boron atom, which is a necessary constituent of the starting material, with nitrogen. Details appear in the Oct. 17 JOURNAL OF THE AMERICAN CHEMICAL SOCIETY.