

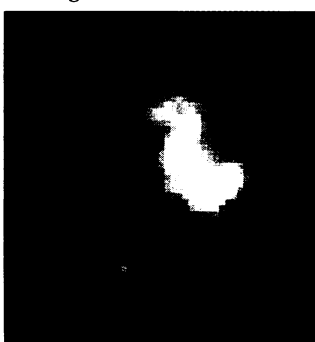
A clearer view of Titan

Peering through the hydrocarbon haze that shrouds Saturn's moon Titan, astronomers have obtained the sharpest images ever taken of the surface of this mysterious body. Infrared pictures reveal a complex terrain of bright regions that could be continents of ice and rock, as well as dark areas that could be oceans of hydrocarbons.

Researchers have long been interested in Titan because of its chemistry. They suspect that some of the organic compounds in its atmosphere could have rained onto its moon's surface and created a complex mixture similar to that on Earth's surface before life emerged (SN: 11/1/97, p. 284).

To observe Titan, Claire E. Max of the Lawrence Livermore (Calif.) National Laboratory and her colleagues used the giant Keck I Telescope atop Hawaii's Mauna Kea. The team viewed the surface in the infrared, since this radiation passes through Titan's hydrocarbon smog.

To overcome image blurring due to Earth's rapidly changing atmosphere, the astronomers took extremely fast snapshots. By combining hundreds of these images, they created a map of Titan's surface that is sharper than that taken by the Hubble Space Telescope (SN: 11/12/94, p. 309), Max says. She and her colleagues describe their results in the July ICARUS.



New map of Titan: The bright region shaped like a duck could be a mixture of rock and ice, while the dark, kidney-shaped region on the left could be a hydrocarbon ocean.

The high-precision images "are better than the Hubble images," says Jonathan I. Lunine of the University of Arizona in Tucson. Some of the very dark areas in the new Titan map "could indeed contain liquid," he adds. If so, it would be the first open sea discovered beyond Earth.

Images of Titan may soon become even sharper, notes Lunine. Livermore researchers are testing an automated system that will allow Keck's mirror to compensate directly for the distortions generated by Earth's atmosphere. Furthermore, a probe on the Saturn-bound Cassini spacecraft is scheduled to parachute onto Titan in 2004. That mission could settle the question of whether this moon has a dark sea.

—R.C.

Sunrise, sunset . . .

A visitor to the small asteroid 1998 KY26 wouldn't have to worry about missing a sunrise. On this rock, the glowing disk climbs above the horizon about every 10 minutes. That's because the asteroid, a mere 30 meters in diameter, makes a complete rotation in just 10.7 minutes. It twirls 10 times as fast as any other known body in the solar system and 60 times as fast as the average rate of rotation of known asteroids.

To measure the spin of 1998 KY26, Steven J. Ostro of NASA's Jet Propulsion Laboratory in Pasadena, Calif., and his colleagues beamed radio waves at the asteroid from NASA's 70-meter antenna in Goldstone, Calif., and recorded their echoes. Another team tracked the asteroid, the smallest solar system object yet studied in detail, with visible-light telescopes. The researchers describe their findings in the July 23 SCIENCE.

Collisions probably sped up the asteroid, notes team member Petr Pravec of the Academy of Sciences of the Czech Republic in Ondrejov. Ostro says the rock may contain as much as a million gallons of water, as well as complex organic compounds that could prove valuable for future space explorers.

—R.C.

Common virus seen in breast tumors

Epstein-Barr virus (EBV), the common herpes virus that causes infectious mononucleosis, appears in breast tumors with unusual frequency, a new study finds.

Research has linked EBV with several other cancers, such as Hodgkin's disease, B-cell lymphoma, Burkitt's lymphoma, and stomach cancer. While its presence in some breast cancer patients also emerged in two earlier studies, the new results show a stronger link and suggest that EBV is most likely to appear in the breast cancers that carry the poorest prognosis.

Scientists examined tumor tissue from 100 randomly selected breast cancer patients. The virus appeared in 51 of the tissue samples. In contrast, analysis of 30 samples collected from healthy breast tissue from the breast cancer patients showed that only 3 contained EBV, says Irene Joab, a biochemist at Saint Louis Hospital in Paris. The report appears in the Aug. 18 JOURNAL OF THE NATIONAL CANCER INSTITUTE (JNCI).

The two previous studies reported EBV in 21 percent and 41 percent of breast tumors. The new study not only showed a higher rate, 51 percent, but also revealed a tendency for the virus to crop up more often in aggressive cancers. For example, EBV was present in 18 of 25 cancers (72 percent) in which cancer had spread to more than three lymph nodes. In contrast, the virus appeared in only 33 of 75 patients (44 percent) with cancer in three or fewer lymph nodes.

EBV was less common in tumor cells showing certain hormone-receptor molecules than in cells lacking these receptors, Joab says. The latter cancers have a poor prognosis.

Ian Magrath and Kishor Bhatia of the National Cancer Institute in Bethesda, Md., caution that several other studies have found no link between EBV and breast cancer. However, these earlier studies employed less thorough tests for EBV, they note. "Although more data are needed, it seems likely at this time the EBV is frequently associated with multiple . . . types of breast cancer," they say in the same issue of JNCI.

The question remains as to whether EBV directly causes breast cancer. Magrath and Bhatia suggest the virus might be attracted to preexisting cancer cells and infect them preferentially. However, Joab and her colleagues note that the virus' presence in some cancerous lymph nodes suggests that the virus had infected breast cells before the tumor spread.

In either case, EBV could play a role in breast cancer diagnosis, Magrath and Bhatia say.

—N.S.

Raloxifene hikes bone density in women

The drug raloxifene came on the market last year, prescribed mainly to counteract osteoporosis, or brittle-bone disease. Approved for use because tests had indicated that it inhibits bone loss, raloxifene nevertheless had not been shown to actually prevent fractures.

Now, researchers report that raloxifene increases bone density of postmenopausal women and reduces their risk of back-bone fractures by nearly half.

Two-thirds of 7,705 women with osteoporosis, average age 67, received raloxifene over 3 years. The rest took an inert pill. Of women getting the drug, less than 6 percent suffered fractures of the vertebrae, compared with 10 percent in the other group. The raloxifene group showed fewer ankle breaks, but the number of other fractures in the body wasn't significantly different between the groups, the researchers report in the Aug. 18 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

On average, bone density rose 2 to 3 percent in the raloxifene group during the study, says coauthor Bruce Ettinger of the Kaiser Permanente Medical Care Program in Oakland, Calif.

The findings add to raloxifene's growing status. Earlier this summer, data from the same study showed that the drug lowers the risk of breast cancer (SN: 6/19/99, p. 388).

—N.S.