

OF NOTE

ASTRONOMY

Record-breaking galaxy

Looking ever deeper into space and farther back in time, astronomers have found a galaxy more distant than any other known in the universe. Using the large Subaru telescope atop Hawaii's Mauna Kea, researchers recorded a galaxy as it appeared just 780 million years after the Big Bang. The universe is now 13.7 billion years old.

For their study, Masanori Iye of the National Astronomical Observatory of Japan in Tokyo and his colleagues used a filter that selects near-infrared light corresponding to radiation emitted by hydrogen atoms in distant galaxies. The distant galaxies emit this light at ultraviolet wavelengths, but the expansion of the universe shifts that radiation into longer, infrared wavelengths that Subaru can detect.

The team found 41,533 candidate galaxies and then used a spectrograph to confirm that one faint galaxy, now dubbed IOK-1, is extraordinarily remote, 12.88 billion light-years from Earth. That's 60 million light-years farther away than the previous galactic distance holder, which astronomers had also found with Subaru. The team reported its findings in the Sept. 14 *Nature*. —R. C.

BIOMEDICINE

Do acid blockers let microbes reach the colon?

Suppressing stomach acid while taking antibiotics may allow antibiotic-resistant bacteria to colonize the intestines, a study shows.

Researchers had previously linked

stomach-acid suppression to pneumonia (*SN*: 10/30/04, p. 277). To test the effect of acid-suppressing drugs on bacteria passing through the stomach to the intestines, researchers gave mice two kinds of live, resistant bacteria via a feeding tube over 3 days. The animals then received an acid-suppressing drug, the antibiotic clindamycin, or both. The acid blocker was a proton-pump inhibitor called pantoprazole.

The bacteria colonized the intestines of the mice receiving both the acid blocker and the antibiotic more than three times as often as they did the intestines of mice receiving the antibiotic alone, says Curtis J. Donskey, an infectious-disease physician at the Louis Stokes Cleveland Veterans Affairs Medical Center in Ohio. He presented the findings at the 46th Interscience Conference on Antimicrobial Agents and Chemotherapy in San Francisco last month.

Both factors—acid suppression and an antibiotic—were needed to make the intestines a welcoming home to the resistant microbes. By reducing acid concentrations in the animals' stomachs, pantoprazole provided "free passage through the stomach" for the microbes, Donskey says. In the intestines, the antibiotic suppressed natural, protective microbes, while the invading drug-resistant bacteria thrived, he says. —N.S.

INFECTIOUS DISEASES

Antiviral drug may limit herpes spread

In people who have had at least one outbreak of blistering from genital herpes, the drug famciclovir sharply reduces virus shedding from the external portions of the genitalia, a new study finds. Such shedding can spread the virus between people.

Despite the apparent risk of herpes spreading during an outbreak, most new cases of genital herpes are caused by sexual contact with an infected person without visible blisters, says Peter Leone, a physician at the University of North Carolina School of Medicine in Chapel Hill. Because such silent transmission "is what drives the epidemic," he says, inhibiting shedding could prove valuable.

Famciclovir (Famvir) is a daily antiviral pill prescribed to limit herpes outbreaks. To test whether it can also stop viral shedding, researchers identified 129 men and women with genital herpes and randomly assigned half to take famciclovir and half to get an inert pill. After 42 days, the regimens were reversed. Participants and researchers didn't know which pill a volunteer was getting.

Every day throughout the study, each participant collected swabs of his or her genital area.

Although previous tests had shown that all the participants carried the genital herpes virus, some had never had an outbreak. Analysis of the swabs revealed that those asymptomatic people were as likely to shed the virus when they were getting the drug as when they received the placebo.

In contrast, famciclovir showed an effect in participants with histories of genital herpes outbreaks. This group was only about one-fourth as likely to shed virus while getting the drug as they were while getting the placebo, says Leone, who presented the findings last month at the 46th Interscience Conference on Antimicrobial Agents and Chemotherapy in San Francisco. —N.S.

BEHAVIOR

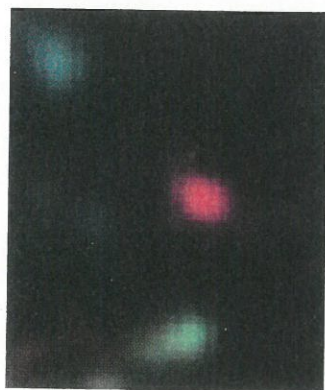
Prepared brains achieve insight

Sudden verbal insights arise from distinct brain operations that focus attention and facilitate access to word knowledge, a new investigation suggests.

A team led by John Kounios of Drexel University in Philadelphia used electric sensors on people's scalps and functional magnetic resonance imaging to track brain activity in 44 volunteers. The researchers took measurements in the seconds while each participant contemplated solutions to word problems. For each problem, volunteers viewed three words—say, *pine*, *crab*, and *sauce*—and tried to think of another word—such as *apple*—that could be combined with each of them to form larger words.

Participants solved nearly half of such problems correctly. During the experiment, they reported when solutions came to them in sudden, "Aha!" flashes or as a result of slow deliberations.

Brain measurements indicated that sudden, insightful solutions followed activity in areas toward the front of the brain that suppress unwanted thoughts and generate word associations. In con-



SO FAR AWAY The most remote galaxy known (red) lies 12.88 billion light-years from Earth. Image depicts radiation emitted by hydrogen atoms.