

Scoping out the homes of gamma-ray bursts

In a matter of seconds, gamma-ray bursts unleash more energy than the sun has released during the past 4.5 billion years. Astronomers don't know what generates these flashes of energetic radiation, but they have begun to identify the galaxies from which the bursts originate.

Earlier this month, astronomers succeeded in measuring the distance to the galaxy from which a gamma-ray burst detected last June 13 by the BeppoSAX satellite had emerged. The measurement, based on observations with the Keck II Telescope atop Hawaii's Mauna Kea, marks only the fourth time that researchers have measured the distance to the source galaxy of a gamma-ray burst.

Shrinivas R. Kulkarni, S. George Djorgovski, and Joshua S. Bloom of the California Institute of Technology in Pasadena and their colleagues reported the finding in a Jan. 3 circular of the Gamma-Ray Burst Coordinates Network (GCN). The galaxy lies about 6 billion light-years from Earth.

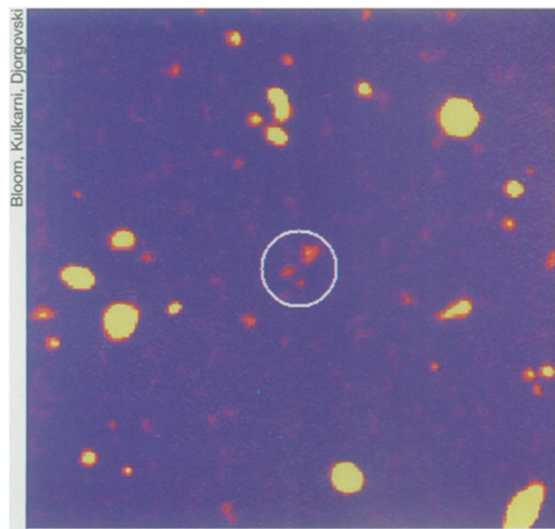
Researchers have also explored the origins of a gamma-ray burst recorded by several satellites on Dec. 20, 1998. The astronomers found what appear to be the fading visible-light ember of the burst and the faint light of its home galaxy. In a Dec. 29, 1998, GCN circular, Aaron C. Eichelberger of Caltech and his colleagues were the first to report the visible glow associated with the burst. Other teams also recorded images of the ember and its home galaxy, which coincide with the position of a radio-wavelength afterglow to the gamma-ray burst. Djorgovski and his collaborators took a detailed visible-light image Jan. 14 with the Keck I

Telescope on Mauna Kea.

"At this point it is simply a feat [to detect] the thing: Its brightness is about equal to that of a 40-watt light bulb seen from 1 million miles away!" says Djorgovski. The galaxy's faintness suggests it is distant, he adds.

Like light bulbs of different wattages, the bursts come in a wide range of luminosities, Kulkarni notes. In the Feb. 1 *ASTROPHYSICAL JOURNAL LETTERS*, Bradley E. Schaefer of Yale University argues that many of the galaxies known to have produced gamma-ray bursts are dimmer than the average galaxy. There is no clear explanation for the finding.

Despite such puzzles, "slowly but surely, we are starting to understand the population of the host galaxies of gamma-ray bursts," says Djorgovski. The researchers hope that such understanding will shed light on the processes that create these energetic outbursts. —R. Cowen



Nov. 29, 1998, image of the galaxy (circle) from which the gamma-ray burst GRB 980613 originated. The galaxy may be merging with another. Mergers rev up star formation, and massive stars may be the source of gamma-ray bursts.

Which is healthier, the wining or dining?

People who regularly drink small to moderate amounts of wine tend to have fewer cardiovascular problems than teetotalers or people who prefer other alcoholic libations, research has shown. One nagging question always remained, however. Do these apparent heart benefits derive primarily from the wine—or from one or more associated aspects of a wine drinker's lifestyle?

A study now suggests that dining and other habits may prove at least as beneficial as any wine consumption. If true, sparing the heart again becomes a lot more complicated than prescribing a daily glass of the house red.

Numerous studies have shown that wine and other alcoholic beverages effect changes in the blood that have been linked to reduction of an individual's risk of heart disease (SN: 5/4/96, p. 286). Three years ago, Danish researchers also showed that people with some of the highest risks for heart disease seem to get the biggest benefit from regularly downing alcohol (SN: 3/30/96, p. 197).

Now, another Danish team has data to suggest why, among those who drink alcohol, wine drinkers still appear to come out on top, heart-wise. Overall, the researchers find that wine drinkers—independent of their alcohol consumption—possess the healthiest habits.

Epidemiologist Anne Tjønneland of the Danish Cancer Society in Copenhagen and her colleagues analyzed the lifestyles of almost 50,000 men and women between the ages of 50 and 64. All

were part of the new Diet, Cancer, and Health Study.

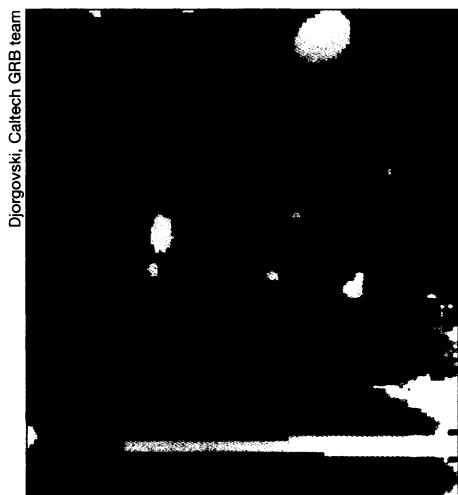
Among individuals regularly downing at least 2.5 alcoholic drinks per month, wine drinkers tended to eat more salads, more fish, more cooked vegetables, and more fruit, Tjønneland's team reports in the January *AMERICAN JOURNAL OF CLINICAL NUTRITION*. Wine drinkers also derived more of their dietary fat from olive oil—rich in heart-beneficial monounsaturated fatty acids (SN: 11/21/98, p. 328)—and tended to eschew butter or margarine on their bread.

Not only did wine drinking serve as a marker for those who ate most judiciously, Tjønneland says, but the strength of that association increased with wine consumption. So at least among these Danes, she says, "the more wine you drink, the healthier your diet."

Moreover, her data show that as a group, these wine drinkers proved the most likely to exercise, least likely to smoke, and least likely to be overweight.

Researchers have tended to study the role of a single food or nutrient because it's easier to do, notes nutritionist Marion Nestle of New York University. However, "single nutrients tend to be just indicators of overall dietary patterns," she says.

"What this kind of study makes clear," she maintains, "is that you can't change just one thing in the diet and expect to get huge health benefits." Instead, Nestle argues, "you may need to make moderate changes across the board and adopt a [studied population's] diet as a whole." —J. Raloff



Picture of object (circle) believed to be the visible-light counterpart of the gamma-ray burst GRB 981220, detected last Dec. 20. This image was taken on Jan. 14. Bright object to the right of the circle may be part of the galaxy that produced this burst, or it could represent a companion galaxy that is interacting with the source galaxy.

