the general population." And Otis Brawley, head of NCI's Office of Special Populations Research, notes that the sort of outcomes studies that the panel would exclude have demonstrated repeatedly that "equal [medical] treatment yields equal outcomes." He also says NCI submitted a list of 127 tightly focused studies totaling $43.9 million, not $24.2 million.

Less eye-catching but potentially more significant is the panel's recommendation that NCI go beyond traditional racial classifications and gather surveillance data on the basis of ethnic groups and socioeconomic status. The federal Office of Management and Budget (OMB) directs that government statistics be gathered in terms of four racial classifications—American Indian or Alaska Native, Asian or Pacific Islander, black or African American, and white—and one ethnic classification, Hispanic or non-Hispanic. But the concept of race "rests on unfounded assumptions," the IOM report says, noting that there is more genetic variety within racial groups than between them.

NCI would do better, the report says, to define population subgroups in terms of ethnicity, embracing country of ancestry and a range of "cultural and behavioral attitudes, beliefs, lifestyle patterns, diet, environmental living conditions, and other factors that may affect cancer risk." The report does not specify the categories but calls on NCI and NIH to develop uniform definitions of ethnicity and of "special populations" to study diseases in the medically underserved. This approach, the IOM panel says, might better highlight disparities between groups and point to new directions for research into risk factors.

Klausner agreed that the OMB racial classifications "are not scientifically sound," and he told Specter's subcommittee that NCI "has gone well beyond" them in such efforts as its Surveillance, Epidemiology and End Results (SEER) program. He also endorsed the need for better data and a uniform definition of the medically underserved; NCI already is funding research in that direction, he said. But Klausner said that because of the importance of linking with other data sources—such as the Census Bureau, Medicare records, and state health department records—NCI can't break away from the current OMB categories on its own.

Klausner disagreed, however, with the panel's recommendation that the NCI Office of Special Populations Research be given line authority, including its own budget for awarding grants, and he challenged the panel's assertion that NCI has no strategic plan for addressing cancer burdens among minorities and the underserved.

NCI officials have not yet completed a cost estimate for implementing the panel's recommendations, although Brawley says it would be "large—in the tens of millions." For at least one member of the IOM panel, however, that price may be acceptable. "If you want to have increased surveillance, if you want to recommend that SEER do more, you've got to give it more money," says Gilbert Friedell of the University of Kentucky Markey Cancer Center in Lexington. "This is not an effort to constrain NCI. We're supporting NCI."

—BRUCE AGNEW

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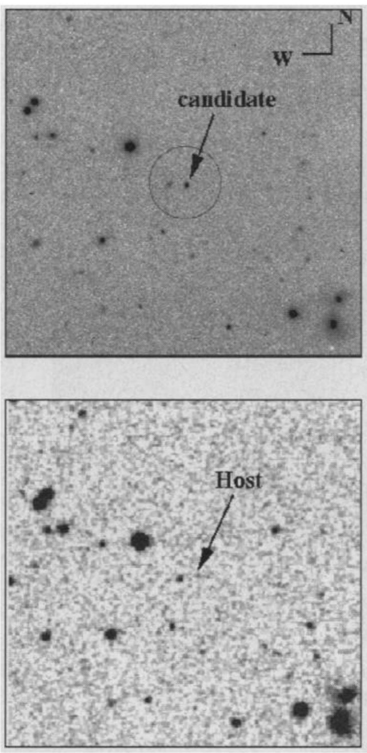
ASTROPHYSICS

Gamma Burst Promises Celestial Reprise

Missed the latest gamma ray burst? Never mind: There's about to be a replay, or so astronomers hope. Last Saturday, one of the brightest of these mysterious blasts of gamma and x-rays triggered satellite detectors. Two days later, after hunting down and analyzing the visible light from the burst source, astronomers concluded that the burst probably looked so bright because the gravity of a galaxy between Earth and the source focused its radiation toward us.

"It is the first such case found," says George Djorgovski of the California Institute of Technology in Pasadena. If a gravitational lens did brighten the burst, a reprise could come shortly, with the arrival of radiation refracted toward Earth along a different, slightly longer route. That would give astronomers a second chance to study the event.

The Italian-Dutch satellite BeppoSAX and NASA's Compton Gamma Ray Observatory (GRO) picked up the initial gamma burst on 23 January at 09.47 Universal Time. BeppoSAX's wide-field x-ray cameras—which have finer resolution than gamma detectors—also detected x-rays from the burst, pinpointing its position so that astronomers on the ground could search the spot for signals in visible light or radio waves.



Distant fire. The afterglow of a gamma ray burst (*top*) may have been intensified by the gravity of a faint nearby galaxy ("host," *bottom*).

A mere 18 seconds later, after being triggered automatically by a signal from GRO, the Robotic Optical Transient Search Experiment, a robotic camera array in New Mexico operated by the University of Michigan, the Los Alamos National Laboratory, and the Lawrence Livermore National Laboratory, recorded a relatively bright new "star" at the burst position. Half a minute later, this "optical transient" had brightened 15-fold, enough to be easily visible to amateur telescopes.

The burst's brightness and the visible glow suggested that the source of the burst must be nearby. The discovery of a faint galaxy at the burst position seemed to support that idea. But events did not bear it out. The galaxy has a redshift—a measure of distance—of between 0.2 and 0.3, modest in the cosmic scheme. Analysis of the optical transient, done on Sunday with the 10-meter Keck II telescope on Mauna Kea and the Nordic Optical Telescope on La Palma in the Canary Islands, placed the burst at a redshift of 1.6, however.

At that distance, roughly 80% of the way across the visible universe, Djorgovski calculates that the explosion would have had to have a staggering 2.3×10^{54} ergs of energy to explain its brightness at Earth, assuming nothing unusual had intensified its light. At maximum brightness, the visible "star" would have had to be as luminous as 100,000 galaxies.

Those numbers are implausible, Djorgovski thinks. The juxtaposition of the distant burst and the nearby galaxy suggests to him that the galaxy or the cluster it belongs to has acted as a gravitational lens, increasing the apparent brightness of the distant burst by a factor of 10 to 50 or so. Depending on how the gravitational lens has warped the paths of the radiation, additional burst images could flash into view within days, weeks, or months, says Jens Hjorth of the University of Copenhagen in Denmark. He hopes that this time around his colleagues will be ready to watch the burst from the moment it occurs.

—GOVERT SCHILLING

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