molecular biologist at the University of Texas, Austin, and one of the state's expert witnesses in the case, maintains that the contamination of two controls does not invalidate the final findings.

Conque said in his January decision that those are issues that should be addressed at the trial. With proper cross-examination and expert testimony from the defense witnesses, the jury would not be unduly confused about the significance of the data. He did, however, forbid the prosecution from implying that the phylogenetic analysis can prove direct transmission. The prosecution agrees that the DNA analysis is only "a single piece of the puzzle."

Myers, who has assembled an HIV sequence database at Los Alamos and was one of the leading scientists in the Florida dentist case, says the defense experts have relevant and well-reasoned arguments, but he believes the judge made the correct decision. "I think the judge understood ... that there is sufficient evidence that the viruses are related. Why they are so related remains to be seen." He agrees with the defense experts, however, that there is some danger that the jury could be misled by the scientific luster of DNA analysis. "If additional evidence does not come forward," he says, "it would be unfortunate, because it would give undue emphasis to the technology."

Adds Myers: "The experts shouldn't carry the weight; the totality of the evidence should."

–Gretchen Vogel

ASTRONOMY

Spotting a Gamma Burst's Afterglow

Dutch and Italian astronomers are closing the net on the culprits in gamma-ray bursts, one of astronomy's greatest mysteries. In the early morning of Friday, 28 February, a burst of gamma rays erupted in the constellation Orion, triggering a dedicated detector on board the Italian-Dutch satellite Beppo-SAX. At the same time, one of the satellite's two Dutch wide-field x-ray cameras, which have a much sharper resolution than the gamma detector, caught the burst. That enabled scientists to pinpoint its position much more accurately, to an area much smaller than the full moon. A mere 8 hours later, controllers pointed the sensitive narrow-field x-ray cameras on the satellite at the suspect position, revealing a rapidly dimming x-ray source that had not been there before.

Burst sentinel. The Beppo-SAX satellite.

SAX had apparently caught the first glimpse ever of the object responsible for the original blast as it cooled off, detecting it just before it vanished. "Had the burst occurred over the weekend, we wouldn't have been able to respond so quickly," says John Heise of the Utrecht laboratory of the Space Research Organization Netherlands. Astronomers around the world are now aiming their instruments at the site of the x-ray object, hoping to pick up more clues to the nature of the event that generated the burst.

Since their discovery almost 30 years ago, over a thousand gamma-ray bursts have been observed at random positions in the sky, but astronomers do not have the faintest idea whether they originate near our Milky Way galaxy or in the far reaches of the universe. Because most gamma detectors have a very low positional accuracy, it has never been possible to link a burst to a known astronomical object such as a galaxy or star.

Beppo-SAX, named after Italian x-ray astronomer Giuseppe "Beppo" Occhialini together with the acronym for Satellite per Astronomia in Raggi-X, could change that, because it carries both a gamma-ray detector and wide-field x-ray cameras, says Heise, the x-ray camera project scientist. The x-ray cameras can quickly narrow down the position of any gamma-ray source that happens to be in their field of view. Launched last April, the satellite made its first simultaneous detection last fall (*Science*, 4 October 1996, p. 38).

This time, the cooling x-ray source spotted by the narrow-field cameras has given searchers an even more precise fix on the position of the burst. As a result, the announcement of the detection by Enrico Costa of Italy's Space Astrophysics Institute and his colleagues in a 1 March circular of the International Astronomical Union has caused a flurry of activity at observatories all over the world. Dale Frail of the National Radio Astronomy Observatory, for example, observed the burst region with the Very Large Array radio telescope near Socorro, New Mexico. In a 6 March circular, Frail reports that measurements on 1 and 4 March reveal a suspect radio source. But according to Heise, it is too early to say for sure whether this source is related to the gamma-ray burst.

To solve the gamma-ray burst mystery, astronomers realize they will probably have to bring down their response time to less than 2 hours after the gamma-ray detection, to catch the burster while it is still glowing brightly. "The last time, our response time was 16 hours," says Heise. "Now it's reduced to eight. We're making progress."

–Govert Schilling

Govert Schilling is an astronomy writer in Utrecht, the Netherlands.

NATIONAL ACADEMY

Court Invalidates Expert Panel Report

Three U.S. activist groups last week won a preliminary injunction in the first case testing a recent court ruling that advisory committees of the National Academy of Sciences (NAS) must conduct their business in public. A lower court judge in Washington, D.C., agreed with a claim by the New York–based Natural Resources Defense Council (NRDC) and two other organizations that because a panel of scientists formed to study the "scientific and technological readiness" of a planned $1.1 billion laser-fusion project had operated behind closed doors, the Department of Energy (DOE), which commissioned the report, could not use its findings.

The ruling has put DOE in the awkward position of saying it doesn't really need the report, which cost taxpayers $335,700. Ground breaking for the facility—the National Ignition Facility, or NIF—at Lawrence Livermore National Laboratory in Livermore, California, will proceed next month with or without the report, according to DOE. Coming on top of the earlier ruling, the decision also suggests that the much-cherished confidentiality of academy panels may be a thing of the past. The NAS argues that opening panel meetings would compromise its ability to give objective, scientific advice. "We're scratching our heads trying to figure out how in the world we could be an independent advisory body under those constraints," says NAS Executive Director William Colglazier.

The stage was set for the NRDC challenge in January, when the D.C. Circuit Court of Appeals agreed with an animal-rights group that the NAS was required to adhere to the Federal Advisory Committee Act (FACA), which states that panels formed to advise the government must open their proceedings to public scrutiny (*Science*, 17 January, p. 297). The academy has requested a rehearing of that decision.

Meanwhile, NIF opponents decided to try to use the January ruling to block the NIF report, which was due out in early March.

NIF will focus a cluster of lasers on a pellet of hydrogen fuel in an effort to achieve a mini–thermonuclear explosion. The facility also is a vital part of the $4-billion-a-year federal "stockpile stewardship" program to maintain U.S. nuclear readiness during the nuclear-weapons test ban. NIF is "overkill," contends NRDC physicist Thomas Cochran, because DOE's weapons-readiness goals can be achieved with existing technology. He adds that additional experiments should be done to show that NIF will work (*Science*, 28 February, p. 1252).

In their suit, the NRDC and two California-based groups—Tri-Valley Citizens Against a Radioactive Environment in Livermore and the Western States Legal Foundation in Oakland—demanded that DOE be barred from using the report because the deliberations of the academy panel violated FACA. They also argued that the panel, called the Inertial Confinement Fusion (ICF) committee, was not balanced because it included many members with ties to Lawrence Livermore or DOE's fusion program, and should be dissolved.

U.S. District Judge Robert Friedman's preliminary injunction, issued on 3 March, stated that the committee proceedings violated FACA and ordered that no more DOE money be spent on the report until after a formal hearing. Friedman declined to block the report's release, saying that would raise concerns about stifling free speech. NAS expects to release the report to the public this week using its own funds.

DOE inertial fusion research director David Crandall told the judge that the ruling will not halt the NIF project, which already has passed several scientific and technical reviews. Cochran, however, points out that at a committee meeting last August, DOE officials said the report was needed for their final decision-making. Asserts Cochran, "This demonstrates the report was all window dressing to politically prop up the decision" to go ahead with construction.

The case also has put the ICF committee, headed by California Institute of Technology physicist Steven Koonin—who has declined to comment—in a tight spot. The panel was formed to provide advice on NIF over several years. But because DOE funding has been frozen, says Colglazier, the panel is "in abeyance" until "this crazy situation" is "rectified."

Judge Friedman must now hold a hearing on the NIF case, but a decision from the appeals court on whether to rehear the January FACA case may come out sooner, shifting the focus of the fight back to the animal-rights case. In the interim, says Colglazier, the academy is examining how it might provide advice "under the constraints [of FACA]."

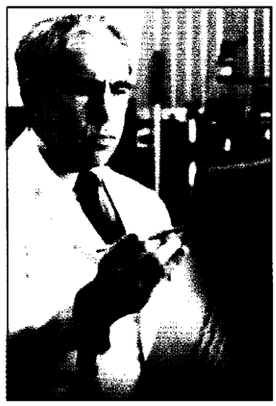
–Jocelyn Kaiser

BIOETHICS

Panel Approves Gene Trial for 'Normals'

The panel that for more than a decade has vetted ethical and safety issues in U.S. human gene-therapy research—the Recombinant DNA Advisory Committee (RAC) of the National Institutes of Health (NIH)—ended its role as gatekeeper with a bang last week, grilling a researcher who had proposed a clinical trial that would inject engineered genes for the first time into normal, healthy volunteers. RAC's final act as safety enforcer also gave a preview of how it might handle the new role that NIH director Harold Varmus has envisioned for the committee. Last year, Varmus decided that the Food and Drug Administration (FDA) alone should regulate gene therapy and that RAC should become a forum for debates on ethical issues (*Science*, 29 November 1996, p. 1453).

In a contentious meeting, RAC scrutinized the safety and scientific justification of a proposal by Ron Crystal of New York Hospital–Cornell Medical Center to study how the immune systems of healthy individuals would respond to engineered genes. RAC ended the review by voting to approve the proposal, but also raised the question of whether the decision might open the way to other experiments in healthy people seeking "health enhancement."



Bronchoscopy, anyone? Ron Crystal plans to test adenovirus vector on volunteers.

Crystal, a former NIH staffer, was among the first clinicians to try using gene therapy to treat cystic fibrosis; now, he's investigating therapies for colon cancer and other diseases. To test an adenovirus vector used in cystic-fibrosis therapy, he had proposed injecting a version of the vector carrying an active bacterial gene into the skin of 20 to 25 healthy adults. In addition to collecting skin biopsies and blood samples, Crystal proposed using an invasive procedure called a bronchoscopy to look for effects in lung tissue. Crystal also proposed paying each volunteer $900.

Crystal seemed annoyed by RAC's interrogation on 6 March as he paced back and forth in front of the committee, explaining the rationale for his trial. At one point, he sputtered that he was "baffled" by the questions RAC was lobbing at him. "We just want to do some science with gene-therapy vectors," Crystal said, arguing that "gene therapy is no different from any other drug," except for the slight risk of introducing new genes to germ cells.

Committee members had approved several other research protocols in December and January without demur, but singled out Crystal's proposal for public review for two reasons. Some felt it had violated review procedures because Crystal had failed to obtain prior approval for the use of an adenovirus vector from his local biosafety committee. Crystal explained in letters to the RAC that this and other procedural lapses were "misunderstandings and/or miscommunications"—the result of confusion during "the holiday season" when the submission was prepared. The RAC also homed in on Crystal's proposal, however, because it seemed to raise important ethical issues.

Although the adenovirus vector proposed for his study has been given before to colon cancer patients, injecting it into normal volunteers is "unprecedented," claimed RAC member Karen Rothenberg, an attorney and ethicist at the University of Maryland School of Law. Other panel members, such as R. Scott McIvor, director of the Institute of Human Genetics at the University of Minnesota, Minneapolis, and pathologist Bratin Saha of Emory University in Atlanta, questioned the need for lung bronchoscopies, which often are painful. The $900 payments also raised eyebrows, with one RAC member calling the sum "coercive."

Crystal said the risk of inducing long-lived genetic changes in the volunteers was slight. He also said his clinic has performed 5000 safe bronchoscopies, and that the payments being offered were standard. As for benefits, Crystal asserted that the data would be invaluable, providing a base line for later trials with cystic fibrosis patients.

In an interview, Crystal claimed that his appearance before the committee was "voluntary" because he had obtained approval for the trial from the FDA 6 weeks earlier. RAC nonetheless asked for some changes before voting that the trial go forward.

Still, the hearing left the RAC with issues to chew over in its new role as an ethics forum. After hearing testimony from three bioethics experts, the RAC members recommended that NIH fund policy conferences this year to examine the use of healthy volunteers and the use of gene therapy for health enhancement. NIH's director of science policy planning, Lana Skirboll, says Varmus is considering "some ideas of his own" on gene therapy and will decide soon how RAC might cooperate with FDA to resolve ethical issues.

–Eliot Marshall