netic magnetite, for example, bears a strong resemblance to the "magnetofossils" left in terrestrial sediments by bacteria that made the mineral to guide them along Earth's magnetic field lines, says co-author and biomineralogist Hojatollah Vali of McGill University.

The sheer diversity of minerals is supporting evidence, says Vali, since the magnetite and pyrrhotite are found in regions of carbonate where acid seems to have pitted the surface. "I couldn't find any acidic conditions under which you can precipitate iron sulfide and magnetite together, whereas in biogenic systems we have many such cases," he says. Joseph Kirschvink of the California Institute of Technology agrees that the combination "definitely is peculiar," making a Martian biogenic source "not unreasonable at all."

In their most provocative claim, the authors suggest that they can actually see traces of the culprits, in the form of the "ovoids" revealed by a state-of-the-art, high-resolution scanning electron microscope. "Our favored interpretation is that these are in fact microfossils from Mars," says McKay. "That is an interpretation; we have no independent evidence."

At 20 to 100 nanometers in length, the objects are 100 times smaller than the smallest microfossils of ancient bacteria ever found on Earth, Schopf points out. McKay and colleagues cite a paper by geologist Robert Folk of the University of Texas, Austin, reporting fossilized "nanobacteria" in some young terrestrial rocks, but, in Folk's words, "everybody is pretty skeptical" that his objects are fossils. The Martian look-alikes face even greater skepticism. "The little blobs [in ALH84001] didn't convince me," says Nealson. They aren't pollen, as in the 1960s episode, but "I think you can form little blobs on rocks with all kinds of chemical precipitates."

What's lacking is evidence other than shape that these forms were once living. But McKay and colleagues are looking hard. Since the *Science* paper was completed, they have gone on to find a variety of generally elongated structures, which one observer compares to so many miniature Chee-tos. At least one of the fossils is long and apparently segmented, reminiscent of some microfossils from Earth's Precambrian era. Now Clemett and his colleagues are beginning to look for amino acids, which could be better markers of past life than PAHs. The JSC group will also try to slice open a putative microfossil to see if it has a cell wall. All Earthly bacteria have cell walls, and fossilized cell walls might retain traces of organic matter. Schopf would also like to see examples of the supposed bacteria frozen in the act of reproducing—a standard he applies to proposed terrestrial microfossils.

Don't expect this drama to be wrapped up in the next TV season. The sort of supporting evidence that would convince Schopf and other critics could be slow in coming. As Schopf quoted Cornell exobiologist Carl Sagan: "Extraordinary claims require extraordinary evidence."

–Richard A. Kerr

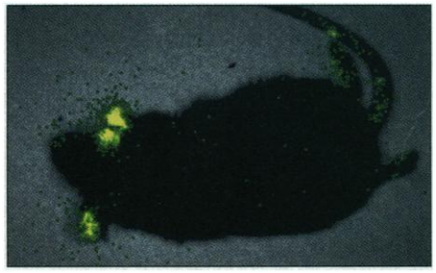
Additional information including images can be found at the NASA web site (http://cu-ames.arc.nasa.gov/marslife/index.html) and the Science *homepage (http://www.sciencemag.org).*

NATIONAL SCIENCE FOUNDATION

Panel Backs S&T Centers Program

A once-controversial $60 million program at the National Science Foundation (NSF) to support university-based centers studying multidisciplinary topics is worth preserving at its current level, says an outside panel. In a report released last week,* a joint committee of the National Academy of Sciences, National Academy of Engineering, and the Institute of Medicine finds that the 7-year–old experiment in funding "medium-size" science is producing mostly top-notch research, and it recommends that the current batch of 24 Science and Technology Centers (STCs) should be allowed to recompete for new funding. "NSF has done well by these centers," says panel chairman William Brinkman, vice president of physical sciences research at Lucent Technologies in New Jersey.

The report reflects consensus on a program begun in 1989 by then-NSF Director Erich Bloch to fund projects too risky or broad for single labs to tackle. Critics argued at the time that it would let mediocre researchers escape peer review and reduce the amount of grant money available to individual scientists, who make up the core of NSF's $2.4 billion research portfolio (*Science*, 4 January 1991, p. 19). The program never grew to the size that Bloch envisioned, however: Rather than supporting up to 100 centers, NSF eventually held two competitions and funded 25 centers on topics ranging from molecular biotechnology to high-pressure studies and astrophysical research in Antarctica. The first class of 11 centers have passed two interim reviews as part of an 11-year agreement; 13 others are now undergoing their second review (one voluntarily closed after 4 years).



M. GEUSZ/CBT

Lighting the way. A firefly gene linked to human *c-fos* promoter illuminates the skin of a transgenic mouse developed at the NSF Center for Biological Timing.

NSF requested the academy report to help it chart the future of the program, which represents roughly 2% of NSF's overall budget. In November, NSF senior managers will offer recommendations to NSF's governing body, the National Science Board.

The panel, set up by the academies' Committee on Science, Engineering, and Public Policy, found "that most STCs are producing high-quality world-class research that would not have been possible without a center structure and presence." The "center approach," the report says, is "a valuable and necessary tool in NSF's portfolio of support mechanisms." At the same time, the panel also found that some centers experienced scientific and administrative leadership problems. And it noted that one unnamed center went overboard in supporting K–12 education and outreach in response to "mixed signals" from NSF.

The panel recommends that NSF continue the current level of funding for the program and that its budget be kept distinct from the rest of NSF's research portfolio. It also says future competitions should continue to be open to all disciplines and be run out of a separate office rather than by each of NSF's seven directorates. The centers' "paramount goals," it says, should be "research and the undergraduate and graduate education linked to it."

"I'm happy about it [the report]," says Gene Block, director of the NSF Center for Biological Timing at the University of Virginia in Charlottesville. Block notes that the STC money has supplemented single-investigator grants by funding technical development projects and fostering collaboration on circadian-clock genes in plants and animals. "We really are believers in both types of support," Block says. NSF's David Schindel of the Office of Science and Technology Infrastructure agrees that the report is "very clearly positive," but adds that kind words don't guarantee the program's future in these harsh budgetary times. "Even if [the science board] feels very positively about the centers, there are competing priorities," Schindel says.

–Jocelyn Kaiser

An Assessment of the National Science Foundation's Science and Technology Centers Program, National Academy Press.