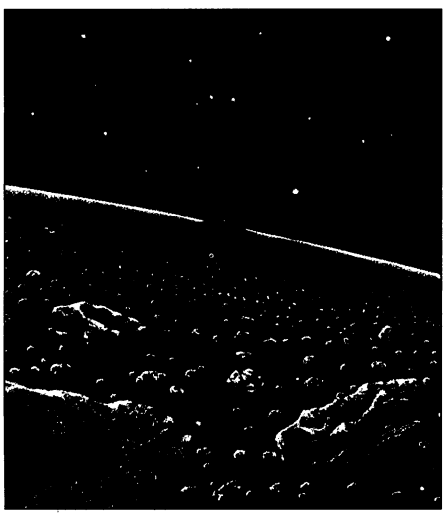
astrobiology. SWAS was designed to measure water, oxygen, and carbon in gas clouds around the galaxy, but a gap in the observing schedule seemed best filled by a star called CW Leonis, one that should have had practically no detectable water anywhere near it. Instead, SWAS detected 10,000 times more water than the star could have been giving off. The only way to make that much water is by vaporizing it from a billion icy comets at once, SWAS researchers concluded. "Nothing but comets comes close to the amount of water SWAS is seeing," says SWAS team member David Neufeld of Johns Hopkins University in Baltimore. "We believe we are witnessing the apocalypse that will engulf our solar system in 6 billion years."

CW Leonis, it appears, is consuming a belt of small, icy bodies orbiting it just as Kuiper Belt objects (KBOs) orbit our sun beyond Pluto and Neptune. KBOs become active comets only when one swoops near the sun, but CW Leonis, running low on nuclear fuel, has ballooned out to the distance of Jupiter from our sun and blazed to 5000 times its normal luminosity. That would vaporize the ice of bodies orbiting 10 to 100 times the Earth-sun distance from CW Leonis, SWAS researchers say, turning each into an active comet with a fuzzy, glowing head and streaming tail.



Nearing the end. The star CW Leonis has swollen to engulf any nearby planets and is vaporizing an entire belt of comets.

"If their interpretation is correct, instead of just finding huge planets around other stars, we're finding comets," says astronomer Tobias Owen of the University of Hawaii, Honolulu. "A lot of us believe these icy bodies are fundamental building blocks of planets. It's nice to know they're out there. It helps the prospects of finding planets, planets with the [gases] that make atmospheres and oceans"—and that could sustain life.

–RICHARD A. KERR

SPACE STATION SCIENCE

Congress Orders Halt To Planned NASA Cuts

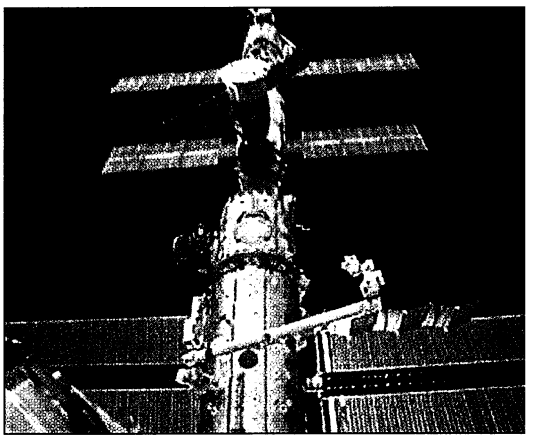
Researchers upset about cuts to space station research have found some allies in Congress. A powerful House panel that sets NASA's budget last week ordered the agency to halt its plans to gut nearly 40% of the orbiting facility's science program. It also added money to rescue one set of experiments and asked President George W. Bush for a "clear and unambiguous statement" on the role of research aboard the orbiting lab. The move sets the stage for another confrontation between Congress and the new Administration over who should pay for the station's skyrocketing price tag.

This spring, the White House refused to request additional funding to meet an overrun of more than $4 billion on the $60 billion facility, ordering NASA to find the money within the program's own strained budget. That prompted NASA to scale back the number of crew members planned for the station as well as its budget for research equipment. Researchers quickly claimed that those moves would cripple science aboard the orbiting lab (*Science*, 23 March, p. 2291).

NASA Chief Scientist Kathie Olsen says the agency intends to spend, through 2006, 36% less on research facilities than the $4.4 billion in its original plans. Some areas, such as fundamental biology, would take up to an 80% cut. In 2002 alone, the $452 million planned for facilities would sink to $284 million, according to Olsen. She adds that the changes amount to a shortfall of only $70 million to $75 million in research-related efforts in 2002, in part because a new round of delays in launching station hardware means there's no rush to build some of the experimental facilities. But Olsen insists the cuts don't mean a reduced commitment to science: "Research remains central on the station—I am adamant on this."

The House panel moved last week to ease the problem by adding $35 million for fluids and combustion research, which accounts for a small portion of planned 2002 station research funding. Much of that program is run by the Glenn Research Center in Cleveland. The panel also added $275 million for work on a crew return vehicle to carry six persons—the number needed to support the station's ambitious scientific agenda—provided the Administration includes funding for the vehicle in its 2003 budget planning.

The committee has asked for a comprehensive plan on the station by 1 March 2002, and it told NASA to suspend its plans to cut research until Congress decides the number of crew members. The agency is setting up an independent panel to review NASA's scaled-back station plan, with a report due by the end of the year. NASA is also searching for cheaper alternatives to keep research on track, including use of the space shuttle for extended periods.



Growing pains. The expanding station—and its higher price tag—leaves less room for research.

In the meantime, NASA's international partners are having their own problems. A Japanese centrifuge to conduct a host of biological experiments has been delayed repeatedly because of technical problems and won't be available to researchers until late 2008. Such distant dates frustrate would-be station researchers. "It's just so discouraging," says Patricia Russell, executive director of the American Society for Gravitational and Space Biology. –ANDREW LAWLER

SMITHSONIAN INSTITUTION

New Panel Will Redirect Science

The Smithsonian Institution took a long-awaited step this week, selecting 18 researchers to help guide this conglomerate of 16 museums, a zoo, and a half-dozen research centers through a reorganization of its scientific research. The institution has been in turmoil since early April, when institution scientists and the public got wind of Smithsonian Secretary Lawrence Small's plans to cut some research efforts and revamp others. The Smithsonian's Governing Board of Regents decided in early May to convene this panel to help quell the outcry and chart a less controversial course for future scientific endeavors (*Science*, 11 May, p. 1034; 13 July, p. 194).

The panel includes biologists, astronomers, geologists, anthropologists, and paleontologists—a half-dozen of whom are Smithsonian staff members. Chaired by Jeremy Sabloff, director of the University of Pennsylvania Museum of Archaeology and Anthropology in Philadelphia, the pan-

CREDITS: (LEFT TO RIGHT) SMITHSONIAN ASTROPHYSICAL OBSERVATORY; AP PHOTO/NASA TV

el will first meet on 6 September. Afterward, "we will take as long as it is necessary to come up with the appropriate recommendations," says Sabloff. Over the next several months, he expects the group to evaluate reorganization plans proposed by Small, Smithsonian scientists, and perhaps even commission members.

Smithsonian paleontologist Brian Huber, a spokesperson for the Senate of Scientists at the beleaguered National Museum of Natural History, is not happy about the wait: "It's going to be a slow process, and we're going to be in limbo for some time." Even so, he says, the delay will be worth it if the panel "will move us in a direction we want to go."

–ELIZABETH PENNISI

GENOMICS

Animals Line Up To Be Sequenced

CHEVY CHASE, MARYLAND—The mouse was a shoe-in. After all, what other organism could better illuminate the human genome? The rat has undisputed standing as a lab staple, and the zebrafish brings a clear vision of development. But, with work on the human genome winding up in 2003, deciphering these other three will only keep the 2000-base-per-second worldwide sequencing capacity busy for so long. So it's high time to add other creatures to the pipeline, sequencers agree. With 1.7 million known species to choose from, however—and almost as many specialists lobbying for their favorites—selecting the next few will not be easy.

The stakes are enormous, researchers agreed at a workshop* here last week designed to set criteria for choosing the next candidates for the sequencing machines. If an organism is picked, its research community is guaranteed to be vibrant and well-funded long into the future. As mammalian geneticist Steven O'Brien of the National Cancer Institute put it, "Species that don't get selected will go away, and species that do get selected will prevail."

At the invitation-only workshop, sponsored by the National Human Genome Research Institute (NHGRI), four dozen researchers touted the research value of sequences from organisms as varied as swine, cats, and sea urchins. Partisans of microorganisms known as protists commandeered the slide projector to woo the crowd with a diagram showing that microorganisms constitute all but a tiny fraction of living things. Primates clearly dominated the discussion—and in this venue, at least, macaques had a home court advantage, as no chimpanzee experts were present.

Meanwhile, meeting organizers urged the group to put horse-trading aside and instead settle on criteria for deciding what to sequence next. With co-chairs David Botstein and Robert Horvitz cracking the whip, the group agreed on two sets. One they called general considerations, such as the ease of obtaining sequence and the factors that will make the sequence useful. These included small genome size, existing technical knowledge, suitability for experiments, and an active and eager research community.

The other was scientific merit—essentially, what questions a particular organism would enable researchers to explore. This was a bit more tricky, because efforts to understand human diseases or probe evolutionary relationships would demand different organisms, the group agreed. To study the evolution of traits, for example, scientists would want to sample groups in each of the major branches of life—say, a mollusk, an earthworm, and a starfish. But to develop new model systems for human neurobiology, a species closely related to humans would be more useful. Still other organisms would help researchers interpret sequence data from humans and model organisms. Although the assembled scientists outlined about 10 questions, they wisely did not attempt to rank them.

The next step in this already-contentious

Contenders. The primate community is arguing over which to sequence first: the macaque *(left)* or the chimp.

CREDITS: (LEFT TO RIGHT) RICHARD T. NOWITZ/PHOTO RESEARCHERS; RENEE LYNN/PHOTO RESEARCHERS

* NHGRI Workshop on Developing Guidelines for Choosing New Genomic Sequencing Targets, 9–10 July.

ScienceScope

Malaria Vaccine Deal An international consortium will spend $1 million to develop a vaccine against India's major cause of malaria. A U.S.-based nonprofit, an Indian research center, and an Indian biotech company this week announced that they will team up to develop a vaccine against the mosquito-borne parasite *Plasmodium vivax*, which causes nearly 65% of India's malaria cases. *P. vivax* is also widespread in other parts of the world, although it is less lethal than *P. falciparum*, the other major malaria parasite.

Under the agreement, the U.S.-based Malaria Vaccine Initiative at the Program for Appropriate Technology in Health will funnel research funds to the International Center for Genetic Engineering and Biotechnology (ICGEB) in New Delhi. Once researchers fine-tune the vaccine, test lots will be manufactured by Bharat Biotech in Hyderabad.

Prior to the deal, "we had no clear way to move this vaccine candidate from the lab to manufacturing and clinical testing," says Virander Chauhan, director of the ICGEB and head of its Malaria Research Group. Human trials are planned for late 2003.

Conflicted at EPA The Environmental Protection Agency (EPA) plans to overhaul how it seeks outside scientific advice in response to a harsh review this week by the General Accounting Office (GAO), Congress's investigative arm. The GAO report, requested by Representative Henry Waxman (D–CA), finds "limitations" in the EPA Science Advisory Board's (SAB's) procedures for reviewing conflicts of interest that "do not adequately ensure independence and balance." The lapses include not requesting sufficient information from panel members, lax record-keeping, and limited public disclosure. SAB staffers apparently failed to notice, for example, that a panelist reviewing an EPA report on whether 1,3-butadiene is a carcinogen had worked on a legal case for a manufacturer, and that others had done industry-funded research on the chemical.

SAB staff director Don Barnes says the report is "useful" rather than "damning" and insists that no panel has been biased by conflicts of interest. But he says the 100-member board is planning to adopt new procedures similar to those followed by the National Academy of Sciences. For example, Barnes's office will now invite the public to suggest panelists and comment on a proposed slate of candidates.

Contributors: Gretchen Vogel, Jeffrey Mervis, Pallava Bagla, Jocelyn Kaiser