ity control. For example, Maynard Olson of the University of Washington says he agrees with NCHGR's goals, but notes that "opinions vary greatly" about the details. Olson, in a "frustrating" experience, drafted his own pledge of compliance several times before NCHGR would accept it. Olson says he plans to hold data for "longer than a day" but "less than 3 months." Craig Venter of The Institute for Genomic Research says he's concerned about putting out flawed information, adding, "I would like the opportunity to do high-quality science." And asking scientists to publish raw data, Venter says, lowers them to the status of "a scintillation counter." Venter would like 3 months to analyze data, and notes that NIH normally allows 6 months.

Eric Lander of the Whitehead Institute–Massachusetts Institute of Technology Center for Genome Research in Cambridge, Massachusetts, says his qualms have to do with technical issues. To minimize the burden on public repositories, Lander says, it might be best to ask researchers to test their data with a gene-hunting program called BLAST before submitting the results. He worries that researchers may use the computing power of the repositories to run multiple BLAST scans on each day's fresh data. But Lander predicts that, once his group is geared up, "we will be making no less than weekly releases." Robert Waterston says his group at Washington University in St. Louis expects to release data daily.

Reactions to NCHGR's patent policy also vary, although most researchers seem to endorse it. So do several key university patent officials contacted by *Science*. But one experienced licensing expert, Lita Nelsen of MIT, says the policy could set "a bad precedent." Nelsen says another government administrator might cite this example to justify declaring some other field of research off-limits to patenting—perhaps for religious reasons.

NCHGR will now work with its grantees to reach agreements incorporating the principles of quick release and open access to DNA data. As David Cox of Stanford University notes, the "devil is in the details." And it may take months of negotiation to exorcise the demons.

–Eliot Marshall

SPACE STATION

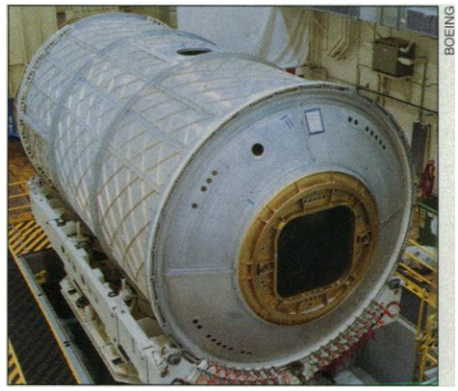
NASA Shuffle Seen as Harming Science

Researchers are up in arms about a reorganization at the National Aeronautics and Space Administration (NASA) that they say poses a threat to the research agenda of the international space station. They believe that the change, which transfers control of the $2.1 billion annual space station budget from NASA headquarters in Washington to the Johnson Space Center in Houston, could force science facilities and experiments to take a back seat to the station's engineering requirements, as well as undermine efforts to improve the credibility of the agency's life sciences research.

"There is no way that space station science can function well if it is not controlled by NASA headquarters," says Claude Canizares, a Massachusetts Institute of Technology astrophysicist who chairs the National Research Council's (NRC's) Space Studies Board. "To transfer the science to space station development and operations is exactly the wrong direction." Adds University of Michigan geophysicist Anthony England: "Our experience with NASA is that science often takes a beating when it is mixed in with hardware."

NASA managers say the change will have no appreciable effect on science and insist they must decentralize the agency. But researchers are sufficiently concerned that members of an NRC space biology panel briefly discussed resigning in protest during a recent meeting. The controversy also prompted a meeting on 16 April between Bruce Alberts, president of the National Academy of Sciences, and NASA Administrator Daniel Goldin. And England criticized the idea during a hearing on the space station held the following day before the House Science Committee.

The reorganization is part of Goldin's effort to shrink the agency's headquarters. A 6 March memo gives the space station program manager based at Johnson, currently Randy Brinkley, control over the science and technology portions of the U.S. effort to build a multinational laboratory in orbit starting next year. In the past, the money was controlled by NASA headquarters. Although most of the program's construction budget goes toward building the hardware and software for the station, about $2 billion of the station's $17.4 billion cost will be spent on preparing science facilities and experiments.



Modular views. The space station's engineering requirements affect the research agenda.

Goldin's move effectively cedes power over the science portion of the station to a center dominated by engineers, non-NASA scientists say. And NRC members are concerned that efforts to bolster the quality of space life and microgravity sciences could suffer if station managers siphon off science money to pay for other portions of the program.

Life scientists are particularly upset. "It's alarming," says Mary Jane Osborn, a University of Connecticut microbiologist who chairs the NRC's space biology panel that advises NASA. "Not just for space biologists, but for the whole science community." Although Osborn says that talk of resignations by the panel is "overblown," she and others grumble that NASA is ignoring their advice.

Osborn and others are particularly worried about the effect of the decentralization on the large centrifuge, the centerpiece of biological research on the station. The facility—slated for launch in 2002—will allow researchers to examine the effects of partial gravity on animals and plants, vital data for missions to Mars or lunar settlement. A recent 90-day delay in awarding a construction contract has sparked concerns that NASA plans to funnel money to other station accounts, but NASA's life sciences and microgravity sciences chief, Harry Holloway, says it simply reflects the need to adjust to changes in the station's launch schedule.

Board members also worry that greater authority at Johnson will hamper efforts to revitalize space life sciences. Those efforts have centered on stronger headquarters control over peer review and program direction. "This looks like an about-face," says Canizares. NASA officials, however, insist that headquarters will retain control over peer review for now. And Holloway promises that shift in budget authority will not diminish the role of scientists in setting the station's research agenda: "There will be no sacrificing the station's capacity for science." If Brinkley wants to take money out of the science account, Holloway says, "he'll have to first come to the community and make his case."

So far the outcry seems to have had little effect. One day after meeting with Alberts, for example, Goldin announced that he would reduce the 1430-person work force at NASA headquarters by more than half in the next 18 months—a move that England denounces as "irresponsible." But while the advisers ponder their next move, NASA's trajectory toward more powerful centers and a leaner Washington operation seems unaltered.

–Andrew Lawler