all new university professors and assistants. Under her plan, only senior professors would retain permanent positions. So-called assistants would be reclassified as doctoral students, 6-year postdocs, or junior professors. Gehrer also proposed making Habilitation—a lengthy apprenticeship necessary to apply for a professorship—optional in view of the extra-long postdoc stint contemplated under the plan. That would bring Austria in line with Germany, which is phasing out Habilitation over the next decade.

In April, Gehrer sent the legislation out for review. The reforms are on a fast track to take advantage of an expected wave of retirements over the next 5 years, when an estimated 500 professors—25% of those now working—will leave academia. But it hasn't worked out quite as Gehrer hoped: After the review process ended on 18 May, the plan came under fire from several directions.

Most deferential was the Federal Conference of Professors, which represents senior professors. It said the reforms were fine—except for the optional status of Habilitation. The Federal Conference for Academic and Artistic Personnel (BUKO), representing 7500 university assistants, also criticizes that aspect. "Habilitation will not be formally necessary, but it will probably be difficult to find a job without it," argues Folk, BUKO's chair. The changes "will still keep young scientists dependent." He suspects that the real intention is to cut costs—a view that Gehrer rejects. "Saving money is not a goal at all," she says. "The main goals are to achieve more mobility, higher quality education, and harmony with European standards."

Meanwhile, the Austrian Rectors' Conference has rejected the proposal. While supporting reform in principle, the rectors contend that the government has provided no clear funding for the plan, which they estimate will cost universities an extra $6 million per year to implement, partly from increased benefits to employees who are not civil servants. The rectors also objected to a proposed $76,000 cap on annual salaries for professors, arguing that it would reduce their ability to retain talented researchers.

The civil service union took perhaps the hardest line. Last week, it threatened a 1-day university strike, forcing 11th-hour negotiations between the union and the science ministry. The union won some concessions: The latest version of the legislation will allow universities to hire permanent "staff scientists" according to their needs and to grandfather researchers now undergoing Habilitation into permanent positions. In addition, the ceiling on professor salaries has been raised to $112,500.

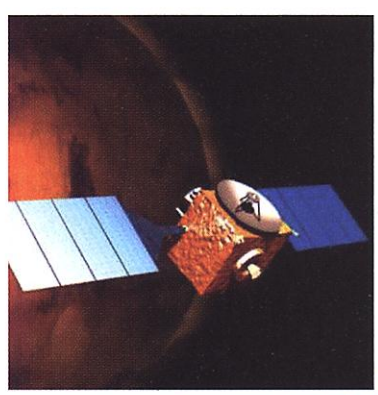
On 29 May, the Federal Cabinet approved the plan and sent it to Parliament, where the government is banking on its majority to pass the legislation by the end of next month. Even if that happens, many people view the reforms as a work in progress. They "are a step in the right direction [but] don't go to the heart of the matter," says Kim Nasmyth, director of the privately funded Institute for Molecular Pathology in Vienna. "The fundamental problem is that no one is in a position of power to organize resources and get professors to cooperate. Nobody is controlling the professors," he insists—and the new law won't change that. **–MIN KU**

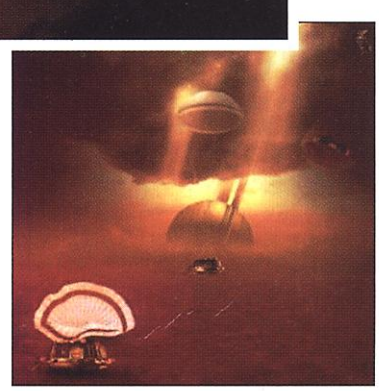
Min Ku is a science writer in Bern, Switzerland. With reporting by Robert Koenig.

SPACE RESEARCH

ESA Embraces Astrobiology

FRASCATI, ITALY—For years, European astrobiologists were a fragmented bunch, largely isolated from one another. That all began to change in April 1999, when some of Europe's top astrobio guns, relaxing over a beer in a bar after a geophysics meeting in The Hague, decided to band together. From that chance get-together emerged the 120-scientist-strong European Exo/Astrobiology Network, which met last week for the first time here in this central Italian city as well known for space research—it hosts a major institute of the European Space Agency (ESA)—as it is for its crisp white wines.





Life in ESA. The Aurora program will build on existing or planned missions such as Mars Express (*above*), scheduled for launch in 2003, and the Huygens probe, expected to land on Saturn's moon Titan in 2004.

CREDITS: ESA

The gathering proved to be more than a coming-of-age party for Europe's fledgling community of exo/astrobiologists. At the workshop, the ESA unveiled an ambitious agencywide strategy for exo/astrobiology called Aurora that the agency intends to present to its governing council this fall.

Aurora is envisioned as having two goals: searching for extraterrestrial life, such as fossil microbes on Mars, and precursor molecules to life on Earth; and laying the groundwork for future human space exploration. "If we decide it is right in 20 years' time to send people to Mars or an asteroid, we must find out now what knowledge and supporting technology we would need," says Didier Schmitt, head of life sciences at the ESA's Space Research and Technology Centre in Noordwijk, the Netherlands.

To support both goals, ESA argues that expertise must be drawn from both the Space Science and the Manned Spaceflight and Microgravity directorates, traditionally quite separate. Aurora will build on programs approved or under discussion in these directorates, assessing them through the prism of exo/astrobiology.

According to ESA, the solar system targets important for exo/astrobiology are Mars (ESA and member states already are preparing missions to Mars either alone or in collaboration), asteroids, Jupiter's moon Europa, and Earth's moon. In particular, the agency's science advisers are keen to see the agency begin a study on a Mars sample-return mission, although such a mission would be needed only if French plans to work with NASA on such a mission collapsed.

Having first broached the idea last November, ESA is moving with uncharacteristic speed to launch Aurora. It hopes to have a fleshed-out proposal to present to science ministers from member states this November. During a 3-year preparatory phase, ESA officials are looking to raise about $30 million for feasibility studies for a detailed exo/astrobiology program and to identify technologies needed to initiate programs. If Aurora becomes a fully fledged program, ESA will look to ministers for up to $130 million a year to fund it.

The network's leaders, who helped advise ESA on its plans, intend also to ramp up fundraising efforts at national research agencies and the European Commission for ground-based as well as space-based studies. "The time is right," argues the network's newly elected president, André Brack, a research director at the molecular biophysics laboratory of CNRS, the French national reseach agency, in Orleans. "Ten years ago, there were no good chemical and physical arguments for life being anything other

than entirely homegrown," he says. "Now we know of extrasolar planets, of complex organic molecules in interstellar clouds, of micrometeorites depositing carbon on Earth, and of microbes living in extreme environments, and there is evidence of water on Mars and on Jupiter's moon, Europa."

The budding pan-European approach to exo/astrobiology builds on efforts in individual nations. In France, for example, the nation's space agency and CNRS in 1999 formed a federation of 50 exo/astrobiology labs that ended their isolation. Spain has gone a step further, in 1998 launching the $8.6 million Centre for Astrobiology in Madrid, and the Italian Space Agency, for the first time, will have a specific line for exo/astrobiology in its 2002 budget. (The amount is under discussion.)

But in spite of this apparent enthusiasm for exo/astrobiology, the prospects for Aurora are uncertain. ESA may have a hard time extracting the additional money from member states, which are already tightfisted when it comes to ESA's regular budget. "There are many difficulties to resolve at ministerial level," admits ESA's Schmitt, who told workshop participants that the agency is seeking the backing of the scientific community on Aurora—something that will be essential for making a strong case to the ministers this fall.

–HELEN GAVAGHAN

Helen Gavaghan writes from Hebden Bridge, U.K.

U.S. CONGRESS

New Leaders Emerge After Senate Shake-Up

A political earthquake has U.S. science advocates scrambling to survey a dramatically altered Washington, D.C., landscape. With Republican Senator Jim Jeffords's (VT) announced defection from his party, control of the Senate will switch to the Democrats. That power shake-up, say science lobbyists, could affect both research budgets and science policy.

Last November's elections left the 100-member Senate balanced on a knife's edge, with both parties controlling 50 seats. Republicans had the upper hand, however, because Senate rules allow Vice President Dick Cheney to break any ties. As a result, Republicans claimed the body's top leadership posts and the right to control the legislative calendar, choose committee leaders, and determine the makeup of panels that negotiate differences with the House of Representatives. Now that Jeffords has become an Independent, Democrats will have sway over all those decisions. Senator Tom Daschle (D–SD) is expected to replace Trent Lott (R–MS) as majority leader as early as 5 June; committees will also get new chairs (see table).

Incoming chairs. Democrats Barbara Mikulski (*above*) and Tom Harkin await Senate posts.

CREDITS: (TOP TO BOTTOM) RICK KOZAK/AP PHOTO/CHARLIE NEIBERGALL

THE EXPECTED LINEUP

Committee	In	Out
	Appropriations	
Full committee	Robert Byrd (D–WV)	Ted Stevens (R–AK)
Labor-HHS panel	Tom Harkin (D–IA)	Arlen Specter (R–PA)
VA-HUD "	Barbara Mikulski (D–MD)	Kit Bond (R–MO)
Energy "	Harry Reid (D–NV)	Pete Domenici (R–NM)
Defense "	Daniel Inouye (D–HI)	Stevens
	Authorization	
Armed Services	Carl Levin (D–MI)	John Warner (R–VA)
Commerce & Science	Ernest Hollings (D–SC)	John McCain (R–AZ)
Science panel	John Breaux (D–LA)	George Allen (R–VA)
Energy	Jeff Bingaman (D–NM)	Frank Murkowski (R–AK)
Environment	Jim Jeffords (I–VT)	Bob Smith (R–NM)
Health and Education	Ted Kennedy (D–MA)	Jeffords

In many cases, the key science spending panels are expected to stay the course. Senator Barbara Mikulski (D–MD), an ardent supporter of a bigger budget for the National Science Foundation (NSF), is expected to replace the equally enthusiastic Kit Bond (R–MO) on the panel that oversees NSF and NASA. Similarly, Senator Tom Harkin (D–IA), a leading voice for doubling the budget of the National Institutes of Health (NIH), is in line to succeed fellow doubling advocate Arlen Specter (R–PA) as head of the panel that oversees NIH. Both senators also oppose possible moves by the Bush Administration to ban federal funding for research using stem cells harvested from human embryos.

Other committees, however, could see changes in emphasis. Senator Pete Domenici (R–NM), known as St. Pete for his efforts on behalf of Los Alamos National Laboratory and several other large Department of Energy (DOE) research facilities in his state, will likely cede control over DOE funding to Senator Harry Reid (D–NV). Although Reid is friendly to science, he has criticized the planned Yucca Mountain nuclear waste repository in his state, as well as the $3.4 billion National Ignition Facility, a giant laser project at DOE's Livermore National Laboratory in California. Renewable-energy advocate Jeff Bingaman (D–NM) is expected to take over DOE's authorizing committee from Frank Murkowski (R–AK), a friend of the oil and gas industry. That switch virtually assures that the Senate will block controversial portions of the Bush Administration's new energy policy, such as a call to open Alaska's Arctic National Wildlife Refuge to drilling (*Science*, 25 May, p. 1462). A Democratic Senate is also likely to question Bush's plans to increase funding for missile defense, downplay controls on global warming gas emissions, and cut funding for environmental research.

Whereas most lobbyists are hedging their bets, Michigan State University's Howard Gobstein ventures that a divided government will be good for research. "Support for science is bipartisan," he says, and the new lineup gives both parties an incentive to take the lead.

–DAVID MALAKOFF

ULTRAFAST LASERS

Strobe Light Breaks the Attosecond Barrier

If you want to see Harm Geert Muller's latest handiwork, don't blink. On page 1689 of this issue, Muller—a physicist at the FOM Institute for Atomic and Molecular Physics in Amsterdam, the Netherlands—along with Dutch and French colleagues reports creating the fastest strobe light ever made, with individual pulses lasting just 220 attoseconds, or 220 billionths of a billionth of a second. These unimaginably short pulses are the first to be confirmed as breaking the attosecond barrier, a goal of high-speed-laser researchers for nearly a decade. Down the road, such pulses may one day serve as an ultrafast camera, allowing researchers to freeze action and perhaps to spot the gyrations of individual electrons whirling around an atomic nucleus.

"This is a great paper," says Paul Corkum, a pioneer in making short laser pulses and a physicist at the National Research Council of Canada in Ottawa, Ontario. Laser researchers have likely been making trains of attosecond pulses for years, says Corkum. But until now they've had no