will spend on her research, her children, and a new apartment.

Next year, the awards will revert to the life sciences, but it's undecided how they'll be distributed in future years. The L'Oréal–UNESCO "for women in science" program also awards fellowships to young researchers. The fellowships were increased in both number and value this year—15 fellowships worth $20 000 each were bestowed in 2003—but so far have remained limited to the life sciences.

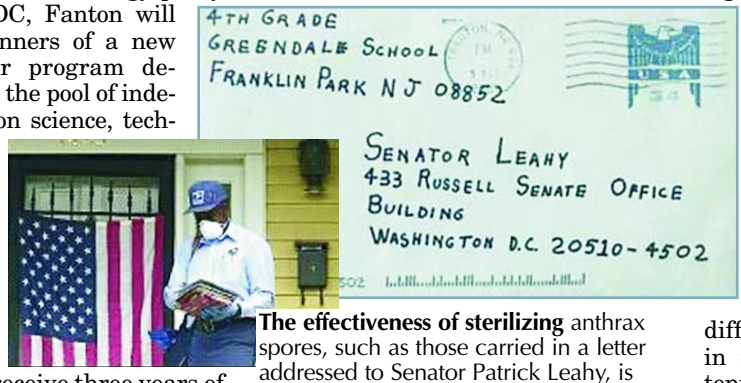
Toni Feder

MacArthur Pumps Funds Into Science Policy Positions

Next month sees the launch of the greatest expansion of faculty positions for science, technology, and security policy since the end of the cold war.

Jonathan Fanton is worried. "Policymakers and the public need reliable, independent advice from scientists in making choices that shape relations among nations and enhance the prospects for peace and security," says Fanton, president of the John D. and Catherine T. MacArthur Foundation, which is based in Chicago. "A generation of scientists—and their students—drawn into public policy by the Manhattan Project and the cold war is passing from service . . . and we need a successor generation." Next month, at an American Association for the Advancement of Science (AAAS) workshop on science and technology policy in Washington, DC, Fanton will announce the winners of a new $7 million-a-year program designed to increase the pool of independent experts on science, technology, and security policy.

Under the MacArthur Foundation's science, technology, and security initiative (STSI), nine US universities will receive three years of funding to create a series of appointments, including five tenured posts. Seven additional grants will help fund independent science policy experts in China, Russia, and the UK.



FBI

The effectiveness of sterilizing anthrax spores, such as those carried in a letter addressed to Senator Patrick Leahy, is one area of research the MacArthur Foundation will fund at Carnegie Mellon.

A big expansion

Three years ago, the collapse of the stock market, especially the stock of technology companies, dramatically reduced the assets of many foundations. In an additional shock to the arms control community, two sources of funds, the W. Alton Jones Foundation in Virginia and the Merck Company Foundation in New Jersey, pulled out of international security policy during the autumn of 2001. Smaller funding sources, such as the Washington, DC-based Nuclear Threat Initiative (NTI), which had lost millions of dollars in AOL Time Warner stock, its sole revenue source, suddenly found themselves inundated with requests. They reacted by restricting consideration to invited proposals. "Although we were already developing STSI at the time, the pullout of the W. Alton Jones Foundation made us feel we had a large obligation to remain in this field," says Kennette Benedict, director of international peace and security at the MacArthur Foundation.

The foundation consulted a number of independent science policy experts and solicited advice from other like-minded funders—the San Francisco-based Ploughshares Foundation, the Ford Foundation (New York), the Carnegie Corporation of New York, and the NTI—on what it should do. Many of those consulted recommended "institution building"—beefing up existing university centers and departments that deal with science and security policy and helping to create new ones.

In its first round of grants, the STSI will fund Carnegie Mellon University ($1.16 million), Cornell University ($1.1 million), Georgia Institute of Technology ($1.25 million), Harvard University ($946 000), the University of Illinois at Urbana-Champaign ($1.35 million), the University of Maryland, College Park ($1.2 million), MIT ($707 000 over two years), Princeton University ($1.35 million), and Stanford University ($1.35 million). Those institutions will look at security issues that match their own expertise. They all hope to double or triple the number of PhDs they award in the field through their STSI grants. The program is also funding nonuniversity organizations such as the Council on Foreign Relations, AAAS, and the Federation of American Scientists.

Tenured positions

Interest in using scientific techniques in security policy has been declining for some time. "We haven't got a single PhD candidate studying nuclear weapons," says Judith Reppy of the peace studies program at Cornell. "Unfortunately, physics departments do not see nuclear weapons policy analysis as physics—and the same with molecular biology departments and biological weapons policy," says Frank von Hippel, a leading security policy expert at Princeton. He adds that "although many physicists consult with the government on these problems, few teach or do unclassified research on them at their home universities." The result, says Clifford Singer, director of the program in arms control, disarmament, and international security at Urbana-Champaign, "is that it has been difficult for scientists working in interdisciplinary work to obtain tenure."

Falling interest and a lack of tenured positions, says Benedict, have led to the body of "scientists working [on policy research] outside industry or the military getting rather slim. . . . The events of September 11, 2001, only confirmed the growing need for more experts."

The MacArthur Foundation approached a number of institutions requesting proposals to help young and midcareer scientists work in security policy areas. "The universities actually responded in ways we hadn't anticipated," says Benedict. "We suggested creating a tenured position," says William Long, chairman of Georgia Tech's Sam Nunn School of International Affairs. Georgia Tech, Cornell, Princeton, Urbana-Champaign, and Carnegie Mellon are all using their MacArthur grants to offer tenured posts devoted to science-based policy issues. The universities

have agreed to support the posts even if the foundation does not extend funding beyond the first three years. "We are very excited about the opportunities this grant gives us to serve as a bridge between international policy and technology studies and research," says Long. Other institutions will use their grants to support existing positions or create postdoc slots in security policy.

"For physicists and biologists working on science and security issues, this program represents a once-in-a-generation opportunity to get a faculty position," says von Hippel. "To my knowledge, there has been no new faculty appointment in this area in the country since the end of the cold war."

"We've learned the hard way that such apparently innocuous things as airliners, the US mail, electric power, and the computer systems can be turned into weapons against us," says Granger Morgan, head of Carnegie Mellon's department of engineering and public policy. "As a result, our grant will help us to identify ways to design safer systems."

Paul Guinnessy

Europe's Comet Mission Delayed

Minutes after it took off on 11 December from Kourou, French Guiana, the Ariane 5 rocket plunged into the Atlantic Ocean with two telecommunications satellites on board. The mishap means the European Space Agency's ambitious comet probe, Rosetta, will be delayed—and must find a new target.

Rosetta was supposed to set off on 22 January for a 2011 rendezvous with Comet Wirtanen. It would have used a smaller version of the Ariane 5 rocket than the one that failed. But Arianespace, the launch company, suspended all sendoffs for several weeks to conduct an internal review. As a result, Rosetta missed its launch window for Wirtanen.

In any case, ESA wants to wait until it has confidence in a successful launch before slinging the €1 billion (roughly $1.1 billion) Rosetta into space. Out of 14 launches, the Ariane 5 has had four failures—including its maiden flight on 4 June 1996, which lost ESA Cluster, a mission to study Earth–Sun interactions. (A replacement mission was sent into space in 2000.) "The reason for not flying now," says ESA's director of space science, David Southwood, "is a distrust in the Ariane 5 system, not [in] any one single item. This made the decision hard and extremely controversial. . . . We have done this to ensure that [a launch failure] does not happen again and that Europe gets a truly reliable and extremely modern launcher in Ariane 5."

Like Wirtanen, the replacement comet should be one that Rosetta can chase in from the cold. "What we particularly want," says the mission's plasma consortium spokesman, Chris Carr of Imperial College, London, "is a long view—from close to its farthest point, where it's almost dormant, to full activity." Adds project scientist Gerhard Schwehm, "We will look for a comet that comes into the inner Solar System. There are a few phenomena that really come into play when the comet is heated up—the coma and tail start evolving." And, for Rosetta's lander to touch down softly, the comet can't exceed about 5 km in diameter.

Other selection criteria are minimizing technical risks from changes in the spacecraft's trajectory and keeping costs down. Storage and other added costs are expected to come to €50–100 million, straining ESA's already tight budget (see PHYSICS TODAY, August 2002, page 24).

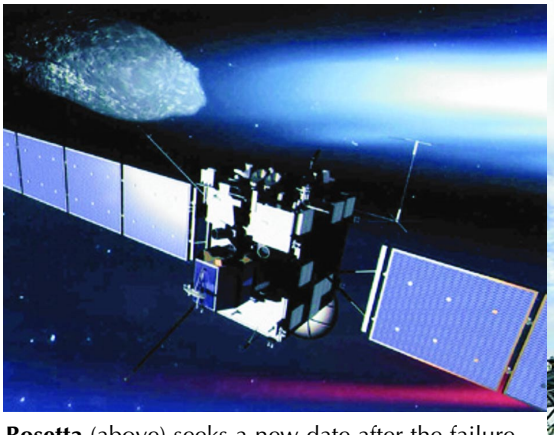
Candidate replacement destinations for Rosetta include the comets Churyumov–Gerasimenko, Haneda Campos, Howell, Hardy-2, and Tempel-2. A decision is expected in May, and the new launch date will be sometime in the next one to two and a half years, Schwehm says.

The Rosetta delay is the second setback in recent months for the comet community: Last August, NASA lost the Comet Nucleus Tour (Contour), which was supposed to fly by three comets (see PHYSICS TODAY, October 2002, page 26). SMART 1, a lunar probe that will test solar propulsion, and other ESA missions may also face delays.

In other European space news, Alain Bensoussan, president of CNES, France's space agency, announced on 29 January that he will step down after seven years on the job. Of ESA's 15 member states, says Southwood, France has the largest space industry. "The head of CNES is always important to ESA, and any change is likely to herald other changes. I think that all Europeans interested in developing European space capabilities have to be concerned."

CNES's budget has been shrinking since 1997, and a recent report chaired by Roger-Maurice Bonnet, until recently a top CNES official, gave Bensoussan a vote of no-confidence. Just a few months earlier, Gérard Brachet, CNES's director general, left. "There's a general crisis at CNES," says an agency spokesman, adding that the Ariane 5 failure, while part of the crisis, did not trigger Bensoussan's resignation.

Toni Feder



ESA/CNES/ARIANESPACE/CSG

Rosetta (above) seeks a new date after the failure of the ill-fated Ariane 5 (right). (Artist's rendering of Rosetta courtesy of ESA.)

ITER Leader to Head CERN

Given the good impression Robert Aymar made last year as chair of an external review committee for CERN, it's no surprise he's been named director general of the European particle physics lab. His five-year term officially begins in January 2004, but throughout this year, he says, he'll split his time between CERN and the International Thermonuclear Experimental Reactor (ITER), which he currently heads.

Aymar's committee made a series of recommendations aimed at getting