



Pioneers

HAT TRICK. When Frances Arnold was growing up, her parents told her that she could achieve whatever she set her mind to. Last week, the 51-year-old chemical engineer and biochemist proved them right by becoming the first woman, and eighth living scientist, to be elected to all three of the U.S. National Academies.

A professor at the California Institute of Technology in Pasadena, Arnold helped develop a technique called “directed evolution” in which promising strands of parent proteins are either mutated or recombined to create new proteins. “[I had] to make better proteins in tenure-clock time,” she explains. Arnold has engineered bacterial proteins that mimic human proteins for use in drug development and is working on enzymes that break down cellulose for use in biofuels. “I can alter anything that’s encoded in DNA,” she says. “The algorithm of evolution fits everything in biology; there is no such algorithm in other fields.”

Arnold’s induction last week into the National Academy of Sciences was preceded by her joining the National Academy of Engineering (NAE) in 2000 and the Institute of Medicine in 2004. Her father, nuclear physicist and NAE member William Howard Arnold, “was the most excited of all,” she says. “He thinks it’s great that I have so much fun with science.”

FACT AND FICTION

A MATTER OF DEGREES. One of the most telling statistics cited in an influential 2005 National Academies report to argue for an increased federal investment in U.S. science is that “there were almost twice as many U.S. physics bachelor’s degrees awarded in 1956 [pre-Sputnik] than in 2004.” The decline is evidence that U.S. students are abandoning science, say policymakers including Tom Luce, head of the National Math and Science Initiative. NMSI sponsored a meeting last month in Washington, D.C., to take stock of how well the country has done since the 2005 report. But those data, it turns out, are dead wrong.

In reality, U.S. colleges and universities awarded 72% more undergraduate physics degrees in 2004 than in 1956—4965 versus 2883. Sliced another way, degree production has risen by 40% since hitting a post-Sputnik low in 1998 and is approaching levels not seen since the late 1960s, when a series of large graduating classes triggered a serious job crunch.

Academy officials say they don’t know how the error occurred, but it’s not the first time that *Rising Above the Gathering Storm* has sounded a false note in its scientific call to arms: Its first edition, since corrected, greatly inflated how many engineers graduate each year from Chinese and Indian schools.

MOVERS

THEORISTS’ ENCLAVE. University of Cambridge cosmologist Neil Turok has agreed to head the Perimeter Institute for Theoretical

Physics (PI) in Waterloo, Canada, which has been leaderless for nearly a year. “The combination of Neil and PI is brilliant and holds great promise,” says



Stephen Hawking, one of Turok’s Cambridge colleagues. Turok succeeds theoretical physicist Howard Burton, who stepped down in June 2007 after failing to agree to the terms of a new contract.

“PI can be like a magnet to the brightest people in the world; ... you have to make space

and encourage people to tackle hard questions,” says Turok, who in 2003 founded the African Institute for Mathematical Sciences (AIMS) in Cape Town, South Africa, to train the continent’s best math students (*Science*, 2 May, p. 604). AIMS and PI “are similar in many ways,” he says. “They are small, dynamic institutes with an international outlook.”

Turok wants to triple the size of the institute, created with a \$75 million gift from Mihal “Mike” Lazaridis, whose company makes the BlackBerry, from its current faculty of seven and encourage more visiting researchers with an associates program. “It’s not obvious that it’s going to work, but that’s what makes it interesting,” says Turok.

NONPROFIT WORLD >>

SHEPHERDING CATS. Alan Rabinowitz is leading a migration of experts on big cats from the Wildlife Conservation Society (WCS) to Panthera, a New York City-based nonprofit that promotes the conservation of all 36 species of wild cats.

Rabinowitz, 54, has spent his entire career at WCS, where he ran the society’s science and exploration division. But he became frustrated by the bureaucracy at the \$185 million nonprofit, which runs four New York zoos and works in 53 countries. “I’m completely free to play to my passions,” Rabinowitz says about his new job, which he began last month. He’s now overseeing Panthera’s budget of \$6.4 million, including \$400,000 in grants for wild cat research.

As part of his move, Rabinowitz has hired Luke Hunter, a specialist in African cats, and famed mammalogist George Schaller from WCS. But he hasn’t severed all ties with his former employer: One of his goals is to help WCS and other large organizations work together on cat conservation.

