the Children, envisions a CURA project to examine malnutrition across the nation and the quality of food provided by breakfast clubs. Peter Dawe, head of the Newfoundland and Labrador division of the Canadian Cancer Society, can imagine a half-dozen issues that a CURA center could explore, including attitudes toward alternative health therapies, the efficacy of public education campaigns, and the degree of self-examination for breast cancer. "There's a desperate need for systematic, evidence-based problem-solving," he says.

Not everyone welcomes the new rules, however. Some university administrators worry that SSHRC's decision will further dilute the already limited resources available for academic research and may not easily fit into traditional university reward systems. "There's currently not very good means to evaluate [outreach scholarship] and certainly little recognition of it in either tenure or promotion," says University of Manitoba dean of arts Ray Currie. "If the community is the origin of these [centers] rather than the university, I think it will be harder to convince the universities that this is credible scholarship" and harder to convince campus researchers to participate.

Renaud says the potential benefits from building better "bridges" between the campus and the community are worth the risk of upsetting a few academic apple carts. "If it's a pilot, you might as well make it a real pilot," he says. "Either we're making a mistake or we're making history. You tell me."

–WAYNE KONDRO

Wayne Kondro writes from Ottawa.

SCIENCE EDUCATION

NSF to Send College Students Into Schools

Kristin Guthrie took as few science courses as possible as a student at Iowa's Luther College. And as a second-grade teacher at Mary Lin Elementary School in Atlanta, she admits that science lessons used to get squeezed out to make room for other subjects in a crowded curriculum. But that was before her "science partner" arrived. Now her kids can't wait for their 90-minute, 2-day-a-week science lesson. And neither can she. "That time is sacred—it's when we do science," says Guthrie, a 10-year veteran at the kindergarten-to-grade-5 school, which serves a predominantly poor, minority population near downtown Atlanta. "The partner brings so much to the classroom, it's just wonderful."

Guthrie's science partners—science-literate students from one of seven Atlanta-area colleges and universities—come to Mary Lin as part of a program funded by the National Science Foundation (NSF) that sends undergraduates to help as teachers' aides in 69 elementary schools. The Atlanta program, called Elementary Science Education Partners (ESEP), is one of several such initiatives around the country, often involving scientific societies as well as universities. Now NSF has decided to go national with a variation of the concept. The new program would send graduate and upper-level undergraduate students into elementary and secondary school classrooms by offering them something on a par with the prestigious NSF graduate research fellowships.

Expanding minds. A science partner helps these Atlanta third-graders identify the chemical composition of various substances. *Inset*, a fourth-grader's vision after a lesson on animal adaptation.

PHOTOS BY CAMILLE GOEBEL

NSF officials have yet to work out details of the program, which would begin with a special grants competition this winter. But it's a favorite of Rita Colwell, NSF's new director, who sees university students as an untapped source of talent and enthusiasm for teaching (*Science*, 25 September, p. 1944). "This is definitely going to happen," Luther Williams, head of NSF's education directorate, told a group of public school and university educators late last month. "And I'm asking you to think about how you can get involved." As things stand, the 3-year awards would go to universities that link up with local school districts on programs bringing together college students and teachers. And the $12 million pot—carved out of NSF's current 1999 budget—is seen as a downpayment on a larger effort in 2000 and beyond.

The program's primary goals are to improve the quality of K-12 science and math instruction and promote teaching as a career for science-savvy students. "We need good teachers just as badly as we need new scientists," says Robert DeHaan, a cell biologist at Emory University School of Medicine in Atlanta and the creator of ESEP, which gives college credit to undergraduates who serve as science partners.

A successful program, say educators, also could alter the mindset of university faculty, who typically place research at the apex of a scientific career. "It has the promise of changing the culture," says Jan Tuomi, director of a project at the National Academy of Sciences called Resources for Involving Scientists in Education (www.nas.edu/rise). "It says this is an award for an alternative career path, not just something for scientists who have 'failed' in the lab."

Educators already involved in such projects say that they welcome NSF's heightened interest. "Any help that you can provide a teacher is useful, and anybody you can turn on to [K-12] teaching would be great," says Hewlett-Packard's Jan Hustler, director of the Bay Area (California) Schools Excellence in Education project, which has grants from HP and NSF to involve scientists from industry and academia in training teachers at 83 area elementary schools.

Hustler and others emphasize that, to succeed, such programs have to provide the teachers' aides with proper training and good mentors and place them in schools already in the midst of reforming how children learn science. In addition, success requires a commitment from the university, especially at the graduate level, where students are expected to immerse themselves in a research project. "A lot of faculty may be wary of having their students mucking around in a classroom," says Ramon Lopez, an astronomer at the University of Maryland, College Park, and head of education and outreach at the American Physical Society, whose Teacher Scientist Alliance Institute trains researchers to work in

their local schools. "But I think that those who are open-minded will welcome it."

Despite the hurdles facing NSF's new program, Guthrie says ESEP has shown that the right environment can make for a great partnership. "I'm still in charge," she says about the students she has worked with. "I take care of discipline and make sure that we follow the curriculum. But they often bring in other material that I don't have access to. And even when they use terminology that might be a little too sophisticated, the kids think it's really neat to be taught by a scientist." –JEFFREY MERVIS

BIOTECHNOLOGY

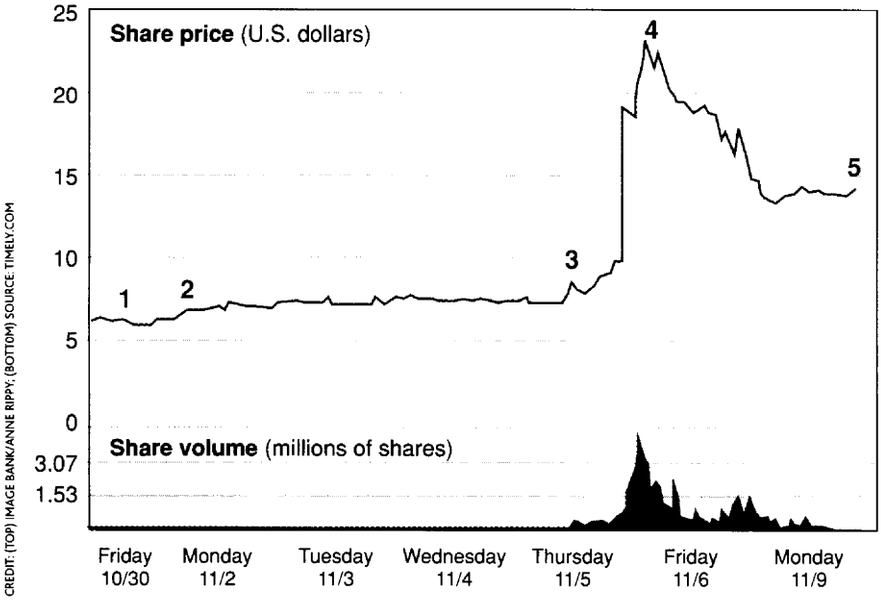
Reaction to Stem Cells: A Tale of the Ticker

For the Geron Corp. of Menlo Park, California, it was déjà vu all over again last week, as the company announced research results that sent investors into a tizzy. In January, the biotech company's stock almost doubled in price when *Science* published a paper by a Geron-funded researcher reporting a way to extend the lifespan of human cells (*Science*, 16 January, p. 349). But the price soon sank as investors realized that the scientifically interesting findings wouldn't soon lead to profitable products. Last Thursday, it happened again.

Geron, which has been operating in the red to the tune of $40 million since 1994 and is still years away from profitability, saw its stock price jump, then slump, when company-supported researchers reported in *Science* and the *Proceedings of the National Academy of Sciences* that they have cultured "immortal" stem cells in the laboratory (*Science*, 6 November, pp. 1014 and 1145). The cells could potentially be used to repair damaged organs and tissues.

The graph below tells the tale of the ticker: 1) On 30 October, *Science* sends more than 1200 reporters an "embargoed" notice of the stem cell paper a week in advance of publication. They are not allowed to report the findings publicly until the following Thursday at 4 p.m. 2) As reporters begin to prepare their stories, rumors about the findings begin to circulate and Geron's stock edges upward. On 2 November at 10:58 a.m. Eastern Standard Time (EST), an anonymous Geron investor posts this message on a Yahoo! stock buyers' bulletin board: "[Geron] stock is going through the roof this morning. ... What's the news? Does anyone know what is going on?" 3) Sometime after noon EST on 5 November, the French Press Agency puts out a story about the findings at least 3 hours early. By 1 p.m., Geron's stock price jumps by $2. By 4 p.m., when the embargo officially ends, the price is around $10. "It looks like everybody on the street knows what the news is except us," e-mails an exasperated investor, who hasn't yet seen the story. 4) On Friday, after the findings make the headlines, Geron's stock soars to $24.50, roughly four times its price a week earlier. "The reaction of the stock price is absurd," Jim McCamant, editor of *Medical Technology Stock Letter* in Berkeley, California, warns the Associated Press. 5) After a weekend of reflection, investor interest slumps and Geron prices slide to $13.75. The discovery, opines one analyst, "is a lot more significant scientifically than commercially."

–DAVID MALAKOFF



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ScienceScope

CANADIAN PANEL DIALS UP FIELDS

The Canadian government has asked a blue-ribbon panel to assess the potential health risks of electromagnetic fields (EMFs) produced by cell phones and other wireless devices. The study is meant to inform a government effort to update regulations that set limits on EMFs produced by consumer products.

"There's an awful lot of controversy around this issue," says Elizabeth Nielson of Health Canada, the nation's health agency. Although she says any risks associated with EMFs have been "difficult to prove one way or another," she hopes the panel—which will review existing studies—will address public worries about cancer and other issues. Epidemiologist Daniel Krewski of the University of Ottawa will chair the eight-member committee.

Canadian officials would like to consider the panel's findings when drafting the new regulations. But that may have to be done informally, because the panel isn't scheduled to officially release its report until March—the same time the safety code revisions are due out.

PNAS MAINTAINS EMBARGO

Biologist Nicholas Cozzarelli dreams of a world in which scientists wouldn't have to keep quiet in public about their papers in press at a scientific journal. He believes such embargo rules, which many journals use to prevent early data release, are inimical to scientific communication. So, as editor of the *Proceedings of the National Academy of Sciences* (*PNAS*), Cozzarelli has proposed getting his journal out of the embargo business.

But the 50-member *PNAS* editorial board is divided on Cozzarelli's plan, which he presented at a 30 October meeting. Some members argue that *PNAS*'s competitive edge might suffer. Geneticist Arno Motulsky of the University of Washington, Seattle, also worries that the lack of an embargo might encourage commercial sponsors of research to hype findings before publication. Such concerns prompted the *PNAS* board to postpone action on making their journal embargo-free—at least until their next meeting in April.

Contributors: Helen Gavaghan, David Malakoff, Christie Aschwanden, and Eliot Marshall