A 'Reforestation Plan' for Biomedical Research

Although leaders of medical research from 14 countries came to Ottawa earlier this month to discuss innovative ways to fund their enterprises, innovative ideas were in short supply. Still, the few that did surface—including auctioning off rights to commercialize the results of academic research and offering big cash prizes for specific advances—raised intriguing possibilities that many participants had not considered. One idea, however, floated by Canadian physician and entrepreneur Calvin Stiller, became perhaps the hottest topic discussed at the 2-day conference. Stiller outlined a breathtaking plan that would turn Canadian universities into venture capitalists: Armed with a pot of government funds and assisted by a slew of tax shelters, they would invest in companies that would commercialize their researchers' findings. Revenues would later be plowed back into medical research.

Stiller described the idea as a "reforestation plan," in which commercial enterprises would reseed the universities. That notion clearly resonated with the leaders of Canada's hard-pressed biomedical research establishment, which is in the throes of absorbing a staggered 13%, 4-year cut in government funding through the year 1998–99. "I did find Dr. Stiller's approach was in some ways the most creative and original [proposed]," said Canadian Medical Research Council (MRC) President Henry Friesen. And, although some at the meeting voiced concerns that universities might shift funding from basic research into areas more likely to generate profits, Stiller's proposal seemed to have legs. "It's a very, very innovative approach, and certainly one that attracted a great deal of interest and will attract more elsewhere," said Philip Lee, assistant secretary of health at the U.S. Department of Health and Human Services.

At the heart of Stiller's proposal, which he has developed with a team of accountants and economic consultants, is a new National Health Science Endowment Equity Fund to which the government would allocate $100 million Canadian ($75.7 million U.S.) a year for up to 10 years. Universities and research institutes could draw on this so-called SEED fund to match private-sector investments in fledgling companies that aimed to commercialize biomedical and health research done at these institutions. A key part of the package is a collection of tax incentives that would be used to lure private investors into the partnerships. And the plan closes the circle by calling for the institutions to kick back a chunk of their earnings—assuming they make any—into the medical research enterprise, either by funding new projects within their own faculties or by funneling those revenues to the MRC for disbursement through peer review.

Stiller argued that his plan would give the institutions substantial equity in research that they are now selling to industry for a pittance, generally in the form of a "small" royalty from licensing fees. He also contended that the scheme would ultimately create a "more self-sustaining" source of research funding. But there is a big tax and subsidy kicker: Stiller thinks it would take 10 years for his plan to generate enough earnings to show much of a return on the investment, during which time he would like the government to provide an "interim" $1.5 billion cash injection in the MRC's base budget. This money, in turn, would rev up the research engine, theoretically producing more new ideas that would lead to more commercial products. That notion, however, might face strong opposition in an austerity-obsessed government increasingly averse to the use of incentives targeted at a single economic sector.

Fraser Mustard, founder of the Canadian Institute for Advanced Research, a public policy think tank, also cautioned that Canadian universities would likely have to create new affiliates to handle the equity holdings and industrial partnerships. Mustard added that the plan is more likely to generate revenues for biomedical research than for health services or population-based studies and may compromise the undergraduate teaching function of universities by steering efforts toward commercially driven R&D. But properly managed, he said, the plan might be "quite doable" because it allows "industry to collect the money by a tax privilege, which is what this is, and to kick it back to steer the fundamental research more directly to their interests."

MRC head Friesen said the impact of such steering effects will have to be carefully examined before the proposal is recommended to government. But he stresses that the idea warrants "very, very serious scrutiny" on the basis of Stiller's track record alone. Stiller was the chief architect of the Canadian Medical Discovery Fund, a wildly successful tax shelter created in 1994 that has attracted $200 million (Canadian) from 40,000 individuals for investment in small biotechnology, medical devices, and health firms. And in a country where the MRC budget is $242 million, that's no small change.

Although no other proposal offered at the meeting made quite the splash that Stiller's created, two more modest suggestions—at least by comparison—raised some interest. Stanford University economist Paul Romer argued that one way to break away from the "tax and subsidy" model of funding for biomedical research would be to strengthen property rights, perhaps through extended patents. Romer specifically proposed that countries could test whether such incentives would promote basic research within industry by, say, auctioning the patent rights to a randomly selected portion of the human genome and comparing the outcome with that achieved through public financing. Another novel idea, described by Seth Berkley of the Rockefeller Foundation, is to offer researchers prize money for making advances in critical areas. This plan, at least, has one thing going for it: It is already being tested. Rockefeller is offering $1 million to anyone who develops a simple test to diagnose sexually transmitted diseases in women.

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investment. He and others noted that the clearest payoffs come in less direct ways, such as seeding the R&D done by industry. France's Lazar noted that basic research also makes scientists and clinicians "superior" teachers, a point he said is "often forgotten."

Wendy Baldwin, deputy director of NIH, agreed that economists sometimes seek too precise an answer to the question of whether biomedical research is a good investment. "I think that level of detail can be mischievous," said Baldwin, who ticked off a long list of basic research discoveries—including the tissue culture methodology used to make the first polio vaccines and the more recent link between *Helicobacter pylori* and stomach ulcers—that obviously have saved untold millions of dollars. Judith Whitworth, chair of Australia's MRC, had similar misgivings. "The whole point in science is it's creative," said Whitworth. "If you're not picking losers, you're doing something wrong."

In spite of such misgivings, organizer Friesen felt by the end of the meeting that the gathering itself was unquestionably a good investment. "This was, after all, an experiment, and it was a great success," said Friesen. One measure of proof: A second meeting is already being planned for 2 years hence.

–Jon Cohen