Civin, a cancer expert and stem cell researcher with the new Institute for Cell Engineering (ICE) at Johns Hopkins University School of Medicine in Baltimore, says more research and new cell lines will be "great" for getting better treatments to patients faster. "Hopefully," he says with a touch of envy, "the U.S. would someday approve our use of them."

The center's first task will be to produce ES cells in bulk quantities from the 10 to 12 lines that researchers will bring to the consortium. It also hopes to generate 20 new ES and adult stem cell lines. Its most difficult challenge, however, will be to coax stem cells to develop into specific tissue types that could be used for therapies. Trounson says he hopes that the center can develop treatments for blood conditions such as leukemia that could go into clinical trial within 5 years and be available commercially a few years later, with help for solid-tissue disorders like Parkinson's to follow. Reagents for identifying stem cells will be ready "straight away," he adds.

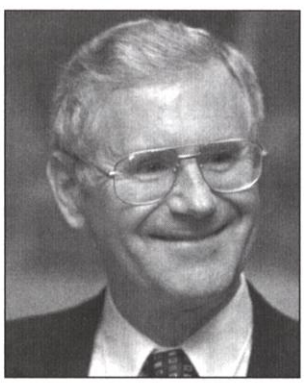
Researchers also anticipate a collaboration with a primate research center, Maccine, at the Bogor Agricultural Institute in Indonesia. Trounson says he hopes to use animals at the primate center to test potential therapies involving blood, skin, cardiac muscle, lung, liver, and brain cells.

The government is preparing legislation to codify the April agreement, which appears to have resolved a heated public debate on the use of ES cells in research. Speaking 30 May at a press conference in Canberra, Prime Minister John Howard called the potential benefits from stem cell research "quite literally unlimited" but said that the work would be "guided by the community's ethical considerations." A raft of committees will be set up to oversee research in the field, and Trounson emphasized that "any procedures banned under these agreements will not be undertaken by the center."

The new center will also receive money from state governments and two companies, ES Cell International and BresaGen, created to commercialize work conducted at Monash and Adelaide universities, respectively. Trounson anticipates that a staff of 150 scientists will eventually work at the center, which will occupy its own building on campus. "Some very well-known U.S. scientists," he adds, have already expressed interest in coming aboard.

Stem cell researcher Ronald McKay of the U.S. National Institute of Neurological Disorders and Stroke doesn't think the new center will cause U.S. researchers to migrate to Australia. Nonetheless, he says that it, combined with the work done in Singapore to derive the Monash cell lines, gives the South Pacific a substantial presence in stem cell research. —LEIGH DAYTON

Leigh Dayton writes from Sydney.



Savior? Gottfried Schatz is pressing for action.

CREDITS: (LEFT TO RIGHT) SSTC; GEERT VANDEN WIJNGAERT/AP

SWITZERLAND

Report Aims to Rescue Science From Doldrums

BERN—A decade of stagnation has sent Swiss science into a downward spiral that only broad reforms and a massive infusion of funds can reverse. That, at least, is the diagnosis offered last week by the Swiss government's science advisory body. However, it's unclear whether leaders of the Swiss Federal Council, the government's executive branch, are prepared to prescribe strong medicine.

At a press conference here, officials of the Swiss Science and Technology Council (SSTC) followed up a warning shot they fired last fall by offering a laundry list of actions for remedying the country's most urgent woes. The proposals include unifying Switzerland's fragmented higher education system, installing a modern tenure-track system, shoring up support for long-term basic research, and increasing the science and technology budget by 10% a year from 2004 to 2007. The recommendations "make a lot of sense," says Patrick Aebischer, president of the Swiss Federal Institute of Technology in Lausanne.

The latest symptom of a research community in crisis, scientists say, is the Swiss drug giant Novartis's announcement last month that it would set up a $250 million research facility in Cambridge, Massachusetts (*Science*, 17 May, p. 1216). "You have to give something back to industry to keep industry here," says Silvia Arber, a neurobiologist at the University of Basel's Biozentrum.

Part of the problem is money. Federal R&D budgets have remained essentially unchanged over the past decade: The $1.7 billion in 2000, adjusted for inflation, is roughly the same amount spent in 1992. But there are deeper structural issues as well. For instance, most universities have few stable positions below the level of full professor. "It's an old-fashioned system," says Jürg Stöcklin, a population biologist at the University of Basel who has what he calls one of the "rare permanent positions in the Mittelbau": the limbo that re-

ScienceScope

Coming Together on Cloning The world needs an international convention outlawing reproductive cloning, say scientists and policy-makers who met this week in Berlin to discuss global bioethics.

The meeting, organized by the French and German governments, attracted 70 participants from about 15 nations. Over 2 days, they sought consensus on a range of issues, including cloning, the commercial use of biotechnology, and developing world access to new technologies.

In a final communiqué issued 4 June, the group offered a laundry list of sometimes vague ideas, including a call for expanded bioethics education and training. But when it came to duplicating humans, participants were precise: They urged governments to forge a global agreement that would ban reproductive cloning and bar international trade in embryos. The more complex issue of therapeutic cloning should be discussed separately, they said.

German and French organizers say they will now take the ideas to the United Nations, which is expected to discuss the issues in September.

Full Speed Ahead A last-minute bid to strengthen ethical restrictions on embryo research failed to derail approval of the European Union's (E.U.'s) main research program. The E.U. council of ministers this week approved the 6th Framework research program without debate, giving little hint of a behind-the-scenes scramble to exclude certain types of embryo research from the $17 billion, 4-year plan.

In late May, member countries Ireland, Germany, Austria, and Italy threatened to block the Framework if it lacked prohibitions on reproductive cloning, germ line modifications, and creation of embryos for research—restrictions that were spelled out last year in a European Commission declaration. After failing to win majority backing for the idea, however, the countries instead issued a joint statement expressing concern about the lack of ethical guidelines. They also vowed to revisit the issue in coming months, as E.U. officials draft rules for specific programs.

searchers occupy while waiting for professorial slots to open. "For junior people, it's lousy," says Peter Chen, a physical-organic chemist at the Swiss Federal Institute of Technology in Zürich, which like its sister institute in Lausanne is one of the few with a tenure-track system. Bright young Swiss researchers can save 10 years and become independent earlier, Chen says, by starting their careers in the United States.

The seven-member Federal Council views the recommendations as grist for an action plan on R&D and education funding for the 2004–07 period that it will present to parliament in November. Two council members have publicly avowed support for a 6.5% increase in the R&D budget—a figure that's short of what SSTC is pressing for but far more robust than recent budgets. They have also warned against sacrificing long-term research for the sake of the more politically expedient targeted research programs. SSTC president Gottfried Schatz and his colleagues will be making appearances before the relevant parliamentary commissions to build on this support. Says Schatz, "I do nothing else these days." **–GISELLE WEISS**

Giselle Weiss is a writer in Allschwil, Switzerland.

MATERIALS SCIENCE

Lighting Initiative Flickers to Life

An alliance of industry, academic, and U.S. government scientists is getting closer to flipping the switch on a 10-year, $500 million initiative to revolutionize lighting. Researchers met in New Mexico last week to map out priorities for the proposed Next Generation Lighting Initiative (NGLI) embedded in a broader energy bill moving through Congress. The project is designed to help the United States stay ahead of competitors in Japan, Europe, and Korea for global leadership in the $40 billion lighting industry. "We've lost [the lead in] other technologies to other countries; hopefully, we can keep this one," says Arpad Bergh, head of the Optoelectronics Industry Development Association in Washington, D.C., which helped draft the initiative.

Over the past decade, researchers have developed new light-emitting diodes and organic thin films that could form the basis of solid-state lights that would be more versatile and efficient than current vacuum-tube bulbs. Analysts say the new lights, if adopted widely, could cut global electricity consumption by 10% or more, reducing environmental problems and spurring economic growth. But technical obstacles, including problems with making brighter and more rugged materials at lower costs, have slowed progress.

To clear those hurdles, researchers at the Department of Energy's (DOE's) Sandia National Laboratories in Albuquerque, New Mexico, and Hewlett-Packard Co. in Palo Alto, California, proposed 2 years ago that DOE, leading lighting companies, and academia pool their skills. A research road map hammered out last year (lighting.sandia.gov/Xlightingoverview.htm) caught the eye of Senator Jeff Bingaman (D–NM), who helped insert language creating NGLI into energy bills that have passed the House and the Senate.

Although differences over nuclear power and other issues might block a final agreement on the energy bill, NGLI is a good bet to survive. Dozens of lawmakers have already asked Senate and House appropriators to provide $30 million for the fiscal year that begins 1 October, with a boost to $50 million annually in subsequent years.

Lighting up. New public-private effort aims to give U.S. companies the edge in developing new lighting devices, such as these light-emitting diodes.

CREDIT: LUMILEDS LIGHTING

Bush Administration officials have been quietly supportive. "It's looking increasingly likely that something is going to happen," says Jerry Simmons, who runs a lighting research program at Sandia.

The initiative's backers project that industry-led consortia would receive about two-thirds of any government funding through a competition, with the remainder going directly to universities and government laboratories. Companies that want to participate would have to match the government's contribution to applied studies, whereas federal funds would finance the riskier basic research. That arrangement gives industry "an incentive to support additional research," says Bergh.

Academic researchers are also upbeat about the initiative, saying it will connect their work to important practical applications. "A concentrated effort to reach super-high-efficiency lighting … is good for consumers and the environment," says materials scientist Steven DenBaars of the University of California, Santa Barbara.

Some DOE-funded scientists have already begun to prepare for the initiative. Sandia, for instance, plans to invest nearly $6 million by the end of 2003 in solid-state lighting studies. The work includes modeling potential materials on a supercomputer—precisely the sort of research that's beyond the reach of most companies. **–DAVID MALAKOFF**

PARTICLE PHYSICS

Dark-Matter 'Sighting' Returns to Shadows

MUNICH, GERMANY—Dark matter is, officially, still dark. Results presented at a meeting here last week* have convinced most physicists who have seen them that a controversial "discovery" of dark matter is in error.

The original claims stemmed from an experiment performed in 1998 deep underneath the Italian Alps. A sensitive detector at the heart of the DAMA (for *Da*rk *Ma*tter) experiment at Gran Sasso National Laboratory showed a yearly increase and decrease in the number of particles it encountered. Although each individual "detection" had a high probability of being background noise in the instrument, the DAMA team concluded that the yearly cycle might be the signature of dark matter, the mysterious material that vastly outweighs the ordinary matter that makes up the visible universe. As Earth orbits the sun, the scientists proposed, it zooms toward and away from a "wind" of dark matter that blows through the solar system, and the shifts in orientation cause the number of dark-matter particles striking the detector to wax and wane (*Science*, 1 January 1999, p. 13; 3 March 2000, p. 1570). From this conclusion, the team calculated some properties of the dark-matter candidates, such as their energy. Although the claim was met with skepticism, the scientific community took it seriously—until now.

The challenge comes from a French experiment called EDELWEISS (for *E*xpérience pour *De*tecter *l*es *W*imps *e*n *S*ite *S*outerrain). Like DAMA, EDELWEISS centers on a particle detector buried under tons of alpine rock to shield it from cosmic rays. For 3 months, EDELWEISS tried to sense DAMA's dark matter candidates. It failed.

"There is no event" that could correspond to DAMA-type dark matter, says Gilles Gerbier of the French Center for Atomic Energy (CEA) in Saclay, a member of the EDELWEISS team. During its run, EDELWEISS saw only one possible dark matter candidate—much too energetic to be DAMA-type dark matter and probably just experimental noise.

* 20th International Conference on Neutrino Physics and Astrophysics, 25–30 May.