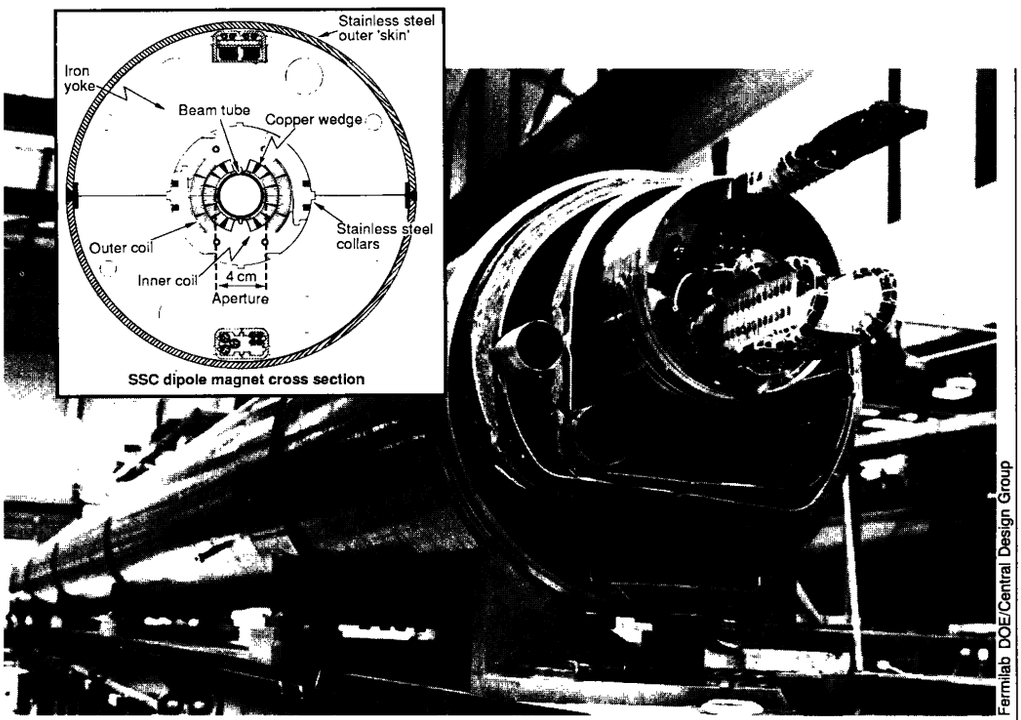

Marginal Magnet. *A sealed SSC magnet sits inside a 24-inch cryogenic shell awaiting tests at Fermi National Accelerator Laboratory in Illinois. It may be necessary to enlarge the aperture (see inset) to 5 centimeters in order to upgrade overall magnet performance.*

as its nearest competitor, the 20-TeV Large Hadron Collider, which has yet to be approved by the Center for European Particle Physics. For the moment, however, abandoning the goal of 40-TeV collisions seems to be out of the question.

One shortcut that might enable DOE to stick with the design specs would be to run the helium-cooled magnet at a lower temperature—3.5 K, instead of 4.35 K as currently required. At the colder level the existing magnets would produce stronger fields and thus gain operating margin. But this approach also might produce operating problems, including a higher rate of magnet failures. Electricity costs for running the magnet cooling system also would rise.

"It's a question of how conservative you want the magnet design to be," says Helen Edwards, the director of accelerator systems at the SSC Laboratory. A recent defector from Fermilab, Edwards favors sticking with the planned 4.35 K specification, noting that it might be prudent to hold the lower temperature option in reserve in case other operating problems crop up after the collider is built.

So far, neither DOE nor physicists working on the SSC have decided to take either of the easy ways out. Instead, a team at the SSC Laboratory in Texas recently has begun studying the merits of a bolder technical solution: scaling up the entire magnet structure, starting by enlarging the aperture from 4 to 5 centimeters. The surrounding superconducting magnet coils, the collars that confine the coils, and the iron yokes that clamp around the collars also would have to grow bigger.

The advantages are many. "Some operational margin has to be gained," says Romeo Perin, a CERN physicist who served on Schwitters' SSC magnet review panel. A slightly bigger magnet, he told *Science*, not only provides a way to raise the magnet field and greatly improve control of the beam focus, but it also reduces mechanical stresses and fabrication problems. That view is also supported by Richard Lundy, who had a central role in building the magnets for Fermilab's Tevatron and helped write the SSC magnet assessment report.

But increasing the size would have two major drawbacks. The first is cost: several years ago DOE estimated that production costs would be 16% higher for a magnet with a 5-centimeter bore. Thus, the SSC would face a hefty and unexpected new bill for a small change in design. The second drawback is that stepping up the magnet aperture could delay by 2 years DOE's plan to have prototypes manufactured in 1992.

To avoid the delay, the review panel said industrial involvement in magnet development should begin as planned in January using the 4-centimeter aperture magnets. At the same time, however, the report said a special group of federal laboratory experts could be assigned to develop a second group of magnets with a 5-centimeter aperture.

Schwitters and DOE will not face a decision on these complex alternatives for several months. Schwitters told *Science*, however, that at this point nothing about the SSC design is sacred. Indeed, magnet guru Richard Lundy has advised Schwitters to build in all the extra performance margin he can, even if it takes a little more time and money.

Whether Congress will be willing to pay for the extra performance remains to be seen. One fact that may affect the legislators is DOE's reestimation of SSC project costs, which is slated for completion in December.

But even with mounting pressures, Schwitters is mindful of the need to make the SSC shine. He claims he will not be shy about asking Congress for new money. Says Schwitters, "We are the guys that have the responsibility to actually build this thing and make it work well." ■ **MARK CRAWFORD**

Shiseido Grant: More Than Skin Deep

Massachusetts General Hospital and Harvard University have just captured one of the biggest grants for basic research ever awarded by a company. The giant Japanese cosmetic firm Shiseido Company on 2 August announced a whopping $85-million pledge to the hospital and Harvard to establish a new skin research center, to be headed by John Parrish, chairman of the dermatology department at Harvard Medical School.

The 10-year Shiseido grant is a boon for MGH-Harvard and for basic dermatology research, coming at a time when federal funding in this area is being cut back. The agreement adds about 35 new research positions to the 50 full-time professors on the dermatology faculty. In addition, Harvard and MGH will get a steady influx of dollars, since they'll take in more than half of the $85 million to cover "indirect costs."

Beginning this October—housed in a former rope factory near Boston Harbor that has been converted into a laboratory and will be called the Cutaneous Biology Research Center—scientists will study the effects of light on skin (Parrish's specialty), cell differentiation, immunology, and the biology of skin pigments, such as splotchy red birthmarks known as "port wine stains."

Parrish, who pioneered a clinical therapy for psoriasis, has been eager to expand the institutions' current research on the structure and function of healthy and diseased skin. A year ago, he broached the idea of creating a new center with Shiseido, which has sent about 45 researchers to MGH-Harvard laboratories during the past 20 years.

About the same time, Shiseido, whose new corporate theme is "Graceful Aging,"

had been scouting for ways to develop new health and beauty products to sell to an increasingly aged population in Japan, according to Tatsuya Ozawa, the company's general manager and director of product development. Shiseido also found the Harvard connection appealing because, "We want to establish an international research network," he says.

Under the agreement, Shiseido can only serve as an adviser at the new center, a stricture that was at first hard for the company to swallow. Parrish said that when he initially approached Shiseido last year to bankroll the project, company officials "wanted a much stronger say in the research." Parrish says it took a year to "educate them" on why it was better that they didn't.

From Harvard's point of view, of course, it wasn't simply better, it was essential that there be barriers between the funding body and those doing the research. A decade ago, Massachusetts General became a bellwether for academic-industry collaboration when it signed a $70-million cooperative agreement with the German company Hoechst AG. At the time, news of Hoechst's grant to MGH-Harvard raised cries of protest among academics who feared that academic scientists were about to sell their soul to industry.

Now there's wide agreement that the $70-million grant from Hoechst didn't corrupt academic science. Nevertheless, universities, private industry, and the federal government are still struggling to define appropriate relationships among themselves as evidenced by a workshop held on the issue in June by the National Institutes of Health (*Science*, 7 July, p. 23).

As in the Hoechst agreement, the decision-making process at the new skin center will insulate its scientists from corporate meddling, says MGH official Ronald Lamont-Heavers. The company will be limited to an advisory role and the center will be overseen by an eight-member scientific board. Only two of the members will be from Shiseido. Ozawa will serve as the center's associate director, and there will be two other associate directors recruited from outside the university.

Under the agreement, Harvard will hold the patents arising from the joint research and receive royalties. Shiseido will have first rights to an exclusive license to any patents.

While federal research grants are typically for 3 to 5 years, the Shiseido pledge is for a 10-year period, which represents "a surprisingly long-term look at basic research" by a cosmetic company, says Parrish.

■ **MARJORIE SUN**

Wider Use of AIDS Drugs Advocated

The drug AZT can delay the development of AIDS in people who have been infected by the AIDS virus but have not yet begun showing symptoms, according to the results of a clinical trial just released by U.S. health officials. "Now there is a good scientific basis to back up what we have been recommending for some time—that people be tested [for the AIDS virus] and get treatment," says Anthony Fauci, the director of the National Institute of Allergy and Infectious Diseases.

The new findings should greatly expand the number of people taking AZT, perhaps to as many as 600,000. There are questions, however, about whether these people will be able to afford the high costs of the therapy. Currently, it costs about $7000 to $8000 per year to treat an AIDS patient. According to a spokeswoman for the drug's manufacturer Burroughs Wellcome Co., company officials do not yet know whether the price will come down if production expands. She points out, however, that the $7000 price tag covers the full dosage of 1200 milligrams per day. At 500 milligrams per day, the effective dose in asymptomatic individuals, the cost should be less than half that.

Until recently, AZT was recommended only for the approximately 40,000 people with full-blown AIDS or advanced "AIDS-related complex." But clinicians and researchers hoped that if AZT could help these very sick individuals it might be even more beneficial for infected people who were still relatively healthy.

The clinical trials are confirming those hopes. Just 3 weeks ago, the NIAID released the results of another study, this one coordinated by Margaret Fischl of the University of Miami School of Medicine, showing that AZT could slow the progression of AIDS in people with very early symptoms. This meant that another 100,000 to 200,000 individuals could benefit from taking the drug.

The number who might benefit grew by an additional 400,000 last week with the release of the latest results, Fauci says. The potential new users are infected with the AIDS virus but remain asymptomatic even though their counts of T4 immune cells have dropped below 500. The virus attacks the T4 cells, and a drop below 500 usually signals a decline in a patient's condition. The normal count is in the range of 600 to 1200.

The current study, led by Paul Volberding of San Francisco General Hospital, is the largest AIDS trial ever conducted. It included 3200 people, approximately 1300 of whom had T4 counts below 500. Those individuals were divided into three equal groups, one of which received a placebo, the second a low AZT dose (500 milligrams a day), and the third a high AZT dose (1500 milligrams per day). The end point for the study was progression to AIDS or severe AIDS-related complex. An analysis of the data conducted on 16 August provided a conclusive result: "A person was twice as likely to progress on placebo as he was on AZT," Fauci remarks.

Researchers were especially gratified by the finding that the low dose worked as well as the high dose. In the placebo group, 38 people got worse, compared to only 17 in the low-dose group and 19 in the high-dose category. Many patients with advanced AIDS cannot take AZT because of the severe side effects that it causes in them. But this may not be a problem for people who begin taking the drug before symptoms begin. The side effects were mild in asymptomatic individuals, limited to nausea in about 3% of those who took the lower dose.

On learning the good news, NIAID officials immediately stopped the portion of the trial that included people with T4 counts below 500 so that those in the placebo group could also begin taking AZT. Meanwhile, the study continues for those with T4 counts above 500, as there is not yet enough data to tell whether the drug slows AIDS progression in these people as well.

Reports that the AIDS virus can become resistant to AZT have raised concerns that the drug can lose its effectiveness and lead to the clinical deterioration of individuals who take it. But Fauci says that this should not prevent an asymptomatic person from taking AZT. "If you weigh the benefits of delaying the disease against the risk of developing resistance," he explains, "the analysis comes down heavily on the side of delaying the disease." At present, no one knows just how long AZT will remain effective in asymptomatic patients, but at the very least it may buy time for them until more effective AIDS drugs can be developed.

Trials of several promising candidate drugs are in progress, and they will continue. AZT is "absolutely not" a cure for AIDS, Fauci says. For ethical reasons, however, the other trials may have to be modified so that people who qualify for AZT under the new recommendations can get it. One study of AZT in infected, asymptomatic hemophiliacs has already been terminated, according to Daniel Hoth, the director of the AIDS Clinical Trials Group of NIAID, and the drug has been offered to the control group members.

■ **JEAN L. MARX**