paired by injecting a mixture of epoxy and cement under the concrete floor slabs, but some worry that this solution will not be permanent. Physicist Michael Hart of Manchester University, United Kingdom, who is a member of the ESRF Review Committee for Methods and Instrumentation, says: "I have seen the floor at SPring-8; I have seen the floor at APS, and the one at ESRF is not only very thin; there isn't any steel in it." Petroff rejects such criticisms, however. "We run vibration experiments regularly. After 2 years we don't see any difference. I think the problem is solved for the moment."

Certainly, researchers who have been putting the machine through its paces are optimistic. A total of 12 beamlines are now in use, and the first 2-week run for visiting scientists, which began on 1 September, has produced several "firsts." Beamline specialist Daniel Häusermann has just finished an experiment with Yuichi Akahama from the Himegi Institute of Technology in Japan. "We could show that at a pressure of 900,000 atmospheres oxygen changes from a molecular crystal structure to a metallic crystal structure, a process called molecular metalization, and this is something that has never been done before." Akahama is returning home "a very happy man," says Häusermann.

Louise Johnson of the Laboratory of Molecular Biophysics in Oxford successfully determined the structure of a protein involved in cell-cycle control called $p13^{suc1}$, reports Wakatsuki. Van der Veen and Willem Jan Huisman, also of the FOM-Institute in Amsterdam, probed the outer atomic layer of diamond by recording the interference pattern produced by the intense x-ray beam. "The technique is not really new, but it is the first time that such an experiment can be performed on such an important prototype structure as diamond," says van der Veen.

These capabilities are expected to attract researchers to Grenoble in droves. Indeed, just as in high-energy physics, synchrotron radiation researchers have formed something of a traveling circus, continually migrating to the best current machine, then moving on to transfer knowledge and techniques to another facility. For example, Wakatsuki, who after his tenure at ESRF will possibly go on to SPring-8, says that "in Europe, the extraction and handling of scientific data is more advanced than in Japan. I am learning quite a lot." Adds Moffat: "It is a trading situation. I am strongly in favor of that; I think that is the way these facilities should be run."

–Alexander Hellemans

Alexander Hellemans is a science writer based in Amsterdam.

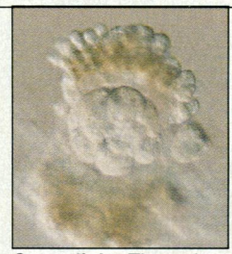
HUMAN EMBRYO RESEARCH

Grant Applications Pile Up at NIH

When Congress and President Bill Clinton lifted a 15-year ban last year on federal support for research using human embryos, grant applications quickly began arriving at the National Institutes of Health (NIH). More than 70 researchers have already submitted proposals for studies ranging from the development of new fertilization technologies to basic research on early gene activation, says National Institute of Child Health and Human Development Director Duane Alexander. Last week, scientists who would like to get started on these projects got some welcome news when a panel of lawyers, ethicists, and scientists endorsed the lifting of the moratorium and laid out guidelines on what types of research are ethically permissible. However, it could be many months before any of these proposals are funded.

The panel's recommendations, described earlier in these pages (*Science*, 19 August, p. 1024), are just the first step in a long process of public consultation established by NIH Director Harold Varmus to determine how NIH should traverse this ethical minefield. Varmus will take the matter up at his next advisory council meeting, on 1 and 2 December, and he has invited the public to submit "substantive" comments.

To judge by the experience of the panel, there will be no shortage of comment on the research proposals. Steven Muller, president emeritus of Johns Hopkins University, who chaired the review, noted last week that the panel had become the target of organized letter campaigns by opponents of embryo research. NIH has received more than 30,000 pieces of mail; Muller said he has received "hundreds" himself. Relieved that the panel's job was done, Muller gave the group a pat on the back, saying, "We have stood the heat ... we have stayed in the kitchen, and we have completed the task ... striking a balance among divergent interests."



MARK HUGHES

Green light. Three-day-old embryo. Panel said research using early embryos is acceptable.

The recommendations are detailed and complex. The Muller panel members voted to encourage the use of "spare" embryos in research. These are fertilized eggs that both donors have specifically offered for research; they are stored in fertility clinics. Ethicist Ronald Green of Dartmouth College, a panel member, explained that the panel judged the moral status of such minute embryos to be greater than that of a "mass of cells," but less than that of an infant, child, or adult. To the extent that patients may benefit from "well-justified research" using such embryos, the panel decided that it should go forward "within a framework of stringent guidelines." The panel agreed that under limited circumstances, NIH grantees might also be allowed to create "research embryos" in the lab, if necessary, to validate the conclusions of research based on donated embryos. Panel members hoped these changes in policy would remove the shackles from an important area of science.

But some observers—including panel member R. Alta Charo, law professor at the University of Wisconsin, Madison—were disappointed that the panel's recommendations would impose a layer of federal red tape on the field. Charo dissented from a section calling for the creation of a new "ad hoc advisory panel" at NIH with a 3-year lifetime. This ad hoc group would report directly to the NIH director and monitor compliance with general guidelines on a case-by-case basis, ensuring that researchers are scientifically qualified, that studies promise "significant scientific or clinical benefit," and that research cannot be "otherwise accomplished by using animals or unfertilized gametes." One Clinton Administration official, speaking anonymously, echoed Charo's dissatisfaction, saying the advisory panel had produced a jumble of detailed and confusing guidelines. This aide regretted that not even one area of embryo research had been exempted from red tape.

But the panel appears to have steered a middle course through the minefield, as another dissenter—Georgetown University law professor Patricia King, co-chair for policy—filed a dissent leaning in the opposite direction. King specifically opposed allowing new embryos to be created in the lab for purposes other than very narrowly limited research, defined as studies related directly to human health "when the information needed cannot be obtained in any other manner." She disagreed with the recommendation that next-of-kin should be able to donate a woman's ova for research, and she argued that women undergoing fertility treatment may be too vulnerable to make an independent judgment about the research use of their donated ova.

The ball is now firmly in Varmus's court. "If and when guidelines are put in place," Varmus said last week, NIH will ensure that embryo research projects are in full compliance with them. That clause—"if and when"—may send a chill through some of the 70 researchers whose grant proposals are now awaiting NIH's attention.

–Eliot Marshall