breeders. But this may not be easy. To begin with, other major breeding houses, such as Charles River, are gearing up to increase production, but they are pressed for staff and facilities to mount an expanded production line on short notice. Then, there is a simple biological limit. It takes 3 weeks' gestation to make a baby mouse; it takes another 4 or 5 weeks to wean him.

Finally, there is the question of identity. Take the popular nude mouse, for example. A JAX nude and another breeder's nude may or may not be the same mouse, depending on your experiment. There is no doubt that the mice are essentially alike in their immunological deficiency, but they also have subtle genetic variations, and quite likely are somewhat different in features such as intestinal flora, because their diets and living environments are not identical. Scientists testing the effect of chemical agents on mice without an immune system may be able to interchange JAX and other nudes, but researchers studying the fine genetic structure of immune development may not.

At this early stage, it is impossible to say with any certainty just what the fire will mean to research except to say this: it will not set back genetic research a decade; the animals will be recreated. But a lot of work may be slowed down. Thomas Roderick, one of the Jackson lab's 36 full-time scientists, says the phone has been ringing off the hook with calls from colleagues who first ask "Are you all right?" and then ask "What is going to happen to our research?" Roderick says that already there has been what he calls a "grass roots" effort to help. For example, Jackson scientists are inventorying their own animals to see how many breeding pairs they might be able to send to colleagues. But it will be awhile before things are sorted out.

■ BARBARA J. CULLITON

Lewin Wins Awards

Science Deputy News Editor Roger Lewin has been awarded two major honors in science journalism. For his work over the last 3 years he was selected winner of the first annual Lewis Thomas Award for Excellence in Communicating Life Sciences, established by the Marine Biological Laboratory, Woods Hole, Massachusetts. And Lewin's most recent book, *Bones of Contention* (Simon and Schuster), was named best science book published in 1988 in the United Kingdom for a general audience by the Committee on the Public Understanding of Science, jointly supported by the Royal Society of London, The Royal Institution, and the British Association.

Bone Marrow Transplants Approved

Once a hero for his efforts to aid the victims of the nuclear reactor disaster at Chernobyl, UCLA's Robert Gale subsequently came in for sharp questioning about the effectiveness of those efforts. Only 2 of the 13 radiation victims who were given bone marrow transplants by Gale and his team survived, and in both cases the patient's own bone marrow recovered. "There were considerable questions about whether they survived because of the transplants," Gale says.

Robert Gale

Since then, however, both the human data collected at Chernobyl and results obtained with laboratory animals have indicated that bone marrow transplantation can help radiation victims. That certainly was the consensus hammered out at "The First Consensus Development Conference on the Treatment of Radiation Injuries," which was sponsored by the Armed Forces Radiobiology Research Institute and held in Washington, D.C., on 10 to 13 May.

"I don't think anyone questions that bone marrow transplantation in certain individuals would be lifesaving," remarks Eugene Cronkhite of Brookhaven National Laboratory on Long Island, who chaired the consensus panel dealing with the transplantation issue and whose own interest in radiation injury dates back to the atom bomb tests of the late 1940s.

Researchers have learned that the transplanted bone marrow does not actually have to replace the recipient marrow permanently in order to be effective. A temporary engraftment will do. "At worst, you give extended cellular support, allowing the patient's own bone marrow to recover," says Rainer Storb of the Fred Hutchinson Cancer Center in Seattle, who came to this conclusion from his work with irradiated dogs. According to Gale, the marrow transplants in nine of the Chernobyl patients appeared to function temporarily, and he maintains that this contributed to the survival of the two who lived.

Two areas of disagreement remain, however. One concerns how to identify those radiation victims who should have a bone marrow transplant, a procedure that may be risky both for the recipient and the donor, who has to be anesthetized when his marrow is removed. The other, which is related, concerns how quickly the transplant needs to be done to be effective.

The consensus participants could readily agree that only those individuals who are likely to die because of the radiation's bone marrow effects, but who do not have other lethal injuries, should be given a bone marrow transplant. The problem is that the extent of the bone marrow damage depends on the radiation dose an individual receives, and good dose estimates are not usually available right away after an accident such as the one at Chernobyl.

The physicians looking after the patients have to fall back on "biological dosimetry" in which they estimate radiation exposures by looking for such signs of radiation damage as chromosome abnormalities and the fall in white blood cell counts that occur as a result of injury to the bone marrow. This can take several days, Gale points out.

Meanwhile, the animal studies suggest that a bone marrow transplant needs to be done within 3 to 5 days of a radiation injury. Storb proposes that it could even be done on the first day, provided that the donor bone marrow is a good match.

In any event, the consensus participants agreed that a severe radiation exposure, of at least 5 to 6 grays, might justify a bone marrow transplant. (A gray equals 100 rads.) For moderate exposures, in the range of 2 to 5 grays, they would recommend instead the use of growth factors that stimulate the growth and maturation of bone marrow cells. Such growth factors have become available within the past few years as a result of gene cloning and are proving their usefulness in restoring bone marrow damaged by cancer chemotherapy. They have also shown some effectiveness in treating the radiation victims of Goiânia, Brazil, who were exposed to highly radioactive material from a stolen x-ray machine.

Although the consensus conference did not resolve all the controversy relating to bone marrow transplantation, Gale maintains that decisions about who should receive a transplant are like others faced by practicing physicians. "I don't think it is different from what physicians do every day in the operating room," he says.

■ JEAN L. MARX