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F.D.A. Approves a Stem Cell Trial

By ANDREW POLLACK

In a research milestone, the federal government will allow the world's first test in people of a therapy derived from human embryonic stem cells.

Federal drug regulators said that political considerations had no role in the decision. Nevertheless, the move coincided with the inauguration of President Obama, who has pledged to remove some of the financing restrictions placed on the field by President George W. Bush.

The clearance of the clinical trial — of a treatment for spinal cord injury — is to be announced Friday by Geron, the biotechnology company that first applied to the Food and Drug Administration to conduct the trial last March. The F.D.A. had first said no, asking for more data.

Thomas B. Okarma, Geron's chief executive, said Thursday that he did not think that the Bush administration's objections to embryonic stem cell research played a role in the F.D.A.'s delaying approval.

"We really have no evidence," Dr. Okarma said, "that there was any political overhang."

But others said they suspected it was more than a coincidence that approval was granted right after the new administration took office.

"I think this approval is directly tied to the change in administration," said Robert N. Klein, the chairman of California's $3 billion stem cell research program. He said he thought the Bush administration had pressured the F.D.A. to delay the trial.

Mr. Klein called the approval of the first human trial of this sort "an extraordinary benchmark."

Stem cells derived from adults and fetuses are already being used in some clinical trials, but they generally have less versatility than embryonic stem cells in terms of what tissue types they can form.

The F.D.A. approval comes a little more than 10 years after the first human embryonic stem cells were isolated at the University of Wisconsin, in work financed by Geron.

Because the cells can turn into any type of cell in the body, the theory is they may one day be able to provide tissues to replace worn-out organs or nonfunctioning cells to treat diabetes, heart attacks and other diseases. The field is known as regenerative medicine.

The Bush administration restricted federal financing for research on embryonic stem cells because creation of the cells entails the destruction of human embryos.

Geron's trial will involve 8 to 10 people with severe spinal cord injuries. The cells will be injected into the spinal cord at the injury site 7 to 14 days after the injury occurs, because there is evidence the therapy will not work for much older injuries.

The study is a so-called Phase I trial, aimed mainly at testing the safety of the therapy. There would still be years of testing and many hurdles to overcome before the treatment would become routinely available to patients.

Geron, which is based in Menlo Park, Calif., said that it had identified up to seven medical centers for the trial but that those sites must first get permission from their own internal review boards to participate.

Even as some researchers hailed the onset of clinical trials, others expressed trepidation that if the therapy proves unsafe — or even if it is safe but does not work — it could cause a backlash that would set the field back for years.

"It would be a disaster, a nightmare, if we ran into these kinds of problems in this very first trial," said Dr. John A. Kessler, the chairman of neurology and director of the stem cell institute at Northwestern University.

Dr. Kessler, whose own daughter was paralyzed from the waist down in a skiing accident, said he thought Geron's therapy was not the ideal candidate for the first trial. He said results showing the therapy worked in moderately injured animals might not apply to more seriously injured people.

"We really want the best trial to be done for this first trial, and this might not be it," he said.

Dr. Okarma of Geron emphasized that the purpose of the first trial was safety, so that lack of efficacy should not be a problem. While researchers will also look for signs the treatment works, he said, the best that could be hoped for would be some slight restoration of function that could then be enhanced through physical therapy.

"We don't expect to take someone who is completely paralyzed from the waist down and have them dance six months later," he said. If the first trial shows safety, the company would then hope to test higher doses of cells and treat patients with less severe injuries, he said.

Geron's therapy involves using various growth factors to turn embryonic stem cells into precursors of neural support cells called oligodendrocytes, which are then injected into the spinal cord at the site of the injury.

The hope is that the injected cells will help repair the insulation, known as myelin, around nerve cells, restoring the ability of some nerve cells to carry signals. There is also some hope that growth factors produced by the injected cells will spur damaged nerve cells to regenerate.

The therapy was developed in collaboration with Hans Keirstead of the University of California, Irvine. He has shown videos of paralyzed rats that were able to walk again, albeit imperfectly, after receiving the therapy. Those videos helped persuade California voters to approve the $3 billion stem cell research program in 2004.

The main safety concern is that if raw embryonic cells are put into the body, they can form tumors. Even though most such tumors do not spread like other cancers, any unwanted growth in the spinal cord can further damage nerves.

"It's not ready for prime time, at least not in my mind, until we can be assured that the transplanted stem cells have completely lost the capacity for tumorogenicity," said Dr. Steven Goldman, chairman of neurology at the University of Rochester. He was a member a committee convened by the F.D.A. last April to examine the safety aspects of trials using therapies from embryonic stem cells.

Dr. Okarma said Geron had done numerous studies showing that its cells did not contain residual embryonic cells and did not form tumors in animals even after a year. It submitted 22,000 pages of data to the F.D.A., perhaps the largest application ever for permission to begin a clinical trial.

The embryonic stem cell line used by Geron is one of the oldest ones and was therefore eligible for federal financing under the Bush administration's policy, Dr. Okarma said.

Nevertheless, Geron paid for its own work, spending $45 million to prepare its F.D.A. application.

Geron, which was formed in 1990 as an antiaging company, is still in the development stage and is not yet profitable, having lost about $500 million since its inception. Besides working on stem cells, it is testing drugs for cancer that influence telomeres, the caps on the ends of chromosomes that help control the aging of cells. Geron's market value is about $400 million.

While the Bush administration's policy did not impede the company's application at the F.D.A., Dr. Okarma said, it did slow progress for the field in general by making it hard for academics to do research.

"It is the private sector that has kept the technology alive so that it can see the light of day in a clinical trial," he said.

Mr. Klein of the California stem cell program said he thought the next trial might be of a treatment for macular degeneration, an eye disease, that is being developed in Britain.

In the last couple of years, some attention has turned away from embryonic stem cells to a newer technique that allows a patient's own skin cells to be turned into a cell resembling such embryonic cells.

That might do away with the need for embryos. And the resulting tissue made from those cells would match the patient, doing away with the need for immune suppression to prevent rejection of the transplant. Geron said its trial would require only temporary use of low doses of immune-suppressing drugs.

But the newer technique involves putting genes into the skin cells using viruses, which also raises a risk of cancer.