cation of this [stem cell] technique to a neurological disorder," Brüstle says.

Developmental biologist Davor Solter of the Max Planck Institute for Immunobiology in Freiburg, Germany, describes the work as "promising," adding: "It is nice that they put the pieces together and substantiated what everyone is believing"—that ES cells may have therapeutic uses. They might, for example, be used to treat people with multiple sclerosis or other conditions in which myelination is defective. Brüstle cautions, however, that much more work needs to be done with animal models before attempting such transplants in humans. But he adds, "if the experiments are successful in animal models, it is worthwhile considering whether the results are applicable to humans."

Consideration may be all the technique gets, however, because of legal barriers to this type of embryo-based research. In the United States, current law forbids the use of public funds for deriving stem cells from human embryos. In Germany, restrictions are even tougher. The human embryo is protected by law from fertilization to implantation, and any research on or with human embryos is prohibited unless the embryo is the immediate beneficiary. "Particularly in Germany it will be difficult to advance research in this field," says Brüstle.

For their experiments, Brüstle and his team took cells from 3.5-day-old mouse embryos and coaxed them to grow and bunch together into embryoid bodies, a first step toward differentiation, which is when individual cells become committed to forming different cell types. Then the researchers cultivated the embryoid bodies in a medium that favors the survival of precursors to nerve cells and finally applied growth factors known to promote the proliferation of precursors to glial cells. Ultimately, the glial precursors formed the two major types of glial cells, known as oligodendrocytes and astrocytes. Five days later, the team detected the expression of CNP, a protein characteristic of the myelin sheaths of neurons, by the cells.

CREDIT: BRÜSTLE ET AL.

Gotcha covered. A mouse glial cell (with dark-stained nucleus), derived from an embryonic stem cell, coats axons in a rat's spinal cord with myelin (brown stain).

Earlier transplant studies had shown that oligodendrocyte precursors injected into animals suffering from myelin diseases had succeeded in coating the host animals' neurons. So Brüstle and his team transplanted their stem cell–derived oligodendrocytes into the brains and spinal cords of fetal and week-old rats who have the same mutation as humans with Pelizaeus-Merzbacher disease (PMD), a rare genetic disorder in which the myelin is defective. A few weeks later, the donor cells had generated numerous myelin sheaths on the rats' brain and spinal neurons. That suggests that similar transplants might help patients with PMD, which is usually fatal, or other demyelinating conditions.

Such promise for stem cell therapies has prompted much soul searching on both sides of the Atlantic over current legislation banning embryo research. Earlier this month, the White House's National Bioethics Advisory Commission recommended that the U.S. government lift its restrictions on research on human embryonic stem cells (*Science*, 23 July, p. 502), while in the United Kingdom two advisory committees recommended relaxing the rules on embryo research, but the government decided in June to put off the decision for 6 months [*Science*NOW, 25 June (see the Archives at www.sciencenow.org)].

German researchers can't expect the green light for human ES cell research anytime soon, however. In March, Germany's main research funding agency, the DFG, published a policy statement on research with human embryonic stem cells, which advised German policymakers not to change the embryo protection law now. "I do not think it is possible to change the embryo protection law within an adequate time period, even if this aim was desired," says DFG president Ernst-Ludwig Winnacker.

The DFG calls instead for more public discussion of the issue and suggests establishing a central commission to assess the ethical, legal, and scientific basis of research with human embryonic stem cells. The agency also wants to see uniform European standards in this matter, which will preserve fundamental values of human dignity and health. "Other countries in Europe are more liberal about research on embryos within certain time limits and permit individual decisions for research projects by bioethics panels," says Jochen Taupitz of the Institute for German, European, and International Medical Law, Public Health Law, and Bioethics at the universities of Heidelberg and Mannheim. Winnacker is confident that some order can be brought to the situation. "We shall present our ideas [to the European Parliament]. Up to now we have had a good response from European committees.

–SABINE STEGHAUS-KOVAC

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MEDICAL PHILANTHROPY

Keck Gives $110 Million For USC Initiatives

The W. M. Keck Foundation, best known for funding giant telescopes that help scientists peer into the distant universe, has decided to invest $110 million to help life on Earth. Yesterday the foundation announced its second-largest grant ever to bolster the University of Southern California's (USC's) medical school and to advance the field of neurogenetics. USC hopes the money will "help propel USC into the first ranks of medical research," says Robert A. Day, president of the $1.5 billion foundation, which along with USC is located in Los Angeles.

About $50 million of the grant, by far Keck's largest contribution to biomedicine, will fund studies of the genetic roots of diseases such as Alzheimer's, Parkinson's, and glaucoma, and the research will span everything from gene sequencing to mouse knockouts, drug development, and molecular epidemiology. Thirty researchers will be hired in the next 5 years to join 50 current USC faculty in the initiative, to be headed by USC cancer epidemiologist Brian Henderson.

A former president of the Salk Institute for Biological Studies in La Jolla, California, Henderson says he plans to take advantage of the university's strengths in clinical medicine and epidemiology, including a long-term health study of a multiethnic group of 215,000 people. "We're really hoping to use the fruits of the human genome project," Henderson says. A portion of the initiative will be housed in a $40 million neurosciences center to open in 2001. Neuroscientist Ira Black of the Robert Wood Johnson Medical School in New Brunswick, New Jersey, says the Keck grant should help USC move into the front ranks of neurogenetics now occupied by Johns Hopkins, Harvard, and other universities.

The remaining $60 million will help USC expand what will be renamed the Keck School of Medicine, strengthening the school's endowment, scholarship funds, and faculty. "The money is going to move us toward the 200-plus people we need to be a top-ranked center," says Henderson. The university has promised to raise $330 million to complement the grant.

–JOCELYN KAISER