

Moral clash looms as biotech targets South Florida

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Stem cells introduced into an aging mouse's brain do something extraordinary.

Like moths moving toward light, the cells sense areas of brain damage and gravitate toward them. The cells begin healing damaged tissue by emitting the proteins that the aging cells lack.

- [Stem cell research](#)

Jeanne Loring speaks of this trait with equal parts wonder and passion. Loring is one of the top stem cell scientists at the La Jolla-based Burnham Institute for Medical Research in California.

She has an ambitious idea: Genetically engineer stem cells to churn out enzymes that naturally clear Alzheimer's plaques — possibly turning back the clock on dementia. As she tests this concept, Loring says she prefers to work on human embryonic stem cells because they can become virtually all types of tissue — and because she finds they illuminate more about basic human development than mouse or adult stem cells.

Two years after recruiting The Scripps Research Institute to Florida, Gov. Jeb Bush is in talks to bring Burnham to the state, most likely with public subsidies. Attracting two major biotech players would cement Florida's efforts to create a biotechnology cluster here.

But there's a complication. One of the fastest-growing and highest-profile sectors of biotechnology is embryonic stem cell research. Bush has called that type of research a moral contradiction — "taking a human life to save a life." It's a stance that's at odds with his drive to expand Florida's biotechnology economy.

Biotechnology continues to be the darling of state economic development efforts nationwide, largely because of its high-wage jobs and its potential for growth as Baby Boomers age. Its publicly traded companies alone have raised more than \$300 billion from investors. The stem cell economy is currently a tiny segment, although it's projected to grow into a \$10 billion industry by 2015.

But the standard technology for obtaining embryonic cells, at present, involves removing them from unwanted fertility clinic embryos, destroying the embryos in the process, and then growing copies of the cells in culture.

Bush and conservatives across America are grappling with how to encourage biotech development in ways that don't compromise their religious values.

Only now is Bush being forced to address the conflict. Scripps historically has focused mostly on stem cells collected from adult tissue — searching for chemical triggers to activate people's existing stem cells. Until now, the issue has barely surfaced.

But Bush's next quarry is the Burnham Institute, which is negotiating to expand to Port St. Lucie. Assisting is incoming Senate President Ken Pruitt, R-Port St. Lucie, also a social conservative.

Burnham seeks public cash

Unlike those at Scripps, Burnham's scientists are some of California's most vocal supporters of public funding for embryonic stem cell research.

Burnham trustees were among the first to endorse Proposition 71, the California constitutional amendment that pledged \$3 billion in state money into researching such cures. Burnham's CEO, Dr. John Reed, sits on the governing board of the California Institute for Regenerative Medicine, the group charged with implementing Proposition 71 — although legal challenges have stalled its grantmaking.

Meanwhile, Loring, with Burnham's sponsorship, has launched a Web site for scientists called the Stem Cell Community. It's designed to give them information about the 200 embryonic stem cell lines that have not been approved for federal funding. The National Institutes of Health operates a similar registry of the 22 currently approved embryonic stem cell lines.

"I had been talking to my colleagues at the NIH, and they were really not able to talk about 90 percent of the embryonic stem cell lines on the planet, so I set it up as a sort of a parallel to the NIH site," she said. "We had to get private sponsorship. It took a lot of cold calls, believe me."

Loring also helps advise the Genetics Policy Institute, a research advocacy group started by Bernard Siegel of Wellington. Siegel is also vice president of Floridians for Stem Cell Research and Cures, the

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The Burnham Research Institute

Founded in 1976, its three research centers have made major discoveries involving cancer, stroke, anthrax and Alzheimer's at its La Jolla, Calif., laboratories. Two years ago, it recruited noted stem cell researcher Dr. Evan Snyder. Now it's negotiating with Florida biotech recruiters for expansion to Port St. Lucie.

- Employs about 725 people in La Jolla, where its neighbors include The Scripps Research Institute, The Salk Institute and the University of California at San Diego. Its annual budget is about \$80 million. It has plans to expand to 900 employees during the next five to eight years.
- Was awarded \$53 million in competitive grants from the National Institutes of Health in 2004, ranking seventh among independent institutes. Its Cancer Center is one of eight basic cancer science research centers designated by the National Cancer Institute.
- Its Inflammatory and Infectious Disease Center focuses on understanding pathogens, including anthrax, smallpox, plague and SARS, and how the body reacts to attack them. Investigators are also working to develop treatments for chronic inflammation disorders such as arthritis and colitis.
- The Del E. Webb Center for Neuroscience and Aging focuses on diseases such as stroke, Alzheimer's and Parkinson's. Research focuses on protecting brain cells from damage and on replacing cells lost to disease. Replacement strategies being investigated include the use of human embryonic stem cells.
- Was among the first California academic institutions to endorse passage of Proposition 71, which put \$3 billion in public money into stem cell research. Burnham's president and CEO, Dr. John Reed, sits on the governing board of the California Institute for Regenerative Medicine, which is charged with distributing those grants.

Florida group that's pushing for a constitutional amendment to earmark state money for stem cell research.

"They're in the vanguard in this field," Siegel said of Burnham. "There should be no contractual limitations preventing (Burnham) from doing the very research in which they excel."

Florida's \$310 million contract with Scripps includes no restrictions on stem cell research, and Scripps' president, Dr. Richard Lerner, said he would not have accepted such political constraints. Scripps is doing no stem cell research in Florida, but Lerner is keeping his options open.

"Jeb Bush has never once said to us what we can and can't do," Lerner said. "It's up to the scientists, what they do. We do not mix science and politics."

Officials vie in stem cell race

Siegel sees Florida as the natural place to capture the growth of the stem cell industry. Many states are competing for their share. Democratic Wisconsin Gov. Jim Doyle told reporters that the stem cell industry will likely employ 100,000 and be worth \$10 billion by 2015. He's urging Wisconsin to dedicate \$5 million to recruit companies finding practical uses for stem cells.

But while Democrats like Doyle seize the public interest in stem cell cures to polish their pro-business image, conservatives are searching for ways to have their research and their pro-life supporters, too.

A member of the President's Council on Bioethics, Stanford medical ethicist William Hurlbut, is gaining support from some Catholic and Washington political leaders for a proposal to create fully potent stem cells by using cloning methods but with a gene for placental development turned off.

In cloning, an egg's nucleus is removed, and then the genetic material from another cell is inserted. Hurlbut proposes removing the human equivalent of a mouse gene called *Cdx2*, which guides development of the placenta, the organ that nourishes the embryo. Thus altered, the cloned stem cells would replicate for a time like embryonic cells, but they would not actually be able to organize into an embryo. A study in mice was published in the journal *Nature* last week, showing the technique may be viable, Hurlbut said.

While the effort is gaining some ground with Catholic and conservative thinkers, University of Miami medical ethicist Ken Goodman called it "kooky."

"This is really a closeted debate about the metaphysics of ensoulment," the moment when a new soul is thought to be born, Goodman said. "Do you really want to say that an egg that has divided for six days has the same moral value as Grandpa or Mom? I believe that stem cell research is morally permissible — if not morally obligatory."

Another route for state funds

In the case of Burnham and Florida, the conflict between moral values and economic growth is one that a Bush spokesman suggests can be accommodated in a simpler way.

Burnham has large research programs in cancer, anthrax and other areas. State money could pay for Burnham's non-stem cell research.

"Scripps serves as a prime example that it should not be assumed that when a biotech institute expands, they are planning on duplicating the research they are currently conducting at existing facilities," said Russell Schweiss, Bush's assistant press secretary.

Meanwhile, a small group of conservatives is working to ensure that neither Burnham, Scripps, nor any other research institute or university in Florida uses taxpayer dollars for stem cell research.

Susan Cutaia, a Boca Raton mortgage broker, says she has collected nearly 36,700 signatures for a ballot amendment opposing taxpayer funding for embryonic stem cell research. There have been other instances in history — like the medical experiments in Nazi Germany's concentration camps — where one group of people has claimed another group was expendable for medical research, she said.

She urged the use of adult stem cells instead of embryonic cells, which she thinks offer more promise. Such immature cells reside in bone marrow, blood, muscle tissue and the brain, and appear to play a role in healing.

"If there's a higher road," she concluded, "why can't we choose that?"

Loring said there are many reasons that adult stem cells may be less desirable than embryonic ones. She and colleague Evan Snyder recently wrote in the *Journal of the American Geriatric Society* that no one has yet done a thorough study of how stem cells of various stages perform — it's likely that aging itself could result from a decline in adult stem cells' ability to heal.

Meanwhile, there are basic scientific reasons that it's less desirable to study adult cells, she said. When she studies adult neural stem cells, it's impossible to control all the differences between individuals' innate cells, and it's difficult to replicate the results. With embryonic cells, there's enough standardization

Stem-cell therapy

[A Boca family](#) travels to Mexico for stem-cell therapy they hope will heal heal quadriplegic Adam Susser, 4.

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for science to progress.

"Embryonic stem cells are just preferable for studying basic biology," Loring said.

Florida could set boundaries

Burnham spokeswoman Nancy Beddingfield said that the institute is aware of Bush's position and that discussions continue nonetheless.

"Obviously the governor knows about our stem cell research, and obviously we know of the governor's stance on stem cell research," Beddingfield said. Loring predicted that Burnham wouldn't expand its stem cell program into Florida.

"I think that Florida can take any part of Burnham they wish," Loring said. "I'd be very surprised if they'd wanted to adopt the stem cell program."

That might change if a state initiative to fund stem cell research passed.

"Bernie Siegel keeps saying, 'I've got a house all picked out for you in Florida,' " she says, laughing.

If Florida prohibits the use of public funds for stem cell research, it will simply perpetuate the already "goofy" situation that Loring says scientists accept.

Before Loring can start her research each day, she must go through a quick check: Are the embryonic cells she's studying among those lines approved by the National Institutes of Health, with the OK of President Bush? Or are they among those barred from research with federal funds?

Equipment purchased with federal money cannot be used on the unapproved cells.

To cope with this, she's designed little decals. They look a bit like no smoking symbols — a tiny petri dish surrounded by a red circle with a slash through it. Equipment bought with NIH dollars gets the red sticker.

Equipment bought with other money gets a different sticker, a dish encircled with green.

She has also helped set up two labs. One, at the Burnham Institute, handles mostly federally approved stem cell lines. Another, run by a separate nonprofit, is stocked with equipment paid from other sources.

"We're just embracing the goofiness," Loring said.



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