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## California Leads, but a Pack Follows

By JEFF CHU

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The lack of a federal policy on human embryonic-stem-cell research--beyond the Bush Administration's restrictions on funding--has left plenty of room for the states to seize the scientific initiative. But when they did--starting in 2002, when California and New Jersey became the first to extend explicit legal protection to such research--the result was a patchwork of laws that has paralyzed some entrepreneurs and galvanized others.

Some form of human embryonic-stem-cell research remains technically legal in almost every state. Only South Dakota bans it altogether, and most states simply have no relevant legislation. Seven states restrict research--including Michigan, which prohibits it on live embryos, making any cutting-edge work all but impossible, and Louisiana, which specifically protects embryos created by in vitro fertilization. A handful of states, including Pennsylvania and Nebraska, do not allow public funding.

In states where research opponents are perennially close to passing restrictive laws, uncertainty can stall science. In Missouri, conservative legislators who believe that using human embryos would be taking lives have proposed restrictions four years in a row. Although they failed each time, the Stowers Institute for Medical Research in Kansas City, Mo., said last month it would wait on a planned \$250 million expansion until state law explicitly protects embryonic-stem-cell research. "If you're scared you'll get shut down," says Leonard Zon, president of the International Society for Stem Cell Research, "you think seriously about where you should be."

Several states have seen others' lack of legislation as an opportunity. The Massachusetts legislature last week backed a pro-research bill by a margin large enough to override an expected veto from Governor Mitt Romney, who promptly sent the bill back to lawmakers with four proposed amendments to weaken it. Zon says the bill, if enacted, would make Massachusetts more "stem cell friendly" than most states. California is the friendliest. Voters there approved Proposition 71 last November, backing \$3 billion in state bonds to create a stem-cell-research fund, although delays in creating regulatory boards plus two lawsuits filed by research opponents killed officials' hopes of disbursing the first grants this month.

The rush is on to copy California. A group called Cures for Florida hopes to get a \$1 billion initiative, modeled on Proposition 71, on the statewide ballot next year. Washington Governor Christine Gregoire last week signed

a bill allotting \$350 million from the state's tobacco-suit settlement to life-science research, which could include stem-cell work. But lawmakers who defeated a bill to protect stem-cell research have promised a fight over how the money is spent when it starts to flow in 2008. New Jersey is mulling a plan to devote \$380 million to a research facility and grants. In Wisconsin, where in 1998 James Thomson became the first scientist to cultivate human embryonic stem cells, Governor Jim Doyle wants \$375 million for an institute. And Illinois is considering a "nip and tuck" law that would impose a 6% tax on elective medical procedures like plastic surgery to fund a stem-cell center.

The stem-cell debate is a moral minefield, and legislative activity doesn't necessarily lead to law, even when there's popular support. In Maryland last month, pro-life state senators blocked a vote on a bill that would have allowed state funding for research even though the bill had the backing to pass. In Texas, four pieces of pro-research legislation, including a proposal from state representative Senfronia Thompson to create a \$900 million Texas Institute for Regenerative Medicine, never emerged from the purgatory of committee. Thompson says her legislation is "as dead as dead can be."

There are limits to what even the most enthusiastic states can do. In California, where scientists' morale is perhaps the highest, worries linger about the lack of federal backing and the possibility that Congress could someday trump state law with nationwide restrictions. That discourages some young scientists who are deciding whether to specialize in stem-cell work. "Students are scared to commit," says Hans Keirstead, a spinal-cord researcher at the University of California at Irvine. "They don't know if the laws are going to change, and I can't fully dispel those fears."

Keirstead is doing his best by demonstrating the field's potential. He and his team published details earlier this month of how they helped paralyzed rats walk again by using human embryonic stem cells to aid regeneration of spinal-cord tissue. That is a tiny step, at best, toward therapies for people but, Keirstead says, "I've never seen anything that looks as good as the human embryonic stem cell." He can only hope that policymakers, too, will agree. --By Jeff Chu. With reporting by Eric Ferkenhoff/ Chicago, Elisabeth Kauffman/ Nashville and Terry McCarthy/ Los Angeles