

Finance/Funding

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▼ Looking for the ripple effect

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One year after its passage, California's embryonic stem cell research funding initiative remains a mixed blessing for biotech startups.

It has been just over a year since California's touted Proposition 71 (Prop 71) went into effect. The new law essentially authorized the creation of a \$3-billion pool of cash to stimulate embryonic stem (ES) cell research and development in California. Boosters and observers predicted that its positive impact would soon be felt not only in California but around the world.

It hasn't quite worked out that way. Prop 71 has been stymied by the legal challenges of those opposing stem cell research and Prop 71. These legal skirmishes have, in turn, essentially seized up funding and construction in San Francisco where the planned California Institute for Regenerative Medicine (CIRM) is to be built. The CIRM is now years behind schedule.

But CIRM president Zach Hall says Prop 71 was not in vain and that CIRM will overcome this setback, commence major funding a year from now and live up to expectations. Still, for all the problems that have ensnared Prop 71, it might be said that the publicity that it has produced has provided at least an indirect boost to some startups and early-stage firms (see [Table 1](#)).



UCSF

Voice of caution: Deepak Srivastava, University of California, San Francisco

Admittedly, several of the most recently funded startups focus on extracting stem cells from umbilical cord blood. One benefactor is the Cambridge, Massachusetts-based ViaCell, which held a \$60-million initial public offering (IPO) last year after raising more than \$120 million in venture funding since 1999. Another example is the St. Paul, Minnesota-based BioE, which garnered slightly more than \$8 million in its first financing round last year.

Others like San Carlos, California-based Cellerant Therapeutics and Stockholm-based NeuroNova focus squarely on therapeutics derived from so-called adult stem cells. Although these companies aren't working on ES cells, they said that Prop 71 has been, on balance, a good thing for the global field of stem cell R&D. Last year, in the wake of Prop 71, Cellerant Therapeutics raised \$25 million in B-round funding. Observers suspect that Cellerant, which is barely three years old, would have had much more difficulty raising that kind of money without Prop 71.

☞ Prop 71 has raised awareness and enthusiasm at the

investor level,' says Cellerant CEO Bruce Cohen.]]

"Prop 71 has raised awareness and enthusiasm at the investor level," says Cellerant CEO Bruce Cohen. "Investors have been very reluctant to put money into anything to do with stem cells [before Proposition 71]. It created a lot of interest in the space and held out the idea that whatever investors put in could be partially offset by what was contributed by a nondilutive governmental funding agency" in California.

Other stem cell companies have mixed opinions about Prop 71. About half of the managers we spoke to said that Prop 71 has boosted their fortunes whereas the other half was either skeptical that or ambivalent about whether it has affected their financing at all.

Swedish-based Neuronova is cautiously optimistic about the ripple effect of Prop 71. The firm has been considering opening a US branch in California ever since Prop 71 was passed. But, a year on, Prop 71 hasn't been everything the company thought it might be at this point in time.

"[The funding measure] sends a message that things will happen in California," says Anders Haegerstrand, vice president of Neuronova. "A lot of good people will move to California and create a cluster by attracting a lot of money, talent and opportunities. But I guess it's been progressing much slower than we've hoped."

Meanwhile, ES cell R&D is surging ahead in countries like Sweden, Denmark, Singapore, the UK and Australia where public and private financial support is growing. This momentum is not lost on stem cell researchers. Recently, two high-profile researchers chose to go to Singapore rather than Stanford University.

[[I think we're several years away from seeing a number of embryonic stem cell clinical trials in the United States and we probably should be several years away,' says Deepak Srivastava, director of the Gladstone Institute of Cardiovascular Disease.]]

Is there some silver lining here? Some say the answer is most certainly, yes. They argue that the slower pace just might be a bit of a blessing. The Hwang scandal has tarnished the reputation of stem cell research in South Korea more than in the US, even though an American researcher was involved in the publication of papers based on contrived data. Unlike South Korea, nobody can accuse the US of rushing ES cell R&D. Likewise, even boosters say that because the scientific complexities and safety issues of ES cells are not trivial, it's just as well that dozens of startups are not out in the public producing the kind of 'news flow' that appeases investors, but generates unrealistic expectations in the process.

"I think we're several years away from seeing a number of ES cell clinical trials in the United States and we probably should be several years away," says Deepak Srivastava, director of the Gladstone Institute of Cardiovascular Disease in San Francisco. "I would prefer a more cautious approach. It's important for the field not to go the way of gene therapy ... that would be a shame because there is tremendous promise [in stem cell medicine]."

Web links

Websites referenced:

- [Economic Impact Analysis of Proposition 71](#)
- [California Institute for Regenerative Medicine](#)
- [Gladstone Institute of Cardiovascular Disease](#)
- [StemCells](#)
- [Neuronova](#)
- [Cellerant Therapeutics](#)

Table 1: Gauging the impact of Proposition 71

Company	Financing two years before Proposition 71 approved	Financing since Proposition 71 approved	Impact	Quote
Amaranth Bio1(Watertown, Massachusetts)	\$0	\$750,000	No effect	"If somebody wants to invest, they're not going to wait for the government." –Lawrence Rosenberg, cofounder.
Artecel, Inc. funded by Toucan Capital Fund (Sunnyvale, California)	*	*	No effect yet	"It added legitimacy to the stem cell and regenerative medicine cause, but until the lawsuits are settled, I don't think you'll see VCs [venture capitalists] changing their policies." –Ken Mosley, acting CEO.
BioHeart (Sunrise, Florida)	\$10 million	\$30 million	Positive	"It brought the debate to the forefront, and the fact that the public is more aware of stem cell therapy is a good thing for the whole field. Unfortunately the difference between embryonic and adult stem cells had been muddled." –Howard Leonhardt, CEO.
Cellerant Therapeutics (San Carlos, California)	\$10 million	\$25 million	Positive, at first, for companies in California	"That's how leverage works. Combining government funding with investors' financing makes it look a little less risky. But being snared in court battles has made it more difficult." –Bruce Cohen, CEO.
ISTO technologies	About \$10 million	\$10.8 million	None	"I don't see any effect due to Prop 71. If anything more positive than negative." –Mitch Seyedin, CEO.
NeuroGeneration (Beverly Hills, California)	\$40 million	\$0	Negative	"The problem is that VCs thought that with Prop 71, the state would take care of our needs. They were also concerned that the state would claim ownership of royalties." –Michel Levesque, founder.
Neuronyx	**	**	None	"Not a drastic change one way or the other. Anything that makes a subset topical does generate some interest. But the cellular therapy space has always been confusing." –Stephen Webster, CEO.
NeuroNova (Stockholm)	€13 million (\$15.5 million)	€6 million (\$7.2 million)	Negative	"Many American investors have become more cautious due to Prop 71. This has not been helpful when trying to attract financing. The big advantage with prop 71 is that it will reinforce the Bay area as the hot spot on earth for this type of research." –Ulf Ljungberg, CEO.
Osiris Therapeutics (Baltimore)	**	**	No effect	"Money for a far far off technology with money that is locked up in courts hasn't swayed any investors." –Randy Mills, CEO.
PrimeGen Biotech (Irvine, California)	\$6 million	\$5 million	Positive	"Stem cell technologies present various hurdles, including an unpredictable time till pay-off, controversial ethical issues and certain regulatory concerns. In light of these matters, Proposition 71 may have actually influenced investors in a positive way by clarifying some issues and eliminating others." –Thomas C.K. Yuen, CEO.
Proneuron Biotechnologies (Ness Ziona, Israel and Los Angeles)	\$20 million	\$0	Positive	"The effect is on nonsophisticated investors in terms of their bullishness. But sophisticated investors know that each technology is independent and has its own targets, and that you can't lump regenerative medicine into just one basket." –Dale Miller, executive chairman.

ReNeuron Guildford2(Surray, UK)	\$0	\$20 million	No effect	"Prop 71 doesn't exist in any meaningful way yet, so there's no effect until investors see the color of money." –Michael Hunt, CEO.
Theradigm (Baltimore)	**	**	Both	"There are two camps. Some investors have a wait-and-see attitude or are turned off that Proposition 71 funds are tied up in the courts. But the visibility it has brought to stem cells has whet the appetite of some investors." –Alan Smith, President.
TheraVita (Bangkok, Thailand and Ness Ziona, Israel)	**	**	Positive	"Today people know more about stem cell therapy than they did two years ago and one reason for that is Prop 71. But when people invest in stem cell therapies it's not because the government gave \$3 billion." –Valentin Fulga, CEO.
TiGenix Leuven (Belgium)	€12 million (\$14.3 million)	€16 million (\$19 million)	Somewhat positive	"It's one of the elements contributing to the change in the investment climate for regenerative medicine. The climate is still difficult but there are signs of improvement. A real breakthrough will only come with a product on the market." –Gil Beyen, CEO.
Vesta Therapeutics (Durham, North Carolina)	Up to \$4 million	\$0	Positive	"It lit a fire under states to get their own ballots into the works and to get some programs going. This gets local VC or angel groups involved." –Mark Johnston, acting president.
Vet-Stem (Poway, California)	\$0	\$3 million	Positive	"In general investors are quite excited about big investments by governments in stem cells." –Bob Harman, CEO.
¹ Company folded in summer 2005.				
² Company held IPO in August 2005.				
*Not applicable.				
**Will not disclose.				

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