

Human Cloning and Embryo Research: No Road to Biotechnology Growth

Legislators in many states are being urged to pass legislation promoting human embryo research and even human cloning for research purposes to ensure that their states maintain progress and profits in the field of biotechnology. However, there is no evidence of any association between the pursuit of such controversial research avenues and growth in the biotech industry. Legislators who are being pressured into supporting embryonic stem cell research and cloning in order to maintain biotech growth in their states must take note: these morally unacceptable types of research provide no promise of a cure to any disease in the foreseeable future and no ready path to advances. Quite the contrary is true:

Michigan

Michigan has long banned harmful experiments on human embryos, and in 1998 it became the first state in the U.S. to ban human cloning for research purposes. Following enactment of the cloning ban, **“Michigan has seen the fastest growth in the nation for its life sciences industry,” with especially rapid growth in the past three years -- adding over 70 new companies.** (See <http://medc.michigan.org/lifescience/>) In a national survey released in November 2003, Michigan was also cited as “the second most business friendly state” in the nation, after North Carolina (Mitechnews.com, Late Breaking News for Nov. 2, 2003).

Michigan State University, in particular, is “a world leader in biotechnology” (www.biotech.msu.edu/), and in January 2003 it acquired a new tenured professor in its Department of Animal Science -- Dr. Jose Cibelli, formerly one of the top three cloning experts at Advanced Cell Technology in Massachusetts.

Ohio

In what is hailed as “a breakthrough initiative for the state of Ohio,” the state has greatly enhanced its biotechnology profile by investing \$60 million in “a new program using **non-embryonic** stem cell therapy” (emphasis added) – about \$20 million in state funds, \$20 million in private funds, and \$20 million in annual federal funds. According to the president of Case Western Reserve University, this partnership “has potential in so many areas of medicine and bioscience business formation,” representing “an investment in the exciting future of adult stem cell research” (Press release, Case Western Reserve University, “State to fund stem cell research,” June 19, 2003, www.cwru.edu/pubs/cnews/2003/6-19/stemcell.htm).

Pennsylvania

Pennsylvania also has a longstanding ban on harmful experiments on human embryos; such experimentation is a Class C felony. Under this policy, Pennsylvania now **“ranks second in pharmaceutical employment nationally, third in biotechnology employment and fourth in medical device employment” in the United States** (www.pabioconnect.com/aboutbio.html).

International Trends

Is the United States losing its preeminence in biotechnology to countries like the United Kingdom, which authorize human cloning for biomedical research? Not at all.

Recent studies show that “the USA continues to dominate the biotechnology industry,” accounting for more than 70% of revenues and more than 70% of R&D spending. All of Europe contributes approximately 20% of revenues and 25% of R&D spending (*The Research Newsletter*, <http://trn.rampazzo.com/W22Y03/indicator.asp>).

And within Europe the leading nation for biotechnology growth is Germany, which has surpassed the UK in number of biotechnology companies (Id.). Germany has long had the strongest law in Europe against harmful research on human embryos, banning human cloning for research purposes as well as destruction of “spare” embryos from fertility clinics for stem cell research. Industry observers saw “a growth spurt in the German biotechnology industry” beginning in 2001, fueled in part by a \$425 million government funding program for genome research (“Germany’s biotechnology industry takes off,” *The Scientist*, February 23, 2001, www.biomedcentral.com/news/20010223/03/). The 2004 international convention of the biotechnology industry, BIO 2004, is featuring Germany as “the leading country for commercial biotechnology in continental Europe” (<http://62.27.89.247/biosan/home/index.cfm>).

In fact, researchers in the European Union have been concerned for a decade about a steady “brain drain” **from** Europe **to** the United States (C. Choi, “Stanching the EU ‘brain drain’,” *The Scientist*, December 15, 2003, www.biomedcentral.com/news/20031215/02/). Recently the European Commission lamented that “the R&D investment gap between the EU-15 and the US is increasing in favour of the US and ‘brain drain’ is on the rise” (Press release, European Commission, “Weakening growth in investment and increasing brain drain: two major threats to the European knowledge-based economy,” November 25, 2003, <http://europa.eu.int/comm/research/press/2003/pr2511en.html>). But this problem seems far less serious in Germany, which bans human cloning and destructive embryo research (N. Stafford, “German brains not draining,” *The Scientist*, May 13, 2004, www.biomedcentral.com/news/20040513/03/).

According to *The Research Newsletter*’s international survey, other leading nations in biotechnology growth are: **Canada** (second highest number of biotech companies in the world), whose Parliament is considering a complete ban on human cloning for research purposes; **France**, which has a policy against human cloning for research purposes; and **Australia**, which has banned human cloning for research purposes since 2002.

Companies

According to *Forbes* magazine, the challenge of creating beneficial products from stem cells is so “difficult” and “prohibitively expensive” that most major drug and biotech companies have not invested in it, and “the biotech landscape is littered with failed stem cell firms.” The magazine says this attitude is changing as some large firms invest in stem

cell research – but every case cited involves stem cells from **adult** tissues and **umbilical cord blood**, not from embryos (M. Herper, “Small Stem Cells Find Big Backers,” *Forbes*, March 5, 2004, www.forbes.com/technology/2004/03/05/cx_mh_0305viacell.html).

By contrast, due to a failure to produce marketable benefits, the biotechnology companies most closely associated with cloning and embryonic stem cell research are turning to other things – or disbanding altogether – despite favorable legal environments.

The **Geron Corporation**, which funded the first U.S. studies in isolating human embryonic stem cells in 1998, briefly attracted investors due to public hype over this work – then took a “sudden fall” by 2000, the value of its stock dropping 98 percent in three years. The company has downsized, and now hopes to survive by concentrating on new cancer treatments that do not involve embryo or cloning research (P. Jacobs, “Biotech’s Bitter Pill,” *San Jose Mercury News*, November 23, 2003, p. 1F).

PPL Therapeutics, the Scottish company that cloned “Dolly” the sheep, has sold its intellectual property on cloning to a holding company, and “is being dismantled after the company’s scientific feats were not followed by commercial success” (H. Timmons, “Cloning Technology Sold,” *The New York Times*, January 1, 2004, p. W1).

Both companies were located in areas with laws encouraging embryonic stem cell research and “therapeutic cloning” – Geron in California, PPL in the United Kingdom.

The message is clear: Biotechnology progress in no way depends on the enactment of laws favoring human embryo research or human cloning for research purposes. States and nations that ban these practices are taking the lead in many aspects of biotechnology growth, leaving behind regions that wrongly assumed they could automatically advance biotechnology by ignoring ethical principles.

Secretariat for Pro-Life Activities
United States Conference of Catholic Bishops
3211 4th Street, N.E., Washington, DC 20017-1194 (202) 541-3070