

CIVITAS INSTITUTE

LEGISLATIVE POLICY BRIEFING

2007 General Assembly

Stem Cell Research in North Carolina ... What's Really Going On?

Dr. Robert Luebke, Senior Policy Analyst

Should North Carolina expand state funding of stem cell research? Sufferers of Parkinson's disease, juvenile diabetes and other chronic diseases hope the state does so, just as they hope that embryonic stem cell (ESC) research will find a cure for their diseases. Spurred on by the fear that a failure to provide state funds would end research efforts, stem cell supporters have been pressing their case with legislators since last summer.

These efforts have paid off. Earlier this year, HB 1837, "The Stem Cell Research Health and Wellness Act," was introduced in the North Carolina General Assembly by Representative Earl Jones (D-Guilford) and three other legislators, including Republican Jim Gulley of Mecklenburg. The legislation would allocate \$10 million to nonprofit organizations conducting stem cell research and includes specific provisions that regulate embryonic stem cell research in North Carolina.

Stem Cell Research in North Carolina. While proponents of stem cell research seem to believe that state funding is essential to their cause, the reality is that several higher educational institutions in North Carolina are already involved in ESC research. In March 2005, the Fiscal Research Division of the General Assembly conducted an informal e-mail survey of North Carolina's public and private universities. The table lists the responses. Over the last several weeks, the Civitas Institute has made efforts to update these figures for 2007. Institutions were requested to provide information regarding: (1) number of ongoing stem cell research projects; (2) type of research; and (3) dollar value of all campus-based stem cell research. The results were surprising and often contradictory.

- **Wake Forest University.** WFU reportedly has approximately 80 different research projects involving adult and amniotic fluid derived stem cells. Research support totals \$10 million.
- **University of North Carolina.** Discussions with the UNC Office of Sponsored Research and Department of Genetics cited several embryonic stem cell research projects on campus. These projects were said to be federally funded and involved the use of existing federal stem cell lines. When asked for specifics, UNC later reported having no ongoing human stem cell research projects.
- **East Carolina University Medical School.** Initial discussions with representatives of East Carolina University Medical School referenced that faculty were conducting ESC research on campus. A subsequent e-mail from a campus official stated that ECU is currently involved in no human stem cell research projects.
- **Duke University.** In spite of repeated requests for information, Duke officials refused to return our calls. The response – or nonresponse – from Duke University, a national leader in the area of stem cell research, is curious. According to the Duke University Web site, the Duke Stem Cell Research Program was established "to advance our understanding of the basic sciences of stem cells and to promote their application in the clinic to help save lives and reduce suffering." The Web site also states that campus research projects involve both embryonic and adult stem cells. Recently, Duke partnered with the National University of Singapore Medical School to establish the cancer and stem cell biology program. Considering the university's visibility and scope of its research efforts, Duke's failure to respond to repeated requests is disappointing.

What Does it Mean? This data is far from complete. Additional information is needed from UNC and ECU. Still, the findings reveal that several universities in North Carolina are already actively involved in stem cell research programs. In 2005, North Carolina institutions reported \$8.3 million in campus-based stem cell research projects. Two years later, Wake Forest University alone reported \$10 million in research support. The inclusion of stem cell projects at Duke University – which likely exceeds several million dollars – would push the total value of research well past the \$10 million figure.

Stem cell proponents might contend that these figures largely represent private investment in stem cell research. Insofar as that is true, it proves that state funding is not necessary for stem cell research to continue in North Carolina. Moreover, this data also shows that the state is already, at least indirectly, supporting embryonic research. Research projects at private

STEM CELL RESEARCH FUNDS HIGHER EDUCATION INSTITUTIONS IN NORTH CAROLINA <i>(Figures Self-reported)</i>		
Institution	2005	2007
Wake Forest University	\$627,000	80 Grants (\$10 million)
UNC-Chapel Hill	5 Grants (\$2.2 million)	None
East Carolina University (Brody Medical School)	1 Grant (\$200,000)	None
Duke University	29 Grants (\$5.2 million) <i>(includes human and animal stem cell research)</i>	No Response

universities, as well as privately funded projects at public institutions, benefit from various forms of public support, such as taxpayer dollars used to pay for faculty salaries, staff support, laboratories, physical plant and office costs. Inclusion of these costs would significantly increase total research funding and reflect significant public subsidies for such efforts.

Funding ESC Research: Promise or Peril? Finally, while HB 1837 is ostensibly dedicated to funding all kinds of stem cell research, committee hearings on the legislation have made it clear that supporters want the state to begin funding ESC research in particular.

HB 1837 proponents point to the potential benefits of alleviating the difficult economic and psychological burdens associated with long-term chronic diseases like Alzheimer's or Parkinson's in order to justify state funding for ESC research. The actual results, however, have been less than promising. Many problems continue to plague ESC research. One of the most significant is genetic incompatibility. The injection of embryonic stem cells into a patient often results in the formation of tumors that cause the body to reject the foreign cells. By contrast, because adult stem cells are part of the natural repair system of the body, adult stem cells are safer and have lower rates of rejection. Moreover, if ESC is so promising, why has there not been one clinical embryonic trial published in a peer-reviewed journal? Also, why has every therapeutic use for stem cells developed to date involved – not embryonic stem cells – but adult stem cells?

Adult Stem Cells. One area of stem cell research that has produced promising results is that of adult stem cells (ASC). Unlike ESC, which must be derived from human embryos, ASCs are readily available from every tissue (whether blood, bone, muscle or fat) of the body. Most important, harvesting ASCs does not require destruction of the donor from whom the cells are obtained.

These advantages have produced encouraging research results. Recent medical studies document that ASCs are better suited for treating many diseases, including heart conditions. Scientists are also using stem cells derived from umbilical cords to treat leukemia and other conditions. Researchers have likewise found that adult stem cells can develop into most – if not, all – tissues in the body, a characteristic scientists refer to as pluripotent. Previously, only ESCs were thought to be pluripotent.

Amniotic Fluid-derived Stem Cells. Other promising research is being pioneered by Dr. Anthony Atala of the Institute of Regenerative Medicine at Wake Forest University. His work involves developing a new source for stem cells, one that does not require the destruction of human life and that may have the capability to treat numerous conditions and diseases. The new stem cells are called amniotic fluid-derived stem cells (AFS). AFS cells are easily collected and, like ASC, are also pluripotent. AFS cells can be grown in large quantities and have the advantage of producing no tumors. Atala's research has produced very encouraging results. According to an Institute for Regenerative Medicine press release, AFS cells have been used to create "muscle, bone, fat, blood vessel and liver cells in the laboratory." These findings have attracted considerable attention from other scientists and also brought in significant research dollars.

Conclusion. Adult stem cell research holds great promise for curing chronic diseases. Similarly, other forms of stem cell research – for instance, Atala's pioneering work at Wake Forest University – proves that ethical research is not only more successful – but for that very reason is attracting private investment. The General Assembly would do well to consider these findings and realize that HB 1837 is a step in the wrong direction.



225 Hillsborough St., Suite 130, Raleigh, N.C. 27603
919-834-2099 (voice) // 919-834-2350 (fax)
www.jwpcivitasinstitute.org