

# Embryonic Stem Cells Not the Answer, Scientists find Stem Cells in Amniotic Fluid

January 9, 2007

Dear Colleague:

We'd like to bring to your attention the recently published paper on ethical stem cells that are derived from amniotic fluid, published this past Sunday in *Nature Biotechnology*. These stem cells are derived without destroying an embryo and like embryonic stem cells are pluripotent as demonstrated by their ability to form all three germ layers. Researchers also claim that these newly discovered cells do not form tumors—a problem that plagues embryonic stem cells. Here are a few of the national headlines with some key quotes:



**"Stem Cells discovered in Amniotic Fluid: Researchers Say Stem Cells Can Be Taken From Amniotic Fluid With No Harm to Mother or Fetus."**

"Researchers at Wake Forest University and Harvard University reported Sunday that the stem cells they drew from amniotic fluid donated by pregnant women hold much the same promise as embryonic stem cells. They reported they were able to extract the stem cells from the fluid, which cushions babies in the womb, without harm to mother or fetus and turn their discovery into several different tissue cell types, including brain, liver and bone." (ABC Health News, 1/8/07)  
<http://abcnews.go.com/Health/wireStory?id=2776804&CMP=OTC-RSSFeeds0312>



**"A New Era Begins: Stem cells derived from amniotic fluid show great promise in the lab and may end the divisive ethical debate once and for all."**

"Like those from embryos, the AFS cells are pluripotent, or able to transform into fully-grown cells representing each of the three major kinds of tissue found in the body... Amniotic-fluid stem cells share another unique characteristic with embryonic stem cells: they multiply quickly and are remarkably long-lived. The Atala lab's cells divided more than 250 times—more than quintuple the life expectancy for stem cells taken from adults." (Mary Carmichael, "New Stem-Cell Source Could Alter Debate," 01/07/07)  
<http://www.msnbc.msn.com/id/16513279/site/newsweek/>



**"Scientists See Potential In Amniotic Stem Cells: They Are Highly Versatile And Readily Available"**

"The new cells are adding credence to an emerging consensus among experts that the popular distinction between embryonic and "adult" stem cells -- those isolated from adult bone marrow and other organs -- is artificial. Increasingly, it appears there is a continuum of stem cell types, ranging from the embryonic ones that can morph into virtually any kind of tissue but are difficult to tame, up to adult ones that can turn into a limited number of tissues but are relatively easy to control.

Atala said that if 100,000 women donated their amniotic cells to a bank, that would provide enough cells of sufficient genetic diversity to provide immunologically compatible tissues for virtually everyone in the United States. With more than 4 million U.S. births a year, it would not take long to collect that many specimens, he said -- especially because the cells can be found not only in amniotic fluid but also in the placenta, which is discarded after birth." (Rick Weiss, "Scientists See Potential In Amniotic Stem Cells," *The Washington Post*, 1/8/07) <http://www.washingtonpost.com/wp-dyn/content/article/2007/01/07/AR2007010700674.html>



**"Stem Cells In Amniotic Fluid Show Great Promise, A study finds they offer key therapeutic benefits but avoid controversy."**

"So far, we've been successful with every cell type we've attempted to produce from these stem cells,' said study senior author Anthony Atala...The finding points to a promising avenue of research that sidesteps the hurdles facing embryonic stem cell research, which has been stymied by moral objections to the destruction of embryos that occurs when the cells are harvested. ... Amniotic stem cell research ducks the controversy because no embryos are destroyed. The National Institutes of Health already funds such research.

Dr. Dario Fauza, coordinator of the surgical research laboratories at Children's Hospital Boston, has used the cells to grow tissue to repair defective diaphragms and tracheas in sheep. He has asked the Food and Drug Administration for permission to do the same for children born with herniated diaphragms. It would be the first human clinical trial involving amniotic stem cells, he said." (Karen Kaplan, 1/8/07)

<http://www.latimes.com/news/la-sci-stemcells8jan08,1,6427115.story?coll=la-breakingnews-headlines>



**"Stem Cells Extracted From Amniotic Fluid."**

"One advantage is that these cells, unlike embryonic stem cells, don't form tumors when implanted into mice. Though much research into the safety and effectiveness of these potential embryonic stem cell substitutes still needs to be done, the huge advantage would be that they can be easily harvested from both amniotic fluid as well as placental tissue after a baby is born. (Elizabeth Weise, "Stem Cells Extracted From Amniotic Fluid," *USA Today*, 1/8/07) [http://www.usatoday.com/tech/science/genetics/2007-01-07-stem-cells\\_x.htm](http://www.usatoday.com/tech/science/genetics/2007-01-07-stem-cells_x.htm)

These articles tell the story of a new breakthrough in science – stem cells obtained from the amniotic fluid and placenta that surrounds a pre-born child which may be able to offer new windows into regenerative medicine and possible cures for diseases. These articles also tell the story of the ingenuity and technical ability of our scientists when faced with the challenge of obtaining stem cells without destroying human life.

Sincerely,

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Christopher H Smith  
Member of Congress

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Bart Stupak  
Member of Congress