

## Stem Cell Research



### Rebuilding the Road to Opportunity

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Research on stem cells is advancing knowledge about how an entire organism develops from a single cell and how healthy cells replace damaged cells. This promising area of science is also leading scientists to investigate the possibility of cell-based therapies to treat disease -- referred to as regenerative or reparative medicine.

Stem cells have two important characteristics that distinguish them from other types of cells. First, they are unspecialized cells that renew themselves for long periods through cell division. The second is that under certain physiologic or experimental conditions, they can be induced to become cells with special functions such as the beating cells of the heart muscle or the insulin-producing cells of the pancreas.

### The Promise of Stem Cells

The issue of stem cell research burst on the scientific scene in November of 1998 when researchers first reported the isolation of human embryonic stem cells (hESCs). The discovery offered great promise for new ways of treating disease.

Some of the most serious medical conditions, such as cancer and birth defects, are due to problems that occur somewhere in this cell transformation process. A better understanding of normal cell development will allow us to understand and perhaps correct the errors that cause these medical conditions.

Another potential application of stem cells is making cells and tissues for medical therapies. Today, donated organs and tissues are often used to replace those that are diseased or destroyed. Unfortunately, the number of people needing a transplant far exceeds the number of organs available for transplantation. But versatile stem cells

offer the possibility of a renewable source of replacement cells and tissues that might take the place of organ transplants and could be used to treat a myriad of diseases, conditions, and disabilities including Parkinson's and Alzheimer's diseases, spinal cord injury, stroke, burns, and heart disease.

### **Bush Limits the Promise of Science**

In spite of the promise, scientific and medical advances have been stymied in the U.S. Under a policy announced by President George W. Bush on August 9, 2001, federal funding for embryonic stem cell research is allowed only for research using embryonic stem cells lines created on or before that day. The U.S. research community is lagging behind other countries that systematically encourage stem cell research. Early this week the head of the National Institutes of Health, the nation's premium medical research facility, said he believes the limit is stifling efforts to find new medical breakthroughs.

The Stem Cell Research Enhancement Act of 2007 -- H.R. 3 in the House of Representatives and S. 5 in the Senate -- would amend the Public Health Service Act to require the Secretary of Health and Human Services to conduct and support research that utilizes human embryonic stem cells, regardless of the date on which the stem cells were derived from a human embryo, provided such embryos: (1) have been donated from in vitro fertilization clinics; (2) were created for the purposes of fertility treatment; (3) were in excess of the needs of the individuals seeking such treatment and would never be implanted in a woman and would otherwise be discarded (as determined in consultation with the individuals seeking fertility treatment); and (4) were donated by such individuals with written informed consent and without any financial or other inducements.

In addition to the Bush-appointed NIH director, a huge majority of Americans believe that funding embryonic stem cell research holds so much hope for so many who need cures and treatments.

The House bill was passed in January. The vote on the Senate bill is set to happen within a few weeks. Encourage your Senators to vote for S. 5. Then, if President Bush does not sign the bill, urge your members of Congress to override the veto.

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