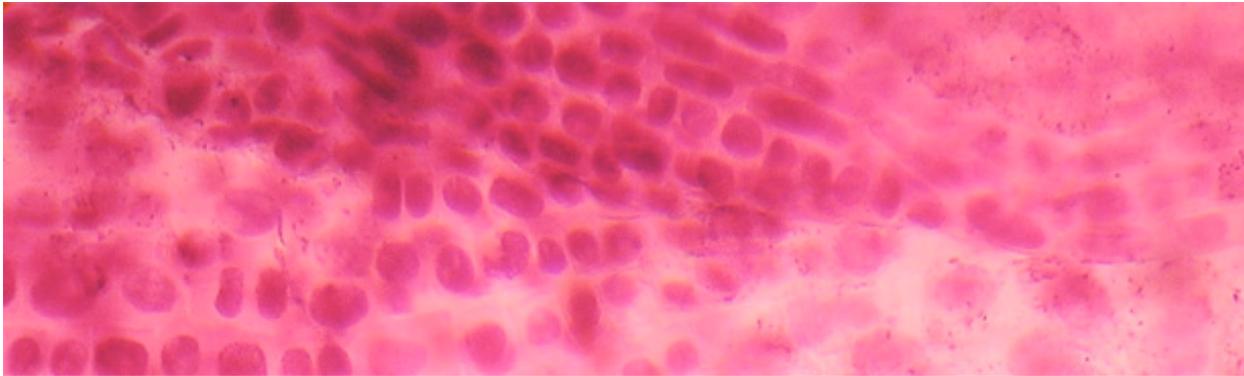




Eight Reasons to Applaud Action on Stem Cells President Obama Issues an Executive Order Lifting Restrictions on Federal Funding for Stem Cell Research

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*SOURCE: Flickr/Katjaja
A close up of coleoptile stem cells in anaphase.*

President Barack Obama takes a first step today toward bringing the United States back to the scientific cutting edge by issuing an executive order that lifts the existing restriction on federal funding for embryonic stem cell research. This will allow the National Institutes of Health to award competitive, merit-based grant funding to scientists who wish to conduct research with any ethically derived human embryonic stem cells, not just those deemed acceptable by the Bush administration. It also paves the way for Congress to pass legislation that will lay out important ethical guidelines to ensure that all stem cell research is conducted responsibly and safely. A recent report from the Center for American Progress, “A Life Sciences Crucible,” outlines how to construct these guidelines.

Federal funding for embryonic stem cell research will have far-reaching effects; here are eight of the most important:

1. The federal government will be able to set ethical guidelines that will allow research to progress cautiously and responsibly. An executive order paves the way for Congress to pass legislation that outlines policy guidelines to ensure that all stem cell research—embryonic and otherwise—is carried out with the highest ethical standards. The legislation should provide broad, principled ethical standards so that the science itself can evolve in the direction that experimentation and serendipity takes it—alongside easily adapted regulations governing the research, based on the broad ethical standards approved by Congress. Specifically, the legislation should charge the National Institutes of Health and the Department of Health and Human Services with the duty to update at regular intervals its regulations for embryonic stem cell research in light of new science.

2. The United States can stake a claim as the world leader in regenerative medicine. Regenerative medicine is a new therapeutic approach that works by rebuilding damaged tissues in a patient’s body. This can involve cultivating a small sample of a patient’s own cells, reprogramming them, and using them to heal—without the risk of rejection or severe side effects that usually result from introducing foreign therapeutic materials. The potential therapies range from transforming the pancreatic cells of diabetics so they can produce insulin to reconnecting the nerves in severed spinal cords. It will be a vital component of cutting edge life sciences in the 21st century, but for medical researchers to participate competitively and responsibly,

the federal government must reform its stem cell research policy in order to fund embryonic stem cell research.

3. Research on all other forms of stem cells will move forward. Opponents of human embryonic stem cell research often champion human adult stem cells, umbilical cord blood stem cells, and induced pluripotent stem cells as suitable alternatives to embryonic stem cells. Yet these approaches cannot be successful without research on human embryonic stem cells. The New York State Stem Cell Foundation reported in July 2008 that its chief scientific officer, Kevin Eggan, produced adult stem cell lines from patients with Lou Gehrig's disease. Yet Eggan said he will still continue his work on human embryonic stem cell research because, "we couldn't possibly be where we are now without first doing extensive work with human embryonic stem cells ... they remain the stem cell gold standard" against which all cells brought forth as alternatives must be measured.

4. The search for life-saving cures will resume. Nothing is more valuable than the lives that will be saved and improved with the therapies and cures that may arise from embryonic stem cells. And the federal government, state governments, universities, and private industry all need to work together to get stem cells from bench to bedside in an efficient, equitable, and safe manner. The Bayh-Dole Act, which allows universities to patent the results of federally funded research and then license to corporations the right to develop products from those results, will speed translation of basic research into cures. Federal funding of stem cell research will generate many of these patents.

5. Drug testing can become safer and more efficient. Scientists can differentiate cells into specific cell types upon which they can quickly test whether a drug has a desired effect. For instance, researchers could test drug toxicity with a group of differentiated liver cells rather than in a living person's system. This will make the drug development process and then the clinical trial process much safer and more efficient.

6. Scientists will be able to learn more about genetics and unique human traits. It is a longstanding research paradigm to study failures of development by determining when, where, and how genes malfunction. The ultimate goal is to develop a guidebook that will tell us exactly how each gene or combination of genes contributes to the development of a unique individual. This will greatly enhance our understanding of basic genetics and could allow scientists to develop drugs that can prevent the diseases from developing in the first place. But they can only do this by tracing the development of human cells from the very beginning. Therefore scientists need to conduct research on embryonic stem cells so that they can discover how these all-purpose cells can change into any one of the more than 200 different cell types in the human body.

7. Federal guidelines will ameliorate the confusion caused by the patchwork of state regulations, facilitate scientific collaboration, and generate good jobs in the biotech industry. The patchwork of state initiatives and regulations introduced wasteful legal and bureaucratic complexity into the overall enterprise of stem cell research. For instance, until November 2008, when voters amended the state constitution, it was illegal in Michigan to derive embryonic stem cells because the state constitution banned the destruction of embryos for research. As a result, researchers at Michigan's large and prestigious state universities had to import cells from out of state. A report from last year estimated that lowering the barriers to stem cell research in that state could generate almost 800 jobs. Healthy stem cell research requires interstate collaboration among various institutions, including private industry and academia.

8. States may rescind or revise their own stem cell research restrictions. Some states have adopted laws that either explicitly or implicitly ban or inhibit human embryonic stem cell research. Hopefully, with a robust and comprehensive federal policy, states will repeal or revise these laws in order to take full advantage of federal research dollars. Thus, the states would allow talented research scientists in academia and industry throughout the nation to maximize their efforts.