



# Dupont Summit 2017

*Science, Technology, and Environmental Policy*

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## **Presentation**

### **“Embryonic Stem Cell Research: Current Challenges”**

It was predictable that in the United States and around the world, embryonic stem cell research (research that involves the destruction of human embryos) would be controversial from the time of its emergence as a field in 1998. More surprising was the federal and then state policy response to the creation of the first embryonic stem cell line and the field of research it created, now called regenerative medicine.

In 2001, President George W Bush used his first address to the nation to articulate the federal policy on embryonic stem cell research. Rather than ban the research either in the US or with federal funds, he struck a compromise: research on stem cell lines created prior to the start of his speech on August 9<sup>th</sup> would be permissible with federal funds. This was an attempt to allow research to go forward without the government being complicit in the destruction of human embryos. While the research was not banned, the number of lines available for research was very limited, and the separation of federally funded work from privately funded work in labs and research institutions proved onerous. In response to the federal restrictions, states began to step in.

Across the country, states began to pass laws supporting the research, criminalizing the research, and notably, providing funding for research not permitted with federal dollars – an unusual state of affairs. The most prominent state program was and is the California Institute of Regenerative Medicine, which through voter-approved Proposition 71 in 2004, dedicated \$3 billion to the research over ten years. A number of other states followed, including Maryland, which in 2006 passed the law establishing the Maryland Stem Cell Research Fund.

While president Obama relaxed federal policy, the patchwork of state policies remains. Though advances in the science (in particular the development of new stem cell types) have diffused some of the ethical and policy tension, the future of federal policy remains open and unpredictable. Other scientific techniques (most notably chimera research, in which human cells are introduced into non-human embryos and animals) have also emerged, which are not currently being funded by the federal government, but are being supported at the state level (and with private funds). It seems likely that future techniques will meet with similarly divergent federal and state policy responses.

Such conflicting responses to controversial areas of science can make for an unsettled and difficult environment in which to practice science. However, this divergence also creates opportunity for

states to build and energize their local research and development communities. Science is a collaborative endeavor that is often also an interstate and international activity. Science is also competitive and increasingly a platform for state and national innovation and economic development strategy. Before such an arrangement becomes the norm, we must think through the risks and benefits of the approach for science and medicine.

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