

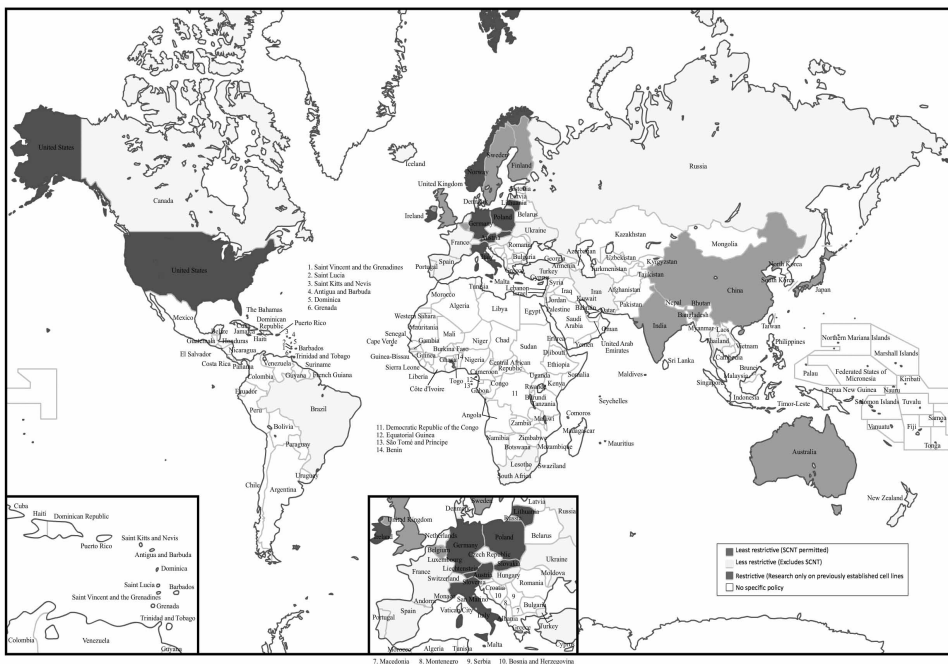
IN FOCUS

# Stem Cell Research Policies around the World

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The proliferation of stem cell research, conflated with its ethical and moral implications, has led governments to attempt regulation of both the science and funding of stem cells. Due to a diversity of opinions and cultural viewpoints, no single policy or set of rules exist to govern stem cell research. Instead, each country has developed its own policy. The following map catalogs the general legal and political milieu regarding stem cell research by country.



## JAPAN

Japan allows scientists to conduct stem cell research for therapeutic purposes; however, there are no formal guidelines [1]. In

November 2007, Japanese researchers collaborating with American scientists reprogrammed human skin cells to behave like embryonic stem cells [2].

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†Abbreviations: IVF, in vitro fertilization; SCNT, Somatic Cell Nuclear Transfer; HFEA, Human Fertilization and Embryology Act; hESC, human embryonic stem cells.

## SINGAPORE

Singapore is widely considered “Asia’s stem cell center” [1]. It has more than 40 stem cell research groups in the country and authorizes the use, for therapeutic purposes, of embryos that are no more than two weeks old.

## CHINA

China has one of the most unrestrictive stem cell policies [1]. In 2003, guidelines were issued that required that embryos used for stem cell research be left over from *in vitro* fertilization (IVF+); fetal cells from abortions; blastocytes from Somatic Cell Nuclear Transfer (SCNT); or germ line cells voluntarily donated. Interestingly, according to Chinese cultural attitudes, a person’s life begins with birth [3].

## SOUTH KOREA

In 2006, scandal arose when the country’s leading biomedical researcher, Dr. Hwang Woo-suk, was discovered to have falsely claimed that he was the first scientist to clone human embryonic stem cells. Nevertheless, South Korea continues to pursue research for the purposes of therapeutic cloning.

## AUSTRALIA

Australia bans all human cloning for reproduction or research [4]. It does allow for the use of embryos remaining after assisted reproduction from before April 5, 2002.

## SOUTH AFRICA

Initially, South Africa enacted legislation that banned reproductive cloning but authorized therapeutic cloning [1]. In 2004, this country became the first African nation to create a stem cell bank.

## UNITED KINGDOM

The Human Fertilization and Embryology Act (HFEA) of 1990 and the Human Re-

productive Cloning Act of 2001 permit the destruction of embryos for human embryonic stem cells (hESC) and allows for SCNT [4]. This is only permissible if the proposed research increases knowledge about the development of embryos or serious disease or enables such knowledge to be applied in developing treatments for serious disease. As a result, the United Kingdom is one of the leading centers for hESC research.

## SWITZERLAND

The Swiss parliament is considering allowing research on stem cells derived from stored embryos remaining at the end of assisted reproduction for therapeutic purposes only. In 2004, a national referendum was put forth in which two-thirds of voters agreed to allow embryonic stem cell research [5].

## BRAZIL

The Brazilian government passed legislation in March 2005 that allows the use of excess IVF embryos that have been frozen for more than three years [1]. The Brazilian Catholic Church challenged the law, arguing that embryonic stem cell research violates the right to life, but Brazil’s Supreme Court rejected the petition, thus permitting embryonic stem cell research [6].

## UNITED STATES

Under the auspices of the Obama administration, the National Institutes of Health plans to expand federal funding for stem cell lines that meet certain ethical requirements: the embryo was discarded after IVF; informed consent was obtained from the donors; the couple does not receive compensation (neither financial nor medical benefits) or are coerced or threatened [7]. Older stem cell lines created in the spirit of the new regulations will be considered for federal funding, whereas embryos created solely for research purposes will be excluded [8].

## MEXICO

While Mexico has a flourishing stem cell industry, it does not have formal regulations [9]. Mexican doctors currently are using stem cells to treat ill foreigners, including Americans, who suffer from ailments such as cerebral palsy, autism, and paralysis. The international medical community has criticized this lack of regulation.

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