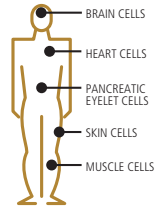


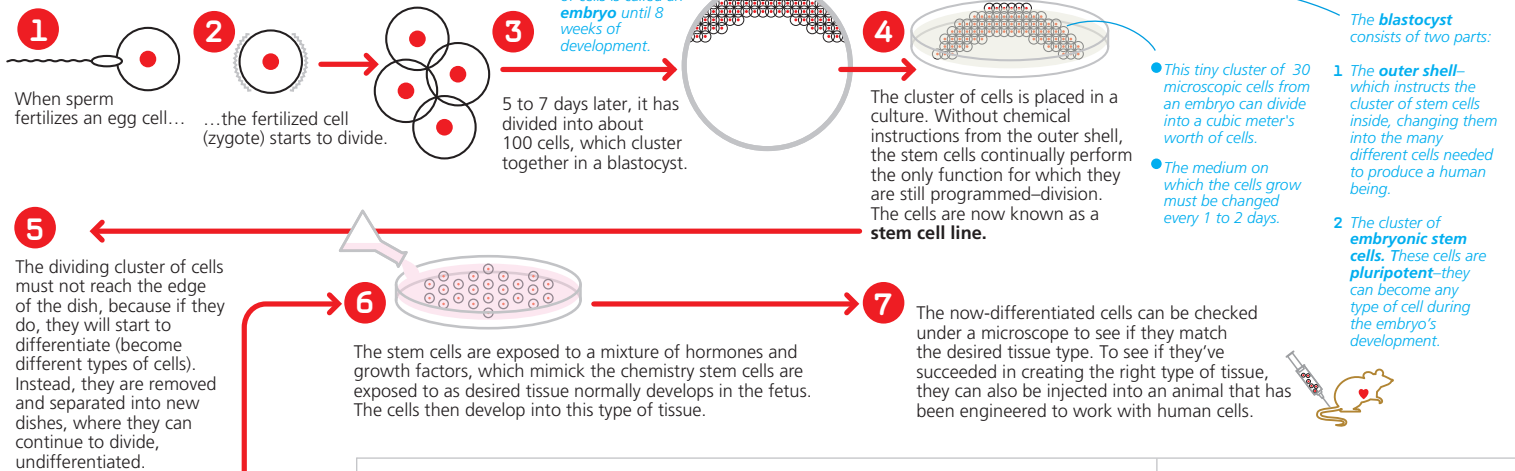
CRIBSHEET #1 STEM CELLS

GOALS

- Stem cell research is about repairing and/or replacing damaged tissue, thereby reversing:
 - Aging
 - Disease
 - Injury
- In the laboratory, scientists have seen embryonic stem cells change into the cells of virtually every part of the human body.
- Scientists want the ability to control the development of these cells, so they can make the types of tissue they need. Some common ones are:



PROCESS



CHALLENGES

- Researchers know little about the chemical environment in the fetus that produces different tissues.
- Years of trial and error lie ahead before they can discern the proper mixture of hormones and growth factors necessary to produce the correct tissue cells in desirable quantities.
- In most areas of stem cell research, chemical combinations used to derive certain cell types only transform between 2 and 28 percent of embryonic stem cells into the correct tissue type.
 - This is not yet good enough for human medicine.

EXPERTS SAY:

"Stem cell therapies for many diseases are a long way off. On the other hand, the roles some cells play in organs like the spinal cord or heart are less sophisticated, allowing for treatment in the nearer future."
—Dr. Hans Keirstead, Reeve Irvine Research Center, UC Irvine

CULTURAL ISSUES

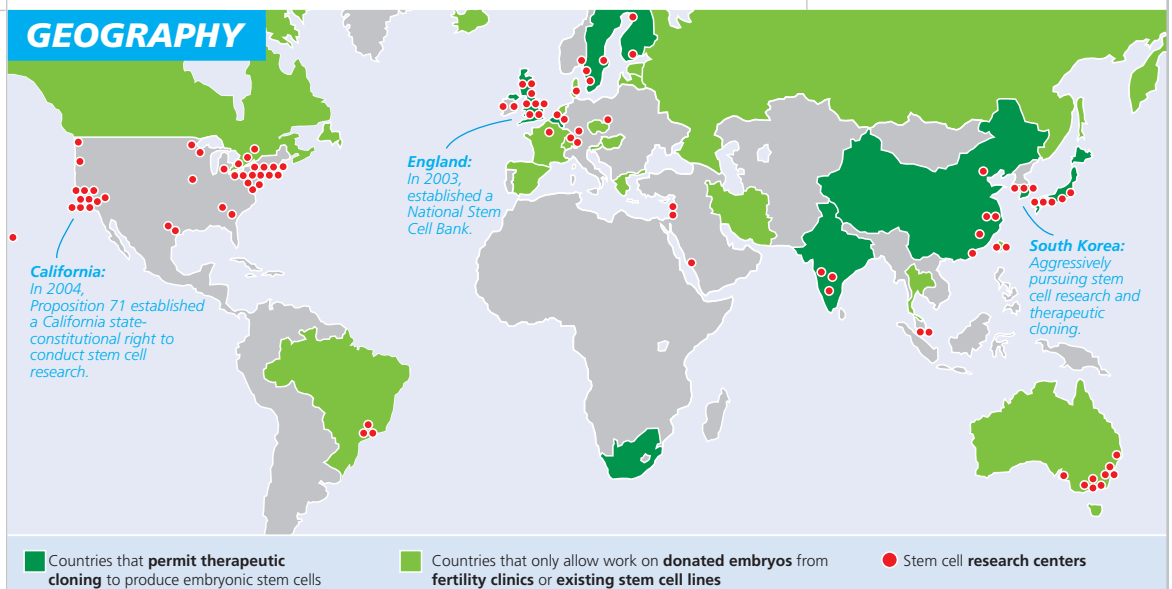
Tissue Matching
Stem cell treatments will be most effective if the tissues intended for transplant are a genetic match to the recipient's; this is one of the primary incentives for therapeutic cloning, which raises ethical issues of its own.

What's in the Dish?
An embryonic stem cell line isn't an embryo, but it comes from one. Should we accord these cells special moral status?

Abortion
Blastocysts are the basis for a potential fetus. Destroying them for therapies is contentious.

Will of the People
If governments don't fund stem cell research, can they keep close enough tabs to prevent ethical abuses?

GEOGRAPHY



Each nation is addressing ethical questions as they face a financial impetus to be on the cutting edge of research. It's no coincidence that many of the countries supporting stem cell research have settled their debates on abortion.

In multicultural populations, like those in the U.S. and Europe, mixed values and different ways of talking about life have led to the suggestion that regional, community-based approaches to funding and regulation are the best way to go.

SOUNDBITE When biologists obtain medical-quality tissue cultures from human embryonic stem cells, we can expect a host of tissue replacement therapies.