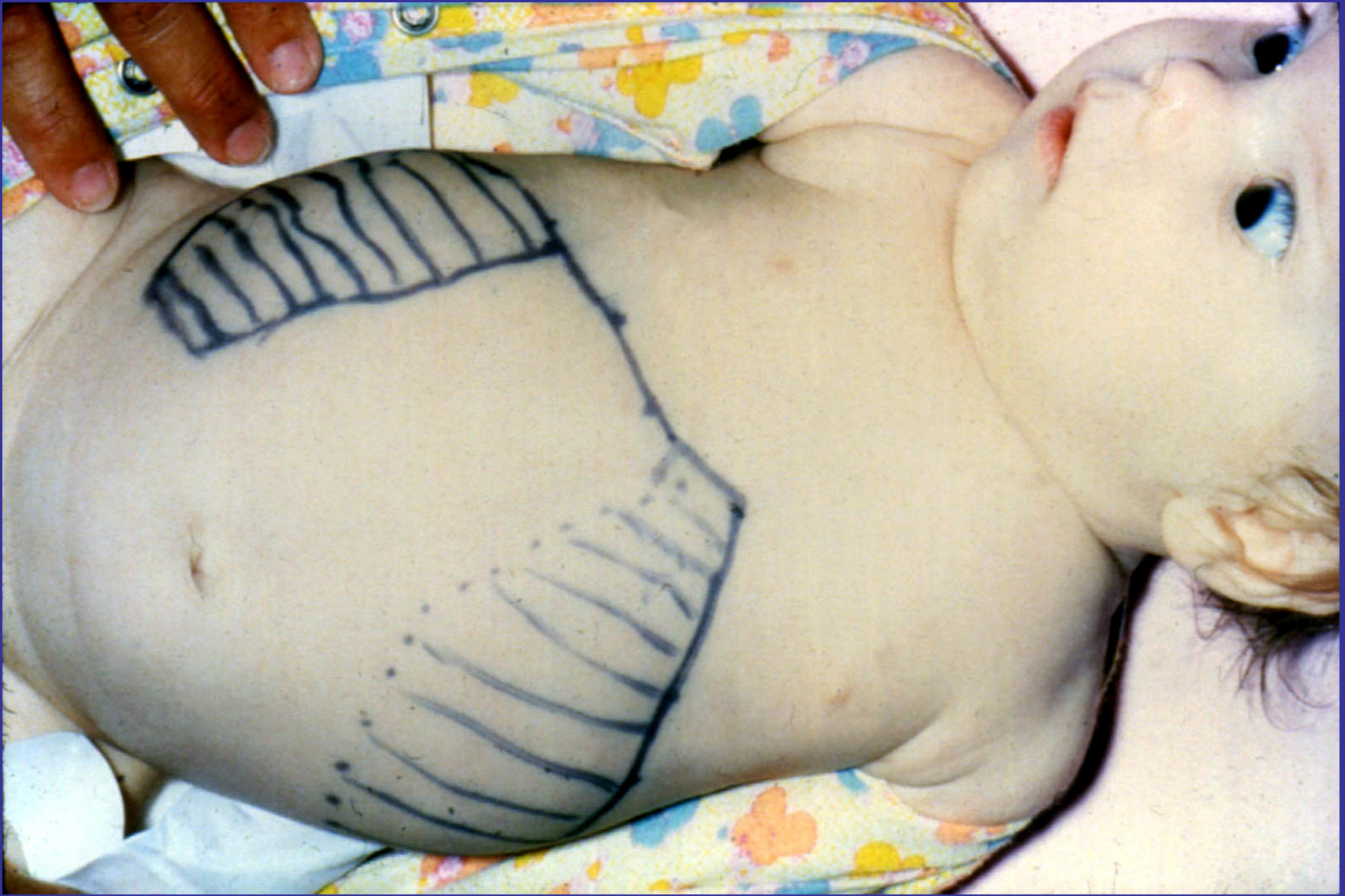


THE PROMISE OF STEM CELL RESEARCH



MALIGNANT OSTEOPETROSIS

- **AUTOSOMAL RECESSIVE**
- **DENSE SCLEROTIC SKELETON**
- **HEMATOLOGIC ABNORMALITIES**
- **NEUROLOGIC ABNORMALITIES**
- **DEATH IN INFANCY OR EARLY CHILDHOOD**







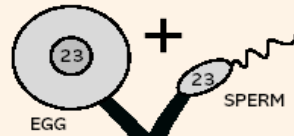
**SUCCESS RATE OF TREATING
MALIGNANT OSTEOPETROSIS
WITH ADULT STEM CELLS**

10%

**SOMATIC CELL
NUCLEAR TRANSFER
TO PRODUCE
STEM CELLS**

(SCNT)

SEXUAL REPRODUCTION



DAY 0

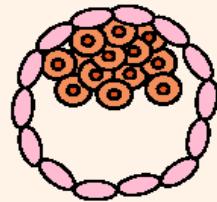


Egg contains nucleus with 46 chromosomes



Cells divide

DAY 5



By ~150 cell stage, there is an inner cell mass and an outer layer in the BLASTOCYST

If blastocyst is implanted into a uterus, embryonic development continues

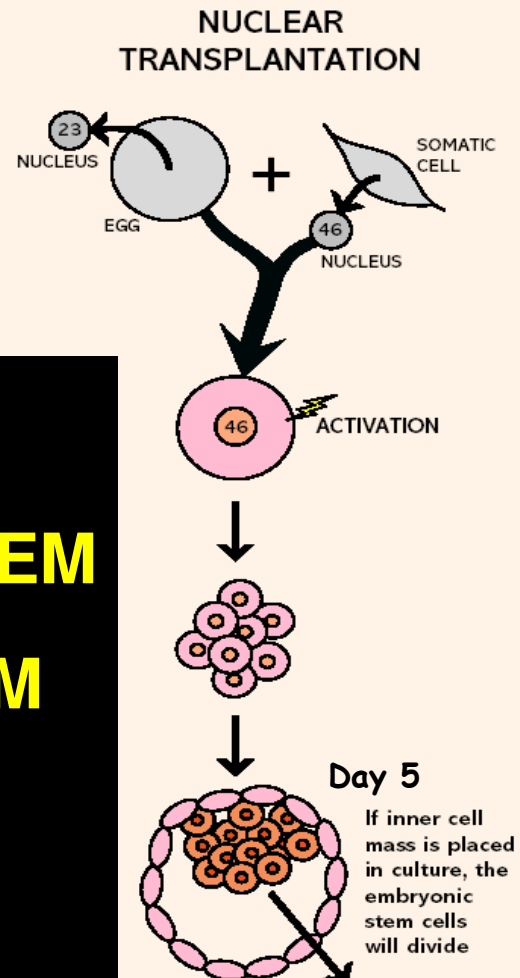


Appropriately nurtured through embryonic and fetal stages, a new organism will result

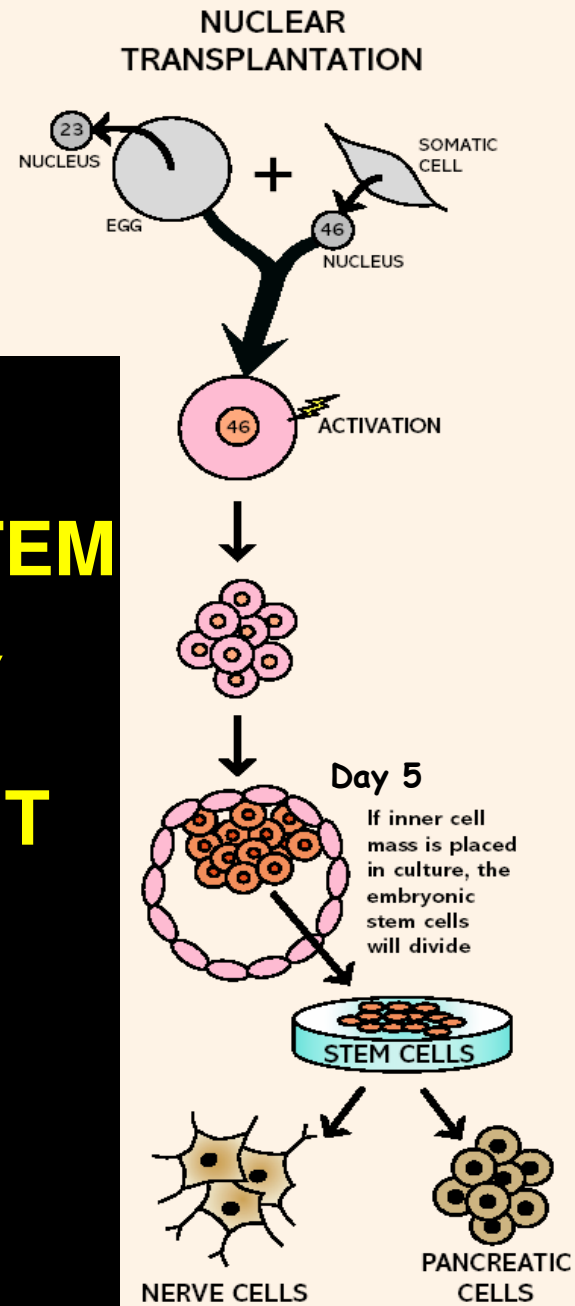


SEXUAL REPRODUCTION

**ABILITY TO PRODUCE STEM
CELLS WITHOUT SPERM**



**ABILITY TO PRODUCE STEM
CELLS GENETICALLY
IDENTICAL TO PATIENT**



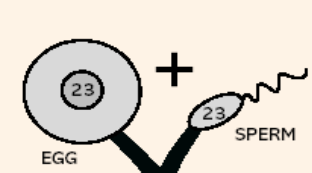
**SCNT
TO PRODUCE CELLS
THAT WILL
NOT BE REJECTED**

**HOW DOES THIS
RELATE TO
HUMAN
CLONING???**



February 1997 Cloning of Dolly

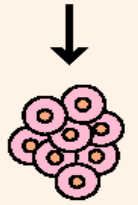
SEXUAL REPRODUCTION



DAY 0

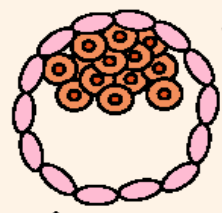


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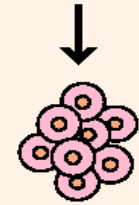
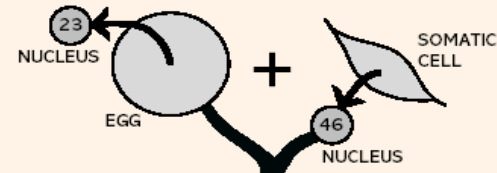
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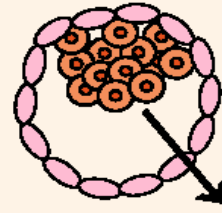
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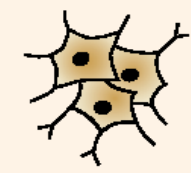
NUCLEAR TRANSPLANTATION



Cells divide



If inner cell mass is placed in culture, the embryonic stem cells will divide



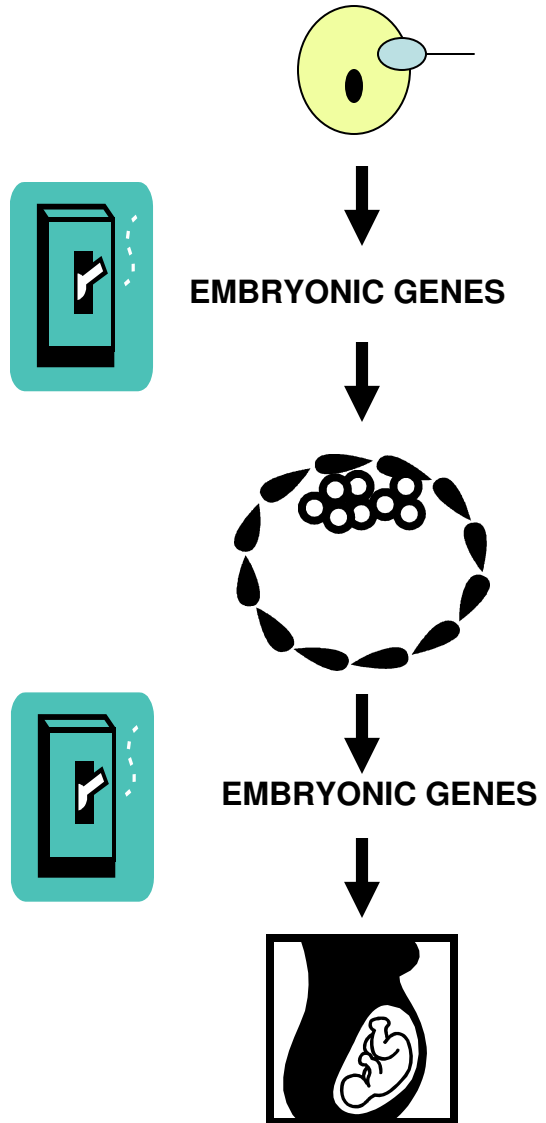
NERVE CELLS



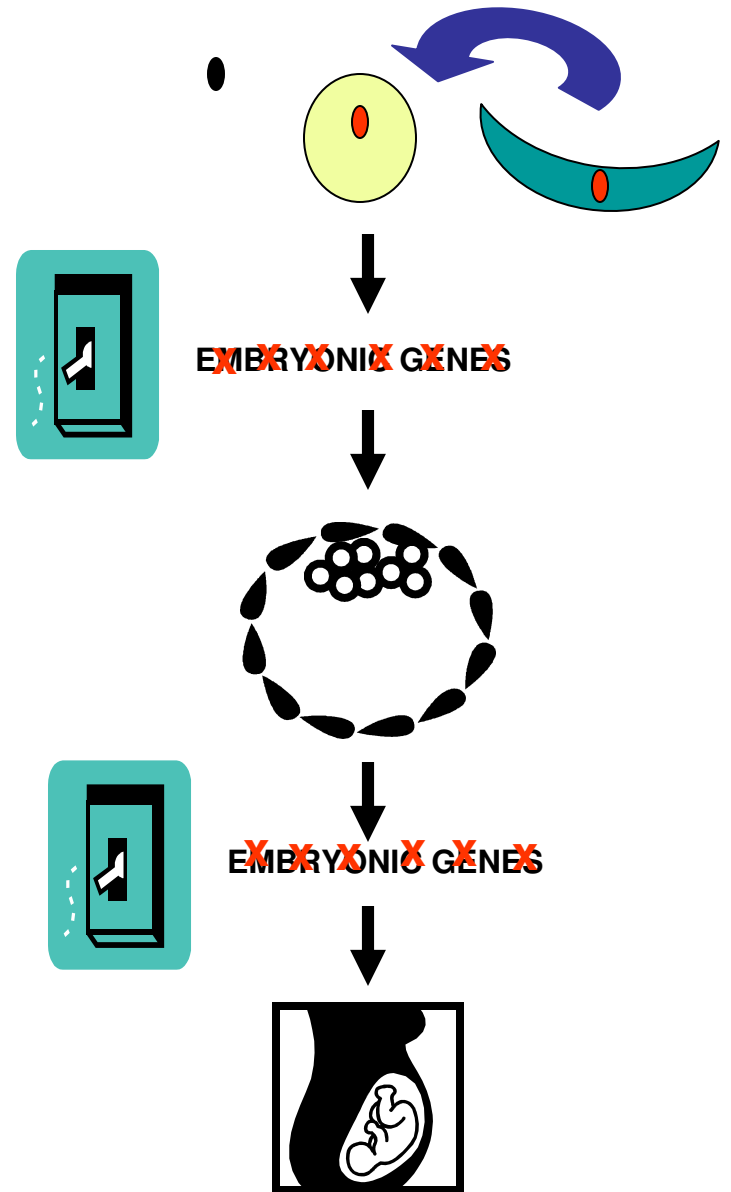
PANCREATIC CELLS

**BLASTOCYSTS PRODUCED
BY SEXUAL REPRODUCTION
AND SCNT ARE
FUNDAMENTALLY DIFFERENT!!**

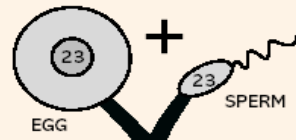
SEXUAL REPRODUCTION



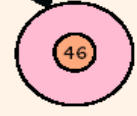
SCNT



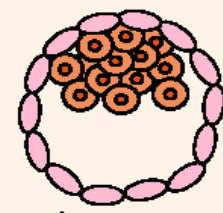
SEXUAL REPRODUCTION



DAY 0



DAY 5



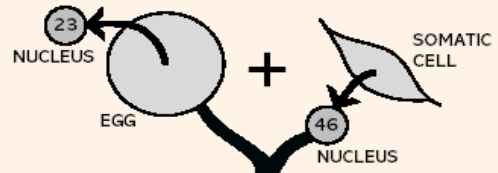
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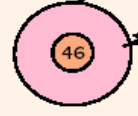
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NUCLEAR TRANSPLANTATION



Egg contains nucleus with 46 chromosomes

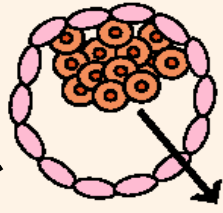


ACTIVATION

Cells divide



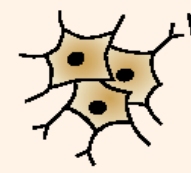
By ~150 cell stage, there is an inner cell mass and an outer layer in the BLASTOCYST



If inner cell mass is placed in culture, the embryonic stem cells will divide



STEM CELLS



NERVE CELLS



PANCREATIC CELLS



MISSOURI STEM CELL RESEARCH AND CURES BALLOT INITIATIVE. WHAT DOES IT DO?

- 1. PROTECTS THE RIGHTS OF MISSOURI PATIENTS TO BE TREATED WITH ANY STEM CELL THERAPIES ALLOWED BY FEDERAL LAW.**
- 2. ENSURES MISSOURI MEDICAL INSTITUTIONS CAN HELP FIND NEW STEM CELL CURES.**
- 3. ESTABLISHES ETHICAL GUIDELINES FOR STEM CELL RESEARCH INCLUDING A STRICT BAN ON HUMAN REPRODUCTIVE CLONING AND PAYING EGG DONORS BEYOND EXPENSES.**

THE PROMISE OF STEM CELL RESEARCH



“I can document, through published scientific papers, with over 65 human diseases, where patients are better already, having been effectively treated through adult stem cells.” – Prentice*



David Prentice, Ph.D.
Senior Fellow
Family Research Council

* J. Shea “Adult stem cells, cord blood hold most promise” *The Catholic Spirit*, October 27, 2005

“I ask unanimous consent to have printed in the Record the listing of 69 different human illnesses being treated by adult and cord blood stem cells.” *

* S. Brownback “Stem Cells” *Congressional Record*: May 4, 2006 - SENATE, Page S4005-S4006 (<http://frwebgate6.access.gpo.gov/cgi-bin/waisgate.cgi?WAISdocID=122359256098+2+2+0&WAISaction=retrieve>)



Sam Brownback
U.S. Senator

LETTERS

edited by Etta Kavanagh

Adult Stem Cell Treatments for Diseases?

www.sciencemag.org **SCIENCE** VOL 313 28 JULY 2006

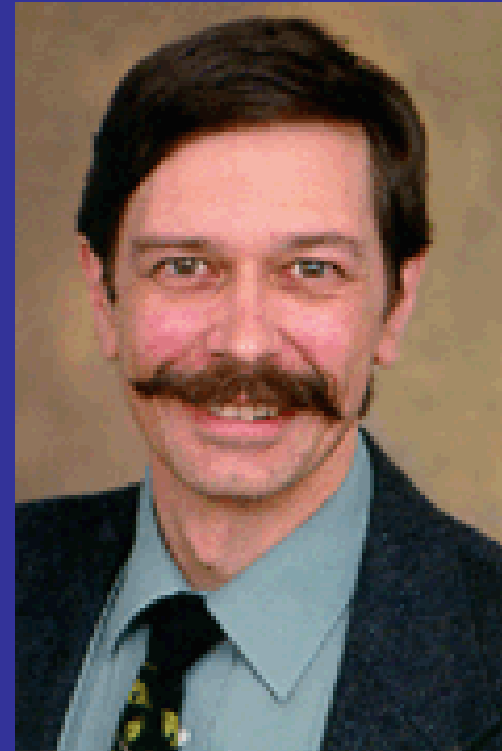
Published by AAAS

“In fact, adult stem cell treatments fully tested in all required phases of clinical trials and approved by the U.S. Food and Drug Administration are available to treat only nine of the conditions on the Prentice list, not 65.”

* S. Smith, W. Neaves, and S. Teitelbaum
“Adult stem cell treatments for diseases?”
Science 313:439, July 28, 2006

The Lame Response

"I think things just got stuck in. We've cleaned up that list now." - Prentice*



David Prentice

* J. Manier and J. Graham "Experts rip Rove stem cell remark; researchers doubt value of adult cells." *The Chicago Tribune*, July 19, 2006

Focus on the Family launched a website opposing research with embryonic stem cells. The website references Prentice's claims and falsely asserts that patients "have access to adult stem cell therapy which currently provides safe and successful treatments for more than 70 diseases and injuries....These are tangible therapies that are available today." *

Focus on the Family®

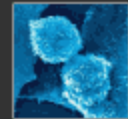
Nurturing and Defending Families Worldwide

* The website "Women's Voices Against Cloning," Paid for by Focus on the Family. (accessed 7 February 2007 at <http://www.citizenlink.org/images/votenocloning/learn-missourians.html>)

Cord Blood Stem Cell Treatment, Stem Cell Therapy Clinics

THE INSTITUTE FOR CELLULAR MEDICINE

DEDICATED TO THE ADVANCEMENT OF ADULT STEM CELLS FOR THE TREATMENT OF HUMAN DISEASES.



Stem Cell Therapy is Available Now

The Institute for Cellular Medicine Clinic is currently accepting patients with neurological conditions including cerebral palsy, stroke, ALS and multiple sclerosis. Stem Cell Treatment at ICM is limited to these conditions and only a select group of applicants who fit a specific profile are accepted. In the future ICM plans to offer treatments for cardiovascular and orthopedic conditions.

Adult and Cord Blood Stem Cells

ICM only uses stem cells from adults, umbilical cord blood and placentas. These types of cells have no ethical issues compared to fetal or embryonic stem cells.

Treatment Using Umbilical Cord Blood, Placenta, and Adult Stem Cells

Stem cells isolated from umbilical cords and placentas can become different types of tissue. Studies have shown that they can become nerve cells, liver cells, heart cells, bone marrow, and cartilage cells. Studies have shown that these stem cells are capable of "homing in" on and repairing damaged tissue.

It was originally thought that only embryonic stem cells had the ability to become many types of tissue and could be transplanted without rejection. Embryonic stem cells must be taken from an embryo, or unborn baby, while umbilical cord and placental stem cells can be isolated from the placentas and umbilical cords that would normally be discarded after a healthy birth.

The Institute of Cellular Medicine (ICM) only advocates the use of stem cells derived from the non-controversial sources: umbilical cords and placentas, bone marrow, muscle, skin and fat. The only cells used in treatments have been tested for infectious agents and are considered as safe as blood from a blood bank. Each batch of cells is then tested again for contamination before being frozen for long-term storage.