

Slide 1

Stem Cell Research in a Catholic Institution: Yes or No?

May 15, 2005
CHAC Conference, London, Ontario

Presenters:
❖ Laurie Hardingham
❖ Dr. John Valley
❖ Gordon Self

Slide 2

Plan for the Workshop:

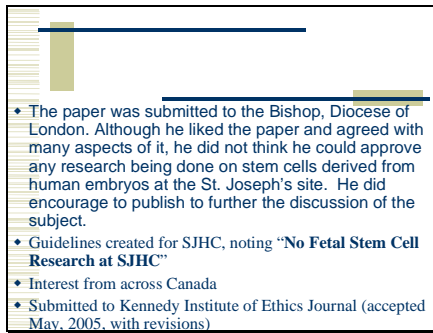
- ♦ Introduction: (Laurie)
 - Origins of the workshop
 - Stem Cells: What are stem cells and what do they do?
- ♦ John Valley:
 - Stem Cells in Catholic Institutions: Yes or No?
- ♦ Gordon's Paper:
 - Struggling with the arguments
- ♦ Summary: Next steps
- ♦ Discussion
- ♦ Wrap-up

Slide 3

Origins of this workshop

- ♦ Interested people formed Ad hoc committee to author paper – 2 years
- ♦ The paper was submitted to an international peer review of eight highly regarded ethicists and moral theologians. All saw it as a solid piece of bioethical research and several encouraged further publications of it to continue the discussion.

Slide 4



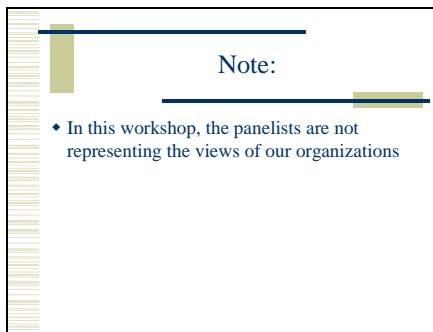
♦ The paper was submitted to the Bishop, Diocese of London. Although he liked the paper and agreed with many aspects of it, he did not think he could approve any research being done on stem cells derived from human embryos at the St. Joseph's site. He did encourage to publish to further the discussion of the subject.

♦ Guidelines created for SJHC, noting "**No Fetal Stem Cell Research at SJHC**"

♦ Interest from across Canada

♦ Submitted to Kennedy Institute of Ethics Journal (accepted May, 2005, with revisions)

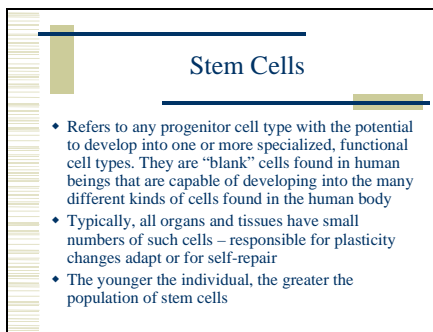
Slide 5



Note:

♦ In this workshop, the panelists are not representing the views of our organizations

Slide 6



Stem Cells

♦ Refers to any progenitor cell type with the potential to develop into one or more specialized, functional cell types. They are "blank" cells found in human beings that are capable of developing into the many different kinds of cells found in the human body

♦ Typically, all organs and tissues have small numbers of such cells – responsible for plasticity changes adapt or for self-repair

♦ The younger the individual, the greater the population of stem cells

Slide 7

Differentiation

- The process in which cells begin to specialize – the new cells are no longer completely “blank” because they begin to take on the functioning of a particular tissue or organ, such as the lungs or the nervous tissue.
- Once a cell has differentiated, it cannot develop or change into a different kind of cell

Slide 8

Stem cells are cells that have not yet differentiated, and they have 2 unique properties:

- Stem cells can divide and multiply themselves in the undifferentiated state for long periods of time, perhaps indefinitely.
- Stem cells can differentiate into different types of specialized cells

Therefore, they are self-renewing populations with obvious attractions for tissue repair, being independent of the present restrictions of tissue availability by organ donations

Slide 9

Totipotent Stem Cells

- The earliest cells, which give rise to the embryo, are located in the inner cell mass of the blastocyst.
- Can give rise to every cell type of the body, in addition to the placenta

Slide 10

Pluripotent Stem Cells

- Human cells are only totipotent during the first few divisions of a fertilized egg.
- At this point, the cells become pluripotent
- Pluripotent stem cells can give rise to all the different cell types in the human body, but do not contain the genetic information to make a placenta
- Embryonic Stem (ES cells) are pluripotent stem cells derived from the inner cell mass of a blastocyst-stage embryo.

Slide 11

Multipotent Stem cells

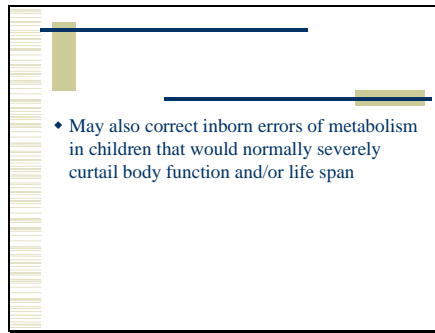
- These are cells that can divide and grow into several differentiated cell types within a specific type of tissue or organ. E.g. A multipotent skin stem cell could divide and grow into a hair follicle cell or a sweat gland cell, but not into a nerve cell or any other kind of cell.
- Multipotent stem cells can be found in many places in the adult human body, including the skin and bone marrow.

Slide 12

Research Possibilities

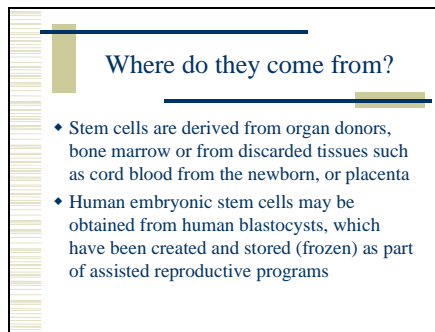
- Growing body of evidence suggests that stem cells have the potential to reverse a variety of chronic diseases for which we presently have no cure by repopulating tissues with the correctly functioning cells.
- These disorders include diabetes, MI, degenerative neurological disorders, spinal cord injury, chronic kidney and liver disease, and arthritis.

Slide 13



◆ May also correct inborn errors of metabolism in children that would normally severely curtail body function and/or life span

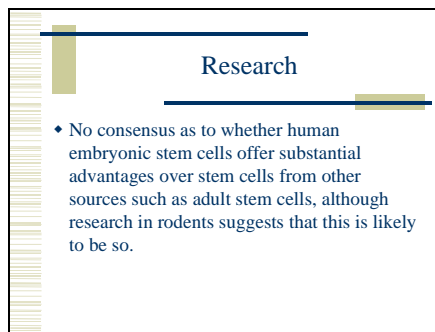
Slide 14



Where do they come from?

- ◆ Stem cells are derived from organ donors, bone marrow or from discarded tissues such as cord blood from the newborn, or placenta
- ◆ Human embryonic stem cells may be obtained from human blastocysts, which have been created and stored (frozen) as part of assisted reproductive programs

Slide 15



Research

- ◆ No consensus as to whether human embryonic stem cells offer substantial advantages over stem cells from other sources such as adult stem cells, although research in rodents suggests that this is likely to be so.
