



# *DNA Molecule* (A-T C-G)

Double Stranded Helical  
Molecule Held Together by  
Weak Bonds



# Elements of Most Diseases



1. Environmental component...
2. Dietary component...
3. Genetic component...

# Misspelled Genes



BRAC1 -(breast cancer) this gene was mapped in 1990 and identified in 1994. Women with this genetic make up have a 50% risk of cancer by the age of 50 and a life time risk of 85%. 1 in 200 women at risk... 1 in 40 Jewish women at risk...

# Misspelled Genes



Cystic Fibrosis - once the gene was identified then the misspelling was pursued. It took ten years of sorting two million base pair of DNA before the misspelling was found to be in three base pairs of DNA...

# Genetics/Edenic Judgment



1. All physical evil in our world has come from man's moral rebellion against God.
2. Genetic anomalies have come as a result of God's judgment on sin.
3. Genetic depravity is real and its increment continues to be located in the genetic pool.

# Major Ethical Issues



1. Genetic Testing & Confidentiality
2. Prenatal Genetic Testing (chorionic villus sampling, maternal serum screening, amniocentesis.)
3. Genetic Counseling
4. Behavioral Genetics (reductionism)
5. Genetic Intervention

# Genetic Markers Testing



1. Type 2 diabetes
2. Coronary heart disease
3. Osteoporosis
4. High blood pressure
5. High cholesterol
6. Lung cancer
7. Colorectal cancer
8. Melanoma

# Theological Reflection



1. Christian Worldview -
  - Creation - Perfection
  - Fall - Judgment
  - Redemption - Grace
  - Consummation - Restoration
2. The Sovereignty of God - Deut. 6:4; Psalm 115:1-3; Dan. 4:35; Isaiah 45:5-9

# Purpose of Genetic Anomalies



1. For the Sake of the Glory of God...
2. To Show Man's Brokenness and Need of Grace...
3. To Present the Church with the Gift of Unconditional Service...
4. To Increase our Desire for the Consummation...

# Pursuit of Shalom “ ”



to promote life not death; health not sickness...

to suffer and counsel with those who suffer...

to care compassionately when one cannot cure...

to be a part of God's presence in the valley of the shadow of death...

# Stem Cell Research:

## Regenerative/Reparative Medicine

1. Embryonic stem cells are removed from 4-5 day old embryos, there are about 30 cells in the center of the blastocyst, their removal kills the embryo...
2. The cells are placed in a plastic culture dish that has a nutrient broth in it & undifferentiated mouse skin stem cells to which the embryonic stem cells adhere...

# Stem Cell Research

## Regenerative/Reparative Medicine

3. As the stem cells proliferate they are transferred to other dishes and in six months there are millions of stem cells...
4. If these undifferentiated cells (pluripotent) appear genetically normal they are a stem cell line, they can be frozen and shipped to other labs for culture and experimentation...

# Stem Cell Research

## Regenerative/Reparative Medicine

5. Embryonic stem cells have the prospect of developing into 220 different kinds of body cells...

# Adult Stem Cells

1. Origin unknown – repair and maintain tissue in which they are found...
2. Bone marrow has at least two kinds of stem cells, hematopoietic & stromal...
3. At present unable to grow in a culture...

# Adult Stem Cells

## 4. Key questions remain...

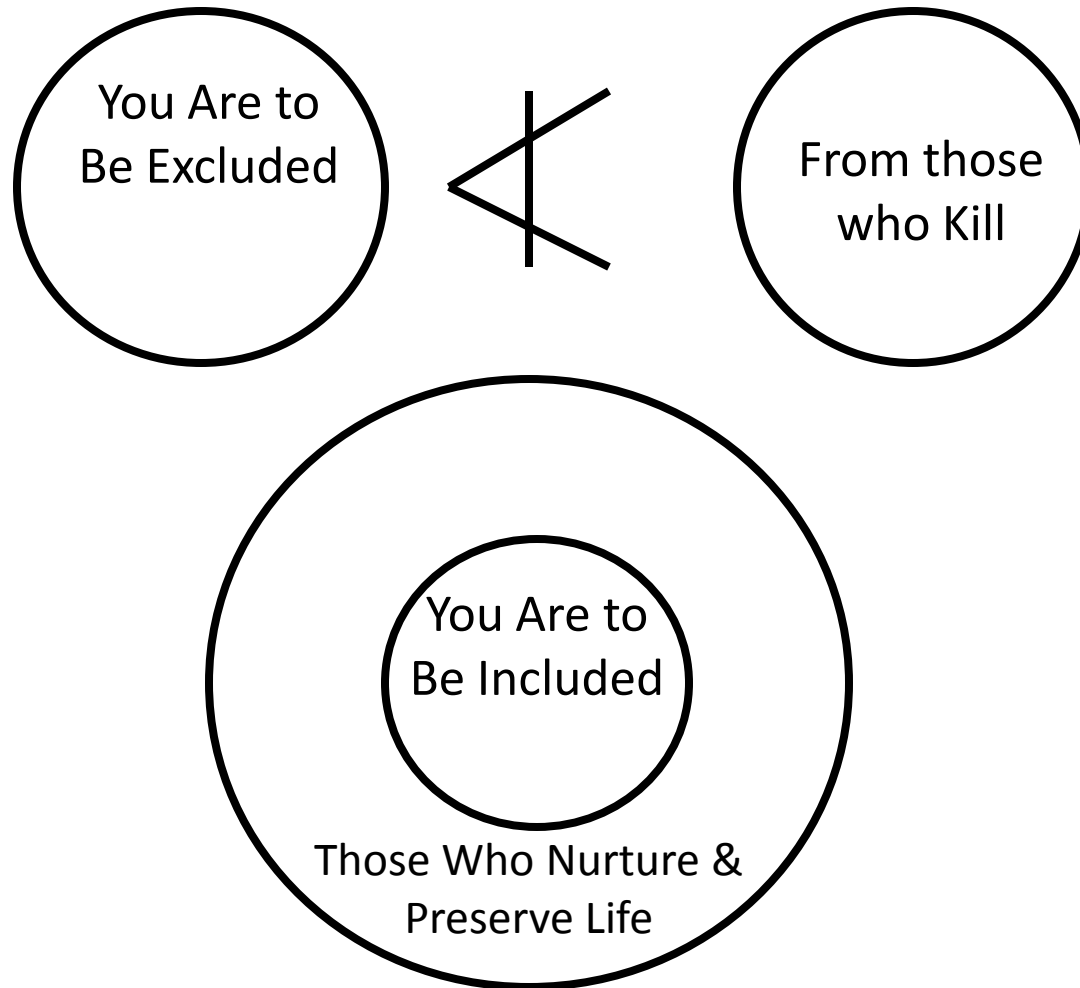
How many adult stem cells exist & where are they?

Do they manifest plasticity?

Is there a single adult stem cell that can generate any organ or tissue?

What causes stem cells to relocate to injury or damage sites?

# Restatement Statement of the 6<sup>th</sup> Word



# Existing Issues with Embryonic Stem Cells

1. There have been no clinical trials in their use approved by the FDA until last month. Geron has received approval for the introduction of hESC of undifferentiated nerve cells into patients that have had recent acute spinal cord injuries...
2. Billions of dollars have been invested and appear wasted given present development...
3. Major unaddressed problem is rejection of stem cells from another genetic pool...

# Existing Issues with Embryonic Stem Cells

4. Present plan to address this is cloning the individual in embryo form and destroying the embryo at five days & harvesting the pluripotent stem cells...
5. Present administration has affirmed no cloning by which they mean no implantation of cloned embryos for gestation and birth, not no cloning for harvesting pluripotent stem cells...
6. Work of Panos Zavos...

# Promising Prospects in Adult Stem Cell or iSP (induced pluripotent stem cell) Research

1. Harvard researchers were able to induce common pancreatic cells to insulin producing cells in mice. This was done inside the body of the mouse whose pancreatic function is very similar to that of humans...
2. Researchers in Japan have successfully produced pluripotent stem cells functionally identical to embryonic stem cells. They did this by injecting four genes into the nucleus of a skin cell. Delivered the stem cells using retroviruses and adenoviruses...

## Promising Prospects in Adult Stem Cell or iSP (induced pluripotent stem cell) Research

3. Adult stem cell therapy provided to patients with cirrhosis of the liver, 7 out of nine showed significant improvement of liver function and 3 or the 7 showed complete recovery...
4. Human bone marrow stems cells injected into the brains of stroke induced mice produced reversal of the nerve damage from the stroke...
5. Injection of adult bone marrow stems cells into muscles of rats with ALS along with a gene that stabilizes connections between nerves strengthened neural connections