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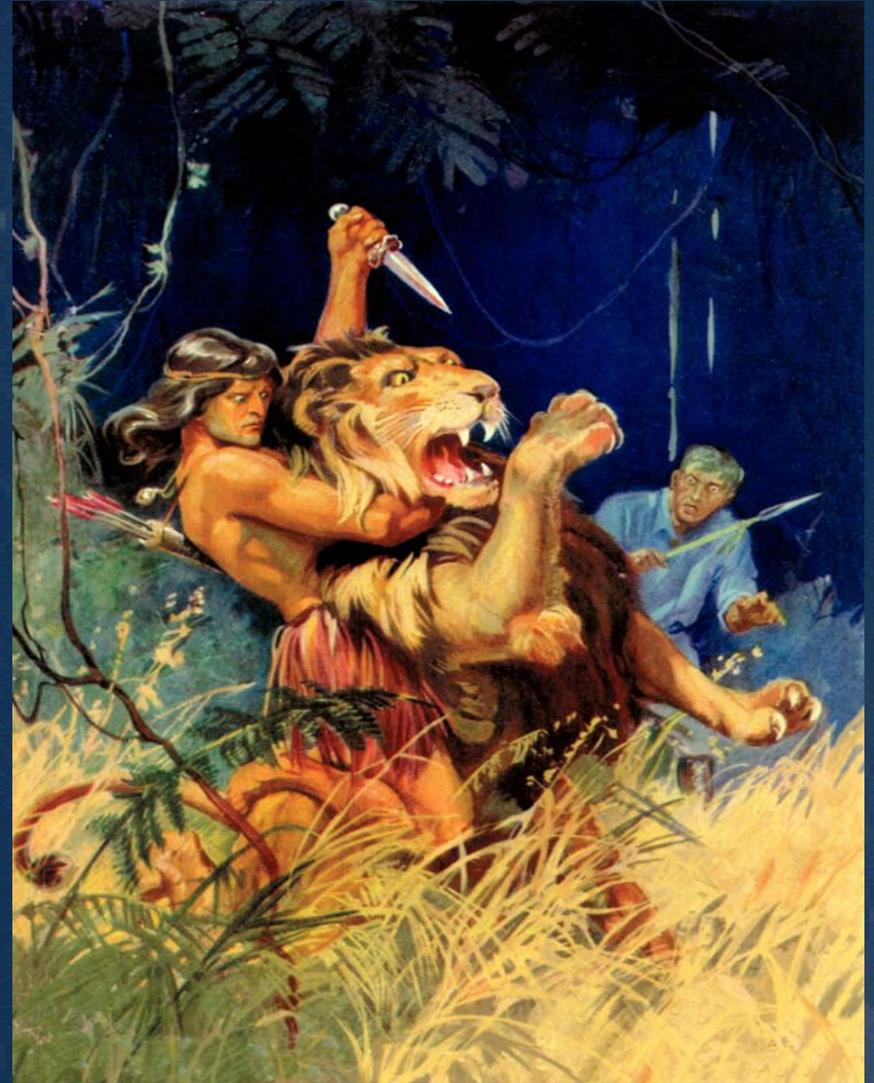


Biotechnology and the Christian Faith

**Dr. Fazale “Fuz” Rana
Reasons To Believe**

Taking on Biotechnology's Challenge

- **Apply Worldview Thinking**
- **Understand the Technology**
- **Recognize the Hype**
- **Anticipate Future Technology**



“A Worldview is a conceptual scheme by which we consciously or unconsciously place or fit everything we believe and by which we interpret and judge reality.”

- Ron Nash, *Faith and Reason: Searching for a Rational Faith*

Theology/Atheology

- *Does God exist?*
- *Is God transcendent or part of the universe?*
- *Is God personal or an impersonal force?*



Metaphysics

- *Is the universe a brute fact?*
- *Is there purpose in the universe?*
- *Is there reality beyond the universe?*
- *How does God relate to the universe?*



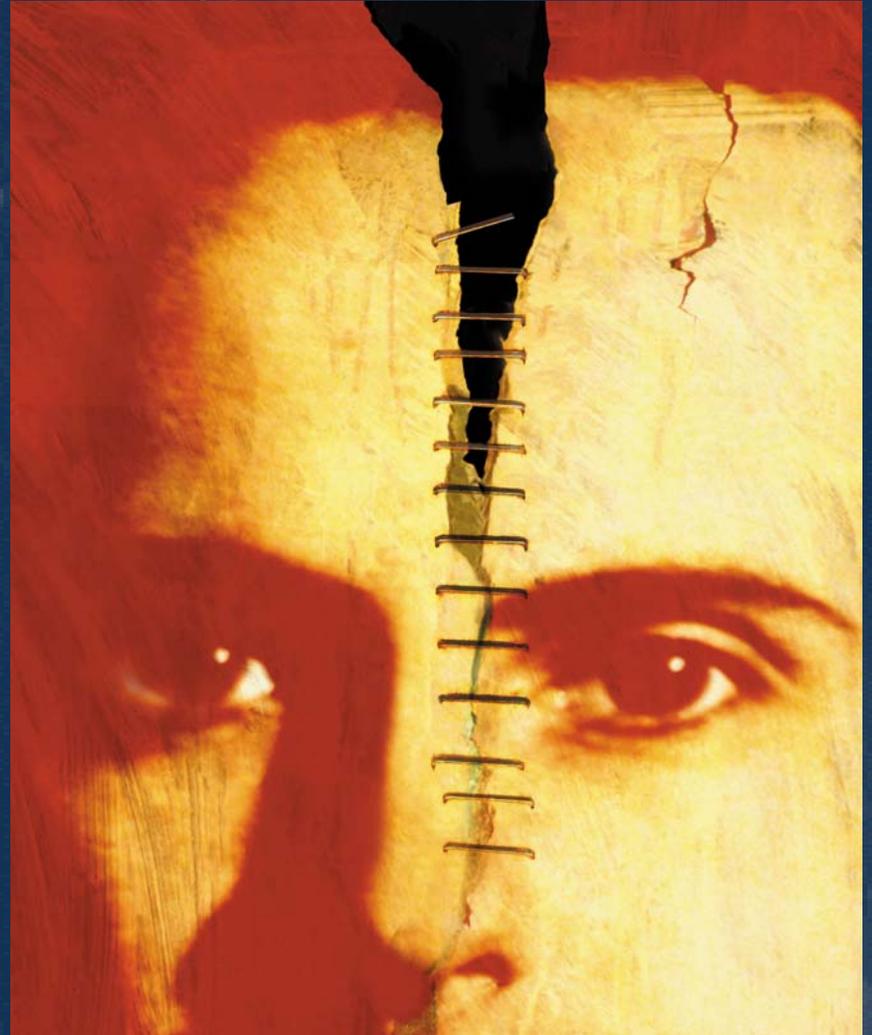
Epistemology

- *Can we trust our senses?*
- *What roles do reason and experience play in knowledge?*
- *Is truth objective or relative?*



Ethics

- *Are there moral laws that govern human conduct?*
- *Is moral truth relative or objective?*



Anthropology

- *Are human beings only material?*
- *Is there a human soul?*
- *Do human beings have free will?*
- *How do humans relate to God?*



Choosing a Worldview

- **Must adhere to the Law of Noncontradiction**
- **Must comport with and explain our experiences**
- **Must be consistent with the experiences of others**



Choosing a Worldview

- **Must be consistent with what we know of ourselves**
- **Must be able to consistently live out our worldview**



Dialogue, Don't Demonize



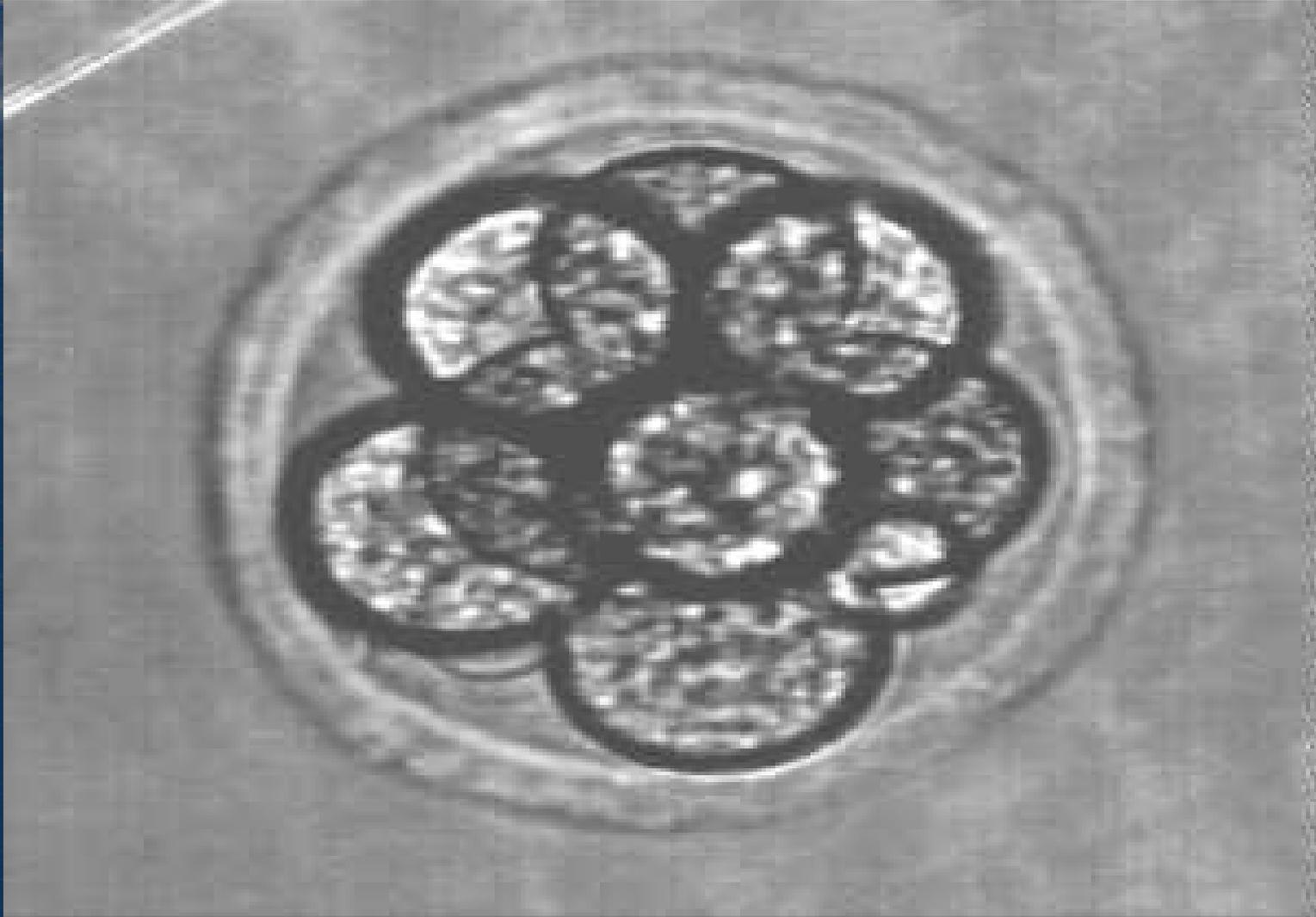
Case Study

EMBRYONIC STEM CELL RESEARCH (ESCR)

Fertilized Egg (Zygote)



Blastula

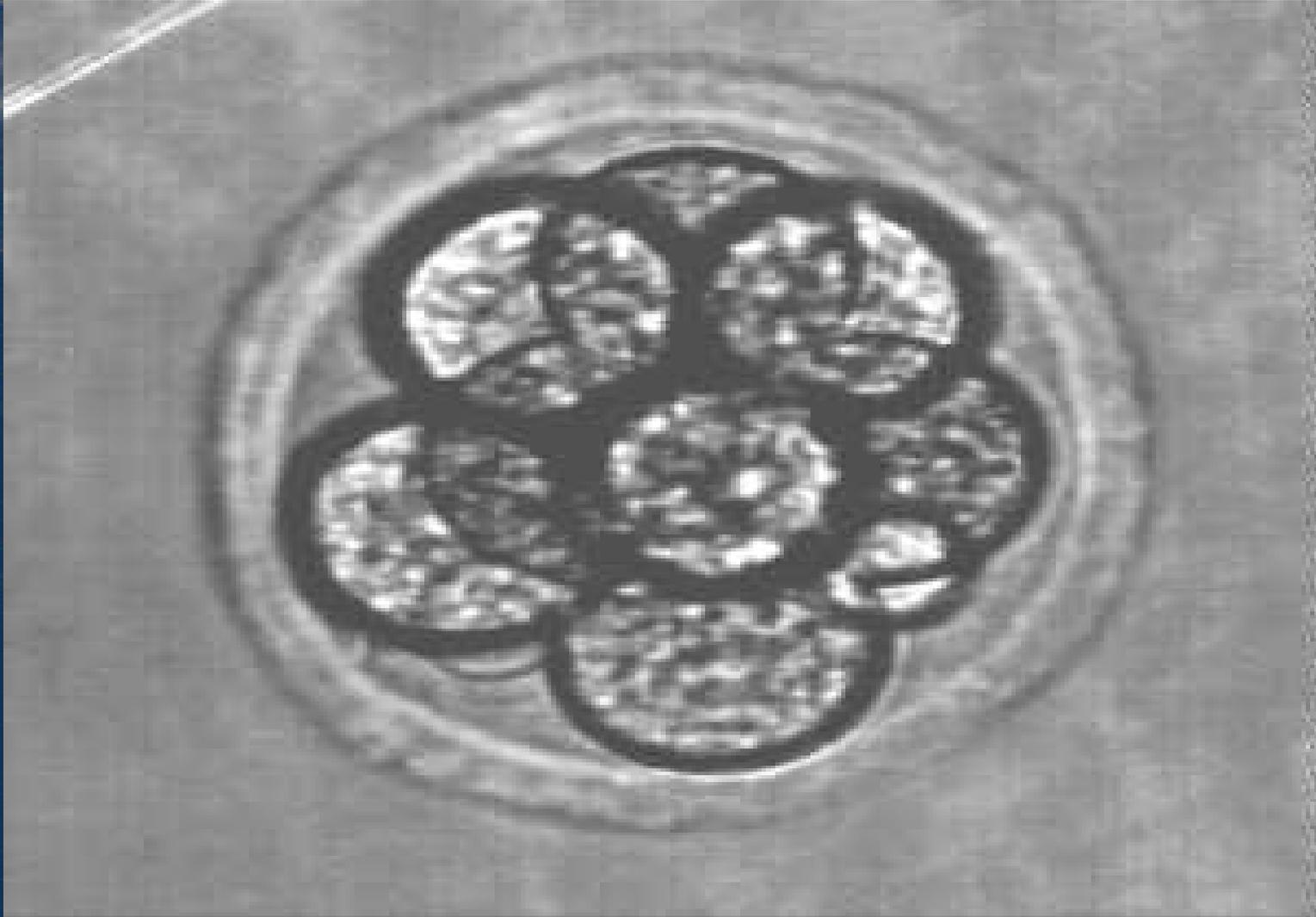


ESCR

Types of Stem Cells:

- Unipotent (Adult)
- Pluripotent (Adult)
- Multipotent (Newly Discovered)
- Totipotent (Blastomeres)

Blastomeres



Resolving the ESCR Controversy

Worldview Thinking

- Are ESCR proponents villains?
- Are ESCR detractors standing in the way of progress?
- Where is the bridge?
- Where is dialogue possible?

Resolving the ESCR Controversy

Technology Advances

- Multipotent adult stem cells
- Isolating blastomeres without embryo destruction

Resolving the ESCR Controversy

Failure of Tissue Replacement Therapies

- Parkinson's fetal cell implant clinical study

Case Study

HUMAN GENOME PROJECT (HGP)

Human Genome Project

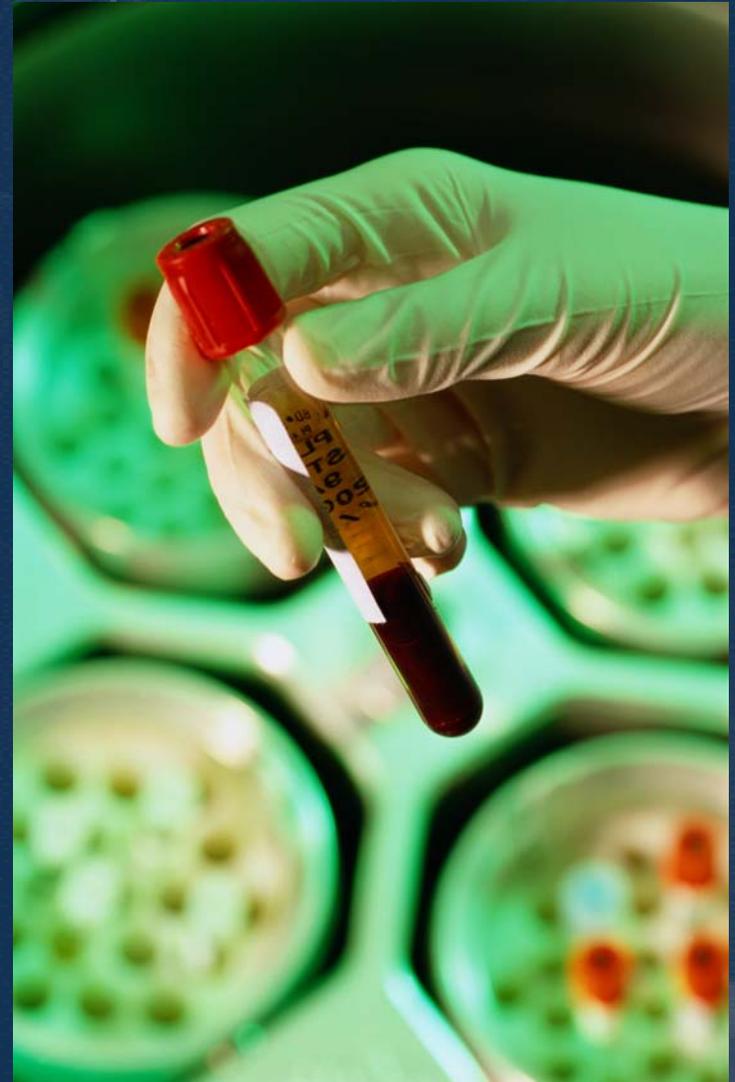
**International,
public and
private
cooperative
effort to
sequence the
entire human
DNA make up.**



Human Genome Project

Applications:

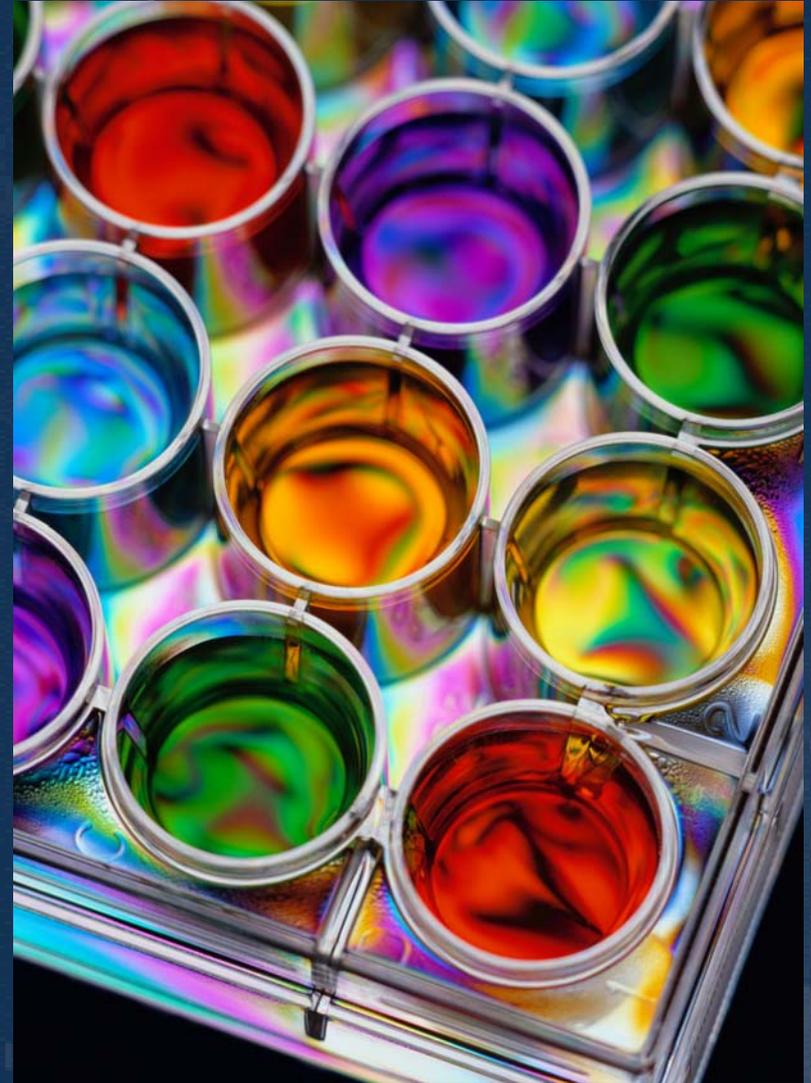
- Better understand disease processes
- Screen for defective genes
- Provide better disease management



Human Genome Project

Applications:

- Identify new drugs/therapies
- Customize drug treatments
- Gene replacement therapy



Human Genome Project

Applications:

- Prevent passage of defective genes to offspring
- Pre-implantation therapy
- Genetic engineering for desired traits



The Gene Myth

- Genes \neq Organism

Organism = Genes + Environment
+ Random Chemical Events

- The Concept of a Gene

- Several Genes \Rightarrow Trait

One Gene \Rightarrow Several Traits

The Gene Myth

- One Gene, One Disease Vs. Multiple Genes, One Disease
- Disease = Multiple Genes + Environment + Random Chemical and Physical Events

The Gene Myth

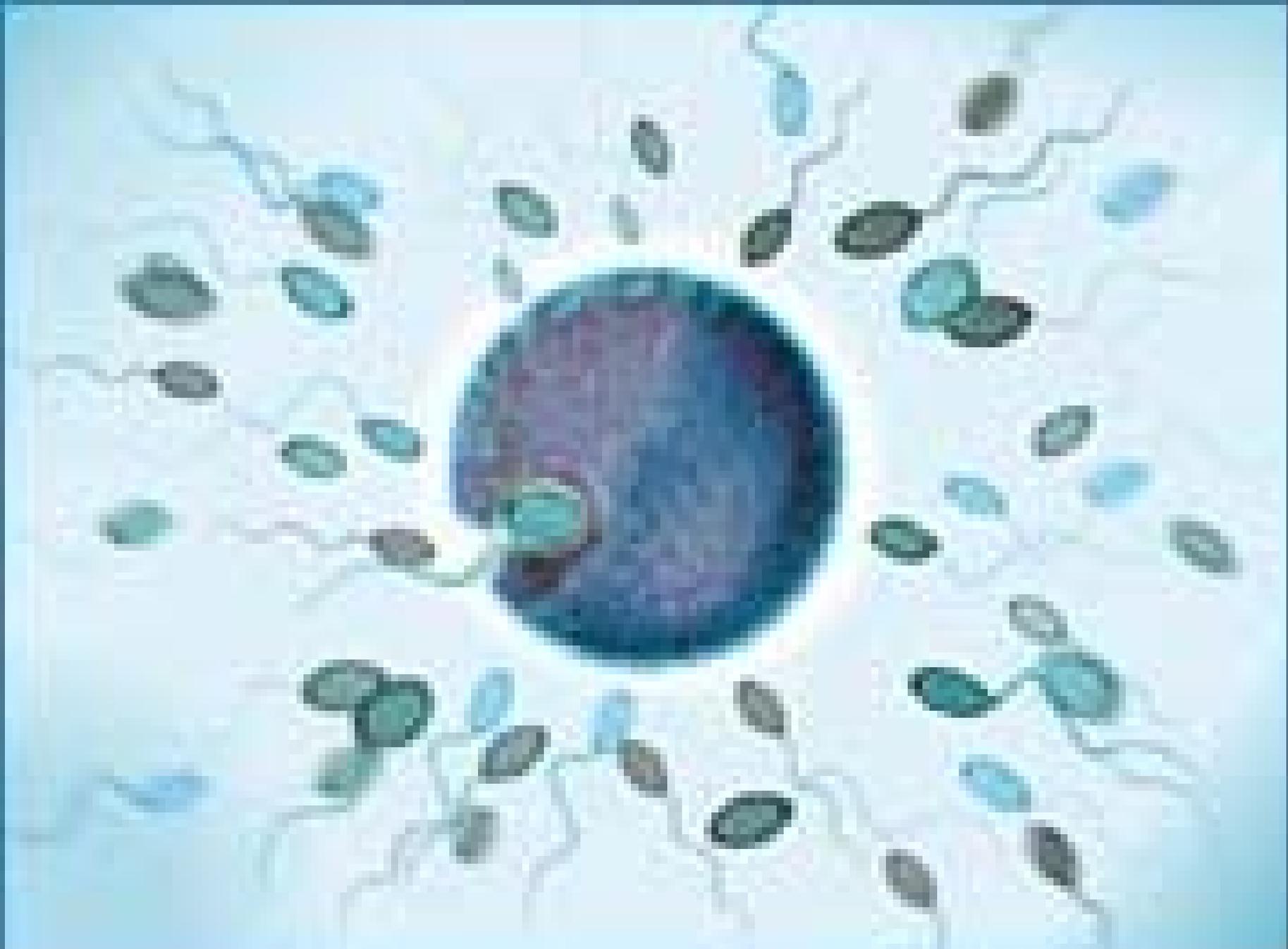
- Natural Genetic Variations
- Single Nucleotide Polymorphisms (SNP's)
- SNP Combinations

The Failure of Gene Therapy

- Gene therapy trials have largely been ineffective
- Need a suitable vector
- Somatic vs. Germ-Line

Case Study

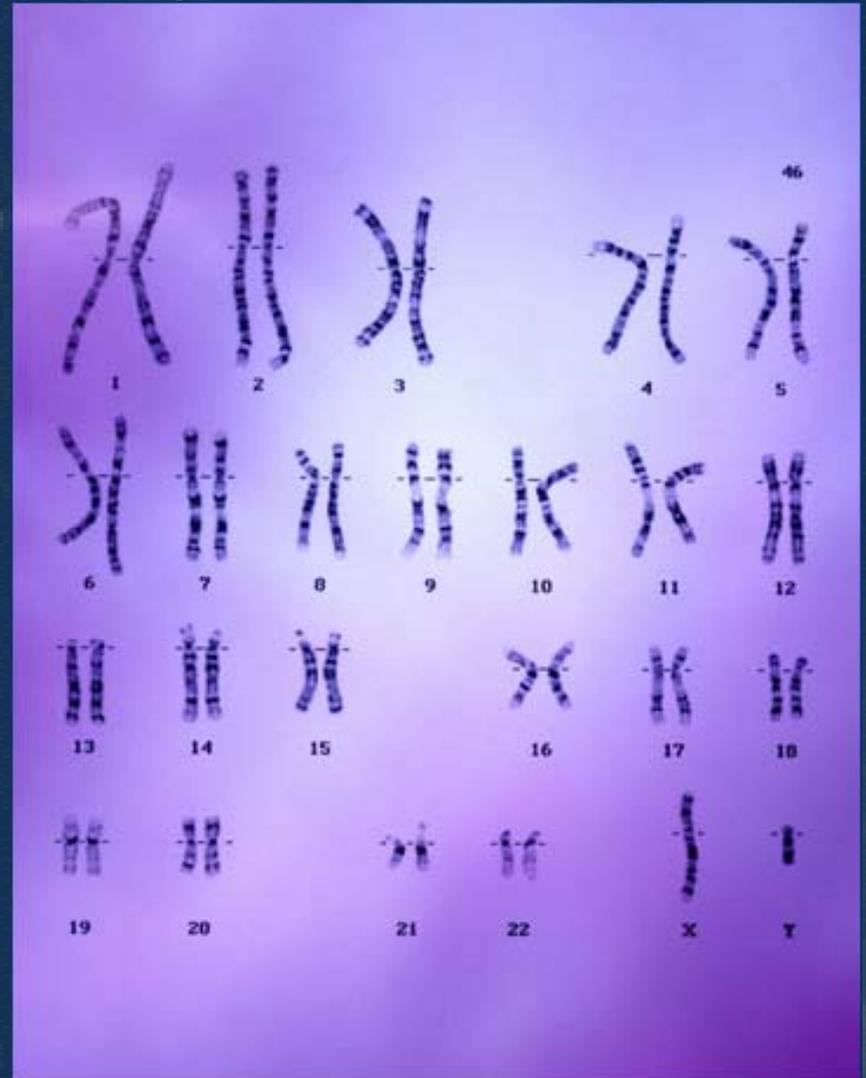
HUMAN CLONING



Cloning

Humans:

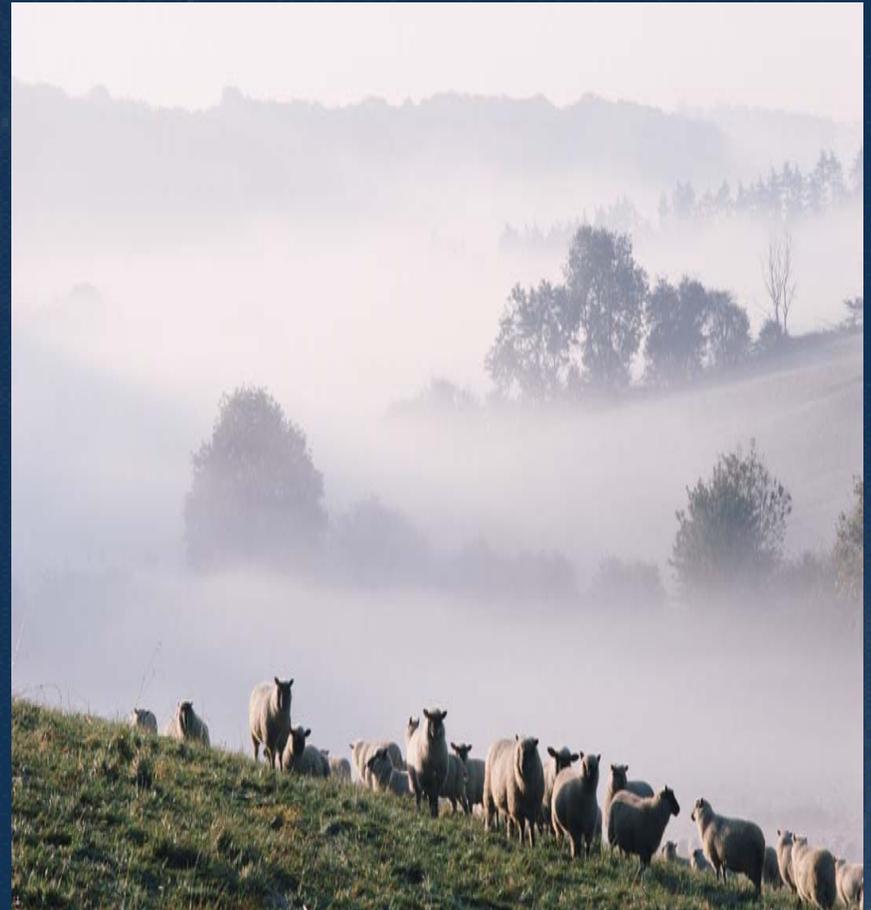
- 23 pairs (46) of chromosomes
- 1 set from the egg and 1 set from the sperm



Cloning

Applications:

- **Agricultural**
- **Bioreactors**
- **Xeno-transplantation**



Cloning

Applications:

- Human reproduction
- Tissue/organ production



Cloning

Applications:

- **Saving endangered species**
- **Resurrecting extinct species**



The Myth of Cloning

There are NO clones

- **The gene myth**
- **Somatic cell mutations**
- **Egg and exclusive inheritance**

**Mt DNA
cytoskeleton
membranes**



The Success of Cloning ?

- **Cloning is a “Black Art”**
- **Clones are unhealthy**
 - **Telomere Length**
 - **Most clones die before birth**
 - **Clones are unhealthy at birth**
 - **Clones suffer from obesity, high blood pressure, heart defects, malfunctioning immune systems...**

The Success of Cloning ?

- **Xenotransplantation Has the Potential to Introduce Foreign Viruses into the Human Population**

Cloning

- **Should we clone humans?**
- **Should we use human clones to produce tissues/organs?**
- **Should we pursue xeno-transplantation?**

Cloning

- **Can we rescue endangered species using cloning?**
- **Can we resurrect extinct species with cloning?**

How Should Christians Respond to Biotechnology?

- Dialogue, don't demonize
- Look for points of agreement
- Become educated

How Should Christians Respond to Biotechnology?

- Become involved with the culture
- Look for ways to shape progress
- Encourage/pursue careers in biotechnology

DNA

