

Life Science  
Mr. Galloway

Chapter Four  
**Modern Genetics**

- INTRO: Respected GENETICISTS who are CREATIONISTS
- 4.1 Human Inheritance
- 4.2 Human Genetic Disorders
- 4.3 Genetics Advances

**DNA =**  
© **Designed Not Accidental**  
**Deoxyribonucleic Acid**

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**Information**  
always originates  
from  
**Intelligence**

A few **Samples** of Respected  
**GENETICISTS**  
who are **CREATIONISTS**

- **Dr. John Sanford** – retired Professor at Cornell University 30 years, author **GENETIC ENTROPY**. Dr. Sanford has published over 80 scientific publications and has been granted over 30 patents. His most significant scientific contributions involve three inventions, the biolistic (“gene gun”) process, pathogen-derived resistance, and genetic immunization.

“Modern Darwinism is built: most fundamentally, upon what I will be calling “The Primary Axiom” . . . that man is merely the product of random mutations plus natural selection. . . . It is for this reason that the overwhelming majority of youth who start out with a belief that there is more to life than mere chemistry – will lose their faith while at college. I believe this is also the cause of the widespread self-destructive and self-degrading behaviors we see throughout our culture.” p. v.  
 . . . the “Primary Hypothesis” (that mutations/selection can create and maintain genomes), is actually found to be without any support! In fact, multiple lines of evidence indicate that the “Primary Hypothesis” is clearly false and must be rejected.”

- **Dr. Norman Nevin** – Professor Emeritus of Medical Genetics, Queen’s University of Belfast. Editor of the book, *SHOULD CHRISTIANS EMBRACE EVOLUTION?*, which includes chapters from numerous European scholars.

“A theology that embraces evolution espouses the idea that God chose to use death, decay and the extinction of life forms as the best means of developing life. This presents a massive challenge to the nature of a good God who created a world that he was able to describe as ‘very good’. It makes death and decay good. . . .” p. 213 “A theology that denies a significant fall and denies that physical death is a result of mankind’s sin makes God responsible for the suffering in our world. . . . Darwin considered suffering in the world a strong argument against the existence of God.” p. 214 “Those who question evolution are often treated as ignorant, idiotic or ‘anti-science’ because they have the audacity to challenge the accepted and prevailing consensus. However, history has recorded that consensus was often an obstacle rather than an aid to understanding.” <http://shouldchristiansembraceevolution.com>

- **Dr. Robert Carter**– PhD from the University of Miami. Rob is an expert in the genetics and computer information coding, especially regarding the **impossibility** of mutation and natural selection to have produced the bio-coding in DNA, etc.

“Previously I had tried several ways of harmonizing the [science & Scripture], including the day-age theory and theistic evolution. The problem was that biblical integrity always lost out to “science” when I tried these approaches. And they put death and suffering before Adam’s sin, the opposite to Genesis 3, Romans 5 and 1 Corinthians 15. **Young-earth creation is the only way to have both science and the Bible.**”

Many traits, many changes. . .

**The Evolution of a Evolutionist**

My Genius Dog: “Suzy”



### Human Inheritance

My son, Michael, at the age of about six years old asked my wife:  
**"Mom, why do all six of us kids look like both you and Dad?"**  
 She said:  
**"God takes a little bit of me and a little of Dad to make each of you."**  
 After looking puzzled and concern, Mike responded:  
**"Wow, then there must not be much of ya'll left after six kids."**

### Single Gene Traits =

traits that are controlled by just one gene (with two alleles).  
 \* **Examples:** Mendel's peas, and human hairline called a "widow's peak".

### Multiple Alleles

= three or more forms of a single gene that code for a single trait.  
 \* Only two alleles can be carried on a gene, since chromosomes exist in pairs.  
 \* Each chromosome carries only one allele for each gene.  
 But there can be many possible forms of the alleles.  
 Example = human **blood type** (A, B, AB, O)  
 - Three alleles control inheritance of blood types.  
 - The allele for A and the allele for B are codominant, but O is recessive.  
**A = I<sup>A</sup>    B = I<sup>B</sup>    O = i**

### Punnett Square Charting

Crossing BB x bb

	B	B
b	Bb	Bb
b	Bb	Bb

F1 Generation Offspring  
 (First Filial Generation)  
 100% of them are black

Crossing Bb x Bb

	B	b
B	BB	Bb
b	Bb	bb

F2 Generation Offspring  
 (Second Filial Generation)  
 75% are black, and 25% are white

### Blood Types

Blood Type	Allele Combinations
A	I <sup>A</sup> I <sup>A</sup> or I <sup>A</sup> i
B	I <sup>B</sup> I <sup>B</sup> or I <sup>B</sup> i
AB	I <sup>A</sup> I <sup>B</sup>
O	ii

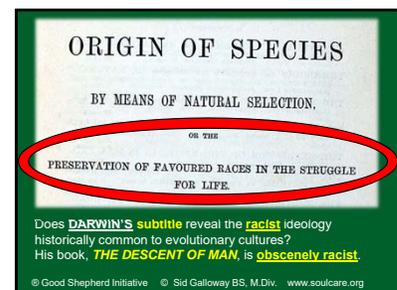
### Multiple Gene Traits

are controlled by many genes acting together as a group to produce the visible phenotype.  
 \* Human **SKIN COLOR** is controlled by at least **three genes**.  
 - Each skin gene has at least two possible alleles at that gene site on the DNA.  
 - The allele combinations determine the amount of pigment in the skin cells.  
 - So 3 genes, each with 2 alleles is 3 x 2 = 6 different alleles controlling skin color

- **NOBODY IS BLACK OR WHITE!!** Typing paper is white, but NO human is the color of white paper.
- My car tires are black, but NO human is the color of my tires. All people are the **SAME COLOR**.
- Our genes for skin color produce proteins that are called **MELANIN**. It is a brown pigment chemical that makes **ALL** humans shades of **TAN**. Just as the pigment chlorophyll makes plants green, our melanin makes us shades of tan. Some folks produce lots of melanin and are very dark tan. Others like me produce very little tan and are very light tan. Think about it. If you lined up everyone you know in order from very dark tan to very light, where alone that line of people would you decide to separate them into two groups: black vs. white?

### RACISM

- **Evolutionary beliefs** are how the **RACIST** idea of black and white people started. Darwin and most of the Europeans of his time (light tan folks) were racists. They believed that humans evolved from apelike ancestors, and apes are dark skinned, so they believed that dark humans were less evolved and more like apes. In order to convince others of their belief, they exaggerated human skin color and called people black and white.



- “At some future period, not very distant as measured by centuries, the civilized races of man will almost certainly exterminate and replace the savage races throughout the world. At the same time the . . . Apes . . . Will no doubt be exterminated.” Charles Darwin, *The Descent of Man* (New York: A.L. Burt, 1874, 2<sup>nd</sup> ed.), p. 178.

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- “The break between man and his nearest allies will then be wider, for it will intervene between man in a more civilized state, as we may hope, even than the Caucasian, and some ape as low as a baboon, instead of as now between the negro or Australian [aborigine] and the gorilla.”
- Charles Darwin, *The Descent of Man* (New York: A.L. Burt, 1874, 2<sup>nd</sup> ed.), p. 178.

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- “Biological arguments for racism may have been common before 1850, but they increased by orders of magnitude following the acceptance of evolutionary theory.”
- Harvard **Evolutionary** Professor, Stephen Jay Gould, *Ontogeny and Phylogeny* (Belknap-Harvard Press, 1977), p. 127-128.

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### Environmental Effects

**Environmental Effects** – (The organisms surroundings can alter the effect of the genes.)

- \* Examples:
  - Exposure to sunlight can alter the amount of melanin produced by skin cells. Melanin's purpose is like sunscreen to protect from the damaging radiation from the sun.
  - Diet can affect height. Since 1800's human height has increased by 10 cm on average.

### Male (XY) or Female (XX)

- \* Humans have 23 pairs of chromosomes (46 total)
  - \* One pair is called "**Sex Chromosomes**".
  - \* These determine a person being male or female.
  - \* They are the **ONLY** pair that do NOT match.
    - A male has an **XY** pair, so a sperm can have either an X or a Y.
    - A female has an **XX** pair, so an egg always has an X chromosome.
- The father determines the sex of the baby.

- PUNNET SQUARE for male or female offspring

**Sex-Linked Genes** are alleles that are passed from parents to a child on a sex chromosome.

- \* Sex-linked genes can be dominant or recessive.
  - \* Since males have only one X chromosome, males are more likely than females to have a sex-linked trait that is controlled by a recessive allele.
- Why? Because they do not have another X to carry a dominant allele that could cover or masks the recessive allele.
- \* Red-Green color blindness is an example of a sex-linked trait.

•A **CARRIER** is a person who has one recessive allele for a trait and one dominant allele.

The dominant allele masks the recessive allele so the trait does not show up.

But the carrier can pass the recessive allele on to offspring.

**Pedigree** is a chart or "family tree" that tracks which members of a family have a particular trait.

## 4.2 Human Genetic Disorders

**Genetic Disorder** = an abnormal condition that a person inherits through genes or chromosomes.

\* They are caused by mutations, which are changes in a person's DNA.

**Cystic Fibrosis** = the lungs and intestines fill with mucus.

**Sickle-Cell Disease** = red blood cells are shaped like sickles.

**Hemophilia** = causes the blood to clot too slowly or not at all.

**Huntington's Disease** = causes the breakdown of brain cells.

**Down Syndrome** = an extra copy of chromosome number 21.

### Diagnosing Genetic Disorders

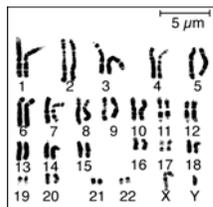
**Amniocentesis** is now used.

- Long needle to get fluid and cells from the baby in the mother's womb.

- A **karotype** (a picture of all the chromosomes in the baby's cell) is then made and examined by the doctor.

**Genetic Counseling** by doctors, helps families predict the possibilities of having a child with the disorder.

### Karyotype



### Section 4.3 - Advances in Genetics

• **Three Methods to Produce Organisms with desirable traits:**

1. **Selective Breeding**
2. **Cloning**
3. **Genetic Engineering**

### Selective Breeding

- A process where scientists select a few organisms with desired traits to serve as parents of the next generation.
  - **Inbreeding** = crossing two individuals that have *similar* sets of alleles. (Used to produce purebred dogs.)
  - **Hybridization** = crossing two genetically different individuals. (Used to mix two different desirable traits.) (Like corn that has lots of kernels & is healthy.)

### Cloning

- copying one organism to make another one from it, that has exactly identical genes.
  - a. **Plants** are cloned by planting a cutting (a small part of stem or leaf) to grow a another plant just like the original.
  - b. Animals are cloned, like Dolly the sheep, are made by taking an egg from one sheep and replacing its nucleus the nucleus from another sheep. The egg then grows into a copy of the sheep with that nucleus.

### Genetic Engineering

- A process where genes from one organism are transferred into the DNA of another organism. It is also called "gene splicing". Scientists sometimes use viruses to transfer the DNA.
  - **Gene Therapy** is a process that tries to correct genetic disorders, by inserting normal (working) copies of the gene into the cells of a person with a disorder.
  - **Genome** is a word that for ALL the DNA in one cell or an organism.