

# Chapter Two: Nature with Nurture



# Learning Objective

Define heritability. How do studies of twins, adopted children, and blended families help us understand heritability?

Heritability is the extent to which different traits are genetically determined

Experiments based on “natural circumstances”



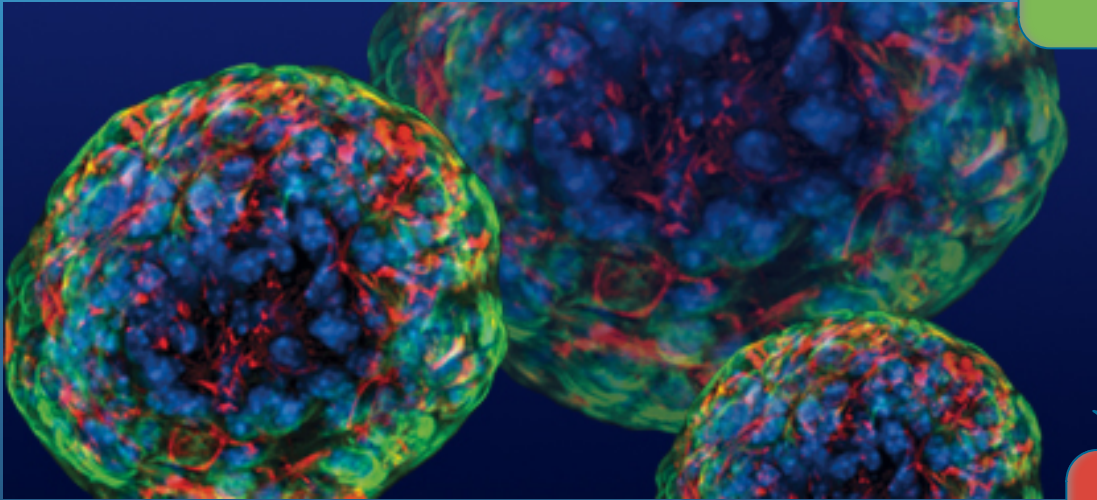
# *YDL Implications*

- Siblings in a program together
- Environmental vs. Genetic Influences on behavior



# Learning Objective

Describe the current epigenetic view of development.



Stem Cells

Nothing is Pre-determined

# *YDL Implications*

- Learning Theory
- Importance of both Genes AND Environment





# Learning Objective

Explain the concept of canalization in genetic expression. Give examples of how evolution has helped select for certain highly canalized traits.



Universal Truths

# YDL Implications

- Helps us see the differences between the children we work with
- Specialized programming



# Learning Objective

Describe what genes are. Discuss their structure, components, and arrangement on chromosomes.



“Unit of heredity that [passes] characteristics from one generation to the next”

Each cell nucleus contains twenty-three pairs of chromosomes



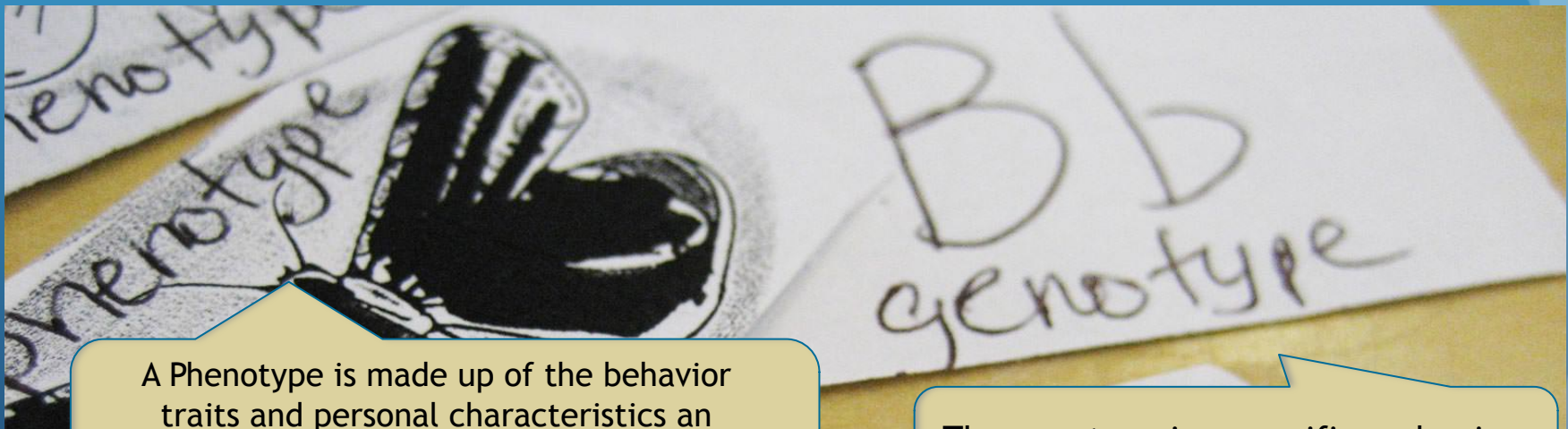
# *YDL Implications*

- Youth with disabilities
- Pregnant Teens and Prenatal Assessment



# Learning Objective

Define the words genotype and phenotype. Explain why they might be different in a particular individual.



A Phenotype is made up of the behavior traits and personal characteristics an individual develops based on the experiences they encounter starting at conception

The genotype is a specific and unique genetic makeup of an individual

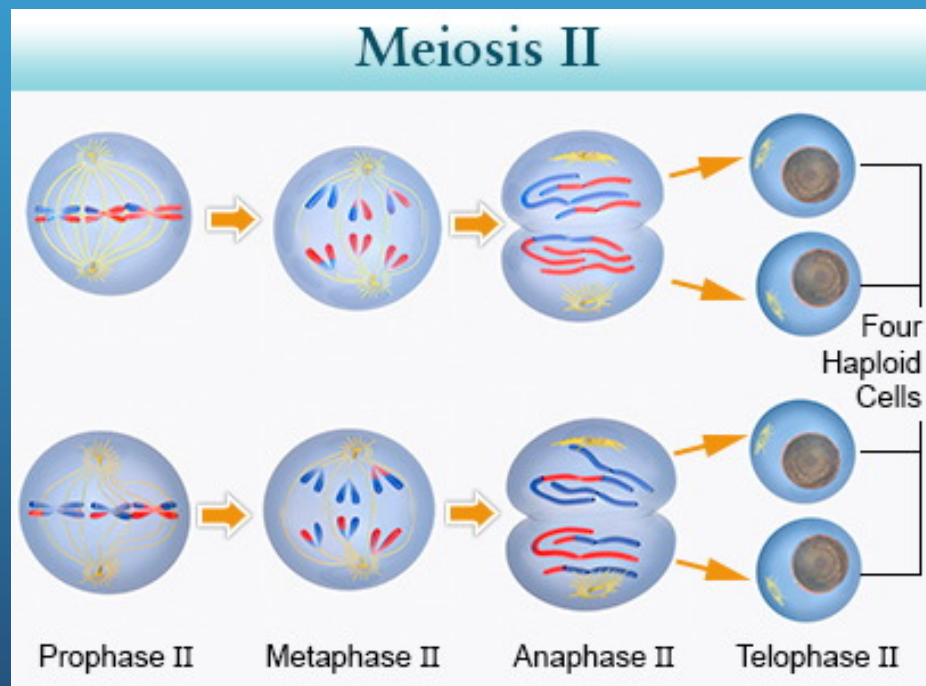
# *YDL Implications*

- Positive program environments



# Learning Objective

Describe the processes of meiosis and mitosis.  
Show how meiosis helps to account for the differences between people.



Mitosis is the known as ordinary cell reproduction

During meiosis, sperm and ova production only generates half a set of chromosomes



# *YDL Implications*

- Differences of the children we serve
  - Individualized programming

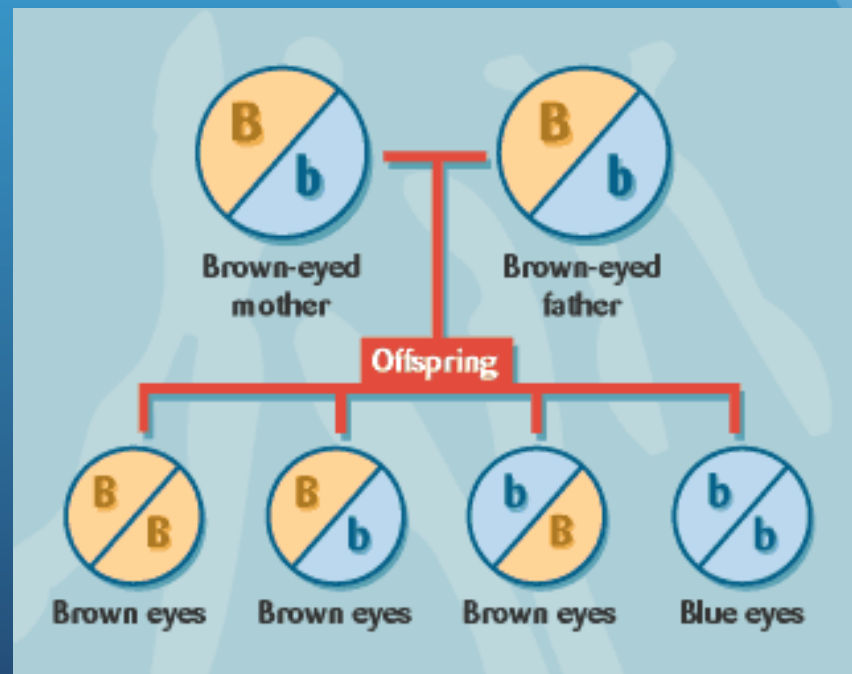




# Learning Objective

Define the concepts of dominant genes, recessive genes, and regulator genes. Give examples of each type of gene.

Dominant and recessive genes represent inheritance patterns of specific traits passed down by an individual's parents.



# YDL Implications

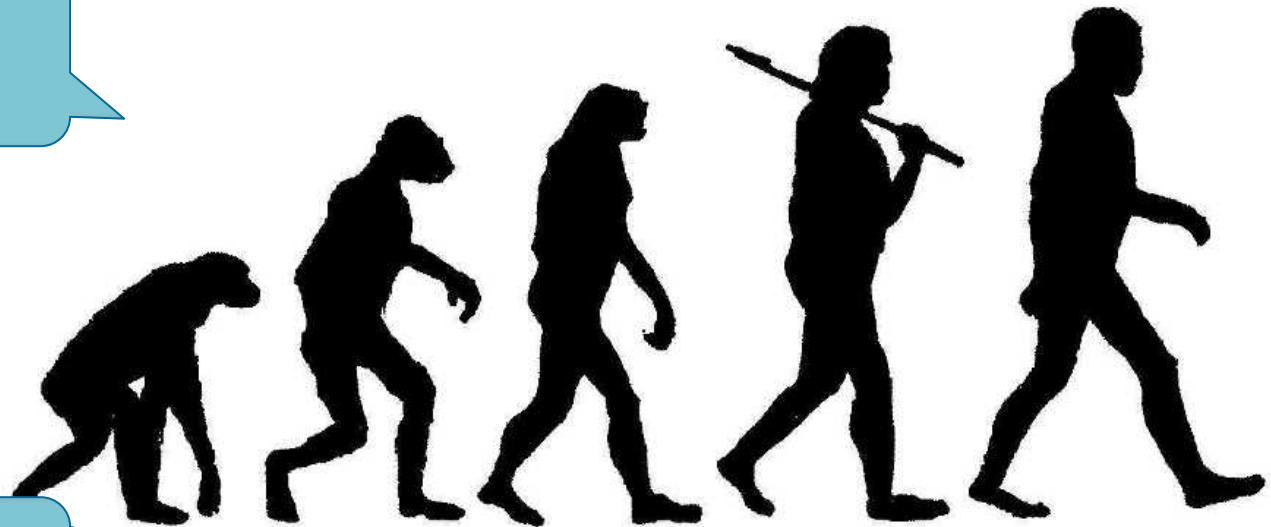
- Kids with disabilities - genetic disorders
  - Autosomal dominant
  - Autosomal recessive
  - X-linked dominant
  - X-linked recessive



# Learning Objective

Discuss how your genes may affect your vulnerability to environmental influences.

Darwin's Theory  
of Evolution



Stephen Jay  
Gould

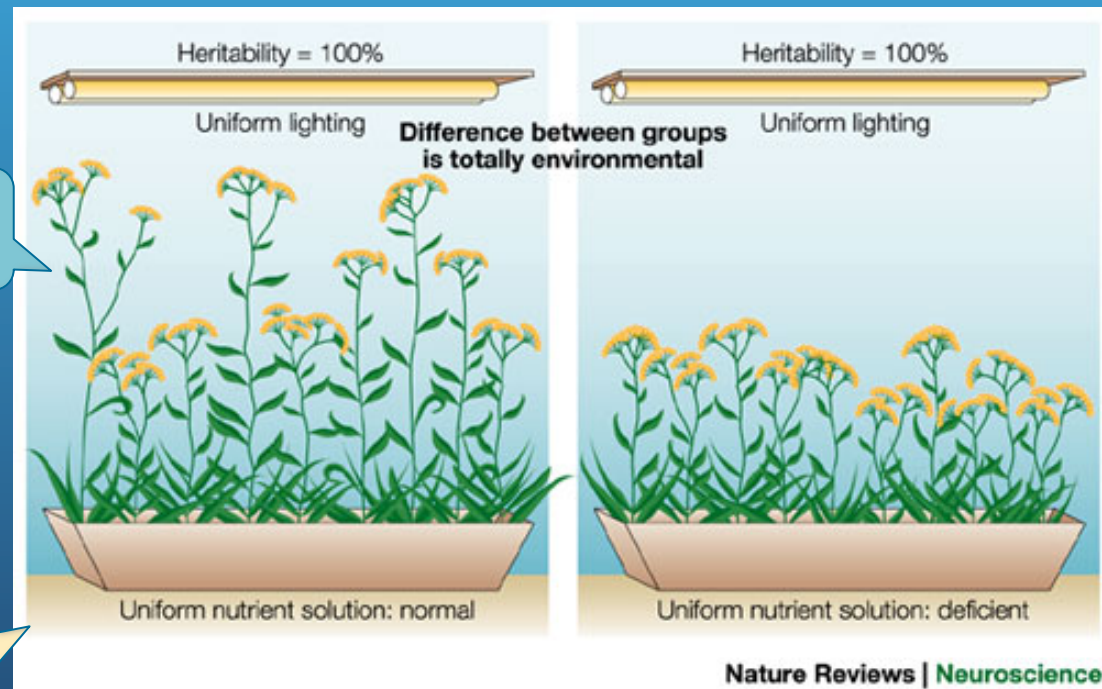
# YDL Implications

- Genetically pre-disposed to be social
- Can more easily change our behavior in response to the environment



# Learning Objective

Describe the four main types of interaction between genetic and environmental influences on children's development.



Heritability

Gene  
Expression

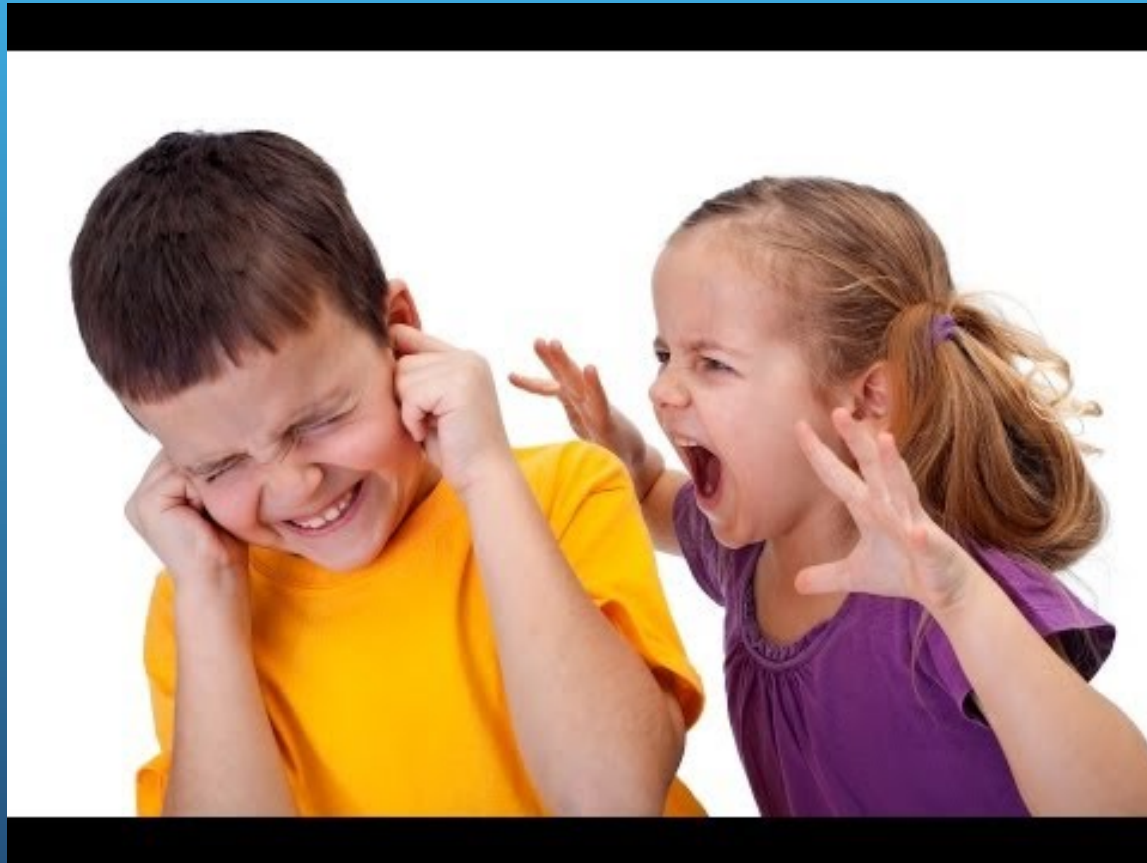
Correlations

Interactions



# *YDL Implications*

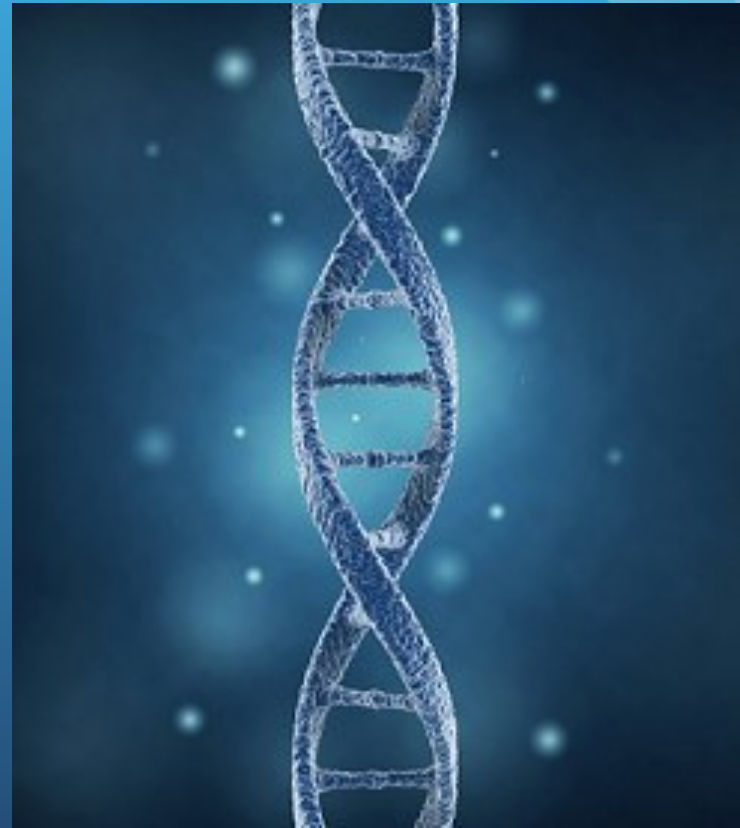
- Environment effects everything



# Learning Objective

Explain the idea of reaction range. Give some examples to demonstrate how reaction range works.

“The reaction range is an array of phenotypic possibilities that a genotype has the potential to produce as a result of the context in which the organism develops.”



# *YDL Implications*

- Influence of the environment is not limitless

