Basic Genetic Concepts & Terms
Genetics: what is it?

• What is genetics?
  – “Genetics is the study of heredity, the process in which a parent passes certain genes onto their children.” (http://www.nlm.nih.gov/medlineplus/ency/article/002048.htm)

• What does that mean?
  – Children inherit their biological parents’ genes that express specific traits, such as some physical characteristics, natural talents, and genetic disorders.
Word Match Activity

Match the genetic terms to their corresponding parts of the illustration.

- base pair
- cell
- chromosome
- DNA (Deoxyribonucleic Acid)
- double helix*
- genes
- nucleus

Word Match Activity

• base pair
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• chromosome
• DNA
  (Deoxyribonucleic Acid)
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Illustration Source: Talking Glossary of Genetic Terms http://www.genome.gov/glossary.cfm?key=chromosome
Genetic Concepts

• **H**_______ describes how some traits are passed from parents to their children.
• The traits are expressed by **g**_____, which are small sections of DNA that are coded for specific traits.
• Genes are found on **ch**______.
• Humans have two sets of ____ (hint: a number) chromosomes—one set from each parent.
Genetic Concepts

- **Heredity** describes how some traits are passed from parents to their children.
- The traits are expressed by **genes**, which are small sections of DNA that are coded for specific traits.
- Genes are found on **chromosomes**.
- Humans have two sets of **23** chromosomes—one set from each parent.
Genetic Terms

Use library resources to define the following words and write their definitions using your own words.

- **allele:**
- **genes:**
- **dominant:**
- **recessive:**
- **homozygous:**
- **heterozygous:**
- **genotype:**
- **phenotype:**
- **Mendelian Inheritance:**
Mendelian Inheritance

- The inherited traits are determined by genes that are passed from parents to children.
- A child inherits two sets of genes—one from each parent.
- A trait may not be observable, but its gene can be passed to the next generation.
Mendelian Inheritance

Each person has 2 copies of every gene—one copy from mom and a second copy from dad. These copies may come in different variations, known as alleles, that express different traits.

For example, 2 alleles in the gene for freckles are inherited from mom and dad:

– allele from mom = has freckles (F)
– allele from dad = no freckles (f)
– child has the inherited gene pair of alleles, **Ff** (F allele from mom and f allele from dad).