

Name: \_\_\_\_\_

### Genetics Big Quiz Review

- Compare:
  - Heterozygous and homozygous
  - Genotype and phenotype
  - Dominant and recessive
  - Allele and gene
- Why was Gregor Mendel's work on genetics so successful?
- Compare and contrast *mitosis* and *meiosis*.
- What is a karyotype? How is it useful?
- Identify the parts of the Cell Cycle and the key parts that occur during each stage.
- Why do cells need to divide? Explain
- How is mitosis related to cancer?
- What is a subunit of a nucleic acid. Identify the parts of it.
- What is the relationship between a gene, DNA, chromosome, and a nucleotide?
- Explain the structure of a DNA molecule.
- Compare and contrast DNA and RNA.
- How and when does DNA replication occur?
- What is a mutation? Identify the three main types of mutations.
- Explain the difference between a *point mutation* (base substitution) and a *frameshift mutation* (base addition/deletion with base movement).
- How does non-disjunction result in a mutation?
- Distinguish between a *codon* and *anticodon*.
- Explain the role of *Transcription* and *translation* in protein synthesis.
- Below is the gene information on a segment of DNA  
1    2    3    4    5    6  
TAC GCT AAC GGG ATG ACT
- Write the complementary base pairs of the DNA strand (other half of DNA)
- Find the mRNA strand of the original DNA strand given.
- Find the amino acid sequence for the mRNA strand.
- If the C in the 2<sup>nd</sup> codon was changed to a G, what type of change would occur in the protein?
- If the last G in the 4<sup>th</sup> codon completely deleted and each base shifted up one place, how would this affect the protein

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