## New Terms - Molecular Genetics (DNA replication, transcription, and translation)

**DNA** - deoxyribonucleic acid, consists of two long chains of nucleotides

that

form a double helix.

**double helix** - the nucleotide chains that form DNA - the chains twist around

themselves in the form of a spiral staircase.

**nucleotide** - consists of a nitrogenous base, a phosphate group, and a molecule

of

deoxyribose.

**RNA** - ribonucleic acid, the nucleic acid that carries out the instructions of

the

DNA. Has only two differences from DNA - the carbohydrate ribose (instead of deoxyribose), and the nitrogenous base uracil (instead of

thyamine).

tRNA - transfer RNA, in the cytoplasm of the cell and is used in protein

synthesis to carry amino acids to the ribosomes.

mRNA - messenger RNA, in the nucleus and receives the genetic code from

DNA and takes it into the cytoplasm to carry out protein synthesis.

**rRNA** - ribosomal RNA, used to make ribosomes.

**replication** - the process by which DNA makes copies of itself; duplication

talked

about during the S stage of interphase in the cell cycle.

**transcription** - process by which DNA "unzips" and codes a strand of mRNA in the

nucleus - one of the first stages in protein synthesis.

**translation** - the mRNA is "read" and formed into a protein containing amino

acids

that were gathered and brought to the mRNA by tRNA.

**DNA polymerase** - enzyme used in DNA replication

**RNA polymerase** - enzyme used in forming mRNA, and tRNA

**protein synthesis** - process by which proteins are formed by linking amino acids.

**nitrogenous bases** - part of the nucleotide. They are made up of purines and pyrimidines.

**purines** - two fused carbon and nitrogen atoms

pyrimidines - single fused ring of nitrogen and carbon atoms adenine - purine base in DNA and RNA symbolized by A purine base in DNA and RNA symbolized by G cytosine - pyrimidine base in DNA and RNA symbolized by C

**thymine** - pyrimidine base in DNA symbolized by T **uracil** - pyrimidine base in RNA symbolized by U

complementary base pairing - describes the pairing of nitrogenous bases during replication,

purine bases pair with pyrimidine bases (A-T; G-C; A-U).

initiation - indicates the start of protein synthesis indicated by the start codon

**elongation** - period in protein synthesis where protein is formed **termination** - end of protein synthesis indicated by the stop codon

**codon -** groups of 3 nucleotides. Each serves as a code word for and

amino

acid

complementary codon to the codon, found on the tRNA molecule AUG UAG anticodon -

start codon stop codon -