Chapter 4 Vocabulary for STAAR Prep

Name: _____ Per: _____

DNA: deoxyribonucleic acid, a self-replicating material present in nearly all living organisms as the main constituent of chromosomes

gene: A unit of heredity that is transferred from a parent to offspring and is held to determine some characteristic of the...: "proteins coded directly by genes"

RNA:
Ribonucleic acid, a nucleic acid present in all living cells. Its principal role is to act as a messenger carrying instructions from DNA...

protein synthesis: is the process in which cells build proteins.

guanine: one of the four main nucleobases found in the nucleic acids DNA and RNA

nucleotide:
A compound consisting of a nucleoside linked to a phosphate group. Nucleotides form the basic structural unit of nucleic acids such as DNA.

deoxyribose: Its name indicates that it is a deoxy sugar, meaning that it is derived from the sugar ribose by loss of an oxygen atom.

base: The part of a plant or animal organ that is nearest to its point of attachment.

ribosome: A minute particle consisting of RNA and associated proteins, found in large numbers in the cytoplasm of living cells.

adenine: s a nucleobase with a variety of roles in biochemistry including cellular respiration,

cytosine: s one of the four main bases found in DNA and RNA, along with adenine, guanine, and thymine.

uracil: one of the four nucleobases in the nucleic acid of RNA that are represented by the letters A, G, C and U

ribose: A sugar of the pentose class that occurs widely in nature as a constituent of nucleosides and several vitamins and enzymes.

transcription:
It is the process of transcribing or making a copy of genetic information stored in a DNA strand into a complementary strand of RNA (messenger RNA or mRNA) with the aid of RNA polymerases.

complementary strand: ether of the two chains that make up a double helix of DNA, with corresponding positions on the two chains being composed of a pair of **complementary** bases.

amino acid: biologically important organic compounds made from amine and carboxylic acid functional groups, along with a side-chain specific to each amino acid.

translation: The process in the ribosomes of a cell by which a strand of messenger RNA directs the assembly of a sequence of amino acids to make a protein.

enzyme: a protein created by an organism that works as a catalyst in biochemical reactions.

hormone: a substance formed in an organ or tissue in the body of a plant or animal and then transported by body fluid to another organ or tissue for a specific action

thymine: a white, crystalline, pyrimidine base, CHNO, contained in the nucleic acids of all tissue: it links with adenine in the DNA structure

reproductive cells: A cell whose nucleus unites with that of another cell to form a new organism.

haploid: having the full number of chromosomes normally occurring in the mature germ cell, or half the number in the usual somatic cell

somatic cell: any of the cells of an organism that become differentiated into the tissues, organs, etc. of the body

diploid: having twice the number of chromosomes normally occurring in a mature germ cell: most somatic cells are diploid

homologous chromosomes: A pair of matching chromosomes in an organism, with one being inherited from each parent.

chromatin: a protoplasmic substance in the nucleus of living cells that readily takes a deep stain: chromatin forms the chromosomes and contains the genes

cell cycle: The series of biochemical and structural events involving the growth, replication, and division of a eukaryotic cell.

interphase: The stage of the cell or nucleus when it is not in mitosis, hence comprising most of the cell cycle.

asexual reproduction: reproduction, as budding, fission, or spore formation, not involving the union of gametes.

prophase: the first stage of mitosis or meiosis in eukaryotic cell division, during which the nuclear envelope breaks down and strands of chromatin form into chromosomes.

mitosis: The process in cell division by which the nucleus divides, typically consisting of four stages, prophase, metaphase, anaphase, and telophase, and normally resulting in two new nuclei, each of which contains a complete copy of the parental chromosomes.

replication: The process by which genetic material, a single-celled organism, or a virus reproduces or makes a copy of itself: *replication of DNA.*

metaphase: The stage of mitosis and meiosis, following prophase and preceding anaphase, during which the chromosomes are aligned along the metaphase plate.

anaphase: The stage of mitosis and meiosis in which the chromosomes move to opposite ends of the nuclear spindle.

telophase:
The final stage of mitosis or meiosis during which the chromosomes of daughter cells are grouped in new nuclei.

cytokinesis:
The division of the cytoplasm of a cell following the division of the nucleus.

cell division: The process by which a cell divides to form two daughter cells. Upon completion of the process, each daughter cell contains the same genetic material as the original cell and roughly half of its cytoplasm.

meiosis: he process of cell division in sexually reproducing organisms that reduces the number of chromosomes in reproductive cells from diploid to haploid, leading to the production of gametes in animals and spores in plants.

sexual reproduction: reproduction involving the fusion of a male and female haploid gamete

gamete: is a cell that fuses with another cell during fertilization (conception) in organisms that reproduce sexually

crossing over: an exchange of genetic material between homologous chromosomes.

interkinesis: A resting point that occurs between two meiotic divisions.

polar bodies: The cell that results from the asymmetric division of an oocyte.

fertilization: A process in sexual reproduction that involves the union of male (sperm) and female (ovum) gametes (each with a single, haploid set of chromosomes) to produce a diploid zygote.

zygote: A cell in diploid state following fertilization or union of haploid male sex cell (e.g. sperm) and haploid female sex cell (e.g. ovum).

embryo: A young, developing plant, such as the rudimentary plant inside the seed of higher plant forms or that inside the archegonium of mosses and ferns

homolog: a member of a homologous pair or series.

stem cells: An unspecialized cell characterized by the ability to self-renew by mitosis while in undifferentiated state, and the capacity to give rise to various differentiated cell types by cell differentiation.

cell differentiation: The normal process by which a less specialized cell develops or matures to possess a more distinct form and function.

mutation: A permanent, heritable change in the nucleotide sequence in a gene or a chromosome; the process in which such a change occurs in a gene or in a chromosome.

gene mutation: Changes in the nucleotide sequence of the genetic material (i.e. DNA, or RNA, in the case of viruses), which are usually caused by copying errors during replication that further lead to base substitution, insertion, or deletion of one or more base pairs.

codon: A set of three adjacent nucleotides, also called triplet, in mRNA that base-pair with the corresponding aniticodon of tRNA molecule that carries a particular amino acid, hence, specifying the type and sequence of amino acids for protein synthesis.

chromosomal mutation:

A mutation involving a long segment of dna. These mutations can involve deletions, insertions, or inversions of sections of dna. In some cases, deleted sections may attach to other chromosomes, disrupting both the chromosomes that loses the dna and the one that gains it. Also referred to as a chromosomal rearrangement.

deletion mutation: A type of gene mutation wherein the deletion (as well as addition) of (a number of) nucleotide(s) causes a shift in the reading frame of the

codons in the mRNA, thus, may eventually lead to the alteration in the amino acid sequence at protein translation.

inversion mutation: A defect in the chromosome in which a segment of the chromosome breaks off and reinserted in the same place but in the reverse direction relative to the rest of the chromosome. Inversions are of two types: paracentric inversion and pericentric inversion.

translocation mutation: Chromosomal translocation, that is a chromosomal segment is moved from one position to another, either within the same chromosome or to another chromosome.

frameshift mutation: A type of gene mutation wherein the addition or deletion of (a number of) nucleotide(s) causes a shift in the reading frame of the codons in the mRNA, thus, may eventually lead to the alteration in the amino acid sequence at protein translation.