

Name: _____ Date: _____ Period: _____

Code Cracking

Vocabulary Terms

Age adjusted: (Also called “age standardization”) A way of comparing age-related disease rates in populations with different age profiles and life expectancies.

Amino acid: The basic unit of a protein, sometimes called the “building blocks of life”. Amino acids combine to make proteins.

Apoptosis: The process of programmed cell death (also called “cell suicide”). Apoptosis is a controlled mechanism for ridding the body of old, abnormal or irreparably damaged cells. One of the hallmarks of cancers is that cancer cells are able to avoid apoptosis.

Base: The differentiating component of nucleotides, the basic units of nucleic acids like DNA and RNA.

Cancer: A group of diseases distinguished by uncontrolled cell division as a result of an accumulation of mutations in the genes that regulate the cell cycle.

Cancer deaths: The mortality rate from cancer. Usually given as number of deaths per year per 100,000 males and females.

Cancer rate: Number of new cancer diagnoses. Usually given as number of diagnoses per year per 100,000 males and females.

Cell cycle: Pattern of growth, DNA replication, and cell division. The cell cycle is very closely regulated in normal cells.

Central Dogma: Describes the process by which the information on DNA is used to code for proteins via transcription and translation. Summarized as DNA → RNA → Protein.

Codon: A sequence of three DNA or RNA nucleotides that corresponds with a specific amino acid or stop signal during protein synthesis.

Deletion mutation: A gene mutation that results from the deletion of a base, or bases, in a DNA sequence.

DNA (Deoxyribonucleic acid): The molecule that carries the genetic information in almost all organisms. DNA uses four different bases (Adenine, Cytosine, Thymine, and Guanine) that pair together in specific ways that enable it to accurately pass on the information it contains to create proteins as well as to self-replicate. The sequence of bases on a particular section of DNA determines the sequence of amino acids that result in a unique protein.

Frameshift mutation: A mutation that shifts the reading frame of the genetic code because of an insertion or deletion.

Gene: A sequence of bases or nucleotides in DNA or RNA that codes for the synthesis of a functional gene product, either RNA or protein.

Global disease burden: A quantification of the risks and consequences of diseases in different populations of the world.

High-income country: The World Bank defined a high-income country as one that has a gross national income (GNI) per capita exceeding \$12,376 in 2018. Sometimes used as a simplified measure of a country's development.

Highly developed country (HDC): A stable country with a high standard of living and per capita income that also has advanced levels of infrastructure and industrialization. HDCs score high on the Human Development Index compared to other countries.

Human Development Index (HDI): A statistical composite index used to rank countries into levels of development. It is based on indicators such as gross national income, standard of living, industrialization, level of education, political stability, childbirth mortality, and other factors.

Insertion mutation: A gene mutation that results from the insertion of a base, or bases, in a DNA sequence.

Least developed country (LDC): Least developed countries are those confronting significant and long-term barriers to sustainable development. They have low levels of human assets and are economically vulnerable. They have a low Human Development Index compared to other countries.

Low-income country: The World Bank defined a low-income country as one that has a gross national income (GNI) per capita less than \$1,025 in 2018. Sometimes used as a simplified measure of a country's development.

Lower middle-income country: The World Bank defined a lower middle-income country as one that has a gross national income (GNI) per capita between \$1,026 and \$3,995 in 2018. Sometimes used as a simplified measure of a country's development.

Mitosis: The process where a single cell divides into two identical daughter cells (cell division).

Mutation: A change that occurs in our DNA sequence, either due to mistakes when the DNA is copied or as the result of environmental factors.

Nucleotide: A molecule consisting of a nitrogen-containing base (adenine, guanine, thymine, or cytosine in DNA; adenine, guanine, uracil, or cytosine in RNA), a phosphate group, and a sugar.

Oncogene: The mutated form of a proto-oncogene. Proto-oncogenes are genes whose normal roles include stimulating cell growth by signaling cell division and regulating cell death. Mutations that cause proto-oncogenes to get "stuck on" and can lead to cancer.

Point mutation: A mutation where a single nucleotide is changed to another. Sometimes called a substitution mutation.

Protein: The major molecular component of cells. Proteins consist of a linear chains of amino acids arranged in a specific sequence. They are the workhorses of the cell and are required for the regulation, structure and function of all of the body's tissues and organs.

Protein synthesis: The process by which the information encoded on DNA is transcribed and translated into a protein.

Proto-oncogenes: Proto-oncogenes are genes whose normal roles include stimulating cell growth by signaling cell division and regulating cell death. Mutations that cause proto-oncogenes to get "stuck on" can lead to cancer.

RNA: RNA has many complex functions. One of its most important roles is as a molecule that acts as a messenger in converting the genetic information encoded on DNA into a functional protein. RNA uses four different bases: adenine, guanine, uracil, and cytosine to code for the specific amino acids that make up a unique protein.

Socioeconomic status (SES): A measure of a person's income, education, and occupation. These factors are often closely tied to other factors such as race, language skills, geography, and access to resources. A low SES is linked to a wide range of health problems, including low birth weight, cardiovascular disease, hypertension, arthritis, diabetes, and cancer.

Tumor suppressor genes: Tumor suppressor genes are normal genes that slow down cell division, repair DNA mistakes or tell cells when to die (apoptosis). Mutations in tumor suppressor genes can allow uncontrolled cell proliferation, which can lead to cancer.

Upper middle-income country: The World Bank defined an upper middle-income country as one that has a gross national income (GNI) per capita between upper middle-income economies are those between \$3,996 and \$12,375 in 2018. Sometimes used as a simplified measure of a country's development.