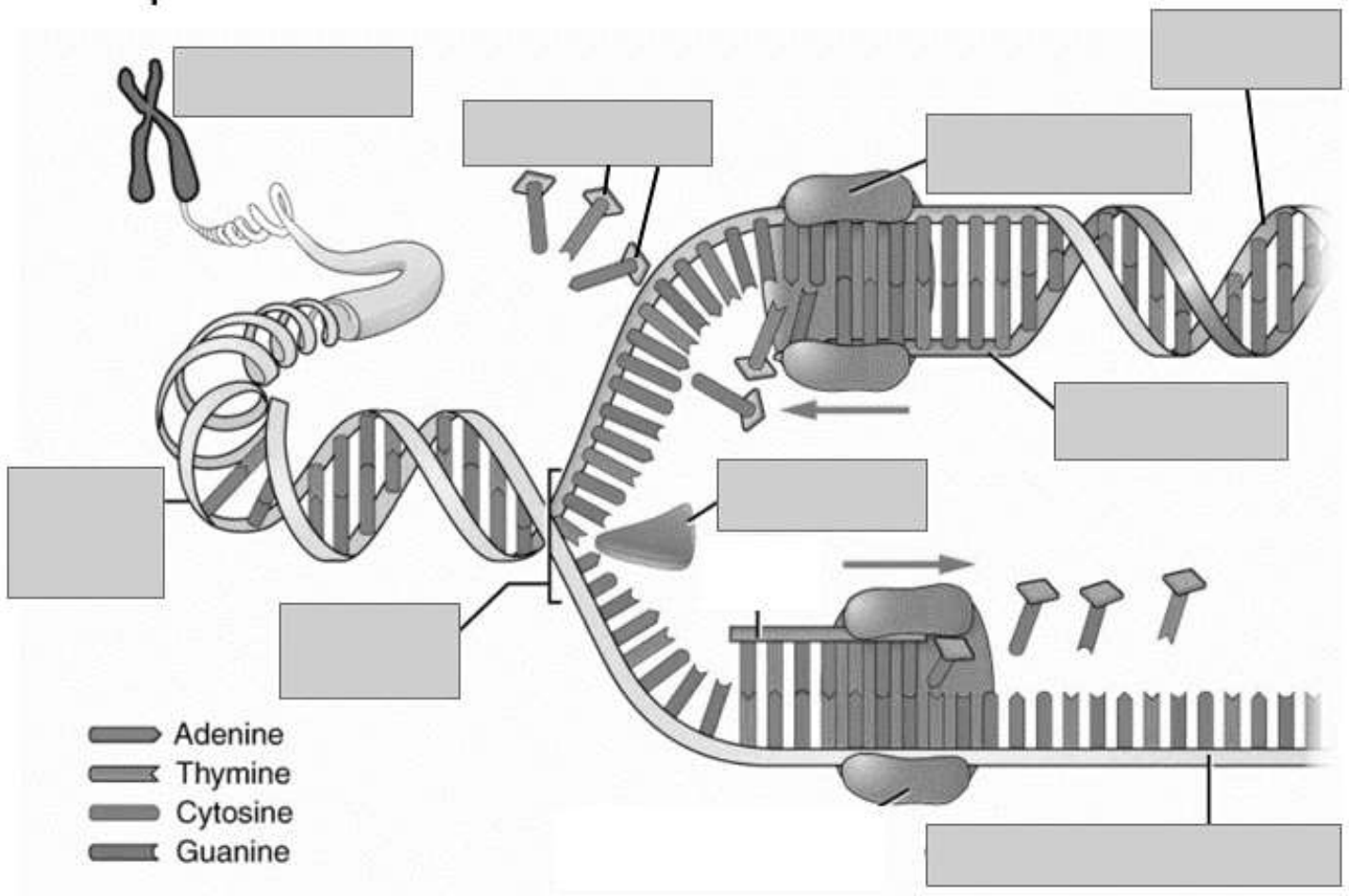


Quiz 12: DNA Replication and Genetic Technology (21 pts)

Use the following word bank to label the diagram of DNA replication below. Each word will only be used once. You do not need to write words in parentheses. (1 pt each; 9 pts total)

Chromosome	Daughter DNA (double strand)	DNA polymerase
Free nucleotides	Helicase	Newly-synthesized DNA (single strand)
Old, template DNA (single strand)	Parent DNA (double strand)	Replication fork (where DNA separates)



Answer the following questions using short phrases or sentences.

1. Explain the purpose of DNA replication. Why would a cell want to copy its DNA? (1 pt)

2. Identify at least one structural feature of DNA that makes replication possible. (1 pt)

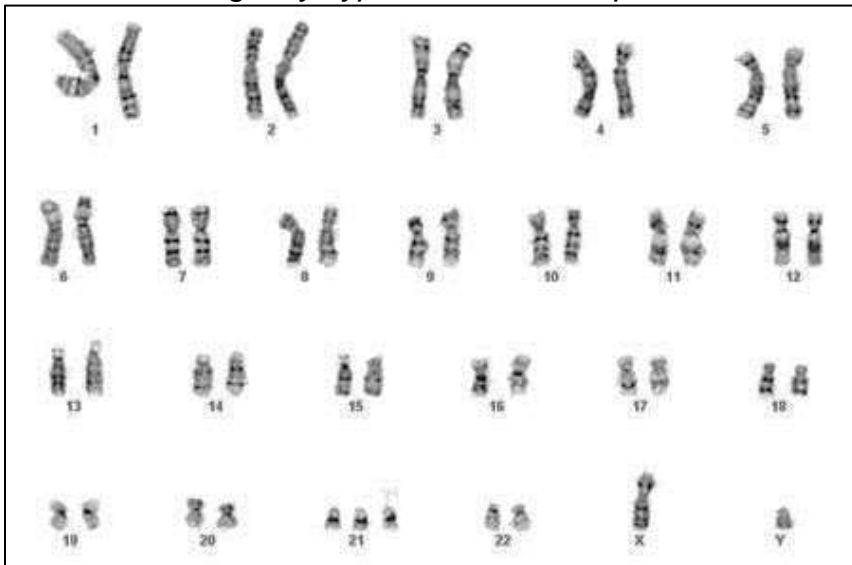
3. Explain the relationship between mutations and the process of DNA replication. (1 pt)

Match each description with the name of the genetic technology it is describing. Not all terms will be used; terms may only be used once. (1 pt each; 6 total)

- _____ Unique patterns of bands made by different samples of DNA, used to identify individuals
- _____ “Reading” the exact nucleotide sequence of a DNA segment
- _____ Collaborative endeavor to determine the entire exact genetic code of human beings
- _____ Inserting one organism’s genes into the genome of another organism
- _____ Using the body cell of one adult individual to make a genetically identical replica of him/her
- _____ Organizing an individual’s chromosome’s into homologous pairs to identify chromosomal mutations and gender

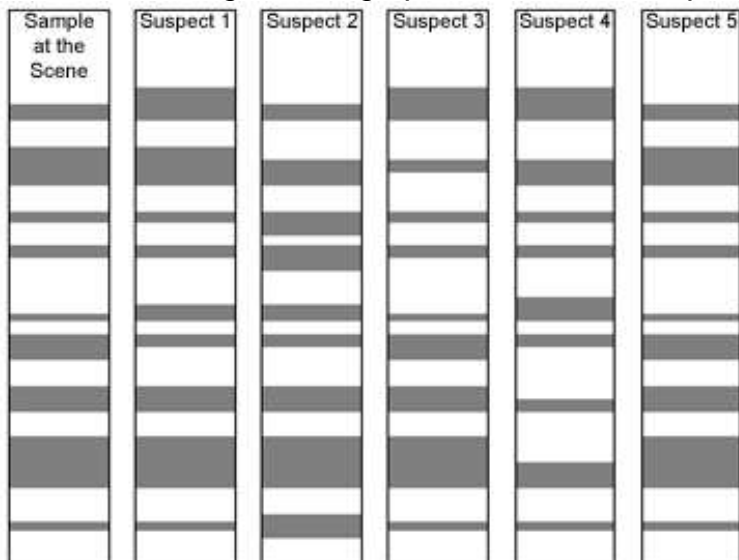
- A. Cloning
- B. DNA fingerprinting
- C. DNA sequencing
- D. Genome Biosynthesis
- E. Human genome project
- F. Karyotyping
- G. Recombinant DNA technology (genetic engineering)

Use the following karyotype to answer the questions below. (1 pt each; 2 pts)



1. What is this person’s gender/sex?
2. Describe any chromosomal conditions this person has, or write “normal” if there are none.

Use the following DNA fingerprint to answer the question below. (1 pt)



1. Which suspect’s DNA best matches the DNA left at the crime scene?