

Quiz for **Exercise 19: DNA & Biotechnology**

- \_\_\_ 1. The monomer of a DNA molecule is called a(n)
- gene
  - nucleotide
  - nucleic acid
  - nitrogenous base
  - pentose sugar
- \_\_\_ 2. The *different* monomers of DNA have a *different*
- gene
  - nucleotide
  - nucleic acid
  - nitrogenous base
  - pentose sugar
- \_\_\_ 3. The pentose sugars of the DNA polymer are linked together by
- phosphates
  - nitrogenous bases
  - water
  - hydrogen bonds
  - peptide bonds
- \_\_\_ 4. The base pairs that hold together the complementary strands of DNA are linked together by
- phosphates
  - nitrogenous bases
  - water
  - hydrogen bonds
  - peptide bonds
- \_\_\_ 5. According to the rules of base pairing between complementary strands of DNA,
- A pairs with G; and C pairs with T
  - A pairs with C; and G pairs with U
  - A pairs with G; and U pairs with T
  - A pairs with T; and C pairs with G
  - A pairs with U; and T pairs with G
- \_\_\_ 6. Restriction enzymes will cut DNA from different people into different patterns of fragments because
- the restriction enzyme cuts DNA randomly.
  - once a fragment is cut once, it is more likely to be cut again.
  - genetic differences between individuals' DNA will add or remove sites for the enzyme to cut.
  - the restriction enzymes cut DNA into fragments of all equal length.
  - all human DNA is identical.
- \_\_\_ 7. Restriction fragments cut from DNA by restriction enzymes separate during electrophoresis because
- shorter fragments travel faster.
  - longer fragments travel faster.
  - polar fragments travel faster.
  - nonpolar fragments travel faster.
  - uncut fragments travel faster.

**For Questions 8–11, consider the following scenario:**

A 23 year old male was found murdered in the hallway of his apartment building. Investigators collected many samples of evidence including blood found on a knife near the body and hair from the victim's shirt. Police had two suspects due to eye-witness accounts. Both suspects, the victim and the evidence were analyzed using DNA fingerprinting.

**DNA fingerprint: electrophoresis of restriction fragments**



- \_\_\_ 8. Who does the blood evidence found at the crime scene most likely belong to?
- a) the victim
  - b) suspect #1
  - c) suspect #2
  - d) both the victim and suspect #1
  - e) both the victim and suspect #2
- \_\_\_ 9. Who does the hair evidence found at the crime scene most likely belong to?
- a) the victim
  - b) suspect #1
  - c) suspect #2
  - d) both the victim and suspect #1
  - e) both the victim and suspect #2
- \_\_\_ 10. What does the forensic DNA analysis say most clearly about Suspect #1?
- a) She's innocent.
  - b) She's guilty.
  - c) She was at the scene at the time of the crime.
  - d) Someone matching her genetic fingerprint was at the crime scene.
  - e) There is no direct DNA evidence that she was at the crime scene.
- \_\_\_ 11. What does the forensic DNA analysis say most clearly about Suspect #2?
- a) He's innocent.
  - b) He's guilty.
  - c) He was at the scene at the time of the crime.
  - d) Someone matching his genetic fingerprint was at the crime scene.
  - e) There is no direct DNA evidence that he was at the crime scene.