Mutations Class Activity

# PART A

Consider this original template DNA strand: **5’---AAGCAGCCATAACGAACGCAT---3’**

1. For what sequence of amino acids does this DNA strand code? (assume it doesn’t contain introns)
2. The table below lists 5 different mutations that may occur in this DNA strand. What happens to the amino acid sequence produced as a result of each mutation? (All positions are from the 5’ end of the DNA template.)

|  |  |  |
| --- | --- | --- |
| **Mutation** | **Effect on amino acid sequence** | **Type of mutation** |
| Substitution of T for G at position 14 |  |  |
| Insertion of T between positions 14 and 15  |  |  |
| Deletion of C at position 7 |  |  |
| Substitution of T for C at position 4 |  |  |

Answers

|  |  |  |
| --- | --- | --- |
| **Mutation** | **Effect on amino acid sequence** | **Type of mutation** |
| Substitution of T for G at position 14 | Change to stop codon: truncated polypeptide | Nonsense mutation |
| Insertion of T between positions 14 and 15  | Serine is still inserted but the amino acids that follow all differ.  | Frameshift mutation |
| Deletion of C at position 7 | 5th amino acid is cysteine and subsequent amino acids all differ | Frameshift mutation |
| Substitution of T for C at position 4 | CUG and CUA code for the same amino acid (leucine). No change. | Silent mutation |