

Mutations Worksheet

Answer the following questions in the space provided.

1. Fill in the blanks with the appropriate terms.

A permanent change in the genetic material of an organisms is called a **a)** _____.
Permanent genetic changes that occur in body cells are called **b)** _____,
while those that occur in reproductive cells are called **c)** _____. Body
cell mutations are a key cause of **d)** _____. A substance that increases the rate of
mutation is called a **e)** _____. When a substance causes physical changes in
the structure of DNA, it is called a **f)** _____. Mutations can
also be caused by **g)** _____, which enter the nucleus of a cell and
h) _____ mutations by reacting chemically with the DNA.

2. Consider the following nucleotide sequence in a strand of mRNA:

GUU-CAU-UUG-CUC-CCG-AAG
val – his – leu – leu – pro – lys

a) The second uracil base in the first leucine in the polypeptide is substituted with an adenine base, resulting in the replacement of the codon UUG with the codon UAG. What type of mutation results from this substitution? Explain your reasoning.

b) The uracil base in the codon for histidine is substituted with a cytosine base. What type of mutation results from this substitution? Explain.

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c) The first cytosine base in the second leucine is deleted. Write the nucleotide and amino acid sequences that occur as a result of this mutation. What type of mutation(s) may result from this deletion?
