Tutorial 4

February 15, 2019 5:03 PM

Tutorial 3 in his notes

Q1. Delete a base in mRNA after the start codon

Mutation occurs which changes all of the subsequent codons and amino acids
Most likely will be nonfunctional, but could be functional

Wobble

Some amino acids coded for by more than one base combination
Glycine coded for by GGT, GGC, GGA, GGG

Insertion mutation

Base pair inserted, which could insert different codons, change subsequent amino acids

Deletion mutation

Base pair removed, which would change codons and amino acids

Q2. mRNA has shorter half life in bacteria compared to eukaryotes

mRNA in eukaryotes has protective 5' cap and 3' poly A tail

More unstable
5' cap has guanine in it

In eukaryotes, also protected by nuclear membrane

Instability in bacterial mRNA is important, otherwise ribosomes will keep reading it.

Q3. True or false

1. Coding strand and mRNA made from other DNA strand are identical
2. Primers are made of RNA, even during DNA replication
    a. Then gets replaced by DNA
3. DNA replicated from 5' to 3' end
4. DNA replicated from 5' to 3' end and ligated in that order as well

Q4.

a) Complementary DNA strand
    a. 3' ATAACCCCTACTAGCGCGATAAGCAAGTGATTCCCCGTTTTTGG 5'
b) mRNA corresponding to original strand
    a. Same as answer to a) but replace T with U
    b. RNA polymerase synthesizes in the 3' to 5' direction
c) Amino acid sequence from RNA
d) List any assumptions you have made!
    a. Assumed a bacterial cell handling bacterial cell compared to eukaryotes
        i. No 5' cap and 3' tail
        ii. fMet instead of Met

iii. No post transcriptional modifications in membrane bound organelle
iv. No introns (no intron splicing) which are the mRNA sequences before the start and after the stop codons
v. AUG is start codon, UAG, UGA, UAA are stop codons