Quiz #9 Key, 7:45 lab

1. Define:

Messenger-RNA (m-RNA) – Messenger-RNA is a copy of a section of DNA called a structural gene (or in the case of prokaryotic cells, multiple structural genes because transcription is polycistronic). Messenger-RNA carries the "message" from DNA to the ribosome, telling the cell what type of protein to make.

Operon – An operon is a segment of DNA containing a series of structural genes and the control elements (e.g., promoter and operator), controlling the transcription of those genes. Bacteria typically carry genes encoding enzymes required to run a specific metabolic pathway within a common operon. Operons may be categorized as inducible, repressible or constitutive.

Catabolite repression – Catabolite repression is a regulatory mechanism allowing bacteria such as *E. coli* to utilize constitutive metabolic pathways in favor of inducible ones. Glucose, a common catabolite, will repress inducible operons by preventing the formation of cyclic-AMP, a regulatory nucleotide. Without cyclic-AMP, catabolite-activating protein cannot enhance the promoter sites of inducible operons, and without enhancement, sigma factor is so weakly attracted to them, that transcription is very limited.

2. Sigma factor/ promoter

3. Small-RNA (s-RNA)/ introns

4. Two answers here are – micro-RNA (mi-RNA) and small interfering RNA (si-RNA)

5. Translation/ peptidyl transferase

6. Transfer-RNA (t-RNA)/ aminoacyl-t-RNA-synthase

7. Codons are sets of three bases on m-RNA that form hydrogen bonds with complimentary anti-codon regions on t-RNA molecules bringing amino acids to ribosomes. This complimentary bonding insures that amino acids are placed in the correct sequence within growing polypeptide chains.

8. Polyribosome or polysome

9. Allosteric

10. Repressor/ operator

11. Polycistronic

12. Inducible/ allolactose

The etiological agents of gastric ulcers are identified as *Helicobacter pylori*.