Study questions

Genetic code

1. Describe the main features of the genetic code.
2. What is degeneracy of the genetic code and what its biological significance?

Translation and tRNA

1. What is translation?
2. What is a tRNA and what is its function in protein synthesis?
3. What are the general characteristics of a tRNA?
4. Why the 3' CCA terminal region in a tRNA is also know as the acceptor arm?
5. What is the wobble effect and which base in the anticodon determines the wobble effect?
6. Explain why aminoacyl-tRNA synthesases are the 'true reads' of the genetic code?
7. How do aminoacyl-tRNA synthetases work? Describe active and editing sites.

Ribosomes

1. What is a ribosome and what are its different components?
2. Which components of the ribosome are critical to its structure and function?
3. Describe the three binding sites (A, P, and E) and which tRNAs are found in each site.
4. What are the differences between bacterial and eukaryotic ribosomes?
5. How can the ribosome be used as a structure to development of new antibiotics?

Protein translation mechanism

1. What are the steps of protein translation?
2. What are the characteristics of the initiation region in bacteria?
3. Explain why the reading frame is establish during the initiation step of protein synthesis.
4. How does protein initiation start and what role initiation factors play?
5. What is the role of elongation and translocation factors?
6. What is the role of release factors in protein synthesis?
7. What is a polysome and what is its biological significance?
8. What are the differences between bacteria and eukaryotic protein biosynthesis?
9. Streptomycin is a bacterial antibiotic that blocks protein biosynthesis. Describe how this antibiotic works and which step of protein biosynthesis is inhibited.