EnterMedSchool.org

Ribosomes

Study Guide — Cell Organelles

Pre-Med practice questions about ribosome structure, location, and function

6 items — Study Guide with Answers

Free & Open-Source

Generated February 20, 2026

Scan to visit online

1 **Which composition correctly describes a typical eukaryotic cytosolic ribosome?**

A 30S small subunit + 50S large subunit = 70S ribosome.

B **40S small subunit + 60S large subunit = 80S ribosome.** ✓

C 50S small subunit + 30S large subunit = 100S ribosome.

D 60S small subunit + 40S large subunit = 60S ribosome.

E Two identical 40S subunits forming an 80S ribosome.

▶ **Explanation:** Eukaryotic cytosolic ribosomes are 80S particles composed of 40S and 60S subunits; bacterial and mitochondrial ribosomes are 70S (30S + 50S).

2 **Which of the following proteins would most likely be synthesized on free ribosomes in the cytosol rather than on ribosomes bound to the rough ER?**

A A lysosomal hydrolase.

B A hormone that will be secreted from the cell.

C A plasma membrane receptor.

D **An enzyme of the glycolytic pathway in the cytosol.** ✓

E A subunit of a voltage-gated Na^+ channel in the plasma membrane.

▶ **Explanation:** Soluble cytosolic proteins (like glycolytic enzymes) are translated on free ribosomes; secreted, membrane, and lysosomal proteins are translated on ER-bound ribosomes.

3 **Where are eukaryotic ribosomal subunits assembled before they are exported to the cytosol?**

A On the cytosolic face of the rough ER.

B In the Golgi apparatus.

C **In the nucleolus.** ✓

D In lysosomes.

E In mitochondria.

▶ **Explanation:** rRNA is transcribed and combined with ribosomal proteins in the nucleolus to form large and small subunits, which are then exported through nuclear pores.

4 **An antibiotic selectively inhibits 70S ribosomes but has little effect on 80S ribosomes. Which cellular component in a human cell is most likely to be affected in addition to invading bacteria?**

A Cytosolic ribosomes.

B Rough endoplasmic reticulum.

C **Mitochondrial ribosomes.** ✓

D Ribosomes in the nucleolus.

E Ribosomes attached to the plasma membrane.

▶ **Explanation:** Mitochondria have 70S-type ribosomes similar to bacterial ribosomes, so some antibiotics targeting 70S ribosomes can also affect mitochondrial protein synthesis.

5 **The gene for a secreted digestive enzyme is mutated so that the codons for its N-terminal signal peptide are deleted, but the rest of the coding sequence is unchanged. The mutant protein is still translated efficiently. Which outcome is most likely?**

A **It is synthesized on free ribosomes and remains in the cytosol.** ✓

B It is synthesized on rough ER ribosomes and secreted normally.

C It is synthesized in the nucleus and accumulates in the nucleolus.

D It is inserted into the inner mitochondrial membrane.

E It is targeted automatically to lysosomes, because all misfolded proteins go there.

▶ **Explanation:** Without an ER signal peptide, the ribosome is not directed to the rough ER, so the protein is translated entirely on free ribosomes and fails to enter the secretory pathway, remaining in the cytosol.

6 **In both prokaryotic and eukaryotic cells, the catalytic site for peptide bond formation during translation resides primarily in:**

A A protein enzyme associated with the large ribosomal subunit.

B A protein enzyme associated with the small ribosomal subunit.

C **Ribosomal RNA of the large subunit, making the ribosome a ribozyme.** ✓

D The mRNA molecule being translated.

E The anticodon loop of tRNA.

▶ **Explanation:** The peptidyl transferase activity is carried out by rRNA in the large ribosomal subunit, so the ribosome is a ribozyme rather than a protein-based enzyme.