

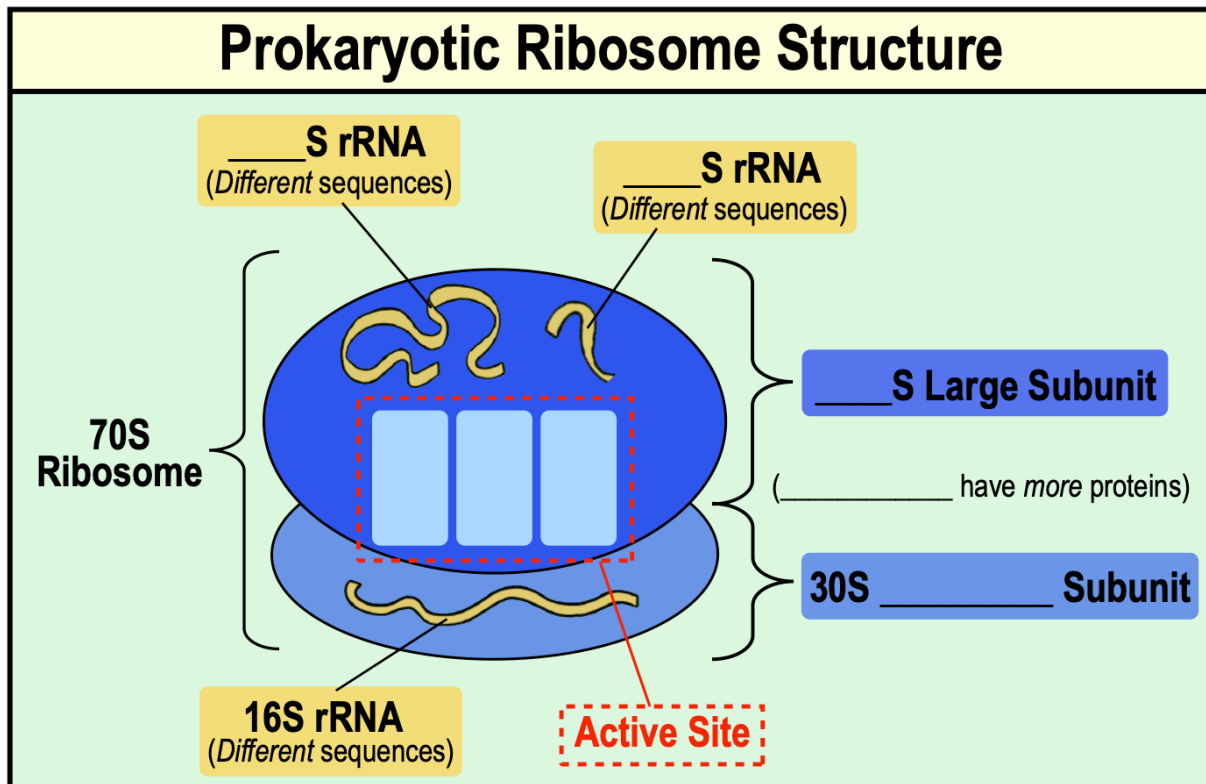
## CONCEPT: PROKARYOTIC RIBOSOMES

- \_\_\_\_\_: cell structure consisting of large & small \_\_\_\_\_ that perform *protein synthesis*.
  - Subunits consist of multiple \_\_\_\_\_ & *ribosomal RNA* (\_\_\_\_\_).

### Structure of Prokaryotic Ribosomes

- *Sedimentation coefficient* (Svedberg = S): characterizes \_\_\_\_\_ of sedimentation & particle behavior in a centrifuge.
  - The *greater* the S value, the \_\_\_\_\_ a molecule centrifuges.
- Prokaryotes have \_\_\_\_\_ S *ribosomes* with a large **50S** & small **30S** ribosomal subunits.
- The 50S \_\_\_\_\_ subunit has **23S** & **5S** rRNAs & the 30S *small* subunit has a \_\_\_\_\_ S rRNA.

**EXAMPLE:** The size of a prokaryotic ribosome and its components.



- **Archaeal** & bacterial ribosomes are the same size but differ in \_\_\_\_\_ important ways:

- 1) The sequence of the \_\_\_\_\_ are *different*.
  - 2) Archaeal ribosomes have \_\_\_\_\_ proteins in each subunit.
- This is why archaea are \_\_\_\_\_-affected by antibiotics that target protein synthesis of bacteria.

**CONCEPT: PROKARYOTIC RIBOSOMES**

**PRACTICE:** Which of the following statements about ribosomes is FALSE?

- a) Ribosomes synthesize new lipids.
- b) Ribosomes synthesize new proteins.
- c) Ribosomes are made of protein.
- d) Ribosomes are made of RNA.

**PRACTICE:** Prokaryotic 70S ribosomes are composed of which of the following subunits?

- a) 40S and 40S
- b) 40S and 50S
- c) 30S and 50S
- d) 30S and 40S
- e) 50S and 50S

**PRACTICE:** Svedbergs are a measurement of the size and sedimentation rate of cellular structures such as ribosomes.

- a) True
- b) False

**PRACTICE:** How are prokaryotic and archaeal ribosomes different from one another?

- a) Large and small subunits are different in size.
- b) The sequences of rRNAs are different.
- c) Archaeal ribosomes have less proteins per subunit than prokaryotes.
- d) Archaeal ribosomes have more proteins per subunit than prokaryotes.
- e) A and C.
- f) B and D.
- g) B and C.