

Introduction to Biology. Lecture 9

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September 14, 2012

Outline

- 1 Where we are?
 - Prokaryotic cell
- 2 Cell
- 3 Main components of prokaryotic cell
 - How to be a prokaryotic cell

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Where we are? Prokaryotic cell

Prokaryotic cell

Main components of prokaryotic cell

- Cell wall
- Membrane
- Cytoplasm
- DNA
- Ribosomes
- Tylacoids (membrane pockets)
- Vesicles
- Flagella

Main components of prokaryotic cell

How to be a prokaryotic cell

How to make energy

- Cell respiration and other destructive processes make ATP for all cell
- Photosynthesis and other synthetic processes make ATP and spend it

How to make proteins

- DNA and RNA contain four types of nucleotides
- The sequence of nucleotides is a cypher
- Each three nucleotides will encode amino acid (“genetic code”)
- Ribosomes translate triplets into amino acids and make proteins

How to take food

- Digestive proteins are transported outside membrane
- They destroy polymers into monomers
- Monomers then are pumping through membrane into the cell
- If cell is photosynthetic, it produce monomers itself

How to make body

- Monomers could be spend:
 - in destructive reactions to obtain ATP, **or**
 - in synthetic reactions to make new polymers. These reactions are using ATP

How to multiply

- DNA is a double helix which may copy itself
- Two copies of DNA untangled and separated, then cytoplasm and membrane divide
- Of course, these processes spend lots of ATP

Summary

- Prokaryotic cells are simplest cells
- They produce energy, obtain monomers, synthesize polymers, e.g. proteins from DNA and RNA, and sometimes also make monomers themselves (with photosynthesis), divide and even perform a sexual process (recombine DNA between cells)

For Further Reading



Genetic code.

http://en.wikipedia.org/wiki/Genetic_code



Protein biosynthesis.

http://en.wikipedia.org/wiki/Protein_biosynthesis

