

# Introduction to Biology. Lecture 8

Alexey Shipunov

Minot State University

September 12, 2012

# Outline

- 1 Questions and answers
  - Exam 1
  - Where we are?
- 2 Cell
  - Prokaryotic cell

# Outline

- 1 Questions and answers
  - Exam 1
  - Where we are?
- 2 Cell
  - Prokaryotic cell

# Questions and answers

## Exam 1

# Results of Exam 1: statistic summary

Summary:

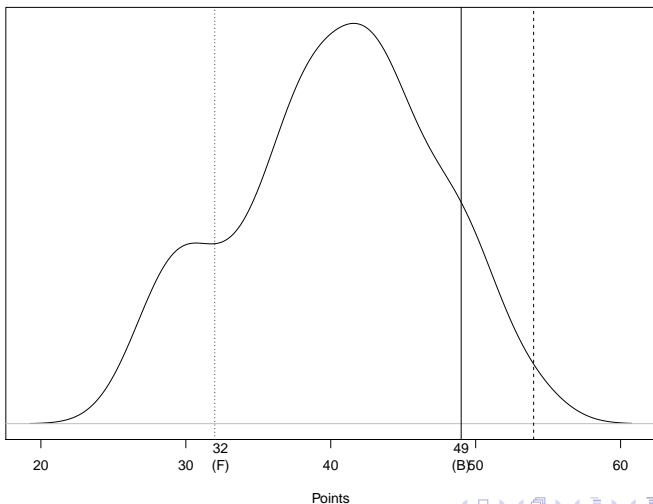
Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
26.00	36.00	41.00	40.32	45.00	54.00	6

Grades:

F	D	C	B	max
32	38	43	49	54

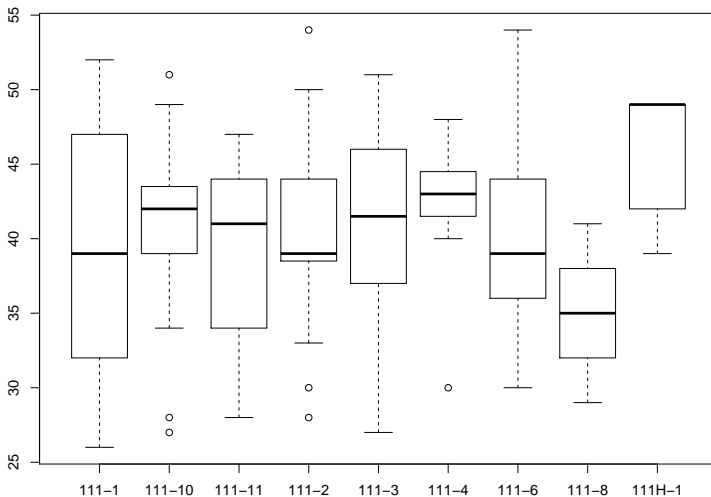
# Results of Exam 1: the curve

Density estimation for Exam 1 (Biol 111)



# Results of Exam 1: sections

Competition between Biol 111 sections (Exam 1)



# Results of Exam 1: some questions I

- Which basic feature of life is modeled in coacervates?
  - Ⓐ DNA → RNA → proteins sequence
  - Ⓑ **Semi-permeable membrane**
- pH is a
  - Ⓐ **Negative logarithm (degree of ten) of the concentration of protons**
  - Ⓑ Negative logarithm (degree of ten) of the concentration of hydroxyl ions
  - Ⓒ Negative logarithm (degree of ten) of the concentration of electrons
- Miller-Urey experiment demonstrated the possible origin of:
  - Ⓐ **Primordial soup**
  - Ⓑ RNA world
  - Ⓒ LUCA



# Results of Exam 1: some questions II

- How many grams of phosphoric acid we should dilute in 1 liter of water to obtain 1 M concentration?
  - Ⓐ 7 g
  - Ⓑ 48 g
  - Ⓒ **98 g**
- What is the difference between reversal and vestigial organs?
  - Ⓐ **Reversal organs are mutations, vestigial organs are normal**
  - Ⓑ Vestigial organs are mutations, reversal organs are normal
  - Ⓒ Reversal organs are are results of the convergent evolution, vestigial organs are not
- If two elements occur in the same period (row) of periodic table, it indicates that:
  - Ⓐ **They have similar size**
  - Ⓑ They have similar chemical features
  - Ⓒ They have similar isotopes

# Results of Exam 1: some questions III

- Which set of three components can make a nucleotide?
  - (A) Sugar, amino acid and carbon cycle with nitrogen
  - (B) **Phosphoric acid, sugar and carbon cycle with nitrogen**
  - (C) Lipid, sugar and carbon cycle with nitrogen
- Radioactivity helps to estimate:
  - (A) Relative age
  - (B) **Absolute age**
  - (C) Both of above



# AP Biology

- **AP Biology:**  
[http://en.wikibooks.org/wiki/AP\\_Biology](http://en.wikibooks.org/wiki/AP_Biology)
- **AP Biology/The Nature of Molecules:**  
[http://en.wikibooks.org/wiki/AP\\_Biology/The\\_Nature\\_of\\_Molecules](http://en.wikibooks.org/wiki/AP_Biology/The_Nature_of_Molecules)
- **AP Biology/The Chemical Building Blocks of Life:**  
[http://en.wikibooks.org/wiki/AP\\_Biology/The\\_Chemical\\_Building\\_Blocks\\_of\\_Life](http://en.wikibooks.org/wiki/AP_Biology/The_Chemical_Building_Blocks_of_Life)



# Questions and answers

## Where we are?

# First life

- In Mesoarchaeon, cyanobacteria (fossilized as stromatolites) were first
- Photosynthesis changed the atmosphere
- Aerobic life respire to obtain more ATP

# Cell

## Prokaryotic cell

## *Prokaryotic cell*

# Main components of prokaryotic cell

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



# Summary

- Prokaryotic cells are simplest cells

# For Further Reading



## Prokaryotic cells.

[http://en.wikipedia.org/wiki/Cell\\_  
%28biology%29#Prokaryotic\\_cells](http://en.wikipedia.org/wiki/Cell_%28biology%29#Prokaryotic_cells)