

Concepts of Biology. Lecture 27

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Outline

- 1 Questions and answers
 - Exam 3
- 2 Where we are?
- 3 Genetics and inheritance
 - Life cycle



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Questions and answers

Exam 3



Results of Exam 3: statistic summary

Summary:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
29.00	41.00	47.00	47.69	57.00	65.00	18

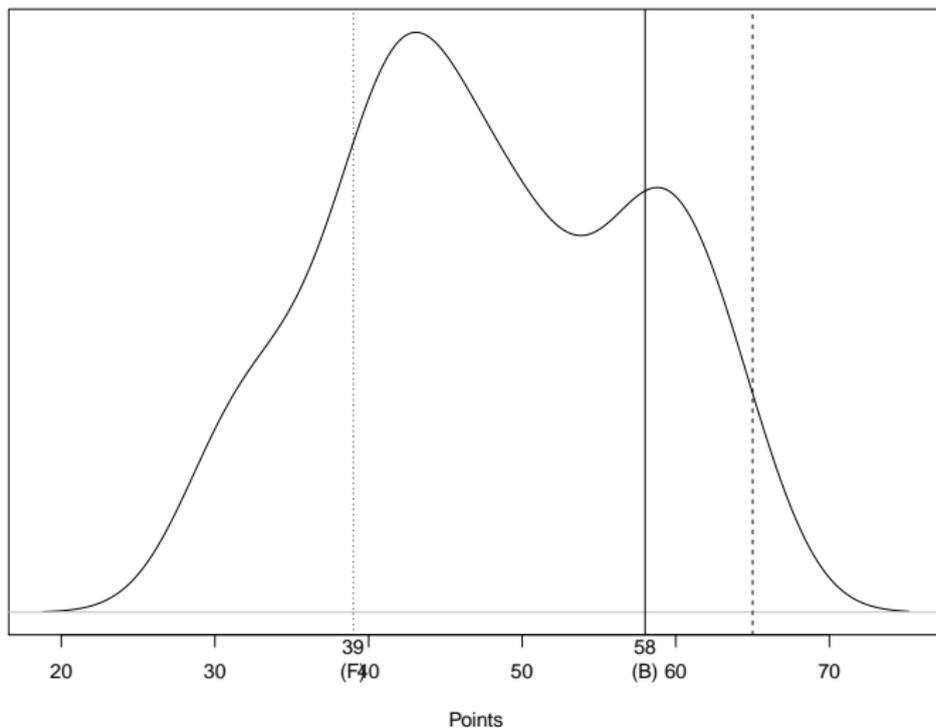
Grades:

F	D	C	B	max
39	46	52	58	65



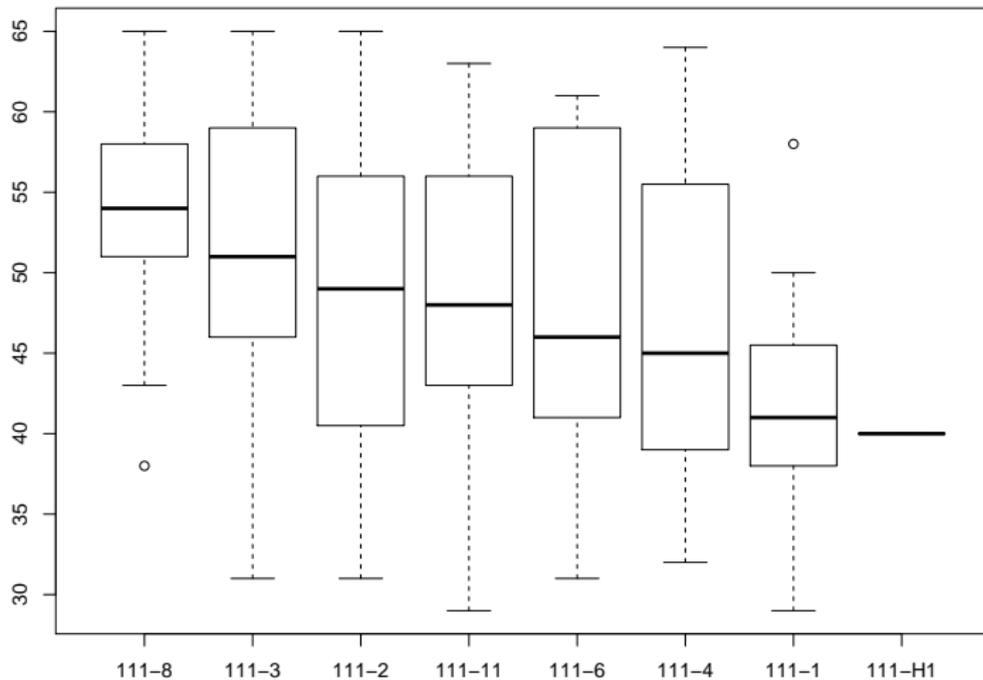
Results of Exam 3: the curve

Density estimation for Exam 3 (Biol 111)



Results of Exam 3: sections

Competition between Biol 111 sections (Exam 3)



Results of Exam 3: five questions

- For fertilization, ferns need:
 - Ⓐ **Water**
 - Ⓑ Wind
 - Ⓒ Insects
- What is the horizontal transfer of DNA?
 - Ⓐ Transfer of DNA from mother to daughter cells
 - Ⓑ **Transfer of DNA between cells of different species**
 - Ⓒ Transfer of DNA between cells of one tissue
- Multicellular organisms:
 - Ⓐ **Could function without both reproductive cells and tissues**
 - Ⓑ Always have specialized reproductive cells
 - Ⓒ Always have specialized tissues
- How to name eukaryotes without tissues?
 - Ⓐ Plants
 - Ⓑ Monera
 - Ⓒ **Protists**
- Closed gut occurs:
 - Ⓐ In arthropods
 - Ⓑ In chordates
 - Ⓒ **In anthozoans (corals)**



Three main phyla of plants

- **Bryophyta**: mosses
- **Pteridophyta**: ferns and allies (like clubmosses and horsetails)
- **Spermatophyta**: seed plants (including conifers and flowering plants)



Meiosis

- Chromosome formula: $XX \rightarrow X + X \rightarrow I + I + I + I$
- **The goal of meiosis** is to counterbalance the syngamy
- Meiosis changes genotype of cells because: (1) chromosomes are **recombined** and (2) chromosomes exchange their genetic material



Stages of meiosis

- Ⓐ First division: reductive part
 - Prophase I: homologous chromosomes form pairs (**synapses**) and start to exchange DNA (**crossing-over**)
 - Metaphase I
 - Anaphase I: homologous chromosomes will go *independently* to different poles
 - Telophase I becomes Prophase II, without interphase (and typically without cytokinesis)

- Ⓑ Second division: equal part (similar to mitosis)
 - Prophase II
 - Metaphase II
 - Anaphase II
 - Telophase II



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An inside-out origin for the eukaryotic cell

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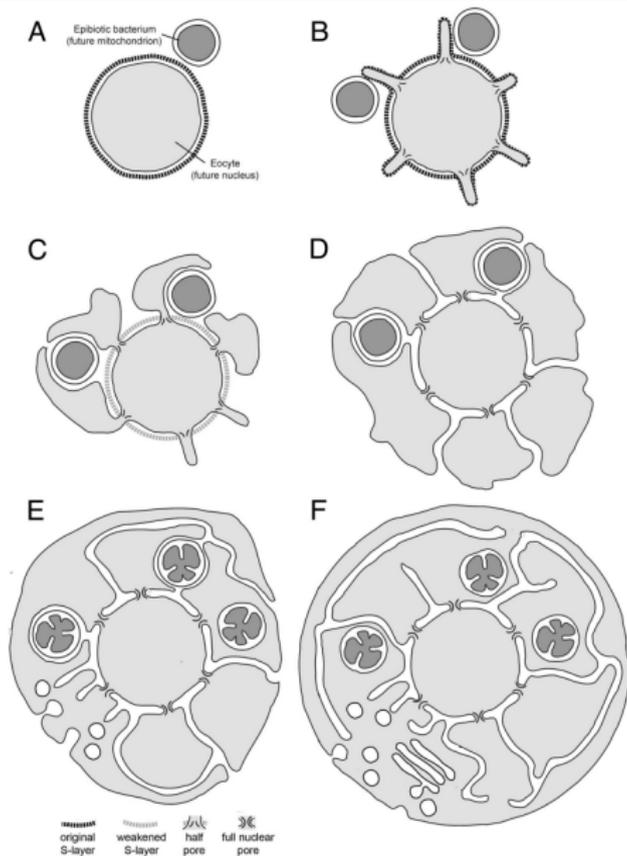
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Just a possibility...



Genetics and inheritance

Life cycle



Life cycle of unicellular organism



Life cycle of multicellular organism



Summary

- Plant body and its tissues is the result of adaptation for the life on land
- The life cycle is the sequence of events between two syngamies
- Gender is the result of division of labor between two gametes: female gametes invest in resources whereas male invest in numbers



For Further Reading



Life cycle.

`http://en.wikipedia.org/wiki/Biological_life_cycle`



Syngamy.

`http://en.wikipedia.org/wiki/Syngamy (only intro)`

