

Introduction to Botany. Lecture 14

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Outline

1 Questions and answers

2 Life cycle

- Basics



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2 Life cycle

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Previous final question: the answer

What is the difference between anaphase I of meiosis and anaphase of mitosis?



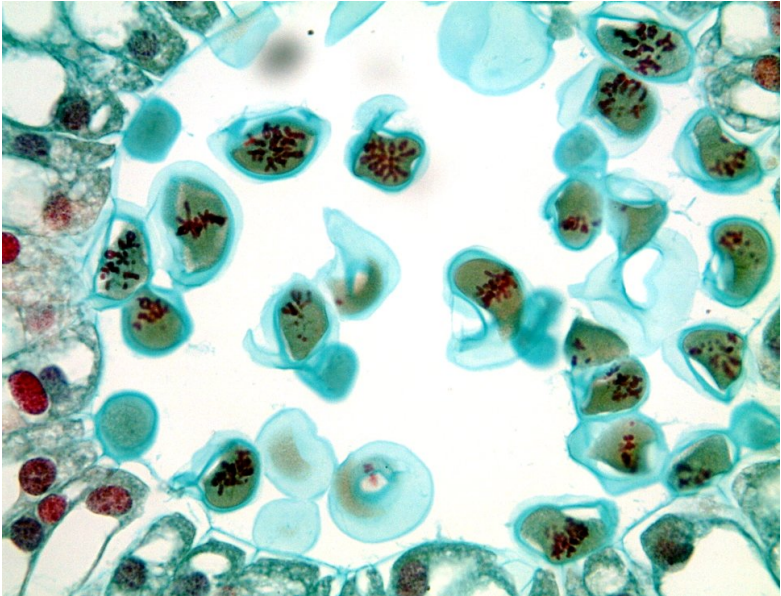
Previous final question: the answer

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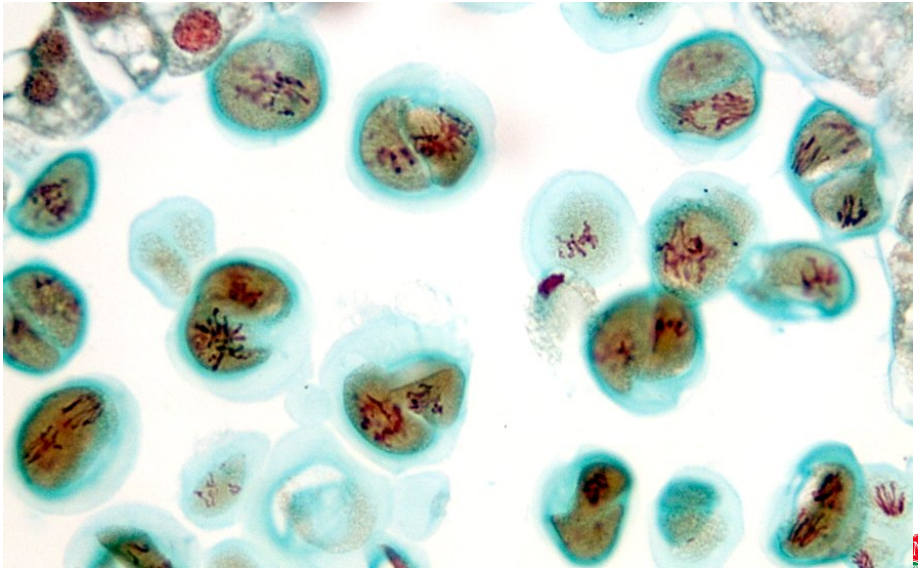
- Meiosis: homologous chromosomes will go *independently* to different poles
- Mitosis: halves of *every* chromosome go to different poles



Meiosis, 1st division



Meiosis, 2nd division



Life cycle

Basics

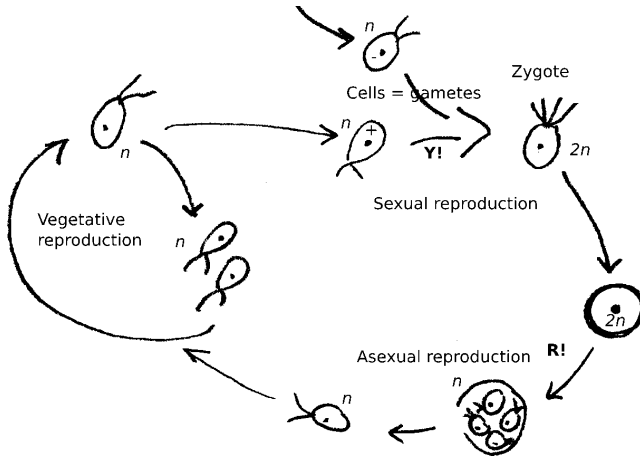


Simple life cycle: unicellular organism

Associated terms: mitosis, meiosis (R!), syngamy (Y!), reproduction, sexual reproduction, asexual reproduction, vegetative reproduction, isogamy, heterogamy, oogamy, zygote, gamete, male, female, spermatozoon, oocyte



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Multicellularity, or Origin of Death

- Sometimes, cells do not part after mitosis. These simple cell aggregates may benefit from their size (e.g., harder to swallow) and putative division of labor (e.g., capture light from different sides and share products of photosynthesis)
- Next step is to separate *germ cells* and *somatic cells*. Somatic cells with eventually die whereas germ cells may give an offspring.
- This is the beginning of **multicellularity**.

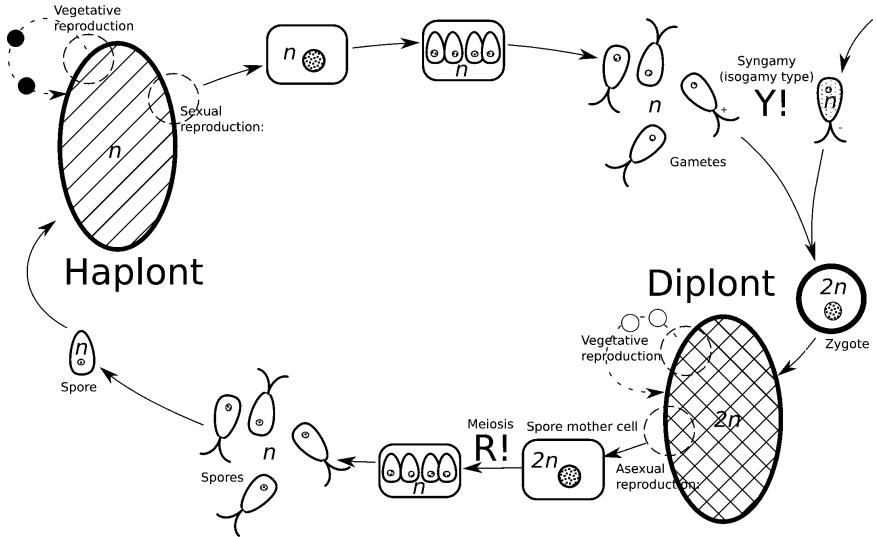


General life cycle: multicellular organism

Associated terms: haplont, diplont, spores, mitospores



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Associated terms: haplont, diplont, spores, mitospores



Final question (2 points)



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In most organisms, cells participating in syngamy are unequal
(male and female).
Why?



Summary

- **Mitosis** is a process of cell multiplication, **ploidy stays constant**, **genotype does not change**
- **Meiosis** is a process of reduction of DNA amount, **ploidy halves**, **genotype changes**
- **Syngamy** is a process of DNA renovation, **ploidy doubles**, **genotype changes**



For Further Reading



A. Shipunov.

Introduction to Botany [Electronic resource].

2010—onwards.

Mode of access:

http://ashipunov.info/shipunov/school/biol_154



Th. L. Rost, M. G. Barbour, C. R. Stocking, T. M. Murphy.

Plant Biology. 2nd edition.

Thomson Brooks/Cole, 2006.

Chapter 12 (skip the angiosperm life cycle!.