

Introduction to Botany. Lecture 16

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Outline

1 Questions and answers

- Quiz

2 Life cycle

- Basics of life cycles



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Questions and answers

Quiz



Final question (2 points)

Before the meiosis, the cell had 6 picograms of DNA. How much DNA will be in the each daughter cells after meiosis?



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- 6 picograms divided between 4 cells = 1.5 picograms



Life cycle

Basics of life cycles

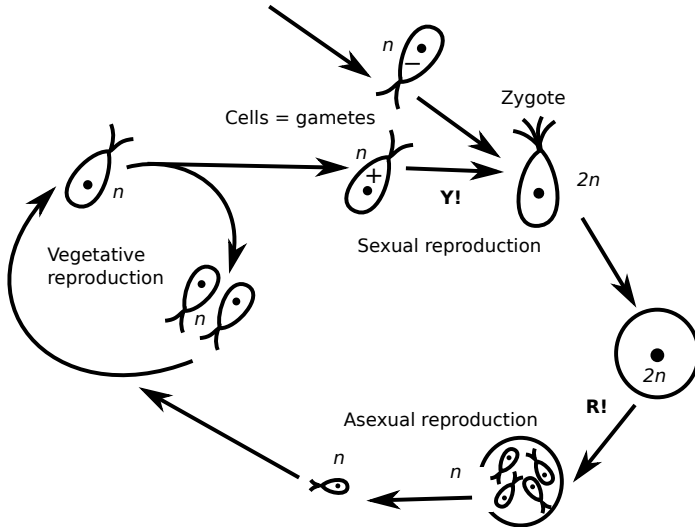


Simple life cycle: unicellular organism

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

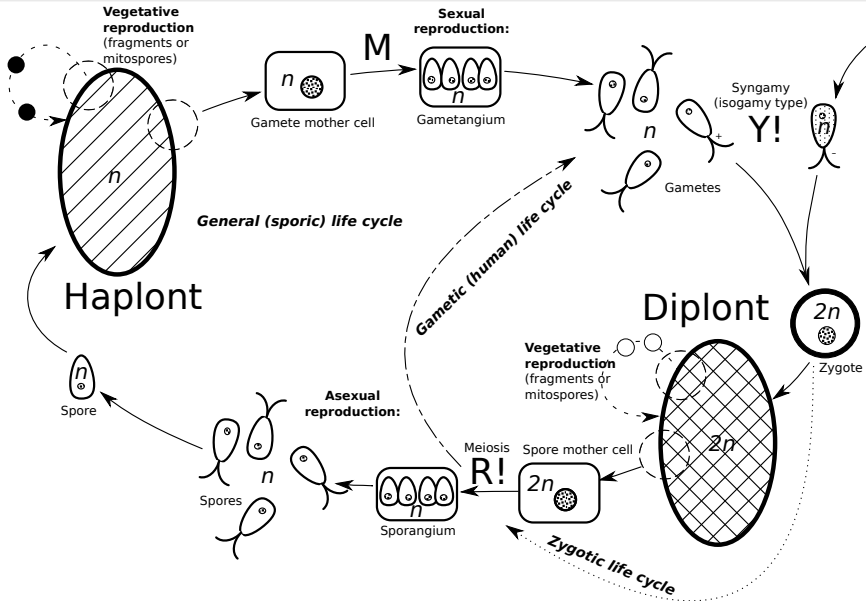
- Sometimes, cells do not part after mitosis. These simple cell aggregates may benefit from their size (e.g., harder to swallow) and putative division of labor (e.g., capture light from different sides and share products of photosynthesis)
- Next step is to separate *germ cells* and *somatic cells*. Somatic cells will eventually die whereas germ cells may give an offspring.
- This is the beginning of **multicellularity**.
- Life cycles of multicellular organisms are based on interleaving **haplont** and **diplont**, the second is making **spores**



General life cycle: multicellular organism



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Why is zygotic life cycle more ancient?



Summary

- **Mitosis** is a equal division of DNA, **ploidy does not change**, **genotype does not change**
- **Syngamy** is a sexual process of cell fusion, **ploidy doubles**, **genotype changes**
- **Meiosis** is a process of reduction of DNA amount, **ploidy halves**, **genotype changes**
- Meiosis has two stages: first to reduce ploidy, second to split exact copies of DNA



For Further Reading



A. Shipunov.

Introduction to Botany [Electronic resource].

Mode of access:

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

