

# Introduction to Botany. Lecture 26

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# Outline

## 1 Questions and answers

## 2 Life cycle

- Syngamy
- Basics



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## Previous final question: the answer

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



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

- In mitosis, parts of chromosomes will go to different poles
- In meiosis, whole chromosomes (from each pair of homologs) will go to different poles



# Polyploids

- If for some reason, meiosis will not run correctly, one of resulted cells could receive double set of chromosomes ( $2n$  instead of  $n$ )
- If this cell goes to syngamy, resulted zygote will have  $3n$  chromosomes
- Cells with  $> 2n$  chromosomes are **polyploids**



# Life cycle

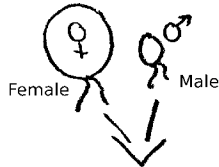
## Syngamy



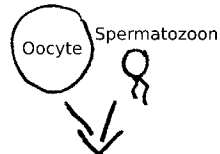
# Types of syngamy (Y!)



Isogamy:  
different  
genotypes



Heterogamy:  
different  
size



Oogamy:  
different  
motility

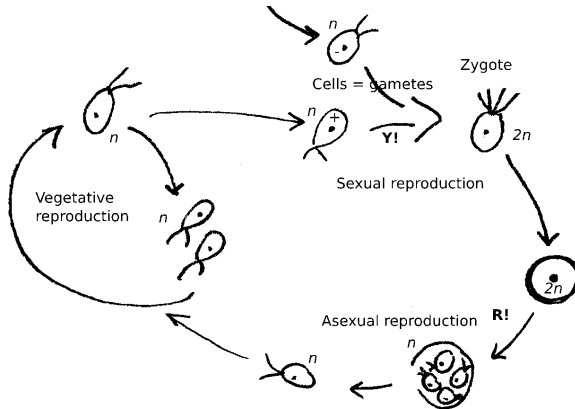


# Life cycle

## Basics

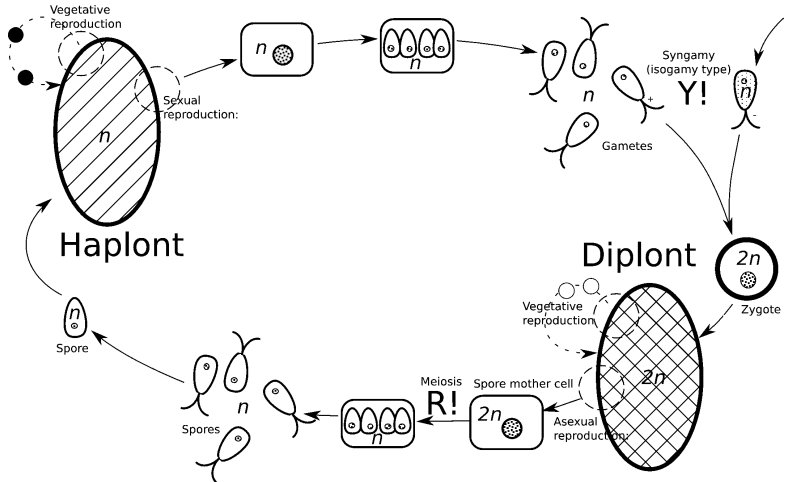


# Simple life cycle: unicellular organism



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

# General life cycle: multicellular organism



Associated terms: haplont, diplont, spores, mitospores



# Final question (2 points)



## Final question (2 points)

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



J. E. Bidlack, Sh. H. Jansky.  
*Stern's introductory plant biology*. 12th edition.  
McGraw-Hill, 2011.  
*Chapters 9, 12.*



Th. L. Rost, M. G. Barbour, C. R. Stocking, T. M. Murphy.  
*Plant Biology*. 2nd edition.  
Thomson Brooks/Cole, 2006.  
*Chapters 11, 12 (skip the angiosperm life cycle!)*

