

Introduction to Botany. Lecture 34

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1 Questions and answers

2 Class Magnoliopsida: angiosperms, or flowering plants

- Life cycle of flowering plants



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2 Class Magnoliopsida: angiosperms, or flowering plants

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Previous final question: the answer

If reproduction via seeds is better than reproduction via spores, why there are 10,000 species of ferns and only 600 species of gymnosperms?



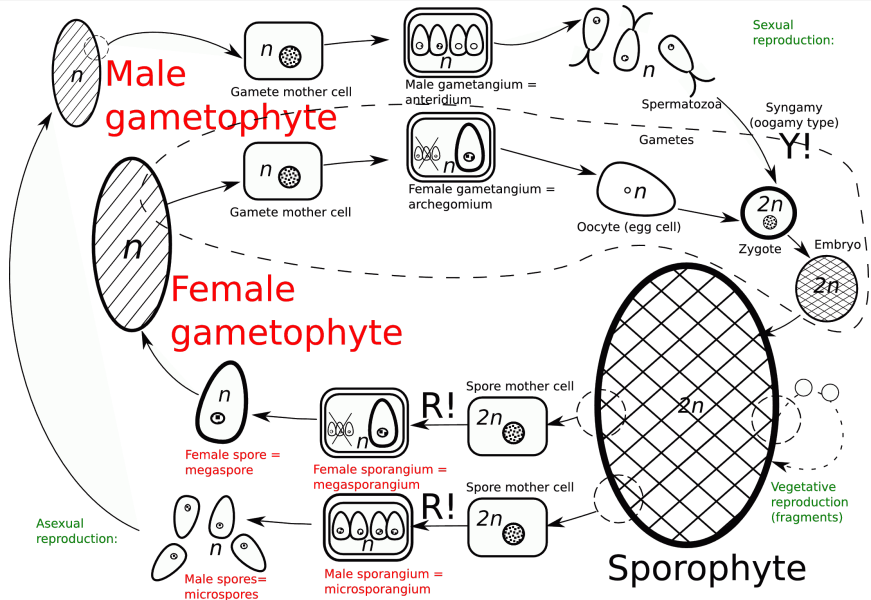
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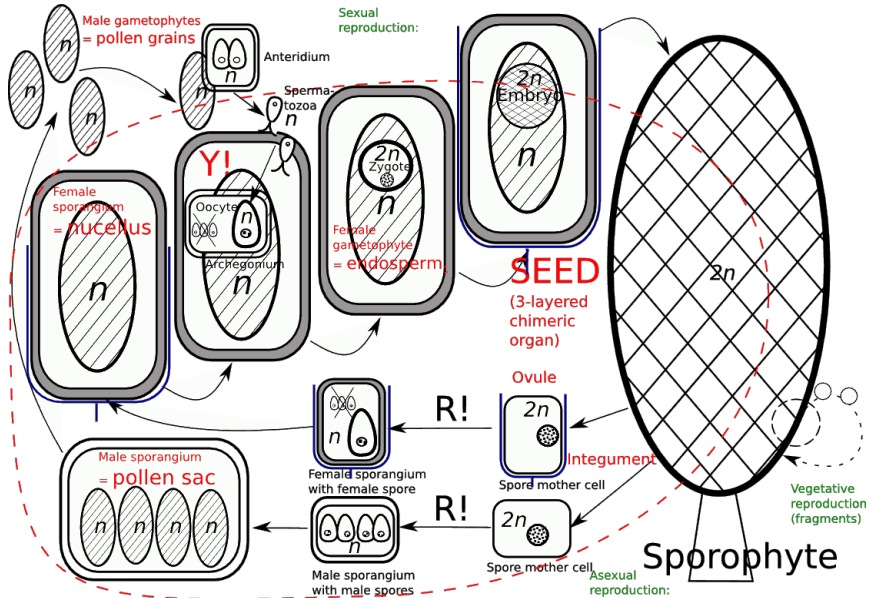
- Slow and ineffective life cycle
- Competition with angiosperms



Heterosporic cycle: differences



Life cycle of seed plants: differences



Class Magnoliopsida: angiosperms, or flowering plants

Life cycle of flowering plants



Life cycle of angiosperms: differences

- Reduction of gametophyte: 3-celled pollen and 7-celled embryo sac
- No archegonia and anteridia
- Spermatia, pollen tube
- Double fertilization
- New endosperm (second embryo)
- Cupule (pistil) and fruit
- In general, **angiosperms have accelerated life cycle** needed for fast-growing herbs



Life cycle of angiosperms

Terms covered:

- Embryo sac, central cell
- Spermatia (sperms without flagella), pollen tube
- Double fertilization
- Pistil and ovule → fruit and seed

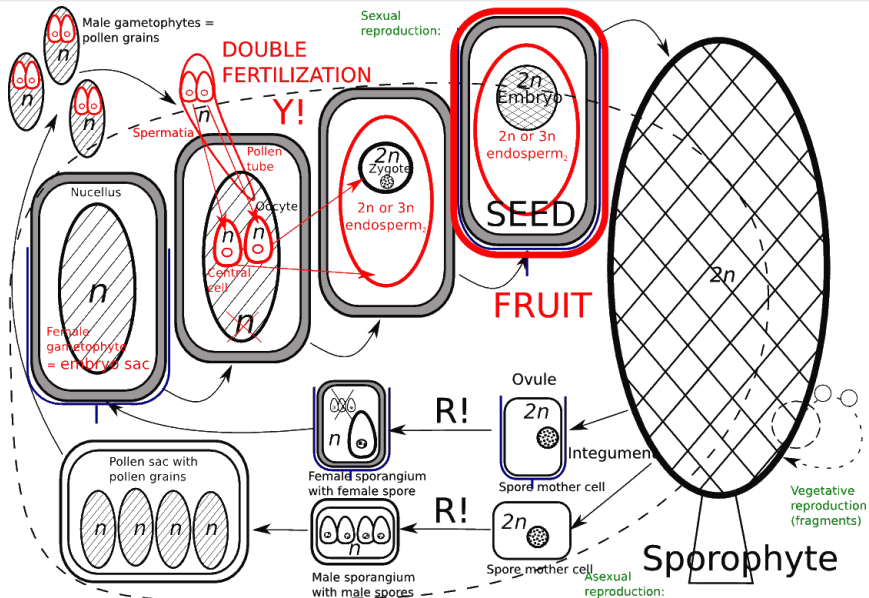


Life cycle of angiosperms: sources of optimization

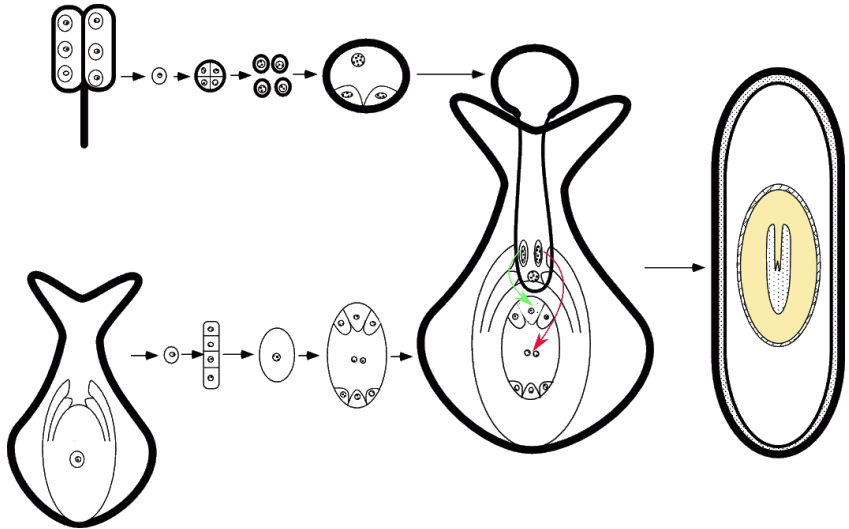
- Reduction of everything, especially of haploid stages
- Signal role of second embryo (source of endosperm₂)
- Well-developed pollination



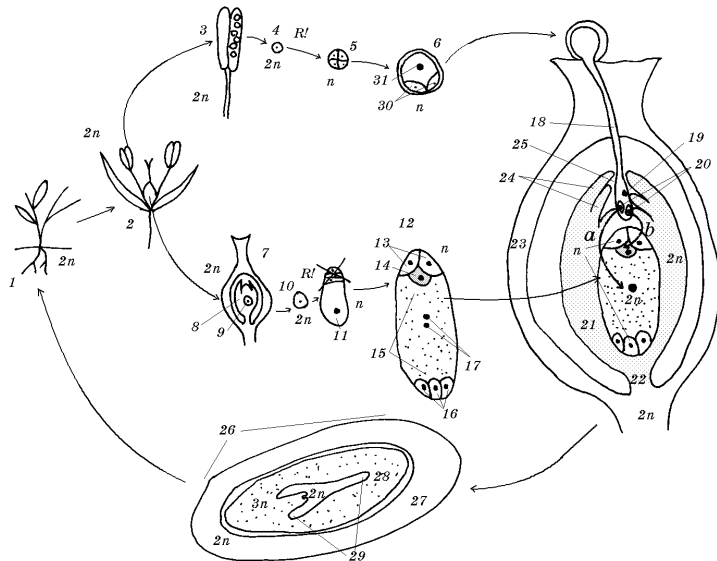
Life cycle of angiosperms: differences



Life cycle of angiosperms: relations between structures



Life cycle of angiosperms: another view



Final question (2 points)



Final question (2 points)

What is a double fertilization?



Summary

- Angiosperms optimized their life cycle using (a) reduction, (b) signaling second embryo and (c) sophisticated pollination



For Further Reading



J. E. Bidlack, Sh. H. Jansky.

Stern's introductory plant biology. 12th edition.

McGraw-Hill, 2011.

Chapters 8 and 23.



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

Plant Biology. 2nd edition.

Thomson Brooks/Cole, 2006.

Chapters 13 and 25.

