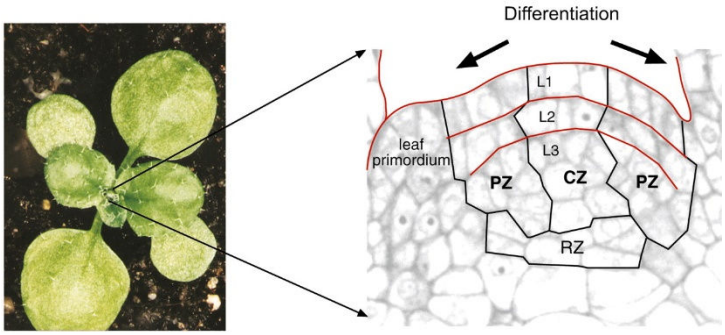
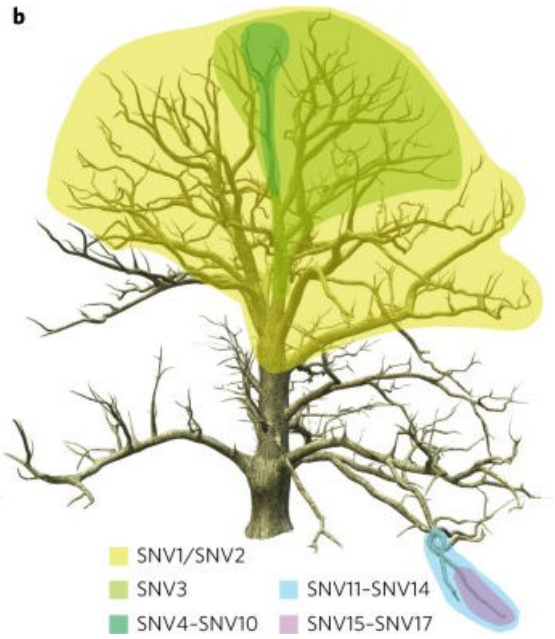
Purpose of Meiosis



Organization of the Arabidopsis shoot meristem. Gross-Hardt & Laux, 2003

Schmid-Siegert et al, 2017

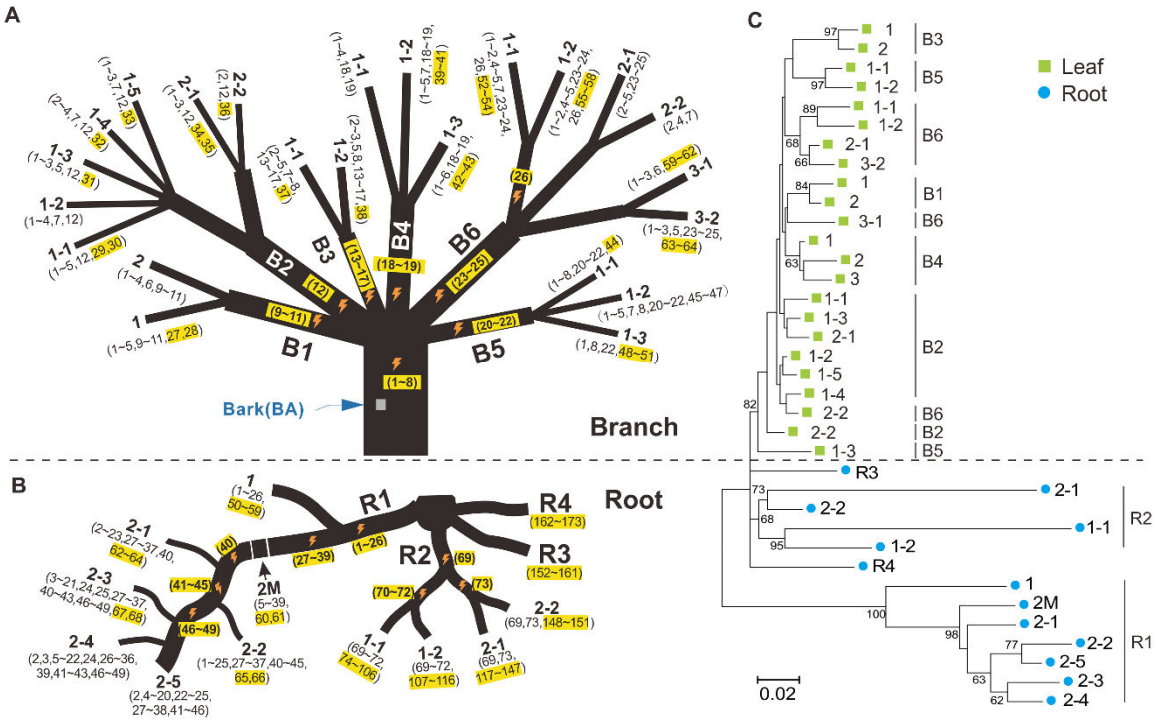
- Napoleon oak, planted 1788



- Arabidopsis gametic rate is 7 x 10^{-9}/generation
- Oak somatic rate = ~4.7 x 10^{-8}

Wang et al, 2019

= mutation found in all derived tissues



Life cycles

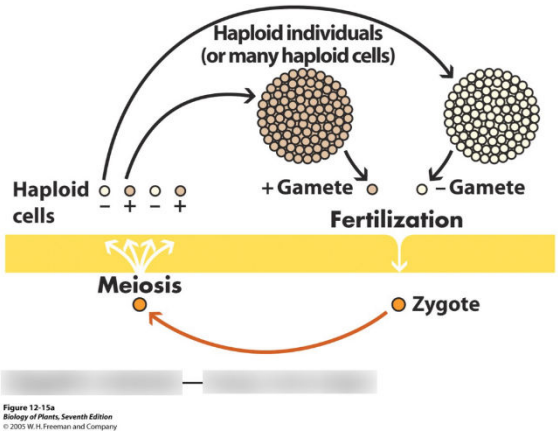


Figure 12-15a
Biology of Plants, Seventh Edition
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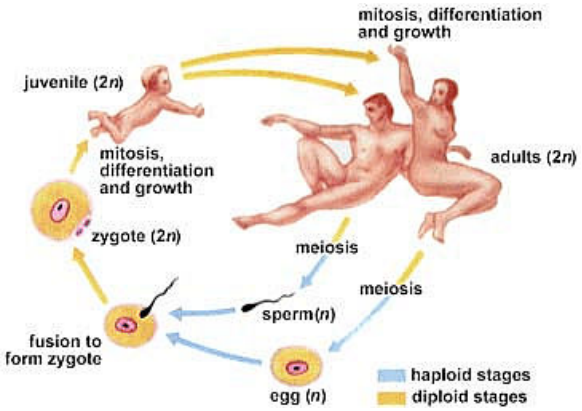
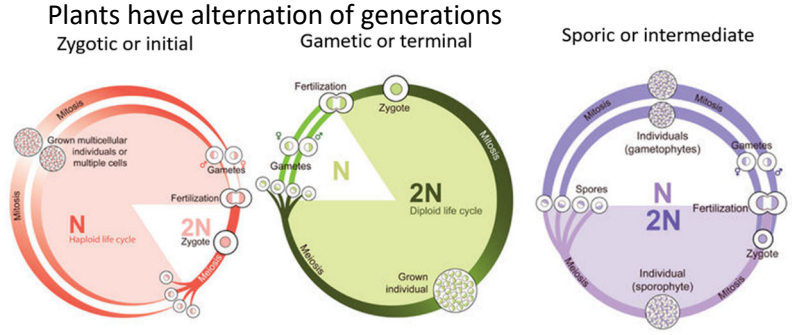
Zygotic or initial meiosis- Found in algae, fungi, protists



Gametic or terminal meiosis- Found in most animals.

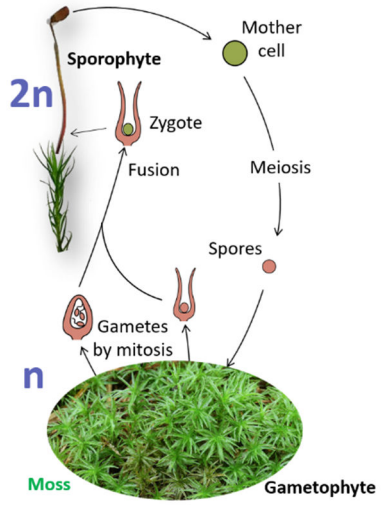
http://www.biosci.uga.edu/almanac/bio_103/notes/apr_4.html

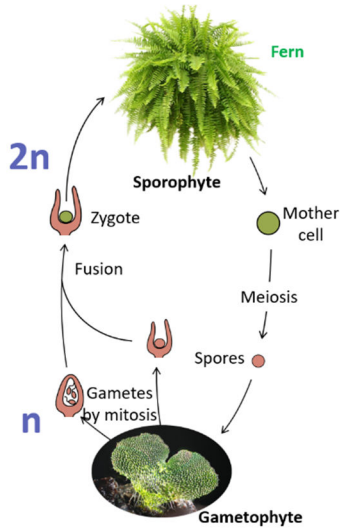
Plants have alternation of generations

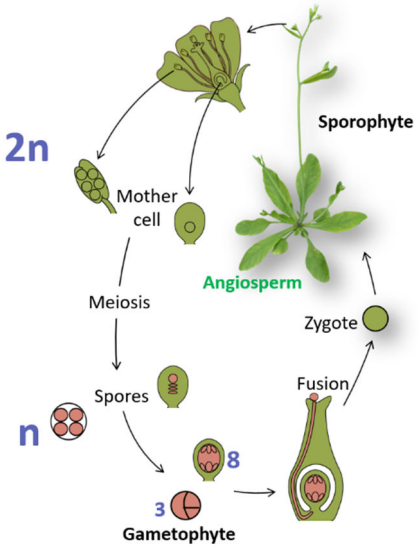


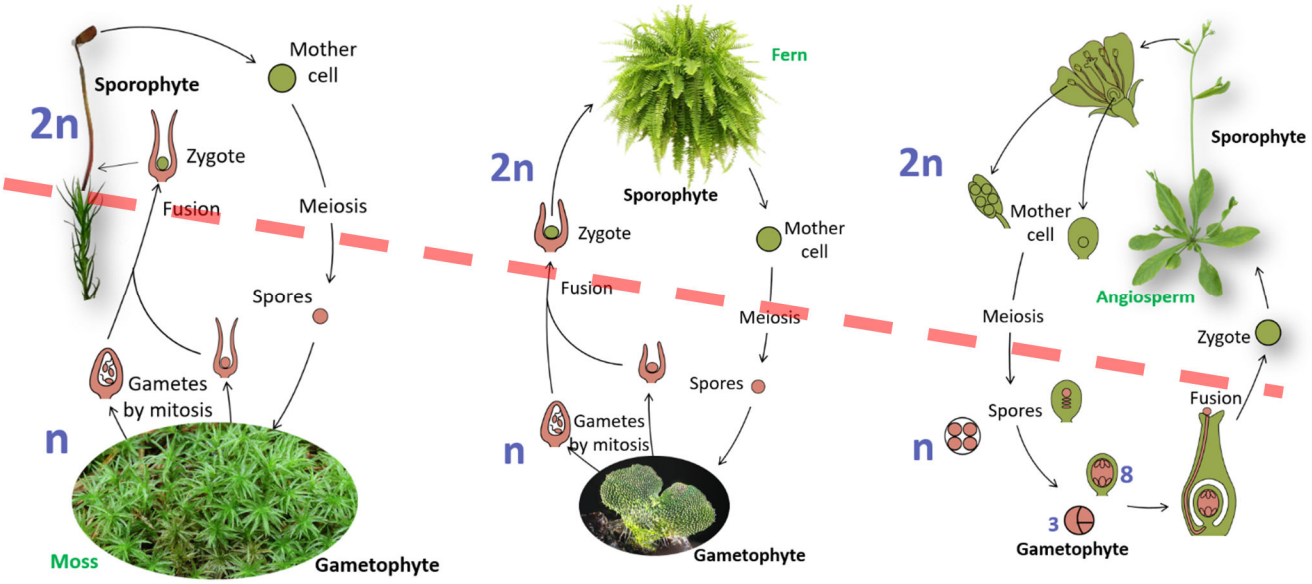
https://flexbooks.ck12.org/cbook/ck-12-biology-flexbook-2.0/section/2.39/primary/lesson/reproductive-life-cycles-bio

Graphics by Gurjot Singh Sidhu









abrc.osu.edu, biomarker.org, vcbio.science.ru.nl, homedepot.com

Stages of Meiosis: Meiosis I

Prophase I

2n=2x=2c=6

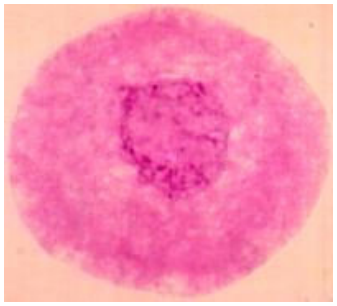


Figure 1. Class Alum Zengbang Chen. Pearl millet-Pennisetum squamulatum hybrid

Leptotene

Figure 2. Class alum Doug Heckart. Seashore paspalum

Zygotene

Figure 3. Class alumna Rebecca Tashiro. White clover

Pachytene

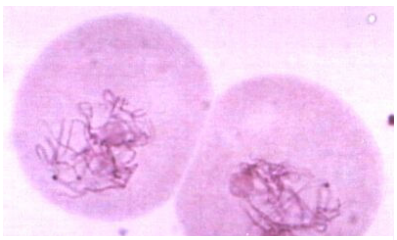


Figure 4. Class Alum Ed Kentner. Iris fulva x I. brevicaulis F1 Hybrid

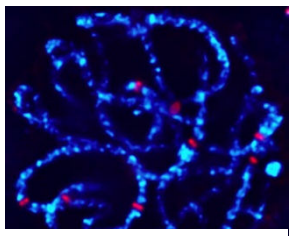


Figure 5. Class alumna Jinghua Shi. Maize

Diplotene

Figure 6. Class Alum Ed Kentner. Iris fulva

Diakinesis

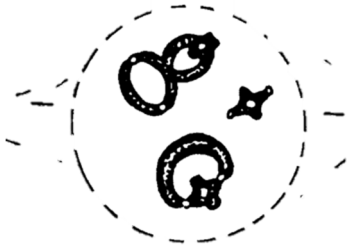
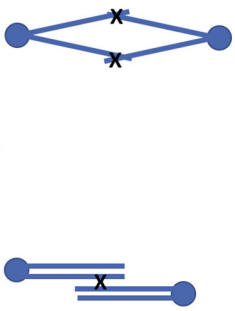


Figure 7. Class alum Doug Heckart. Seashore paspalum



Prometaphase I

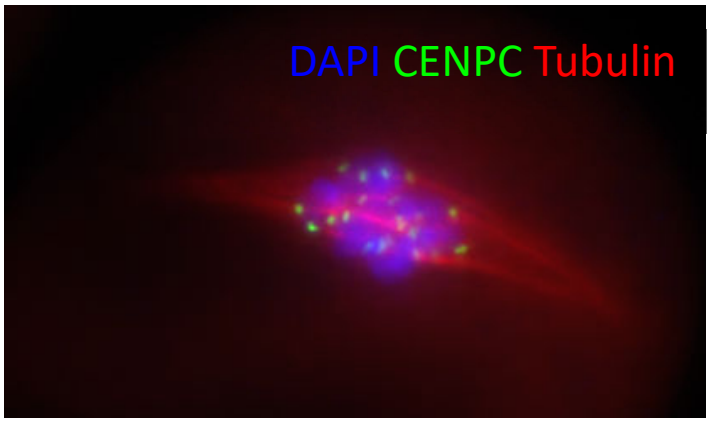
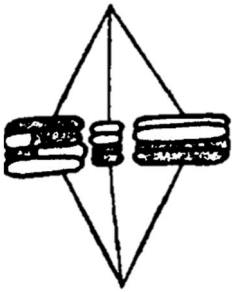


Figure 8. Class alum Kyle Swentoski

Metaphase I



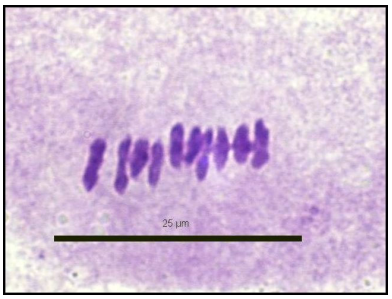


Figure 10. Class alum Doug Heckart. Seashore paspalum

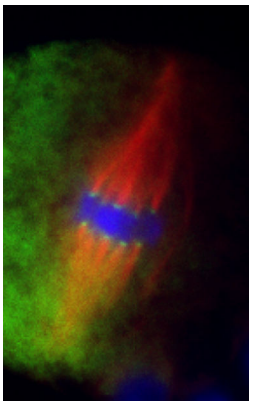
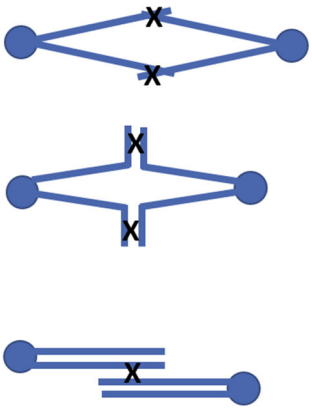
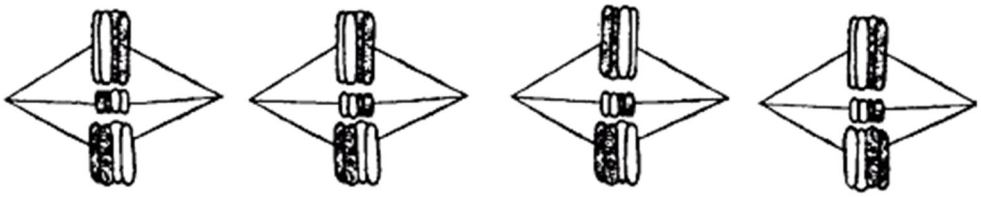


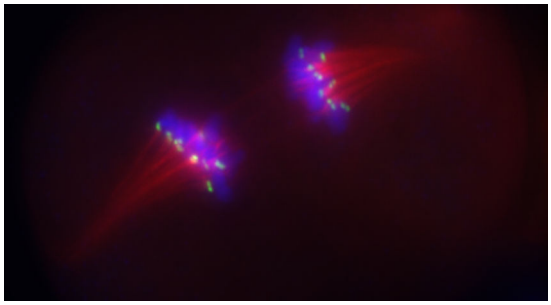
Figure 9. Class alum Kyle Swentoski. Maize



Metaphase I orientation



Anaphase I



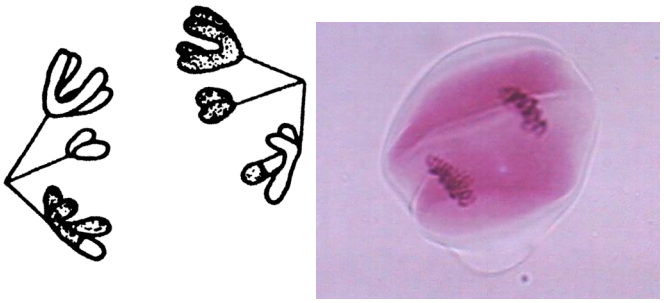
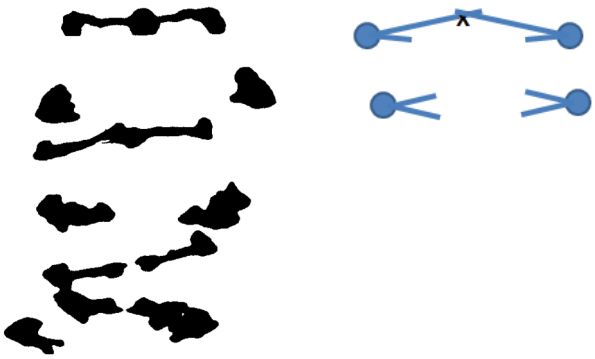
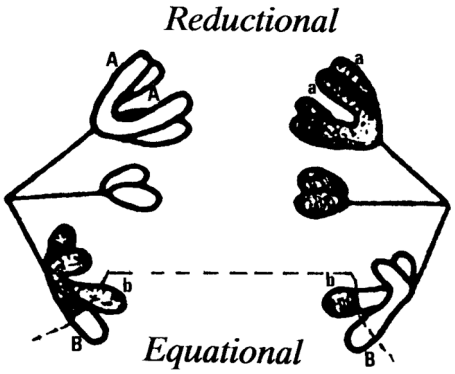


Figure 12. Class Alum Ed Kentner. Iris fulva



Reduction



Telophase I

Figure 14. Class alum Aaron Hoskins. Jalapeño pepper

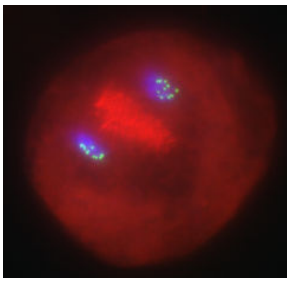
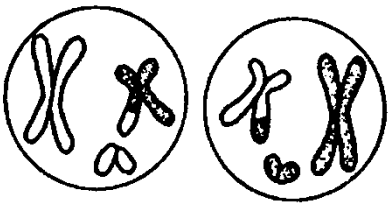


Figure 13. Class alum Kyle Swentoski, Maize



Possible interphase

Meiosis II

Prophase II

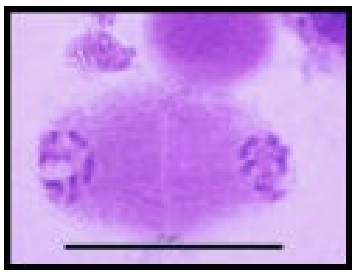


Figure 15. Class alum Doug Heckart. Seashore paspalum

Metaphase II

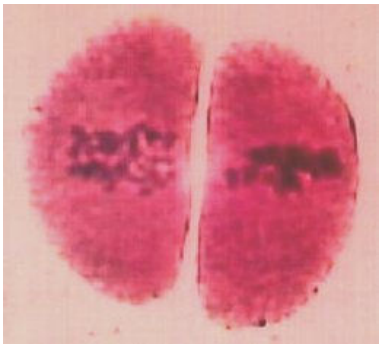


Figure 18. Class alum Zenbang Chen. Pearl millet-Pennisetum squamulatum hybrid

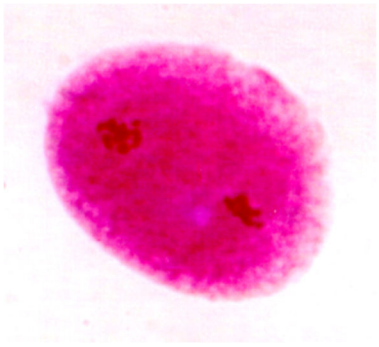


Figure 17. Class alumna "Mike" Scheiber. Abelia schumannii

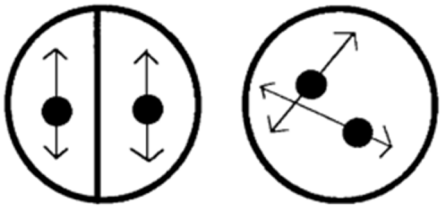
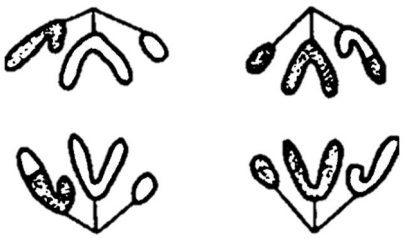


Figure 16. The spindle axes are parallel to each other in Met II in monocots. For eudicots, they define the poles of a tetrahedron.

Anaphase II



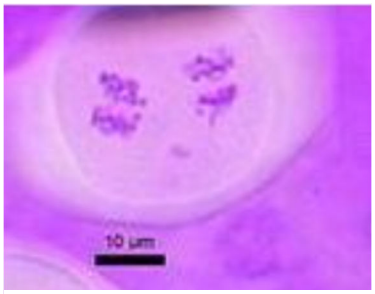
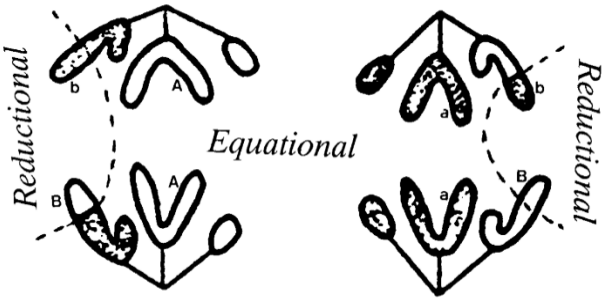


Figure 19. Class alumna Amanda Hershberger. Lantana camara 'Miss Huff'

Reduction



Telophase II

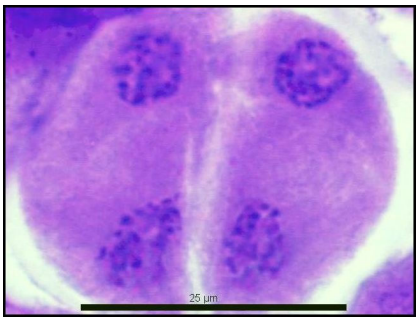
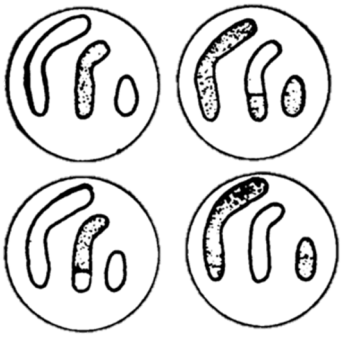


Figure 20. Class alum Doug Heckart. Seashore paspalum

Figure 21. Class Alum Aaron Hoskins. Jalapeño pepper



Cytokinesis

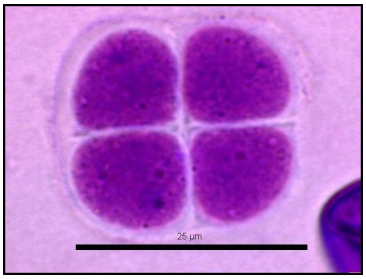


Figure 22. Class alum Doug Heckart. Seashore paspalum

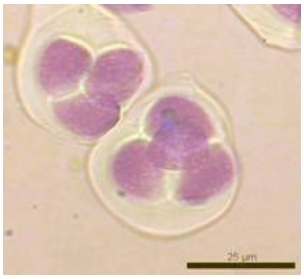


Figure 23. Class alumna Rebecca Tashiro. White clover