

Learning Modules outline the tasks that should be completed to master the biology outcomes from each chapter or group of chapters. Some of the tasks are optional, but highly recommended. Mandatory tasks must be completed by the specified deadlines. Mandatory tasks will consist of a short on-line quiz over the reading, and a short on-line critical thinking question. Sometimes, there will also be group assignments that will be assigned during class.

Learning Module 8

Learning Outcomes for Chapter 12 & 13 - Cell Division.

1. Compare and contrast the process and products of mitosis and meiosis.
2. Correlate the stages of the cell cycle to the activities within the cell.
3. Illustrate the stages of cell division in both mitosis & meiosis. These stages include interphase, prophase, metaphase, anaphase, telophase and cytoplasmic division (cytokinesis).
4. Distinguish between cytoplasmic division in animal cells and plant cells.
5. Explain what can happen if control mechanisms of cell division fail.
6. Explain how meiosis contributes to variation in traits of offspring.

Learning Tasks

- 1) Read chapter 12 & 13. This should parallel and be reinforced by what you have already learned in lab.
- 2) Review these figures in chapter 12: Fig 12.5, 12.6 and 12.17
- 3) Review these figures in chapter 13: 13.5, 13.8, 13.9
- 4) Go to this link >http://www.cellsalive.com/cell_cycle.htm< to review the cell cycle. Select "Cell Cycle" on the left, and observe the animation. Be sure to watch the "Basic animation" and the "Checkpoints" animation.
- 5) Go to the same link as above to review the stages of mitosis or meiosis. Select "Mitosis" or "Meiosis" on the left and observe the animation. You can go through the animation in "Step" by pressing the step arrows to see what is happening in each separate stage.
- 6) Go to the following links to observe narrated animations of mitosis and meiosis. ><http://bcs.whfreeman.com/thelifewire/content/chp09/0902001.html>< or ><http://bcs.whfreeman.com/thelifewire/content/chp09/0902002.html><
- 7) Don't forget to check out the learning and review tools from your textbook on Masteringbio.com.
- 8) Define the following, important biological terms.
 - A. Mitosis, meiosis
 - B. Chromosomes, sister chromatids
 - C. Interphase: G1, S, G2, Mitotic phase.
 - D. Spindle apparatus, centrosome, microtubules
 - E. Prophase, metaphase, anaphase, telophase, cytoplasmic division
 - F. Asexual reproduction, sexual reproduction
 - G. haploid chromosome number, diploid chromosome number, homologous chromosomes
 - H. Crossing over
 - I. Gametes, egg, sperm, fertilization
- 8) **Critical Thinking Question # 8 is posted at proferickson.com/ami. It is due Thursday, April 2nd before class.**