

# Life Cycles of the Poor & Underappreciated

Biol 1012, S2008, Shannon & Little

**Goal:** Help you learn the three primary life cycles

## Exercise 1

Working in three groups, devise a skit illustrating the life cycle assigned to you using the role packet provided. The skit should include:

- 1) Diagram and explain the life cycle on the whiteboard.
- 2) Narration of the skit.
- 3) Action, including:
  - (A) Illustrate both haploid and diploid stages of the life cycle,
  - (B) Depict all types of cell division and fertilization that occur,
  - (C) Include gametes, zygotes, and multicellular generations (if any),
  - (D) Specify whether cells are haploid ( $n$ ) or diploid ( $2n$ ).

## Rules

- All members of the group must play a part in the skit.
- All roles must be included – please include at least 1 prop for each.
- Skits may be no longer than 5 minutes.

## Exercise 2

Evaluate the skits. Below, draw the life cycles as they are depicted by your classmates. Place stars near anything that you think is incorrect. Comment on the performance.

Group: \_\_\_\_\_ Life cycle: \_\_\_\_\_

Drawing:

Comments/ranking:

Group: \_\_\_\_\_ Life cycle: \_\_\_\_\_

Drawing:

Comments/ranking:

Group: \_\_\_\_\_ Life cycle: \_\_\_\_\_

Drawing:

Comments/ranking:

### Exercise 3. Challenge Questions

1. Why is meiosis a necessary part of every sexual life cycle?
2. You are out collecting cells in nature (just go along with it). You find a haploid fungal cell. Can you definitively determine what cell division process (meiosis or mitosis) created this cell? Why or why not?
3. If you found a haploid animal cell, in general, could you definitively determine what cell division process (meiosis or mitosis) created it? Why or why not?
4. In which life cycle does cell division never produce a diploid cell? Why?
5. Consider land plants, which have alternation of generations. The first land plants (mosses) have a large haploid multicellular stage (gametophyte) and a tiny, dependent diploid multicellular stage (sporophyte). The reverse is true in more recently derived land plant lineages (ferns, pines, and flowering plants). Scientists consider plants with large, dominant diploid sporophytes to be better adapted to life on land, [where they are exposed more directly to UV radiation (a mutagen)], than plants with large, dominant gametophytes. Speculate as to why... (See Fig 30.17/22, 2E 29.14 for life cycle illustrations).