

## Exercise 4 CELL DIVISION

### MATERIALS

In this laboratory exercise, you will borrow:

- 1 compound microscope
- 1 prepared slide of *Paramecium* sp. (fission)
- 1 prepared slide of Onion (*Allium cepa*) root tip
- 1 prepared slide of Grasshopper testis (demonstration by teacher)

**REMINDERS:** You will be drawing your observations in this exercise. Remember what you have learned in Exercise 2. In addition, avoid overlapping your lines when labeling.

### METHODS

#### 4.1 AMITOSIS

1. Study the prepared slides of *Paramecium* sp. showing amitosis. You are able to identify a one undergoing amitosis if they are at least partly conjoined at the tips.
2. Look for the three stages of fission: Early, Middle, and Late
  - a. **Early** – The macronucleus is elongated. There is a slight indentation in the middle of the individual.
  - b. **Middle** – The constriction deepens and a furrow between the organisms is clearly visible
  - c. **Late** – The cleavage furrow has almost pinched away from the two organisms. The two daughter cells are roughly half the length of the mother cell.
3. Draw the cells at different stages of cell division and label the following structures: cilia, cell membrane, cleavage furrow.

#### 4.2 MITOSIS (PLANT)

1. Examine the prepared slide of mitosis of onion (*Allium cepa*) root tips.
2. Familiarize yourself with each of the four stages of mitosis by identifying the notable parts such as: chromosomes, chromatids, nuclear membrane, equatorial plate, and spindle fibers (if visible). To help you identify which phase of the cycle the cell is in, let us go over the features to look for each phase.
  - a. **Interphase**- Cytoplasm, nucleolus with discrete nuclear membrane and aggregations of nuclear chromatin.
  - b. **Prophase**- The chromosomes appear condensed, and the nuclear envelope is not apparent.
  - c. **Metaphase**- Thickened coiled chromosomes, each with two chromatids, are lined up on the metaphase plate.

# Marieb Laboratory Manual Exercise 4

**S Marginson**



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