Optional Activity for AP® Biology Laboratory 3

Observing Meiosis

Procedure

1. Place a flower bud in a drop of 70% ethanol in the bottom of a petri dish. Transfer the dish to the stage of a stereomicroscope. Use dissecting needles to tease apart the bud, exposing the anthers. Dissect out 2–3 intact anthers, being careful that you do not allow them to dry out. Transfer the anthers into a drop of aceto-carmine stain on a clean microscope slide.
2. Using a dissecting needle, break open the anthers and squeeze out the cells (developing pollen) contained in the pollen sacs into the stain. Remove as much of the ruptured anther walls as possible with the needle tip and discard them.
3. Place a clean coverslip over the drop of aceto-carmine stain.
4. **Caution:** *Wear safety glasses and gloves for this step.* Use a clothespin to hold the slide. Warm the slide by passing it back-and-forth over the flame of a Bunsen burner (or alcohol burner or hot plate) for five seconds. Do not allow the stain to boil.
5. Place some paper towel or other absorbent paper over the coverslip. Use your thumb or a pencil eraser to press down on the paper. Press firmly, but be careful not to break the coverslip. Do not push the coverslip sideways. If you do, the cells will roll up into tight bundles. You want to flatten the cells so the chromosomes are more easily seen.
6. Examine the slide under a microscope. If you see cells with chromosomes, switch to high power. You may not be able to identify every stage of meiosis, but you may see several stages. Depending on the species of plant you are using, you may also see some abnormal divisions in which the homologous chromosomes do not separate properly.