

## LABORATORY EXERCISE 20: Insect blood and muscle

### Insect Blood:

Carefully examine one of the slides of grasshopper blood (haemolymph or haemolymph; the latter is the original spelling). Look for some of the cell types (hemocytes/haemocytes) that we have discussed in lecture: prohemocytes, plasmatocytes, granular hemocytes, cystocytes, and others. Make a drawing (**Drawing #37**) of at least three morphologically different cell types from your slide, labeling nuclei, cytoplasm and inclusions and vacuoles when visible. Classify each hemocyte that you have drawn, if you can. If you have the time and inclination, squeeze some haemolymph from an incision in the leg of a living *Gromphadorhina portentosa* or *Blaberus sp.* Then prepare your own slide of cockroach blood, staining it with an available histological stain (see fig. 17.6 in Gillott).

### Muscular System:

Cut the integument lengthwise along one edge of the **femur** of a preserved cockroach (any large species), and pin the edges back to the wax dish (compare with fig. 14.5 in Gillott). Cover the femur with water or 70% EtOH. Find the extensor (adductor) and flexor (abductor) muscles of the tibia within the femur, together with the tendon and muscle controlling the unguis of the pretarsus via the unguitactor plate. Make a drawing (**Drawing 38**, diagrammatic sketch) showing the dissection of these antagonistic muscles, labeling tibial extensor, tibial flexor, unguitactor muscle, unguitactor tendon, points of origin and insertion for the various muscles, and parts of the leg (for purposes of reference). During the course of your dissection of the nervous system (labs 21 and 22), you will be able to make note of the main thoracic muscles (dorsal longitudinal muscles, ventral longitudinal muscles, and tergo-sternal muscles).

Examine a slide showing cross-sectional and transverse-sectional views of insect muscle. These are rather poor slides, but in some areas you should be able to see muscle fibers, nuclei, myofibrillae, transverse striations denoting the areas of actin and myosin filaments, tracheal supply around muscle units, and so on. Make a drawing (**Drawing #39**) detailing a section of your slide, preferably showing muscles in longitudinal orientation, labeling as many of the above features as you can find.