Transmission Electron Microscopy

Responding to the wishes of our clients, DCPAH now offers transmission electron microscopy as a diagnostic service. Ultrastructural examination is a highly useful tool to elucidate a number of different disease mechanisms:

1. Detection and characterization of unknown viral particles. As an example, figure 1 shows the first ultrastructural image of porcine circoviral particles forming characteristic intracytoplasmic inclusions in macrophages in a pig with postweaning multisystemic wasting syndrome;

2. Identification of parasites, in particular protozoal organisms in tissue sections. As an example, figure 2 shows *Sarcocystis neurona* in a skeletal muscle cell in the tongue of a 4-month-old filly. The finding of mature, intact schizonts in the brain and sarcocysts in the tongue further elucidate the life cycle of this parasite, strongly suggesting horses as natural intermediate hosts;

3. Identification and characterization of neoplastic cells;

4. Characterization of degenerative processes, in particular neurodegenerative disorders;


Samples should be submitted formalin fixed. Preferably we would like to get a larger, approximately 3 cm in diameter, well fixed tissue sample, together with a detailed report of the clinical presentation, gross, and microscopic lesions. We will cut submitted sections (fig. 3), paraffin embed one half of the tissue to produce an H&E slide and use this slide to identify the best location for further ultrastructural examination (fig. 4) by comparing the microscopic tissue half with the mirror image of the remaining formalin fixed tissue. For each submission, we will then cut 4 trapezoid 2-3 mm tissue samples (fig. 5) to produce plastic embedded “thick” sections (fig. 6). We also accept the submission of samples prepared in a similar manner by the client for processing. For each case, 2 “thin” sections will be produced and examined by our team of highly experienced pathologists. Refer to our Fee Schedule or Available Tests link on our website for current pricing. For more information on the Transmission Electron Microscopy, contact Dr. Matti Kiupel at 517-353-5275.