**Renal/Kidney Diagnostics**

For overall tissue evaluation, light microscopy (LM), immunofluorescence (IF), & transmission electron microscopy (TEM) are combined as an integrated diagnostic protocol.

* Light microscopy is used to make an assessment of overall tissue morphology and to identify major pathological processes.
* Immunofluorescence (on unfixed, frozen tissue) is used to determine the composition and location of immune deposits.
* The high magnification of the electron microscope enables observations not possible by light microscopy. Electron microscopy is considered to be an essential component of human diagnostic renal pathology. Ultrastructural features may enable a diagnosis to be made where the light microscopy is apparently normal, for example minimal change, thin membrane disease, and hereditary nephropathy. In addition, it can provide information to confirm or elucidate a diagnosis, as in immune complex glomerulonephritis, renal amyloidosis, dense deposit disease, diabetes, etc.

**Specimen Preparation**

Renal biopsy kits are available that contain fixatives for LM, IF, & EM from Regional Pathology Services.

Evaluate and triage the specimen into 3 portions using a stereo or light microscope. Tissue should be kept wet/moist at all times during the triage procedure using gauze tray moistened with normal saline solution or Millonig Phosphate Buffer (isotonic solutions).

At least sixteen glomeruli are considered adequate for routine triage and portioned as follows:

1. Part A: at least 10 glomeruli for light microscopy--placed into 10% buffered formalin.
2. Part B: at least 3 glomeruli for immunofluorescence--placed into Millonig’s Phosphate Buffer Solution. ***Be careful not to expose this tissue to any fixative (formalin or Trump’s/EM)***
3. Part C: at least 3 glomeruli for electron microscopy--placed into Trump’s Fixative or other appropriate EM fixative (see further information below \*).

Place specimens in appropriate media/fixative as soon as possible.

If manipulation of the tissue is necessary, use small forceps, being careful not to crush the tissue. If possible use capillary action to move the tissue, allowing the tissue to float in a droplet of solution held between not-closed/tightened forceps tips.

Use a clean, new, sharp blade to cut/divide the tissue. Avoid crushing while cutting, using a slicing movement rather than a sawing movement.

Ensure that the IF specimen part does not come into contact with fixative of any kind by using fresh/new forceps and blades to handle and divide the tissue. Fixative contamination of the IF tissue will potentially destroy the antigens to be stained.

Specimens should be free of blood, connective tissue, muscle, and extraneous fat. If extraneous tissue is present, submit it in the Light Microscopy fixative/portion.

In regard to needle core biopsies, submit the core intact in length. The dimensions of the tissue will allow adequate fixation.

Diagnostic information can be obtained for ultrastructural investigations on reprocessed paraffin-embedded or frozen material or formalin-fixed tissue though this is suboptimal.

*Please use the included small vials of Trump’s Fixative (5ml) for the EM portion.*