GENERAL INFORMATION:

To assist in the interpretation of a specimen, a copy of the completed NEUROMUSCULAR HISTOPATH REQUEST FORM should be submitted with the muscle(s), nerve(s) and/or serum sample.

Label each container with the name of the muscle or nerve from which the sample was taken. If possible, send serum and tissue samples collected prior to steroid therapy since this may significantly decrease antibody staining and cell infiltration in inflammatory/immune-mediated myopathies and neuropathies.

To discuss a particular neuromuscular case with a VMTH clinician, please contact: Dr. Monica Aleman at (530) 752-0290 for Large Animals, and our Neurology residents for Small Animals at (530) 752-1393. To discuss collection, handling or shipping of a sample, or to alert the laboratory that a sample is in transit, please contact Dr. Maggie Knipe (Laboratory Director) or Colette Williams (Laboratory Coordinator) at (530) 752-1170.

MUSCLE:

The muscle biopsy should be obtained from a muscle that is definitely affected but not so severely wasted that much of it is replaced by fatty or fibrous tissue. Ideally, the muscle should be one that has not been traumatized by injections or EMG studies. For a suspected generalized neuromuscular disorder in a small animal, the vastus lateralis is typically chosen. For comparison, the triceps is often biopsied as well. In the horse, the gluteal or semimembranosus muscle is routinely biopsied (see annex for horse muscle). For suspected masticatory myositis cases, the temporalis is typically biopsied (be sure to retract the more superficial caudoauricular muscle prior to excising the sample). Often, this disease can be diagnosed by detection of antibodies in the serum alone, without submitting a muscle biopsy.

A specimen approximately 1 cm long, by 0.5 cm wide and 0.5 cm deep should be removed with minimal trauma (no cautery, please). It should be dissected along the long axis of the muscle, as myofiber orientation is crucial in obtaining diagnostic sections. Immediately after removal, the sample should be rolled up in a saline moistened (not dripping wet) gauze sponge. Place the sample and sponge into a suitable container (i.e. small specimen jar or petri dish) and keep it cold on crushed ice, ice packs or in a refrigerator. For shipment, securely sandwich the container between cold packs in a Styrofoam box. Label the package refrigerate upon arrival and ship the same day by priority overnight Monday-Thursday (no Fridays, please). All histochemical and immunocytochemical studies are performed on fresh tissue. If shipment is coming from outside the United States follow the same instructions but add a formalin fixed sample in case of shipment delay, and request from us the USDA importation permit (add it to your shipment).

A Dystrophin test can be run on cases suspected of Muscular Dystrophy. Cost: $87.50/muscle
NERVE: 

The peroneal nerve can be easily biopsied near the fibular head. A small section, roughly a quarter to a third of the width of the nerve, and at least 2 cm in length, should be excised. Leave the fat and connective tissue on the sample, as this will protect it until it can be frozen. Prepare as described above for muscle.

SERUM ONLY (for canine masticatory myositis screening): 

Cost: $67.00/sample

Myasthenia gravis (equine ONLY): 

Cost: $80.00/sample

A minimum of 0.5 ml of serum (do not send whole blood) can be shipped priority overnight without the need for cold packs.

SHIPPING ADDRESS: See the Neuromuscular Histopath Request Form.

INTERNATIONAL SHIPPING:

For international shipping, please MAKE SURE TO REQUEST the USDA permit for importation and transportation of controlled materials and organisms and vectors (total of 2 pages). The permit can be obtained with us at +(530)-752-1170 or +(530)-752-7267. The permit will be faxed to you immediately. You should add the permit to your shipment.

For tissue that will not arrive within 24 hours or less, follow the guidelines for removal of the biopsy from the patient. Instead of wrapping the sample in saline moistened gauze, place it directly on a piece of aluminum foil. Fold the foil around the tissue and secure the edges (by rolling them tightly). Place this in the middle of a medium to large styrofoam box filled with dry ice (minimum 3-4 kg). The dry ice should be in thick slabs, do not use pellets, as they sublimate too rapidly. Position the sample such that it is surrounded by dry ice on all sides, including the top but try not to crush the sample. Include the patient information, as well as your clinic’s address, phone and fax numbers, with the sample. Ship as quickly as possible! Make sure it is set to arrive on a weekday. Notify the lab so we can be on the lookout for your shipment and let you know if there is a problem.