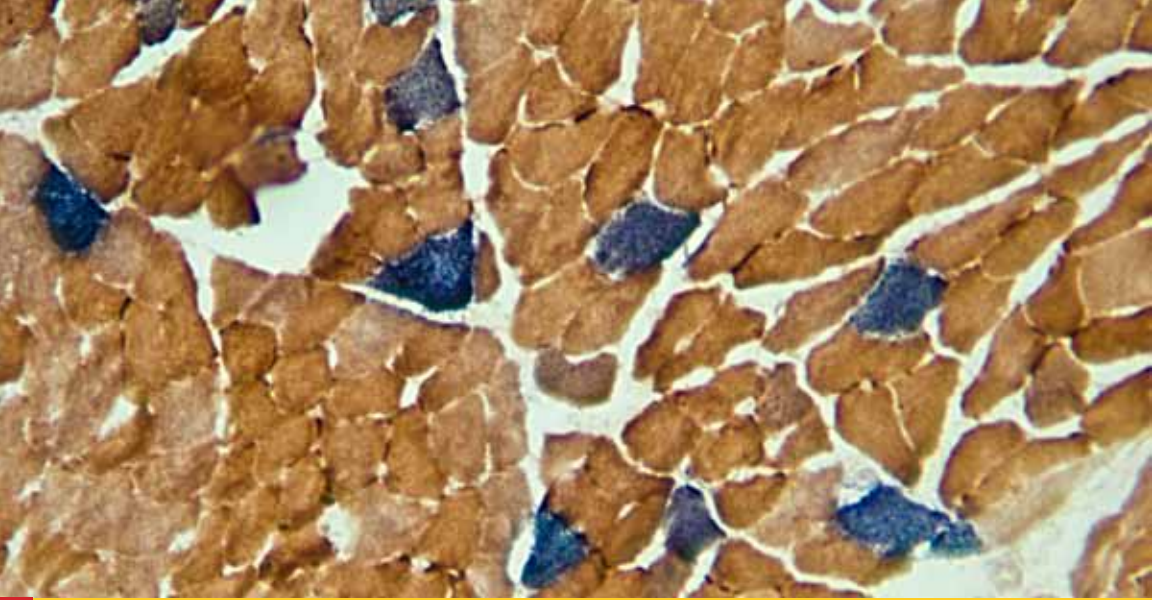


THE JOHNS HOPKINS UNIVERSITY
DEPARTMENT OF NEUROLOGY

Neuromuscular Pathology Laboratory Cutaneous Nerve Laboratory

Accurate biopsy results for neuromuscular and
peripheral nerve conditions

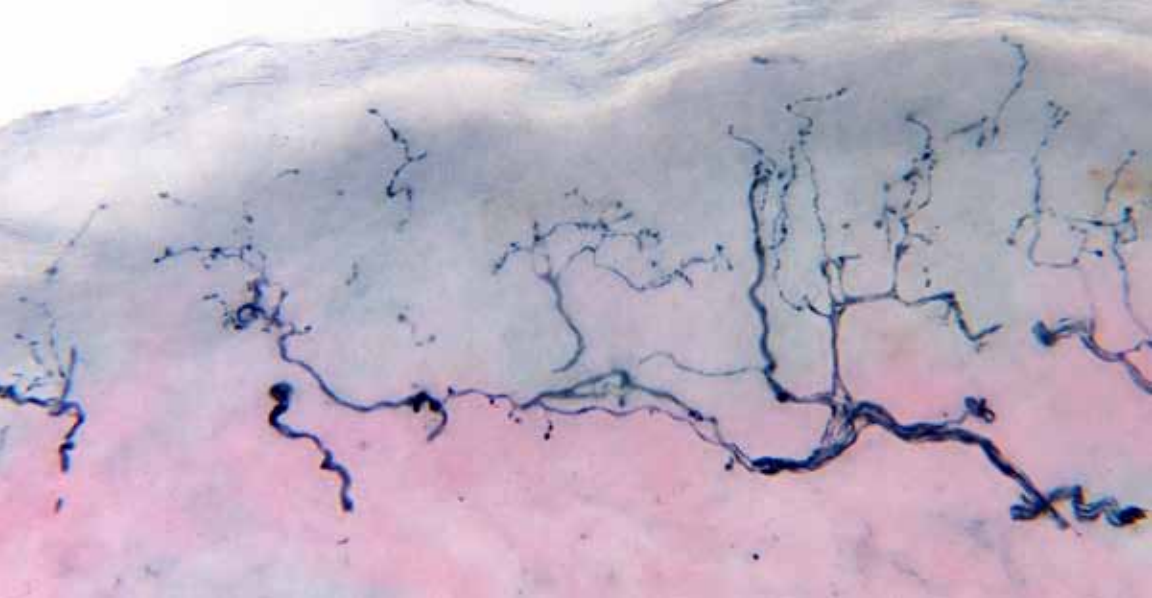


Welcome to Johns Hopkins Neurology Laboratories

The Johns Hopkins Department of Neurology offers comprehensive resources for the diagnosis of muscle and nerve disease, including clinical evaluation, muscle, nerve and skin biopsy, tissue preparation and pathology interpretation.

Muscle or nerve disease can be diagnosed by a biopsy, often a critical step to initiating certain medical regimens. Some of the following conditions may be diagnosed by the Johns Hopkins Neuromuscular Pathology or Cutaneous Nerve Laboratories through the evaluation of muscle, nerve or skin biopsies:

- **Inflammatory Myopathies**
- **Peripheral Neuropathies**
- **Muscular Dystrophies**
- **Amyloidosis**
- **Vasculitis**



The Johns Hopkins Neuromuscular Pathology

Laboratory provides muscle and nerve biopsy staining and interpretation for hospitals and surgical facilities throughout the country. For more information about our biopsy and pathology consultation services contact:

410-614-4278

neuromuscularpathlab@jhmi.edu

www.hopkinsmedicine.org/NeuromuscularPathLab

The Johns Hopkins Cutaneous Nerve

Laboratory analyzes skin samples to diagnose and monitor small fiber neuropathies. 3mm skin punches are analyzed for epidermal nerve fiber density and morphological changes. A diagnosis of small fiber neuropathy can be made based upon these results.

For more information or to order a cutaneous nerve biopsy kit contact:

410-614-6399

skin_biopsy@jhmi.edu

www.hopkinsmedicine.org/CutaneousNerveLab

The Neuromuscular Pathology Laboratory



How is the muscle or nerve biopsy performed?

A biopsy is an invasive procedure appropriate for the diagnosis of serious muscle or nerve disease. Performed under local anesthesia, a biopsy is an outpatient procedure. Patients undergoing a muscle or nerve biopsy at Johns Hopkins will receive instructions in advance. It is very important for patients not to take aspirin, aspirin-containing products, or nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen for 10 days prior to the procedure. Patients taking Coumadin (warfarin), Lovenox or ticlopidine will need to follow specific instructions relating to these medications. After the procedure, patients will be given instructions on how to care for the biopsy site.

Where are the biopsies performed?

Surgeons at any hospital or surgical facility who are familiar with diagnostic muscle and nerve biopsy procedures can obtain a specimen, which can be sent directly to the Neuromuscular Pathology Laboratory for staining and interpretation.

Biopsies can also be performed at The Johns Hopkins Hospital. Patients can expect to spend one half-day in preparation and follow-up for the procedure. The tissues obtained at the time of biopsy are prepared in the muscle and nerve pathology laboratories at Johns Hopkins.

How can I send a specimen to the lab?

The Neuromuscular Pathology Laboratory receives fresh specimens by courier or frozen specimens by overnight mail. *Please call 410-614-4278 two days in advance to inform the lab that a muscle or nerve specimen will be arriving.* The protocols for sending muscle and nerve biopsy specimens can be found at www.hopkinsmedicine.org/NeuromuscularPathLab

Who interprets the results?

The results are interpreted by expert physicians in the Johns Hopkins Department of Neurology who are specially trained in neuromuscular pathology.

When will my patient and I receive the results?

After the biopsy, a report on frozen or paraffin specimens will be sent to the referring physician within one to two weeks. A report on plastic nerve specimens will be provided in three to four weeks.

Are biopsies covered by insurance?

Our staff will secure a patient's insurance authorization once the appropriate referral forms have been completed. These forms can be obtained by calling **410-614-4278**.

Is there a doctor or laboratory technician with whom I can directly communicate?

If you have any questions, please contact us at **410-614-4278**.



Cutaneous Nerve Laboratory

For patients who present with small sensory nerve dysfunction, a cutaneous nerve/skin biopsy is useful to diagnose the presence and stage the severity of a neuropathy. Usually, however, a specific cause is not directly identified by the skin biopsy, but further testing may be indicated if a neuropathy is confirmed.

The American Academy of Neurology has recommended skin biopsy as useful for the diagnosis of small fiber sensory neuropathy in symptomatic patients. (AAN practice parameters, *Neurology* 2009; 72:1-1)

What is the cutaneous nerve/skin biopsy procedure?

A cutaneous nerve/skin biopsy is a very simple procedure performed in the outpatient setting and takes 10 to 15 minutes. First, the skin is thoroughly cleaned and a small injection of a local anesthetic to numb the skin is made. Then, a sample of skin is taken by a biopsy from the numb area of the skin. A bandage dressing is used to cover the biopsy site. Generally, the skin heals easily within one to two weeks without the need for a suture. The risk of bleeding or infection is extremely low.

Can I perform the biopsy in my office or does my patient need to come to Johns Hopkins?

Biopsies can be performed at The Johns Hopkins Hospital or physicians' offices, and then sent to the cutaneous nerve lab. In both situations, our staff will secure the patient's insurance authorization once the appropriate referral forms have been completed. These forms can be obtained

by calling **410-614-6399**

or at www.hopkinsmedicine.org/CutaneousNerveLab.

If a physician wants to perform the biopsy at his or her office, a biopsy kit can be mailed once the patient's insurance authorization is approved.

What will I receive?

A biopsy kit will be shipped to the physician's office. Step-by-step instructions with photographs will be included and video demonstrations are available at our Web site. The biopsy kit includes:

- **Biopsy fixative**
- **Skin punch tool**
- **Scalpel and forceps**
- **Biopsy ID form**
- **Buffer and cryoprotectant solutions**
- **Printed instructions for obtaining biopsies and for cryoprotecting samples**
- **Wound care instructions to give to patient**
- **Shipping container and ice pack for return shipment (NOTE: Keep ice pack in refrigerator until use)**
- **Shipping instructions, including a preprinted air bill for return shipment**

Where can my patient go to have the cutaneous nerve/skin biopsy?

Biopsies are performed at both The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center.

How can I direct my patient to prepare?

The cutaneous nerve/skin biopsy is a relatively minor procedure. Patients should be informed that they will receive a local anesthetic prior to the biopsy. No other specialized preparation is necessary. Patients who are anticoagulated with an INR above 3.0 should not be biopsied.

Who interprets the results?

The results are interpreted by expert physicians in the Johns Hopkins Department of Neurology who are specially trained in neuromuscular pathology.

When do my patient and I receive the results?

After the biopsy, a report will be sent to the referring physician within one to two weeks.

Are biopsies covered by insurance?

Our staff will obtain insurance authorization once the appropriate referral forms have been completed. These forms can be found online at our Web site or by calling **410-614-6399**.



Is there a doctor or technician with whom I can directly communicate?

If you have any questions about the cutaneous nerve/skin biopsy, please contact us at **410-614-6399**.

My patient has more questions. Is there more information to explain the procedure?

Our Web site is an excellent resource for both patients and physicians, and features a Q&A section. Please direct your patient to visit this site for more information: **www.hopkinsmedicine.org/CutaneousNerveLab**.

For muscle or nerve biopsies:

The Johns Hopkins Department of Neurology
Neuromuscular Pathology Laboratory
600 N. Wolfe Street, Meyer 5-144
Baltimore, MD 21287
Tel: 410-614-4278
Fax: 410-614-7296
Email: neuromuscularpathlab@jhmi.edu
www.hopkinsmedicine.org/NeuromuscularPathLab

For cutaneous nerve biopsies:

The Johns Hopkins Department of Neurology
Cutaneous Nerve Laboratory
1550 Orleans Street, Room 362
Baltimore, MD 21231
Tel: 410-614-6399
Fax: 410-502-5560
Email: skin_biopsy@jhmi.edu
www.hopkinsmedicine.org/CutaneousNerveLab