

University of California at San Francisco

Instructions for Submission of **Muscle Biopsy Consultation Specimens**

Fresh muscle tissue submitted for primary diagnosis

1. **Notifying us:** Notify the UCSF Surgical Gross Specimen Receiving Room by phone (415-353-1608) that the biopsy will be arriving. Muscle biopsies should **arrive by 4pm Monday through Friday**.

Histochemical stains are performed once a week; muscle biopsies must arrive by noon on Wednesday for processing the same week. Except for holidays, cases are initially reviewed at the Neuromuscular Pathology Conference every Friday at 9:00 AM via Zoom; let us know if you would like to join the conference, and we will send you a link. (During holidays, cases will be reviewed as soon as possible after histochemical stain completion, with no set schedule.) If additional work-up is required for the final diagnosis, preliminary diagnosis will be discussed with the referring clinician within a few days after initial review.

2. **Biopsy site:** The biopsy site should be chosen based on the patient's clinical, imaging, and electrodiagnostic work-up; ideally, a moderately involved muscle should be sampled. (The most severely affected muscles often show end-stage changes that are not diagnostically informative, while muscles that are clinically spared typically lack diagnostic features.) In the absence of clinical, electrodiagnostic, or imaging information that can be used to guide sampling, biopsies should be taken from the quadriceps, deltoid, or biceps brachii muscles because they are best characterized and most consistent in their morphology. The gastrocnemius muscle is less optimal because it can show nonspecific changes, but it can be sampled if a paired nerve and muscle biopsy is requested. The biopsied muscle should not have been used for EMG studies, as the EMG procedure causes an inflammatory reaction.

3. **Biopsy handling:**

(Note to surgeons)

A 1.0 x 1.0 x 1.0 cm (minimum) biopsy is essential to allow adequate tissue for histology, histochemistry, electron microscopy, and possible additional molecular/biochemical studies; the tissue should be excised along the longitudinal fiber axis to enable proper specimen orientation and embedding. Please **do not** use biopsy clamps or tie the tissue to a tongue depressor, as this leads to handling/cutting/crushing artifacts. Multiple small fragments are suboptimal, as they are extremely difficult to orient correctly and introduce handling/cutting/crushing artifacts.

The muscle should be gently wrapped in a piece of gauze/Telfa paper, which has been dampened with saline and then **well rung out**. **DO NOT** place the tissue in saline

solution or use a heavily dampened gauze/Telfa pad, as the muscle will soak up the saline, resulting in a significant freezing artifact.

(Note to pathologists)

The muscle should be gently wrapped in a piece of gauze/Telfa pad that has been dampened with saline and then **well rung out**. **DO NOT** place the tissue in saline solution or use a heavily dampened gauze/Telfa pad, as the muscle will soak up the saline, resulting in a significant freezing artifact. Each sample should be placed in a small waterproof specimen container labeled with the patient's name, biopsy site (i.e., left biceps or right quadriceps), and date and time of the biopsy. (Please do not use Petri dishes taped shut, as they will leak.) Placing this specimen container in a sealable plastic bag is also suggested, to avoid melted ice leaking into the bottle. **An insulated specimen transportation box (e.g., Styrofoam box) with an adequate amount of regular (H₂O) ice (NOT dry ice) to last the estimated transit time should be prepared.** The small specimen container should then be placed **on top** of the ice (not buried in the ice, as tissue may freeze). Sending fresh specimens on wet ice is the preferred procedure and should be used whenever transit to UCSF is expected to last less than 24 h (either direct courier or overnight FedEx service can be used).

Muscle diseases are often patchy. **To reduce the possibility of a sampling error, send us the entire specimen;** please do not retain a portion of tissue for formalin fixation and paraffin embedding at your institution! If the clinical question is urgent, let us know in the accompanying paperwork, and we will contact the referring clinician to discuss the preliminary findings as soon as initial slides come out. (While histochemical stains are performed once a week, slides from the formalin-fixed, paraffin-embedded portion of the specimen are generally available the day after specimen receipt and will be used to provide preliminary interpretation when requested.)

If transit time to UCSF is expected to exceed 24 hours, the entire specimen should be snap-frozen and sent with an appropriate amount of dry ice. Please contact the Surgical Gross Room (phone 415-353-1608) or Dr. Marta Margeta (Director of the UCSF Neuromuscular Pathology Service; phone 415-514-0228) with any questions regarding specimen handling.

4. **Paperwork:** The following paperwork should accompany the biopsy:

- Muscle and nerve requisition form, available from the UCSF Pathology Department Website:

- Patient demographics (Name, age, sex, date of birth).

- Clinical history (Indication for muscle biopsy, duration of symptoms, proximal versus distal weakness, pain, rash, CPK level, EMG/NCS results, all current patient medications [e.g., steroids or statins], and the clinical differential diagnosis).

- **Name, phone, and FAX number** of the clinician who ordered the biopsy (usually **neurologist, rheumatologist, or hospitalist**), from whom additional clinical information can be obtained and to whom a diagnosis can be given.
- **Billing information:** All the patient's insurance information, including policy and group number, billing address, subscriber name with social security number, and employer or sponsor for group policies. **Please attach authorization for insurances that require prior authorization. Authorization should be a printout from the insurance company with authorization #, effective dates, and CPT codes authorized.**
- **Name and address of referring hospital** (the referring hospital will be billed if other billing information is not provided).

5. **Shipping address:** Please **address** the outside of the box with:

**Attention: Neuropathology Service (Muscle Biopsy)
Department of Pathology
University of California San Francisco
505 Parnassus Avenue
Gross Specimen Receiving Room
Moffitt Hospital M576
San Francisco, CA 94143**

Additional frozen material for specimens received for a second opinion

When glass slides from outside muscle biopsies are received for additional evaluation/second opinion at UCSF, additional frozen section stains sometimes need to be performed and require shipment of the already frozen muscle tissue from the original institution. There are two options for this:

Frozen tissue block:

Send the block(s) with enough dry ice to keep the tissue frozen until receipt.

Frozen unstained slides (USS):

Send 5- or 10-micron frozen sections on dry ice, unfixed (keep cold after sectioning). Enzyme stains are done on unfixed FS. IHCs are mostly done on acetone-fixed and air-dried slides, but LC3 stain requires formalin fixation, so again, sending all slides unfixed on dry ice is the best to capture all stain requirements.

Shipping instructions: Send the material by *FedEx Express overnight or by same-day courier*.

Please address the outside of the box with:

**Attention: EM/NM Lab
UCSF Dept of Pathology
513 Parnassus Ave. S570
San Francisco, CA 94143
(415) 353-2673**

In addition, **notify the lab of this shipment at Path-MC-EMLab@ucsf.edu**, so the lab staff is aware of it and does not attempt to accession the material as a new case.