

## **NEEDLE MUSCLE BIOPIES**

### **Background:**

Needle muscle biopsy sampling offers a less invasive, more rapid alternative to conventional open muscle biopsies for sampling muscle for research purposes. The smaller size of the sample obtained is no longer an important limitation as the sensitivity of emerging molecular technologies has improved exponentially and small amounts of substrate can go a long ways. Using the sampling techniques described below, up to 300 mg of tissue, depending on muscle bulk, can be obtained with three passes into the muscle. Such a sample, divided into three, is more than adequate for flash freezing in liquid nitrogen for expression studies, placement in appropriate media for myoblast culture as well as histologic studies.

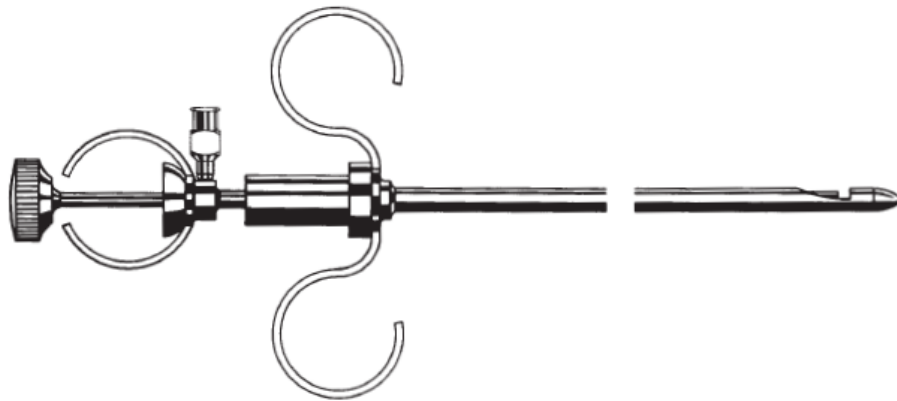
### **Biopsy Needle:**

The biopsy needle used is a modified Bergstrom needle shown below. Perhaps the most important modification is the addition of a Luer lock attachment to the inner cannula to allow the application of suction during the procedure. Suction applied during the procedure results in consistently larger samples.

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## MUSCLE BIOPSY

### U.C.H. Skeletal Muscle Biopsy



For biopsies of muscles such as quadriceps femoris, gastrocnemius, tibialis anterior, deltoideus, pectoralis, biceps brachialis, triceps and erector spinae. Additional benefits of this product include an aspirating facility for use during the biopsy procedure and is economically preferable to open biopsy since it is essentially an out-patient procedure.

Cat. No.	Description
8065	8G x 3 1/8"
8066	7G x 4 3/4"
8067	8G x 4 3/4"
8068	1/4" O.D. Tubing x 4 3/4"

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### Needle Muscle Biopsy Procedure:

Muscles that are readily and safely accessible by needle muscle biopsy:

- Vastus Lateralis: Most commonly and most easily biopsied muscle because of its size. Site of biopsy: With patient supine, make sure leg is positioned so that toes are pointing upwards. Palpate vastus and mark a spot typically about 4-6 inches proximal to the patella and just lateral to the femur. Enter perpendicularly with the needle for sampling
- Biceps: Typically the lateral head of the biceps in the mid section of the biceps muscle. Requires entry into the biceps at an angle (about 45 degrees or less).
- Other potential muscle groups: Deltoid, gastrocnemius.

After appropriate prepping, 8-10 cc of 1% Lidocaine is drawn into a syringe. The biopsy site is infiltrated with about 2cc intradermally and subcutaneously with a 25g needle. Change to a 22g, 1 1/2 in needle; introduce the needle to its hub at 45 degree proximal to the biopsy site and infiltrate with lidocaine as you withdraw. Repeat the same procedure

at 45 degrees distal to the biopsy site. This will insure that the subcutaneous tissue and muscle fascia is anesthetized without distorting the muscle sample to be biopsied.

Following lidocaine infiltration, a stab incision is made with a #11 surgical blade making sure it is inserted far enough to nick the muscle fascia. The needle is attached to wall suction and introduced perpendicularly (for vastus biopsies) into the incision. The needle will encounter resistance at the fascia. Push through the fascia and make sure the needle is deep enough so that the upper edge of the cutting window is pushed past the fascia (if not a piece of fascia will be caught and will make it difficult to extract the needle). Once the needle is in place, pull out the inner cannula to open the cutting window. Hold the inner cannula open for about 30-45 second, allowing the suction to draw in a muscle sample, at the same time push the vastus lateralis externally with the free towards the needle. Once the time is up, push the inner cannula all the way in to cut the sample. Ask the attendant to disconnect the needle from the suction and slowly pull out the needle with a steady force as you rotate the needle from side to side. Place the needle on the sterile tray, remove the inner cannula and gently lift the sample with hypodermic needle tip. Make sure there is not another sample stuck in the inner cannula. Repeat the procedure 2-3 times until an adequate sample is obtained.

Pressure is applied to the incision site for hemostasis. The incision site is cleaned and can be either closed with Steristrips and covered with Tegaderm or sealed with Dermabond.