



# 2025 NMD4C Summer School

## Schedule D1

Accolade Building West (meeting in the lobby and lectures in room 109)

Time	Wednesday, May 7, 2025
8:15 – 8:45 am	Registration
8:45 – 9:00 am	Opening Remarks
9:00 - 10:10 am	Participants Flash Talks
10:10 - 10:30 am	COFFEE BREAK
10:30 - 11:00 am	Lecture: Patient partner - <b>Meghan Hines</b> <i>A Fireside Chat with Meghan Hines: What does life with a neuromuscular condition really look like?</i>
11:00 - 11:30 am	Lecture: Patient partner - <b>Terrence Ho</b> <i>Duchenne Muscular Dystrophy: Adulthood and Navigating the Transition for Caregivers</i>
11:30 am - 12:00 pm	Lecture – <b>Lisa Hoffman</b> <i>Improving the skeletal muscle microenvironment in Duchenne Muscular Dystrophy</i>
12:00 - 1:30 pm	LUNCH
1:30 – 2:00 pm	Lecture – <b>Anthony Scimé</b> <i>Muscle stem cells have altered fate choices after epigenetic reprogramming in quiescence</i>
2:00 - 2:30 pm	Lecture – <b>Dean Betts</b> <i>Metabolic Mastery: How Cellular Energy Programs Stem Cell State and Fate</i>
2:30 – 3:00 pm	COFFEE BREAK
3:00 - 3:30 pm	Lecture - <b>Charles Kassardjian</b> <i>Medication Safety Without Evidence: Advancing Quality Improvement in Neuromuscular Care</i>
3:30 - 4:00 pm	Lecture - <b>Jean-Philippe Leduc-Gaudet</b> <i>Histopathological Basis of Muscle in NMD</i>
4:00 - 4:30 pm	Industry Talk – <b>Katherine Anthaide</b> - Aurora Scientific <i>Three Techniques, One System: How to Effectively Characterize Muscle Function</i>
4:30 - 4:45 pm	Closing remarks
6:00 - 9:00 pm	NETWORKING EVENT - Neuromuscular Careers Roundtable VMV's Bar & Grill  Panelists: <ul style="list-style-type: none"><li>• <b>Youn Hee</b> – BenchSci</li><li>• <b>Jean-Philippe Leduc-Gaudet</b> – UQTR</li><li>• <b>Homira Osman</b> – Muscular Dystrophy Canada</li><li>• <b>Chris Rand</b> – Aurora Scientific</li></ul>



# DAY 2 - Rodent Muscle Function Assessment Workshop (Full-Day)

Farquharson Life Sciences Building

9:00 am - 10:00  (classroom close to procedure room)	i) Introductions  ii) Fundamentals of muscle function assessments  iii) Organize 12 students into groups of 4 per station for three stations
10:00 - 10:15	Break
10:15 - 12:00  (procedure room)	<b><u>IN-VIVO MUSCLE FUNCTION</u></b>  i) Demonstrate mouse anaesthesia and mouse placement  ii) Demonstrate length-tension relationship and force-frequency assessment  iii) <b>Student practice with length-tension relationship and force-frequency assessment</b>  iv) Demonstrate fatigue assessment  v) <b>Student practice with fatigue assessment</b>
12:00 - 1:00	Lunch
1:00 - 2:00  (procedure room)	<b><u>IN-VITRO MUSCLE FUNCTION</u></b>  i) Demonstrate in-vitro setup, dissection of soleus muscle, and mounting  ii) <b>Student practice with dissecting and mounting muscle</b>
2:00 - 3:00  (procedure room)	i) Demonstrate force-frequency and fatigue assessment  ii) <b>Student practice with force-frequency and fatigue assessment</b>
3:00 - 3:15	Break
3:15 - 3:45  (classroom close to procedure room)	i) Debrief Q&A session  ii) Quiz
6:30 - 9:00	NETWORKING EVENT The Pickle Barrel



# DAY 2 - Myofibre Isolation and Analysis Workshop (Full-Day)

## Farquharson Life Sciences Building

8:30 am - 9:00  (classroom)	i) Introductions, organize participants (Total 20) into groups of 2  ii) presentation on the fiber culture protocol
9:00 - 9:15 (procedure room)	i) Prep fresh collagenase
9:15 - 10:15  (procedure room)	i) Demonstrate EDL isolation  ii) Practice  iii) Place muscles in collagenase (aim for 9:30 am).  iv) Agitate muscles (30 mins) and incubate  v) Make Isobuffer and FCM (fresh)
10:15 - 10:30	Break
10:30 - 11:00  (procedure room)	i) Reconvene. Place muscles in isobuffer.  ii) Demonstrate and practice making bore and hooked pipettes
11:00 - 11:15	Preview of next steps and demonstrate fibre isolation
11:15 - 12:30 (procedure room)	Practice fiber isolation into 24-well plates with FCM.
12:30 - 1:30	Lunch
1:30 - 2:30  (procedure room)	i) Demonstrate and practice fixing fibers  ii) Demonstrate and practice mounting fibers on slides
2:30 - 2:45	Break
2:45 - 3:45  (classroom)	i) Show short video on staining and observe example slides  ii) overview protocol  iii) Questions
6:30 - 9:00	NETWORKING EVENT The Pickle Barrel



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## Description of workshops

### Rodent Muscle Function Assessment Workshop (Full-Day) - Led by Dr. Arthur Cheng

**Aim:** Skeletal muscle weakness is a hallmark of many neuromuscular diseases. This workshop is tailored for graduate students working in research labs who study mouse models of neuromuscular diseases but may lack practical experience in assessing muscle function.

Participants will learn essential techniques to measure skeletal muscle contractile force, focusing on the muscle length-tension relationship and the force-frequency relationship. These techniques will be explored through:

1. **In vivo assessments** – directly in a living mouse.
2. **In vitro analyses** – using isolated hindlimb muscles.

By mastering these methods, you will gain the skills needed to evaluate the severity of muscle weakness in mouse models and to assess the impact of interventions such as pharmacological treatments, nutritional strategies, or exercise programs.

### Myofibre Isolation and Analysis Workshop (Full-Day) - Led by Dr. Anthony Scimè

The Myofibre Isolation Workshop will provide students with hands-on experience with the well-established method of analyzing adult muscle stem cells in their microenvironment on muscle myofibres. Participants will gain skills in appropriately dissecting and dissociating the extensor digitorum longus muscle for single myofibre isolation, followed by fixation and mounting techniques to allow for the assessment of muscle stem cell behaviour ex vivo. This workshop is ideal for researchers interested in using an innovative and advanced approach to study muscle stem cells from quiescence and activation, through to their fate decisions for self-renewal and commitment.