



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 - Meghan Hines <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 - Terrence Ho <i>Duchenne Muscular Dystrophy: Adulthood and Navigating the Transition for Caregivers</i>
11:30 am - 12:00 pm	Lecture – Lisa Hoffman <i>Improving the skeletal muscle microenvironment in Duchenne Muscular Dystrophy</i>
12:00 - 1:30 pm	LUNCH
1:30 – 2:00 pm	Lecture – Anthony Scimé <i>Muscle stem cells have altered fate choices after epigenetic reprogramming in quiescence</i>
2:00 - 2:30 pm	Lecture – Dean Betts <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 - Charles Kassardjian <i>Medication Safety Without Evidence: Advancing Quality Improvement in Neuromuscular Care</i>
3:30 - 4:00 pm	Lecture - Jean-Philippe Leduc-Gaudet <i>Histopathological Basis of Muscle in NMD</i>
4:00 - 4:30 pm	Industry Talk – Katherine Anthaide - 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">• Youn Hee – BenchSci• Jean-Philippe Leduc-Gaudet – UQTR• Homira Osman – Muscular Dystrophy Canada• Chris Rand – Aurora Scientific



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)	<u>IN-VIVO MUSCLE FUNCTION</u> i) Demonstrate mouse anaesthesia and mouse placement ii) Demonstrate length-tension relationship and force-frequency assessment iii) Student practice with length-tension relationship and force-frequency assessment iv) Demonstrate fatigue assessment v) Student practice with fatigue assessment
12:00 - 1:00	Lunch
1:00 - 2:00 (procedure room)	<u>IN-VITRO MUSCLE FUNCTION</u> i) Demonstrate in-vitro setup, dissection of soleus muscle, and mounting ii) Student practice with dissecting and mounting muscle
2:00 - 3:00 (procedure room)	i) Demonstrate force-frequency and fatigue assessment ii) Student practice with force-frequency and fatigue assessment
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.