



Center for Musculoskeletal Research

IND464: Musculoskeletal Basic Science

Fall 2025

Monday 1-1:50pm

Course Co-Directors:

Anne E.C. Nichols, Ph.D.

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Research Assistant Professor

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Center for Musculoskeletal Research

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Office hours: Upon request

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Assistant Professor

Department of Orthopaedics

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Office hours: By appointment

Course Website: Blackboard

Prerequisites: Graduate standing or permission

Course Description: This course provides an overview of key basic science concepts relating to musculoskeletal tissues including bone, bone marrow, cartilage, muscle and tendon. Lectures address a range of topics musculoskeletal tissue homeostasis, pathologies, and regeneration. Lectures are designed for real time interaction, and student/fellows are encouraged to contribute to the discussion.

Attendance: Since this class is graded in part on participation, attendance is mandatory. Students are expected to arrive on time, fully attend and participate in ALL class sessions. Extenuating circumstances causing absence should be discussed with the instructor **before** the absence occurs, not post-facto. If you must miss a class, you can make it up by submitting a two-page paper on the topic for that day.

Assessment and Grading Criteria:

50% Attendance/participation

50% NIH style proposal background section

E-mail: You should only use email as a tool to set up a one-on-one meetings with Dr. Nichols, Dr. Muthukrishnan, or the course lecturers. Your message should include at least two times when you would like to meet and a brief (one-two sentence) description of the reason for the meeting. Emails sent for any other reason will not be considered or

acknowledged. Participation in class discussions asking questions is strongly encouraged during class. For more in-depth discussions, please plan to meet in person (via Zoom). Our conversations should take place in person rather than via email, thus allowing us to get to know each other better and fostering a more collegial and effective learning atmosphere (Courtesy of S.S Duvall, Salem College).

Academic Integrity: Academic integrity is a core value of the University of Rochester. Students who violate the University of Rochester University Policy on Academic Honesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since academic dishonesty harms the individual, other students, and the integrity of the University, policies on academic dishonesty are strictly enforced. For further information on the University of Rochester Policy on Academic Honesty, please visit the following website:

http://www.rochester.edu/college/honesty/docs/Academic_Honesty.pdf

Students in this course are expected to conduct themselves in an honest and ethical manner, as well as to respect the intellectual work of others. Students should complete all required readings and work on their own, though open discussions with others regarding course content and issues raised in the case studies is always encouraged. Any writing assignment completed in lieu of an approved absence must represent the student's own work, with any ideas or text taken from others being appropriated identified and cited.

Accommodations for students with disabilities: Students needing academic adjustments or accommodations because of a documented disability must contact the Disability Resource Coordinator for the school in which they are enrolled (see link below for contact information). <http://www.rochester.edu/eoc/DisabilityCoordinators.html>

Textbook:

No textbooks are assigned for this course.

Time & Place:

Mondays 1:00-1:50 pm

URMC SMD

1-9525/35 Northeastern Room

Lecture Schedule:

Date	Lecture Title	Presenter	Room
9/8/25	Bone homeostasis and pathology	Roman Eliseev, MD, PhD	1-9525/35 Northeastern Room
9/15/25	Rheumatology	Homaira Rahimi, MD	1-9525/35 Northeastern Room
9/22/25	Musculoskeletal stem cells	Chia-Lung Wu, PhD	1-9525/35 Northeastern Room
9/29/25	Musculoskeletal biomechanics	Cherice Hill, PhD	1-9525/35 Northeastern Room
10/6/25	Spine health and pathologies	Ram Haddas, PhD, MBA	1-9525/35 Northeastern Room
10/13/25	No Class (Fall break)		
10/20/25	Bone regeneration	Chao Xie, MD	1-9525/35 Northeastern Room
10/27/25	Musculoskeletal infection	Gowrishankar Muthukrishnan, PhD	1-9525/35 Northeastern Room
11/3/25	Bone marrow biology and pathologies	Ben Frisch, PhD	1-9525/35 Northeastern Room
11/10/25	Tendon pathology and regeneration	Anne Nichols, PhD	1-9525/35 Northeastern Room
11/17/25	Musculoskeletal Metabolism	Sarah Catheline, PhD	1-9525/35 Northeastern Room
11/24/25	Cartilage biology and pathology	Whasil Lee, PhD	1-9525/35 Northeastern Room
12/1/25	PROMIS	Judy Baumhauer, PhD	1-9525/35 Northeastern Room
12/8/25	Calcium signaling in musculoskeletal tissues	Chike Cao, PhD	1-9525/35 Northeastern Room