

# Module 8 LO1

## Overview of Muscle Tissues

Dr. Lisa Brinn

[lbrinn@fiu.edu](mailto:lbrinn@fiu.edu)

[Video Recording Link](#)

# Introduction

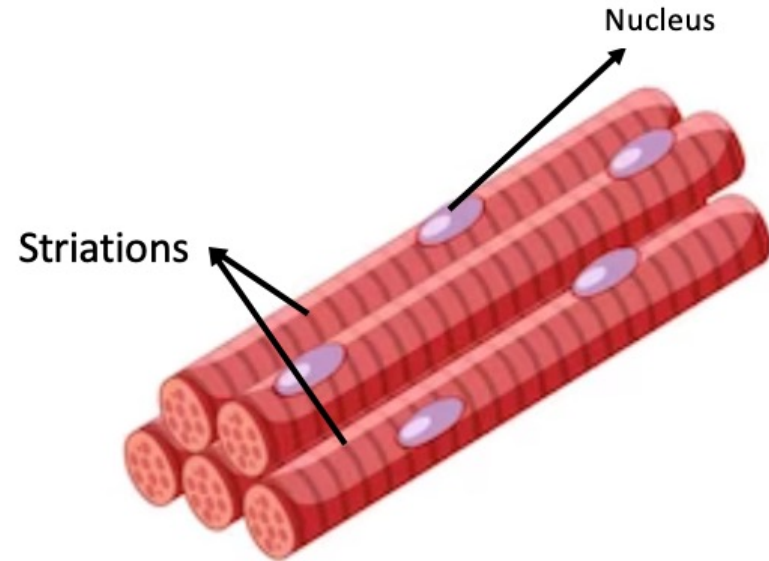
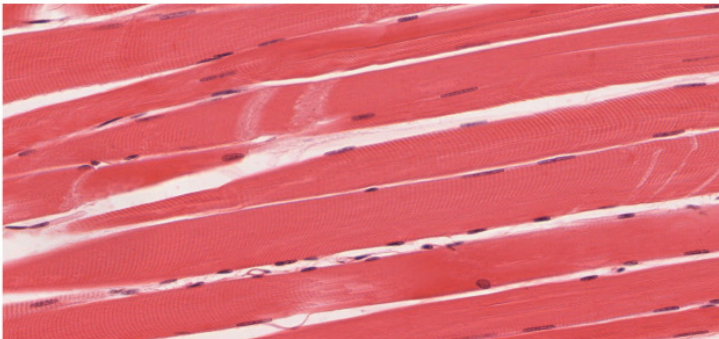
- Component of the human body machinery
- Muscular tissue accounts for 40 to 50% of total body mass
- Results of muscle activity
  - Pumping of blood through blood vessels
  - Eating
  - Breathing
  - Speaking
  - Standing up straight
  - Moving our skeleton

# 1. Overview of Muscular Tissue

- Myology
  - Scientific study of the structure, function, and diseases of skeletal, cardiac, and smooth muscular tissues
- There are three types of muscular tissue:
  - Differ in their microscopic anatomy, location, and how they are controlled by nervous and endocrine systems
- A. Skeletal
- B. Cardiac
- C. Smooth

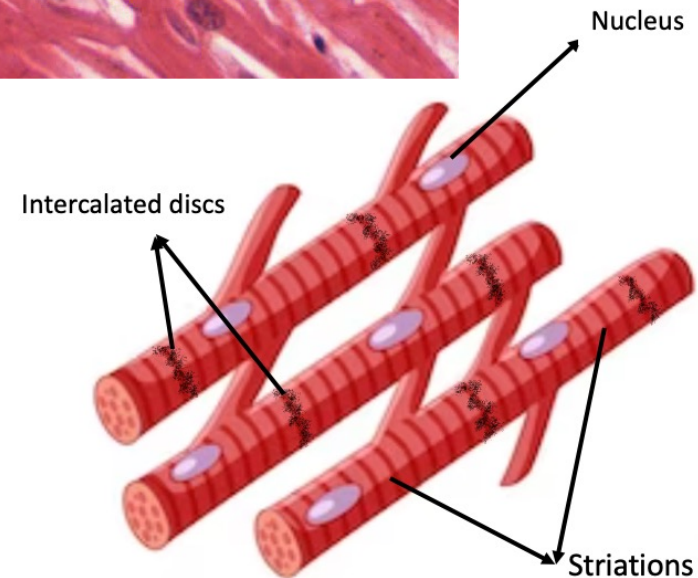
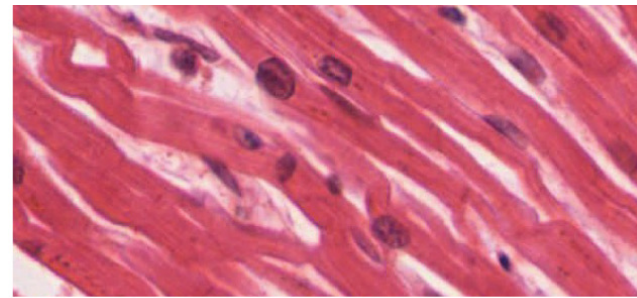
# A. Skeletal Muscle Tissue

- Function
  - Voluntary (consciously controlled) contraction to move skeleton
    - Most are attached to bones
    - Some attach to skin or other skeletal muscles
- Characteristics:
  - Striated
  - Multinucleated, peripheral



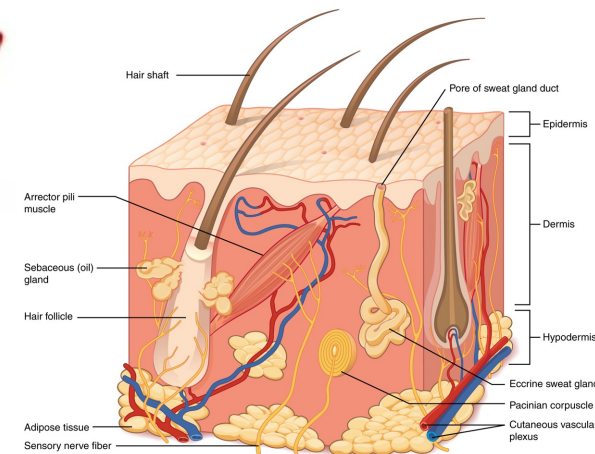
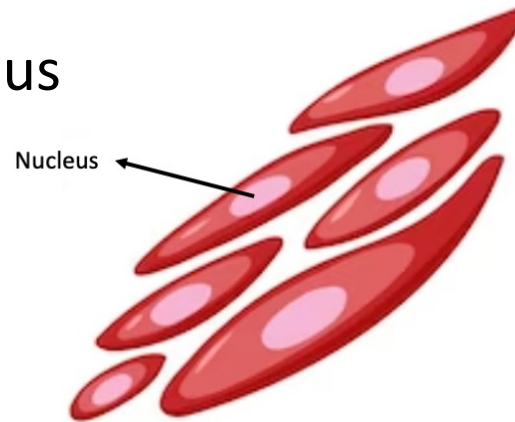
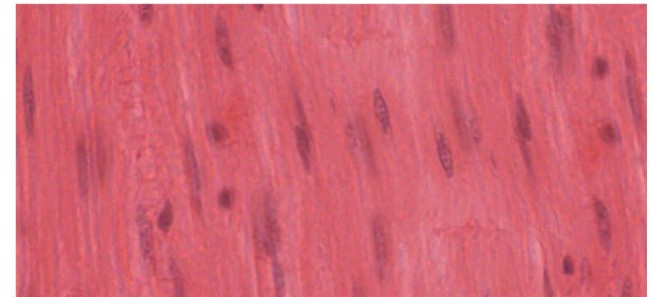
## B. Cardiac Muscle Tissue

- Found only in heart
- Natural pacemaker (Autorhythmicity)
  - Involuntary (not consciously controlled)
- Regulated by neurons
- Characteristic:
  - Striated
  - 1-2 central nuclei
  - Branched
  - Intercalated discs
  - Desmosomes
  - Gap junctions



# C. Smooth Muscle Tissue

- Located in walls of hollow internal organs and structures
- Regulated by neurons
  - Involuntary
  - Autorhythmicity
- Characteristics:
  - Non-striated
  - Single, central nucleus



# Muscle Tissue General Properties

- Properties that enable them to perform their functions:
  1. Electrical excitability – production of action potential by chemical or electrical stimuli
  2. Contractility – contract forcefully when stimulated by action potential
  3. Extensibility – ability to stretch without damaging
  4. Elasticity – ability to return to its original shape

# Functions of Muscular Tissue

- Through sustained contraction or alternating contraction and relaxation, muscular tissue has 4 key functions
  1. Producing body movements – walking and running
  2. Stabilizing body positions – stabilize joints
  3. Storing and moving substances - sphincters
  4. Producing heat - thermogenesis