

Muscular Tissues



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Semester - III, Paper CC-6

Introduction



- Muscular Tissue is a specialized tissue in animals which applies forces to different parts of the body by contraction.
- Muscular tissue is generally mesodermal in origin
- It controls the movement of an organism

Muscle Tissue



Structure of Muscle Tissue

It is made up of thin and elongated cells called muscle fibers

- Muscle tissue consists of fibers of muscle cells connected together in sheets and fibers
- The cytoplasm of muscle fiber is called sarcoplasm
- It contains a network of membrane called the sarcoplasmic reticulum
- The cytoplasm has numerous mitochondria called sarcosomes
- The membrane surrounding the muscle fiber is called sarcolemma
- The sarcoplasm is largely occupied by fine longitudinal parallel protein threads called myofibrils, arranged along the long axis of the fiber.

Muscular Tissue



Properties of Muscular Tissue

- **Contractibility**
 - It is the ability of the muscle cells to shorten forcefully
- **Extensibility**
 - It is the ability of the muscle cells to be stretched
- **Elasticity**
 - Elasticity is the ability to recoil or bounce back to the muscles original length after being stretched
- **Excitability**
 - It is the ability of the muscle to respond to a stimulus

Muscular Tissue



Functions of Muscular Tissue

- **Movement**
 - Muscular tissue is responsible for movement of body parts, like hands, arms, eyes, legs etc.
- **Maintenance of posture**
 - Muscles generate a constant contractile force that allows us to maintain our posture.
- **Heat Generation**
 - Contraction of muscle tissue generates heat which is essential for maintenance of temperature homeostasis
- **Respiration**
 - Our muscular system automatically drives movement of air into and out of our body

Muscular Tissue



Functions of Muscular Tissue.. contd...

- Constriction of organs and blood vessels
 - Nutrients move through our digestive tract, urine is passed out of the body and secretions are propelled out of glands by contraction of smooth muscles
 - Constriction of or relaxation of blood vessels regulate blood pressure and blood distribution throughout the body
- Pumping Blood
 - Blood is pumped through the blood vessels by contraction and relaxation of heart muscles.

Muscular tissue



Types of Muscular Tissues

There are three types of muscular tissues

- Skeletal muscles
- Smooth muscles
- Cardiac muscles

We will discuss the types of muscular tissue in detail in next class



cardiac muscle

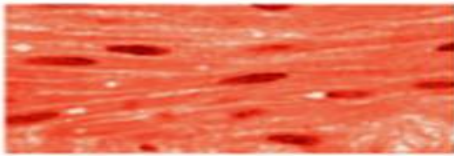


smooth muscle



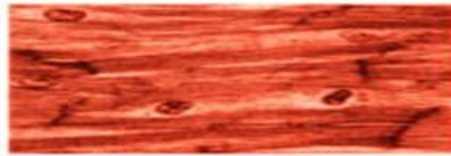
skeletal muscle

Different Muscular Tissues



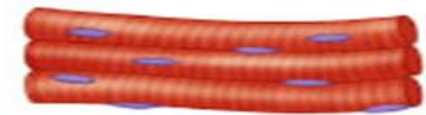
Smooth muscle

- has spindle-shaped, nonstriated uninucleated fibers.
- occurs in walls of internal organs.
- is involuntary.



Cardiac muscle

- has striated, branched, uninucleated fibers.
- occurs in walls of heart.
- is involuntary.






Skeletal muscle

- has striated, tubular, multinucleated fibers.
- is usually attached to skeleton.
- is voluntary.

Types of Muscular Tissue



Three Types of Muscular Tissue

| | Location | Function | Appearance | Control |
|--|--|--|---|--------------------|
| Skeletal  | skeleton | movement, heat, posture | striated , multi- nucleated (eccentric), fibers parallel | voluntary |
| Cardiac  | heart | pump blood continuously | striated , one central nucleus | involuntary |
| Visceral (smooth muscle)  | G.I. tract, uterus, eye, blood vessels | Peristalsis, blood pressure, pupil size, erects hairs | no striations , one central nucleus | involuntary |

Thank You

