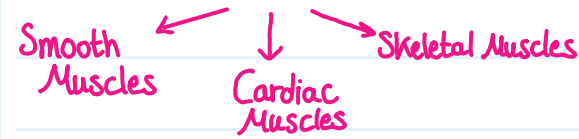


# Muscular Tissue

Done by: Rama Alwraikat



\* Contractile Ability: the interaction between actin & myosin filaments

Cell membrane = Sarclemma


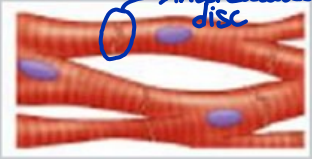

Cytoplasm = Sarcoplasm

Smooth endoplasmic reticulum = Sarcoplasmic reticulum



Sacro = flesh (related to muscle)

## Comparison between the three types of muscle cells:

	<i>Skeletal</i>	<i>Cardiac</i>	<i>Smooth</i>
<i>Location</i>	Attached to bones	The heart (myocardium)	Internal organs and skin <i>except Heart</i>
<i>Shape</i>	Elongated and cylindrical 	Branched 	Fusiform 
<i>Nucleus</i>	<u>Several</u> peripherally located nuclei	<u>Single</u> centrally located nucleus	<u>Single</u> centrally located nucleus
<i>Striation</i>	Striated	Striated	<u>Non</u> -striated
<i>Function</i>	<ul style="list-style-type: none"> <li>• Movement of bone</li> <li>• Heat production</li> </ul>	Beating of the heart	Movement of the viscera
<i>Control</i>	Voluntary	Involuntary	Involuntary

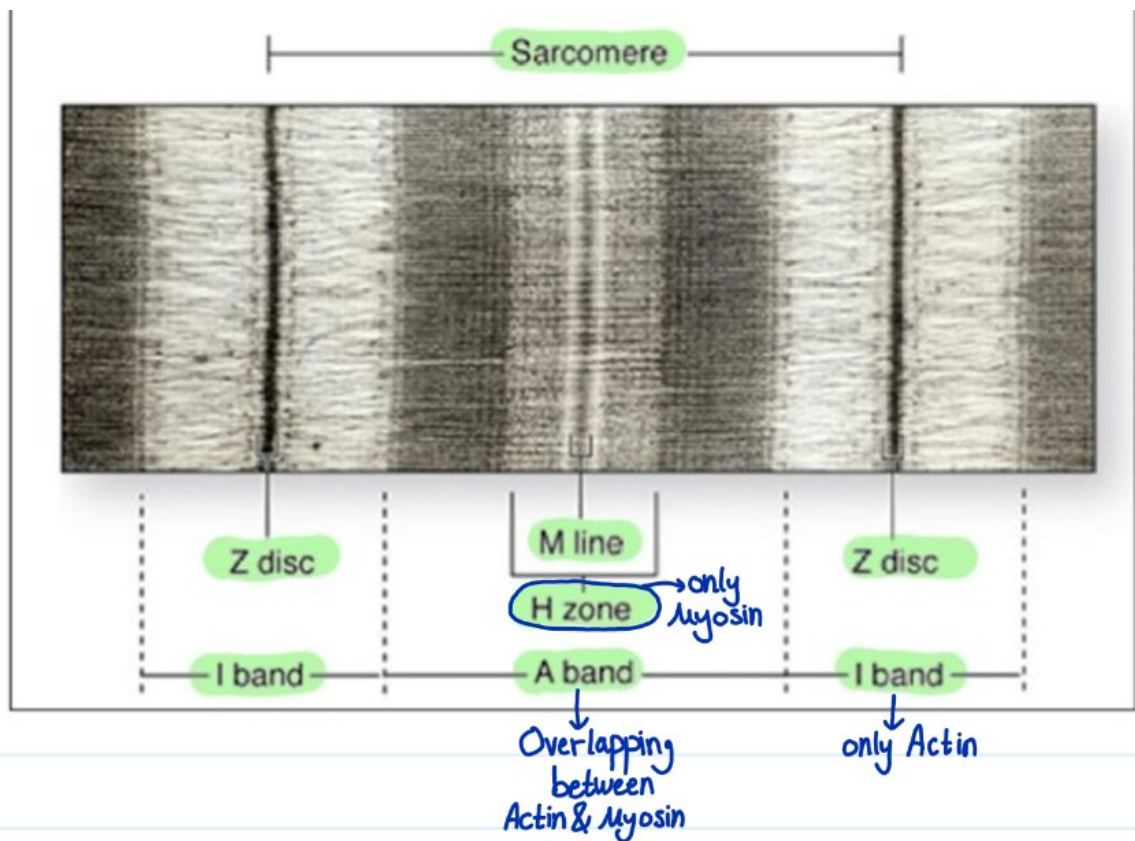
\* **Skeletal Muscles** → have mitochondria & abundant smooth endoplasmic reticulum  
 → multinucleation because of the fusion of several muscle-cell precursors (myoblast)  
 → functions: maintaining posture/stabilization of joints *Cannot divide (inactive Satellite Cells)*

**Cardiac Muscles** → Numerous mitochondria  
 → have desmosomes & gap junctions *Cannot divide (No Satellite Cells)*  
 → T-tubules are longer than those in skeletal muscles / less well developed Sarcoplasmic Reticulum

- Cytoplasm contains fatty droplets, glycogen particles & lipofusion granules
- Atria have an endocrine role so their cytoplasm contain atrial natriuretic hormone

### Smooth Muscles

- Gap junctions & No T-tubules
  - Cytoplasm contains mitochondria, ribosomes, Rough endoplasmic reticulum, Golgi complex & rudimentary sacroendoplasmic reticulum
  - produce the components of extra cellular matrix
  - Dense Bodies (in Cytoplasm, on the cell membrane)
- Can divide



Types of proteins of the Sacromere: Actin/Myosin/Titin/Troponin/Tropomyosin

T-tubule + 2 terminal cisternea = Triad

While contraction of muscles, the sacromere will shorten (H-zone & I-band become narrower) so the myofibrils & the whole muscle will shorten (but A-band is still the same)

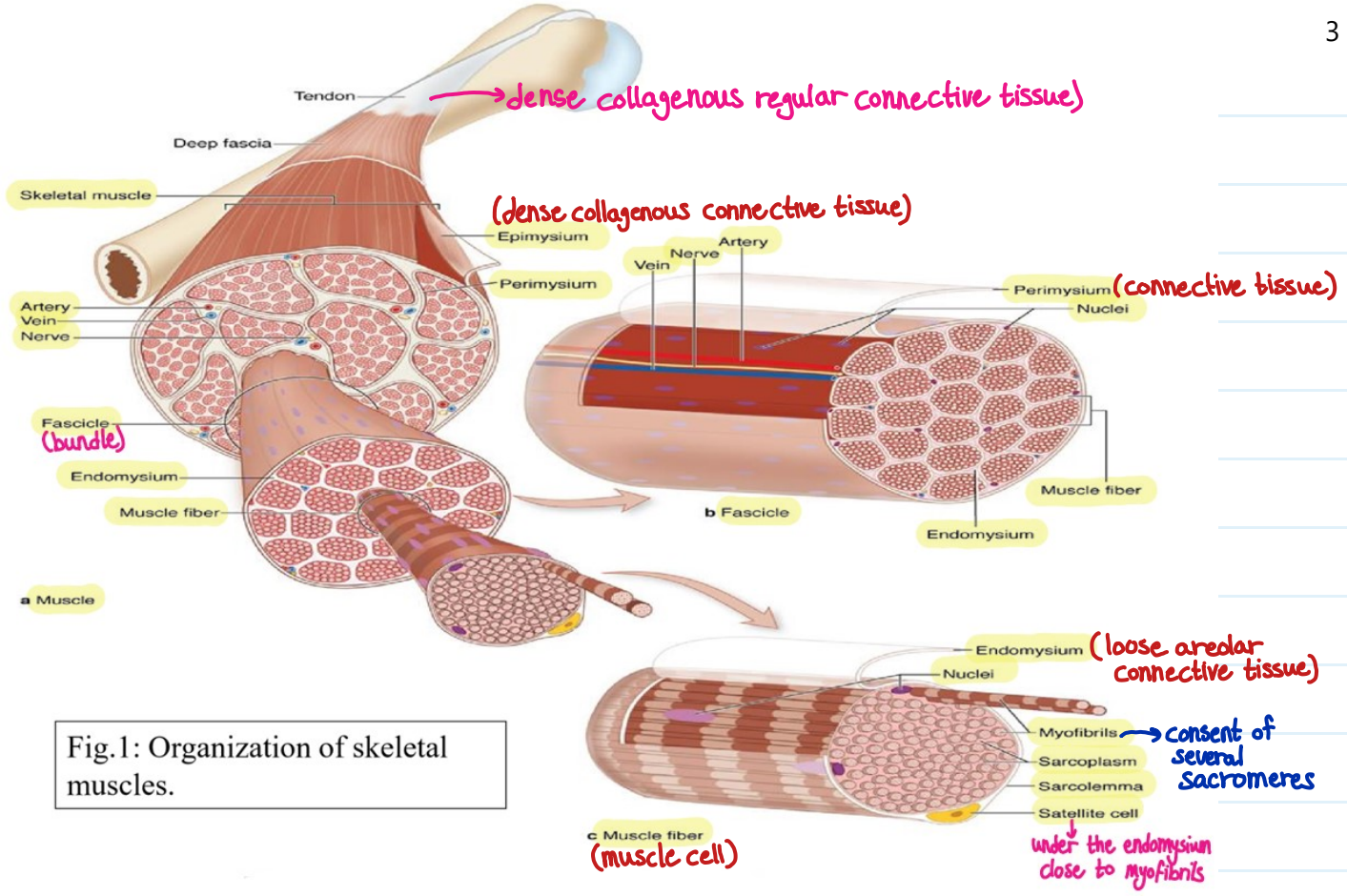


Fig.1: Organization of skeletal muscles.