# Cardiac *vs.* Skeletal *vs.* Smooth

| | Cardiac | Skeletal | Smooth |
|---|---|---|---|
| **Cell size** | ≈100 μm long<br>≈10 μm dia | up to 10s of mm<br>≈60-100 μm | ≈40-600 μm<br>≈2-10 μm |
| **Cell to cell connections** | mechanical, electrical | no | Mechanical, electrical |
| **Striations** | yes; “strict” 6/3 lattice | yes; “strict” 6/3 lattice | no; “amorphous” |
| **Contractile proteins** | myosin, actin | myosin, actin | myosin, actin |
| **Site of regulation** | thin filament; Tn and Tm | thin filament; Tn and Tm | thick filament; LC phospho |

# Cardiac *vs.* Skeletal *vs.* Smooth

| | Cardiac | Skeletal | Smooth |
|---|---|---|---|
| **SR** | modest | dense | minimal |
| **T-tubules** | Z line; fewer SR<>T connect | end of I band[1]; dense SR<>T | N/A |
| **Control** | involuntary; intrinsic pacer | voluntary, reflex | involuntary; intrinsic pacer[2] |
| **Innervation** | autonomic | somatic | autonomic, enteric |
| **AP** | plateau; varies | spike; consistent | spike |

[1] Fig 12-3(B) [2] Some (gut)

# Cardiac *vs.* Skeletal *vs.* Smooth

| | Cardiac | Skeletal | Smooth |
|---|---|---|---|
| **Ions for AP** | $Na^+$, $K^+$, $Ca^{2+}$ | $Na^+$, $K^+$ | $Na^+$, $K^+$ |
| **$Ca^{2+}$ for contraction** | intracellular and extracellular | intracellular | intracellular and extracellular |
| **$Ca^{2+}$ removal** | SR and extrusion | SR | SR and extrusion |
| **$Ca^{2+}$ transient** | variable | constant | variable |
| **Variation of force** | $Ca^{2+}$ transient, stretch | recruitment, tetany | $Ca^{2+}$ transient |

# END

Video 3, Module 5