Muscle

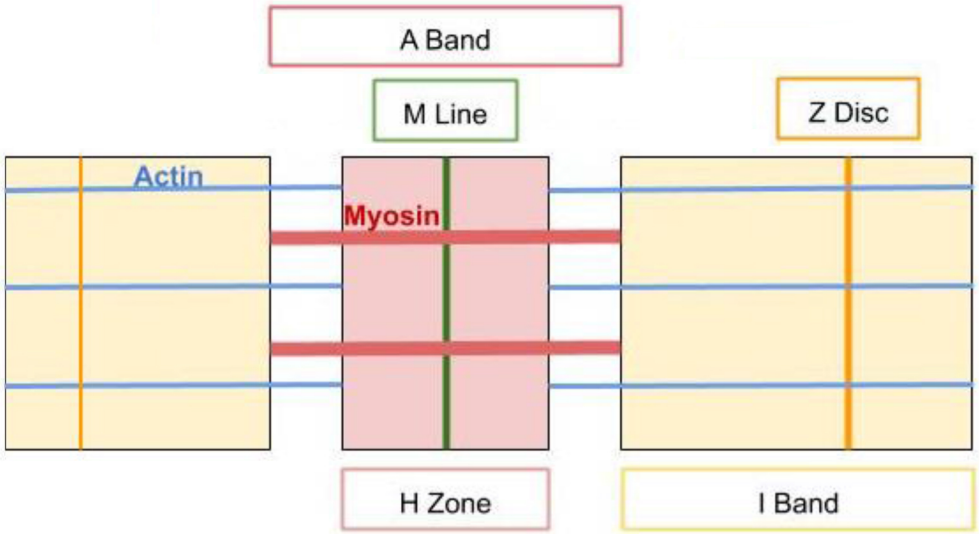
Organization of Skeletal Muscle

Muscle → Fascicles → Fibers (cells) → Myofibrils → Myofilaments: Actin and Myosin

	Function	Contraction	Appearance
Smooth Muscle	Surround organs (except for the heart) and blood vessels	Involuntary	Nonstriated and tapered
Skeletal Muscle	Moves the skeleton	Voluntary	Striated, multinucleated

Sarcomere Structure

The **sarcomere** is the smallest functional unit of muscle, visible as striations on muscle cells



Sliding filament model:
Muscle contraction occurs when the motor protein, myosin, pulls on actin. The filaments move past one another, shortening the sarcomere and generating muscle tension.

Component	Definition	Effect of Contraction
Thick Filament	Composed of myosin	Myosin heads bind to actin
Thin Filament	Composed of actin	Slides past myosin
Z-Line	Mark the borders of the sarcomere. Site of connection for actin	Move closer together
M-Line	Midline of the sarcomere	No change
I Band	Contains **only** thin filaments	Shortens
H Band	Contains **only** thick filaments	Shortens
A Band	The length of the thick filaments	No change

Memory Tool:

"**The letter H is thicker than I**"
H Band = Thick filament
I Band = Thin filament

"**HI is short for Hello**"
H and I band shorten in contraction