CONCEPT: SKELETAL MUSCLE ANATOMY

●Muscle contractions are accomplished by molecular _____ protein interactions.

□ The motor protein _____ pulls on *thin actin microfilaments* during a muscle contraction.

□ Muscle contractions in _____ muscles are one of the best understood mobility systems.

Skeletal Muscle Anatomy

●_____: complexes of thick myosin filaments and thin actin microfilaments in special arrangements.

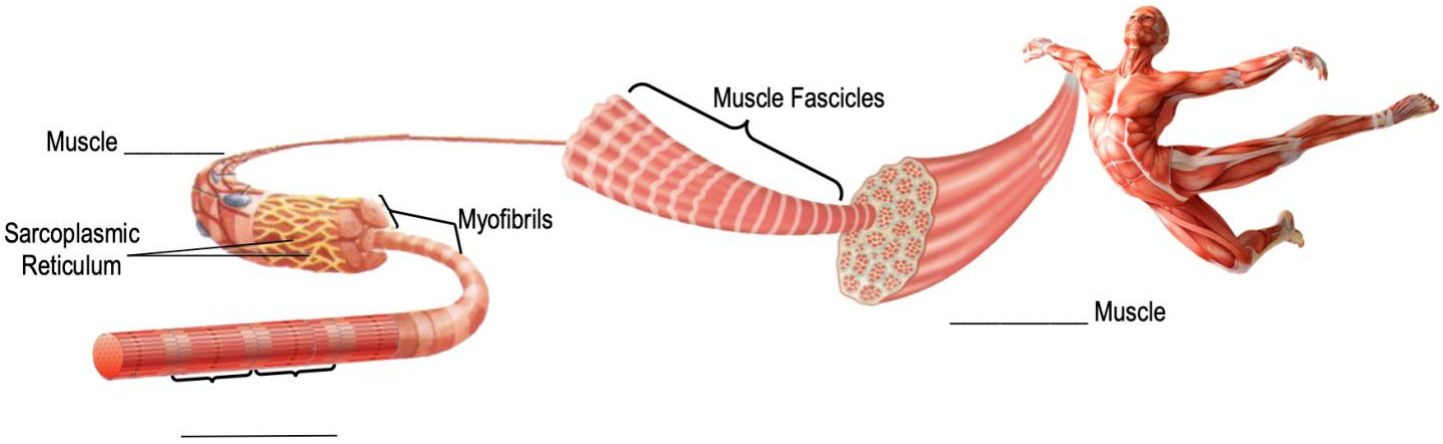
●_____: repeating units of *sarcomeres* surrounded by a *sarcoplasmic reticulum* (membranous structure).

●*Muscle* _____: long multinucleated cells with parallel bundles of *myofibrils* that can run the length of a muscle.

●*Muscle* _____: bundles of *muscle fibers* (bundle of individual cells).

●_____ *muscle*: voluntary muscles (ex. biceps) with a striated/striped appearance consisting of *muscle fascicles*.

EXAMPLE: Review of Human Skeletal Muscle Anatomy.



PRACTICE: Match the following parts of the muscle with the correct description:

a) Sarcomere. _____: voluntary muscles (i.e. triceps) that consist of muscle fascicles.

b) Myofibrils. _____: repeating units of sarcomeres.

c) Fascicles. _____: multinucleated cells that consist of a bundle of myofibrils.

d) Sarcoplasmic Reticulum. _____: membrane-bound structure found within muscle cells.

e) Skeletal Muscle. _____: complex of thin actin and thick myosin filaments.

f) Muscle Fiber. _____: a bundle of skeletal muscle fibers.

CONCEPT: SKELETAL MUSCLE ANATOMY

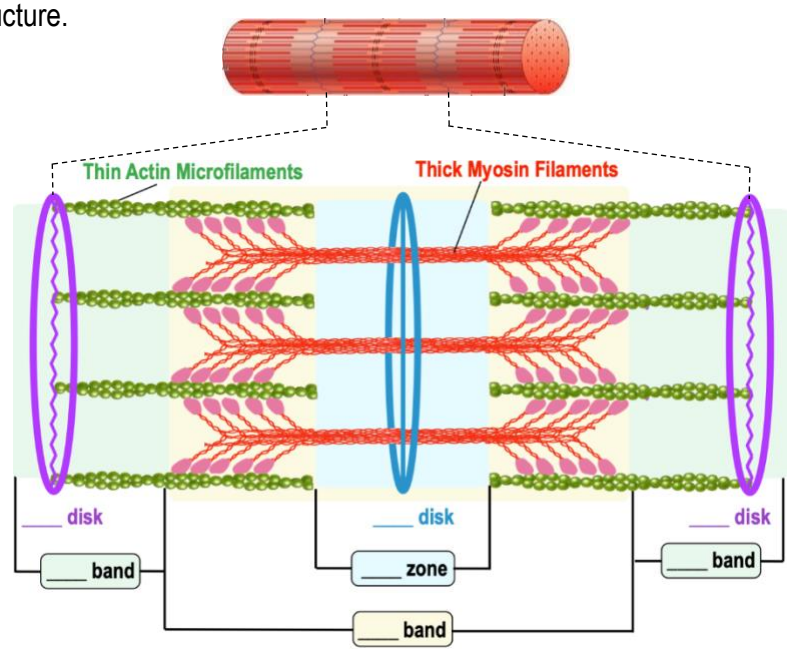
Sarcomeres

●A muscle contraction is the result of _____ contractions.

●A single sarcomere has several different regions & components:

- □ ____ *zone*: "H" is a "thick" letter so H-zone ONLY contains *thick* myosin filaments (no thin actin microfilaments).
- □ ____ *bands*: "I" is a "thin" letter so I-band ONLY contains *thin* actin microfilaments (no thick myosin filaments).
- □ ____ *band*: "A" is "mostly thick & thin" letter so contains ALL of thick myosin filaments & some actin filaments.
- □ ____ *disk* (or *M line*): vertical anchors to myosin in the *middle* of the H zone & A band.
- □ ____ *disks* (or *Z lines*): vertical anchors to actin; centered on the I band (marks start & end of a sarcomere).

EXAMPLE: Sarcomere structure.



PRACTICE: Correctly label each part of the sarcomere in the electron micrograph below:

a) A-band.
b) M-disk.
c) Sarcomere.
d) Thick myosin filament.
e) Thin actin microfilament.
f) Z-disk.
g) I-band
h) H-zone.