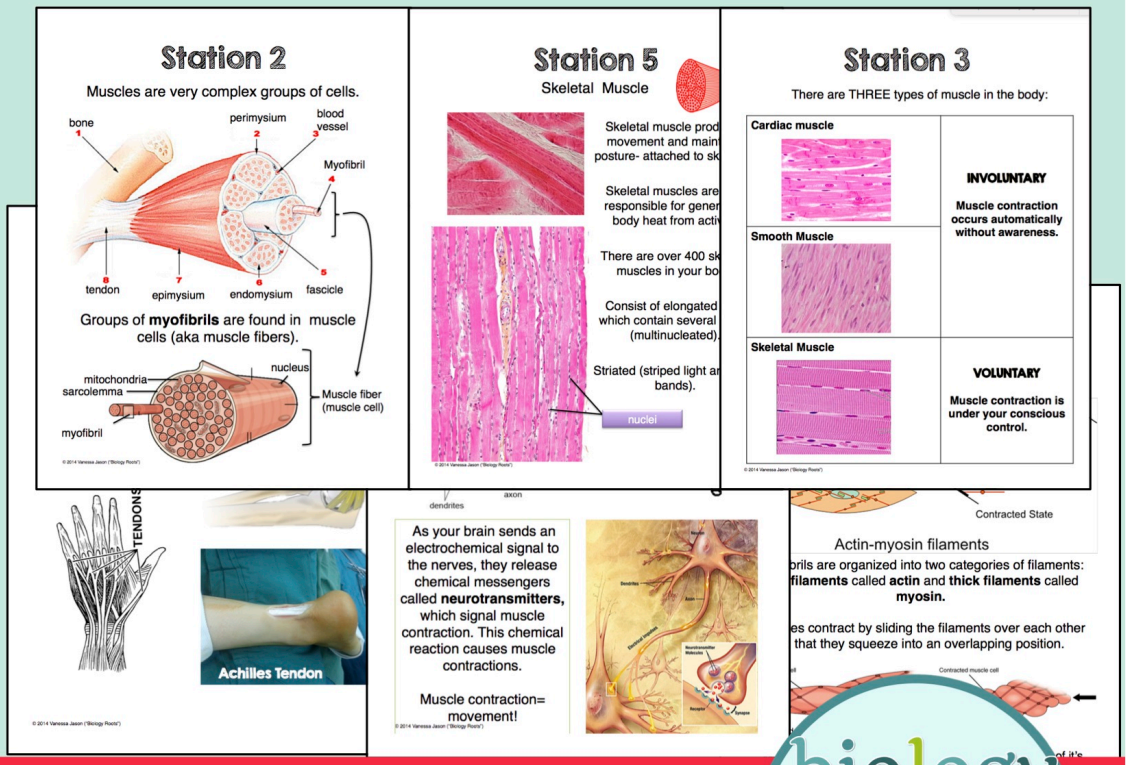
muscular system
Exhibition Stations





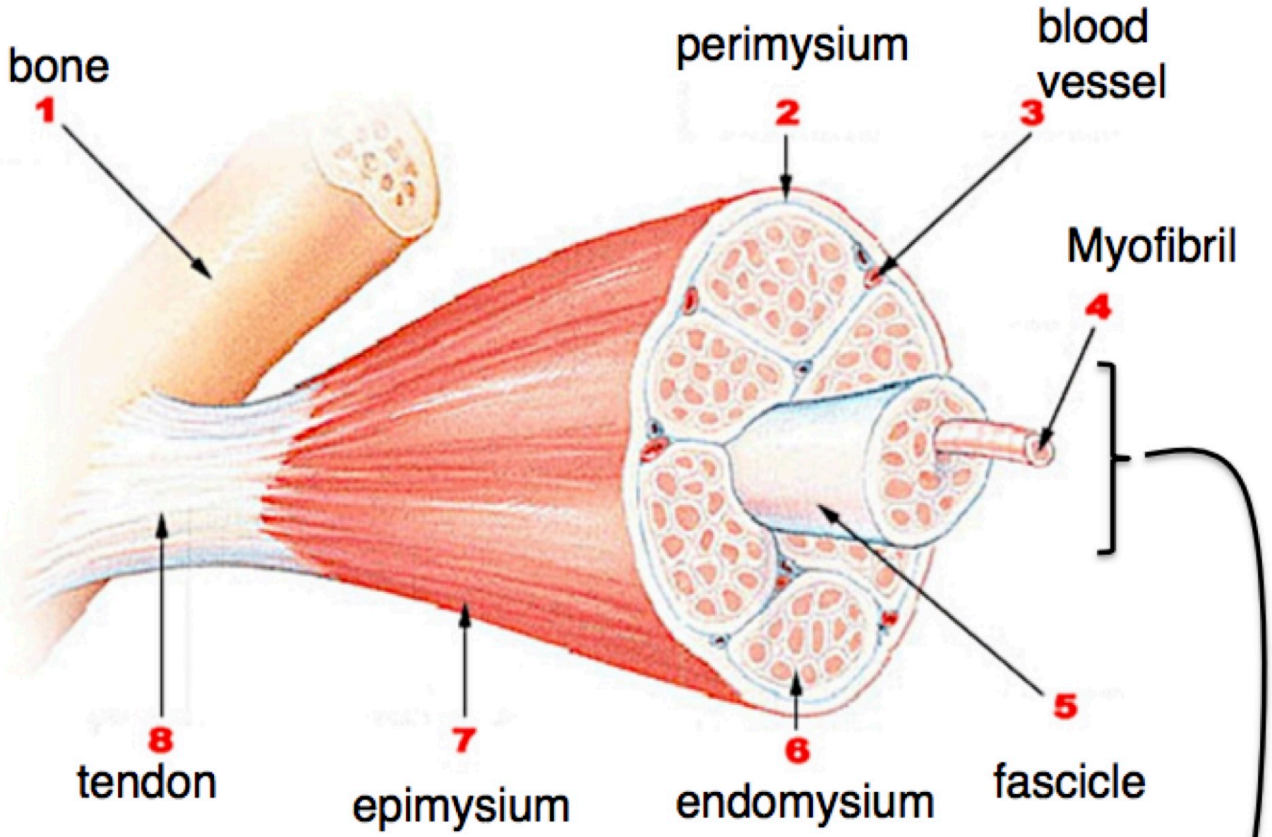
STATIONS WITH STUDENT ANSWER SHEET INCLUDED

biology roots

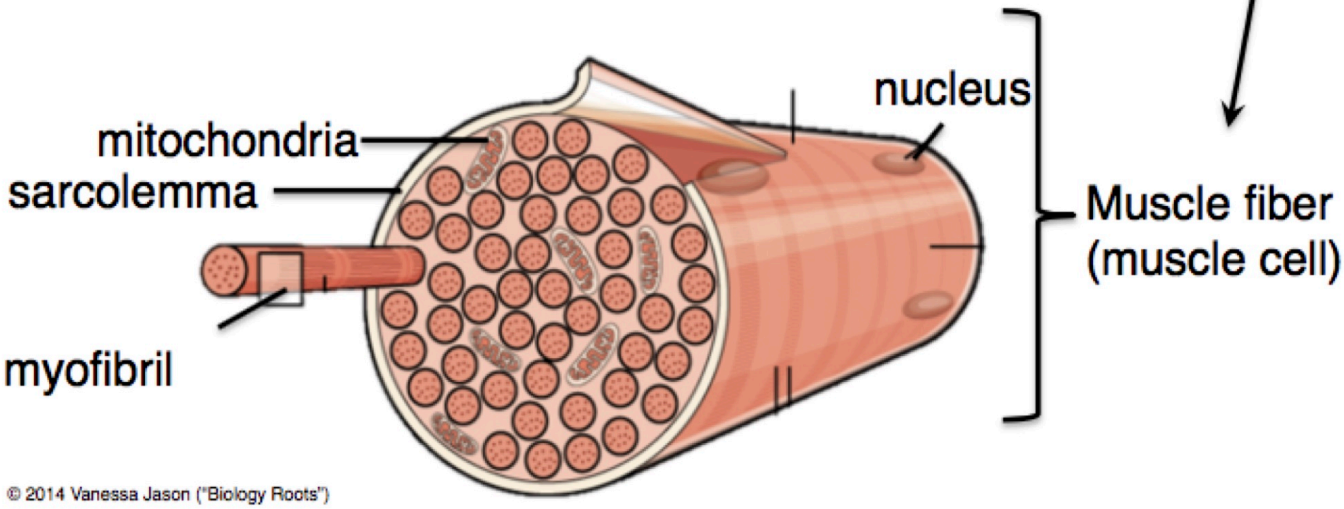
- 16 STATIONS (18 SLIDES- SOME INCLUDE MORE THAN ONE PAPER)
- STUDENT ANSWER SHEET INCLUDED.
- EDITABLE VERSIONS OF BOTH STATIONS AND STUDENT ANSWER SHEET INCLUDED.
- ANSWER KEY INCLUDED.

Station 2

Muscles are very complex groups of cells.

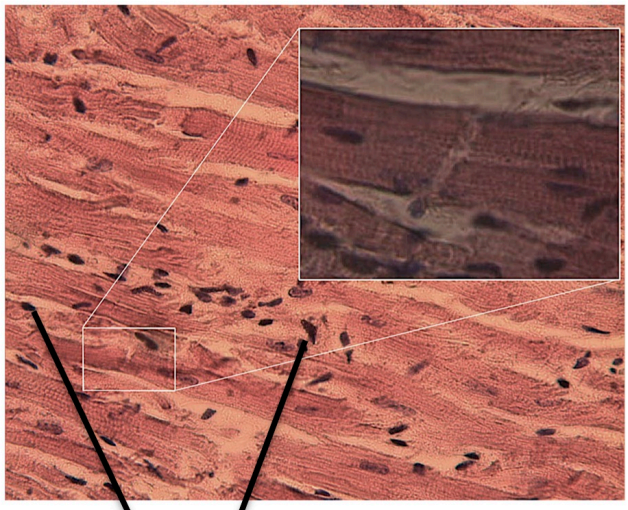


Groups of **myofibrils** are found in muscle cells (aka muscle fibers).



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Station 4



nuclei

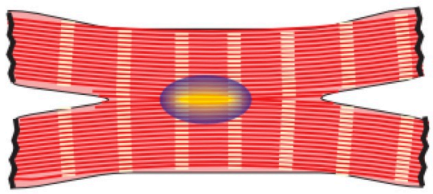
Cardiac muscle exists only in your heart.

Strongest type of muscle! Works 24 hours a day and never fatigues because it contains MANY mitochondria.

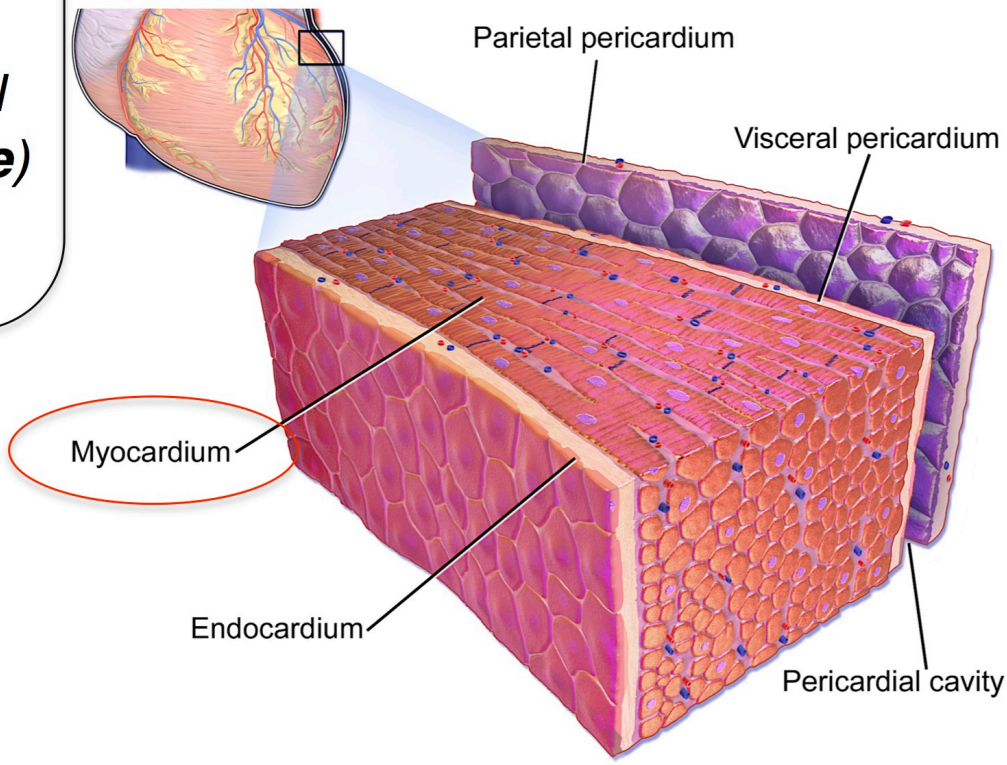
When cardiac muscle contacts, it pumps blood out of the heart.

Cardiac muscle is striated (meaning it is striped- light and dark bands).

Each cell contains one nucleus (mononucleated).



*Cardiac muscle cell (aka **myocardiocyte**)*

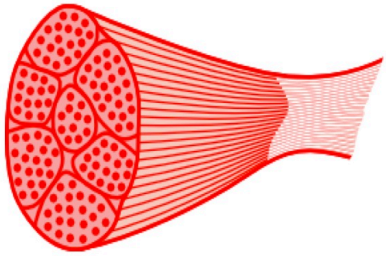


Myocardium= cardiac muscle; muscle of the heart.

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Station 5

Skeletal Muscle

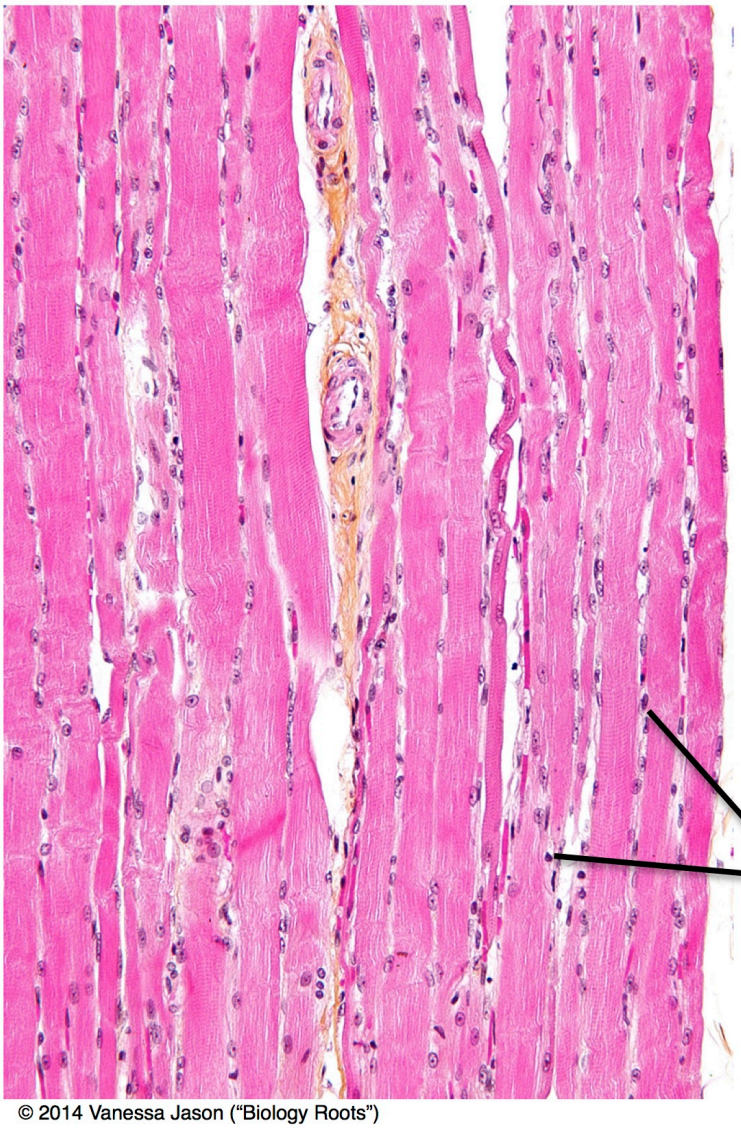




Skeletal muscle produces movement and maintains posture- attached to skeleton.

Skeletal muscles are also responsible for generating body heat from activity.

There are over 400 skeletal muscles in your body.



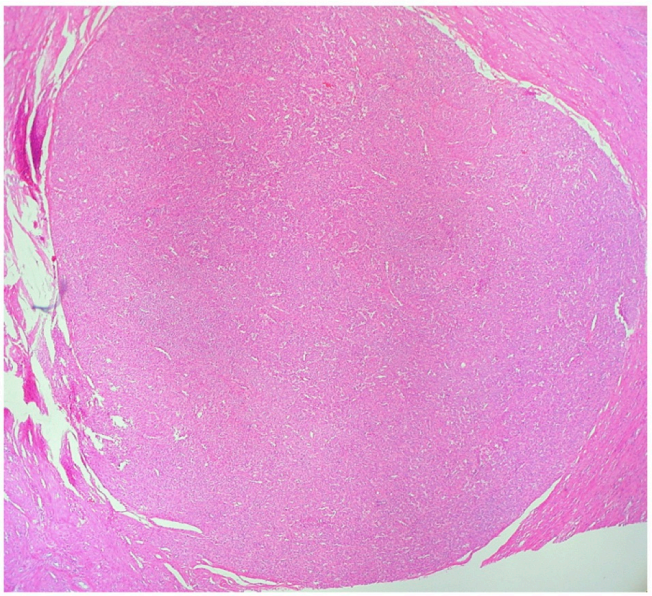
Consist of elongated cells which contain several nuclei (multinucleated).

Striated (striped light and dark bands).

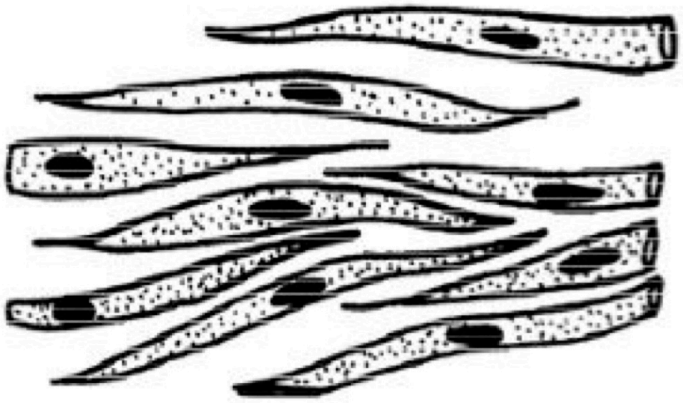
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Station 6

Smooth Muscle



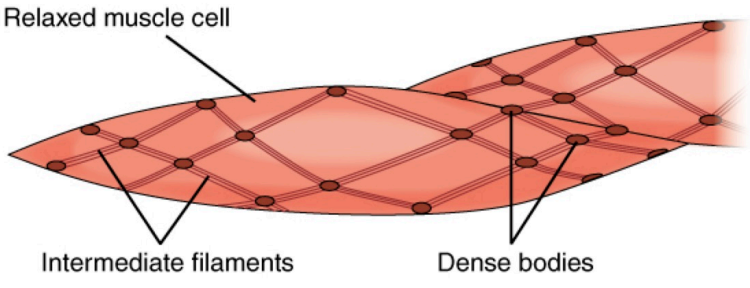
Smooth muscle can be found in hollow internal organs such as the esophagus, stomach, intestines, bladder and uterus. It is also found in the lining of blood vessels.

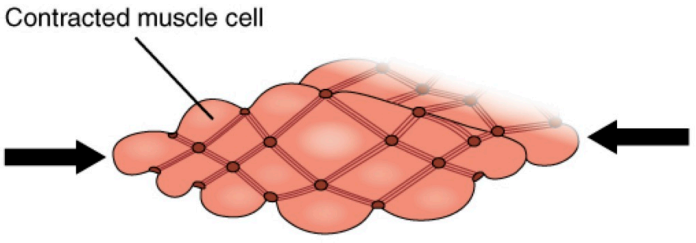


Cells are spindle-shaped and generally contain one nuclei (mononucleated).

No striations.

Smooth controls, slow, involuntary contractions.



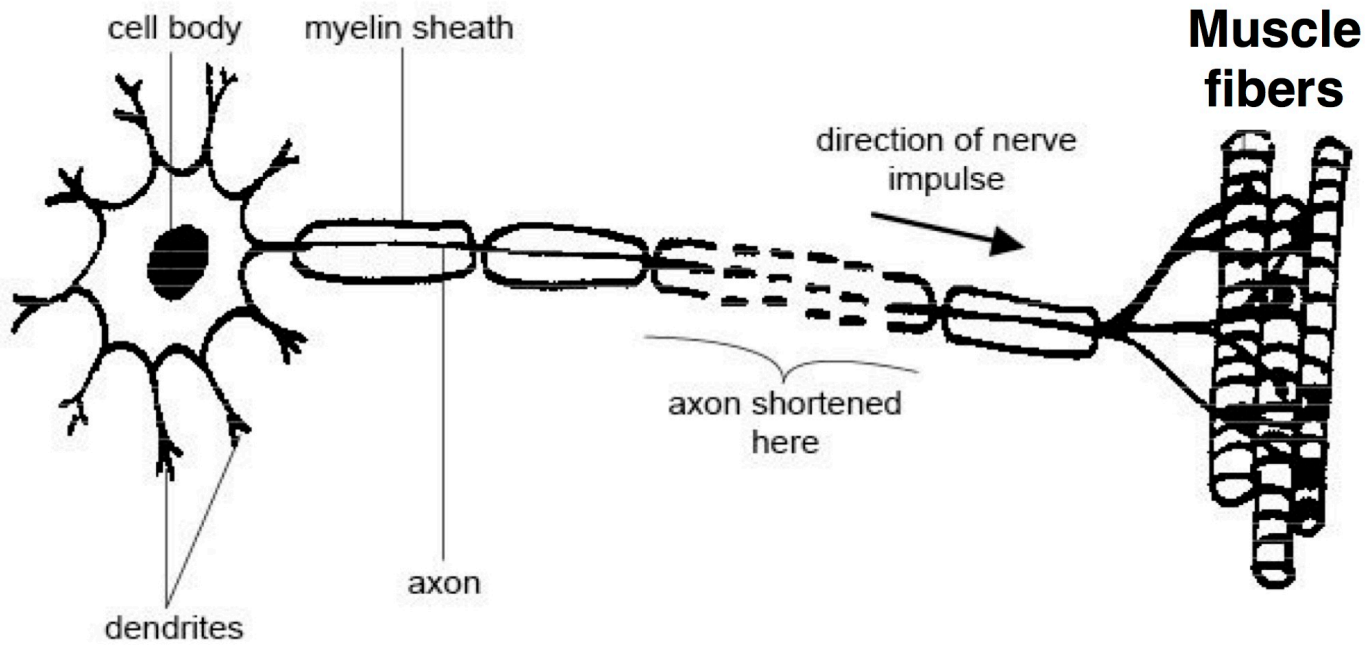


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Station 9

How can you control skeletal muscle?

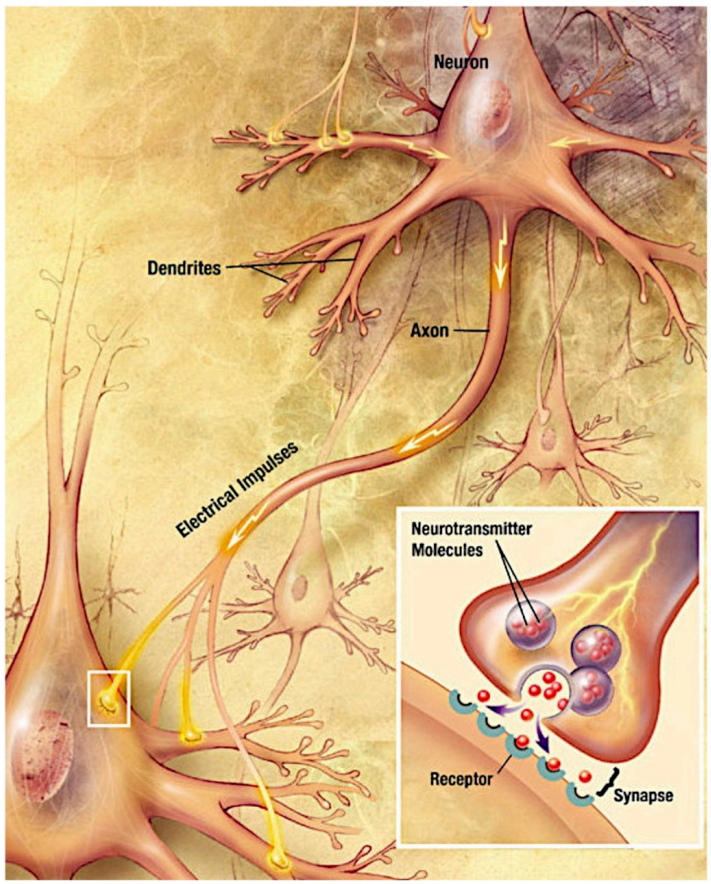
*The tiny myofibrils are connected to special nerves called **motor neurons**.*



As your brain sends an electrochemical signal to the nerves, they release chemical messengers called **neurotransmitters,** which signal muscle contraction. This chemical reaction causes muscle contractions.

Muscle contraction= movement!

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Station II

Muscle Fatigue

Muscle fibers use ATP as their energy source and require oxygen.

Sometimes in skeletal muscle when the muscles are overworked, muscle fibers require a process known as anaerobic respiration to gain energy. A waste product called lactic acid is formed during anaerobic respiration.



A buildup of lactic acid decreases a muscle's ability to contract, which leads to muscle fatigue.

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Station 12

MICROSCOPE STATION

At each microscope, sketch the different muscle types on your answer sheet in the proper space. Please use pencil!



Have your teacher sign off on your sketches!

John Hancock

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STUDENT ANSWER SHEETS:

Name: _____ Date: _____

Muscular System Exhibition Lab

Station 1: Function

You need your muscles to:

1. _____ internal organs
2. _____
3. _____ _____
4. _____ food.
5. Maintain _____ _____.
6. _____

Station 3: Three Muscle Types

Involuntary muscle contraction occurs _____

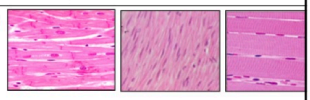
_____

Examples of involuntary muscle:

Voluntary muscle contraction is under your _____

Example of voluntary muscle:

Label the pictures by muscle type:

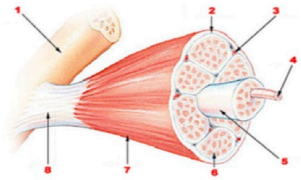


Station 2: Anatomy

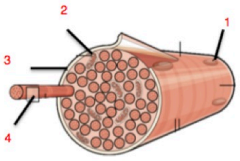
Muscles are very complex groups of _____.

Groups of myofibrils are found within _____ aka _____

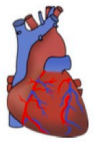
Label the muscle:



Label the muscle fiber:



Station 4: Cardiac Muscle



Cardiac muscle is only found in the _____.

Never fatigues because it contains many _____.

Cardiac muscle is (circle one) striated I not striated.

Cardiac muscle cells are: (circle one) mononucleated I multinucleated.

A heart cell is called a _____.

The muscle portion of the heart is known as _____.

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Muscular System Exhibition Lab

Station 5: Skeletal Muscle



Skeletal muscle produces _____ and maintains _____.

Skeletal muscle can also generate _____ _____.

There are more than _____ skeletal muscles in your body.

Skeletal muscles are (circle one): mononucleated I multinucleated.

Skeletal muscle is (circle one): striated I not striated.

Station 6: Smooth Muscle



Where can smooth muscle be found?

Smooth muscle cells are shaped like _____.

Smooth muscle cells are (circle one): mononucleated I multinucleated.

Smooth muscle is (circle one): striated I not striated.

Station 7: Tendon to Bone

Tendons connect _____ to _____.

Do muscles push or pull? _____

There are no muscles in your fingers, only bones, ligaments and tendons. How are they able to move?



Station 8: Pairs

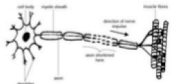


Skeletal muscles work in _____.

Muscle pairs are called _____ pairs; **why is it important that muscles are paired?**

As of the muscles contracts, the other one must _____ (and vice versa).

Station 9: Motor Neurons



What are motor neurons connected to? _____

Fill in the sequence of events that lead to the movement of muscles:

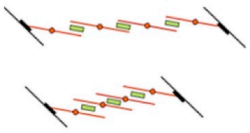
1. The _____ sends an _____ _____ to the nerves.
2. The nerves release _____ _____ called _____.
3. The neurotransmitters signal muscle _____.

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Thick filaments= _____

How do muscles contract? _____

_____.



Label each picture at left as "contracted muscle" or "relaxed muscle".

Complete the key below by labeling which shapes in the picture are actin (thin filaments) or myosin (thick filaments):

KEY

Station 11: Fatigue

Muscle fibers use _____ as an energy source and require _____.

What is lactic acid?

How does lactic acid contribute to muscle fatigue?

Station 12: The Wall Sit

Your time: _____

Why weren't you able to sit longer? What were you feeling and where?

Station 13: Clothespins

How many squeezes...
HYPOTHESIS

First round (10 seconds): _____

Second round (20 seconds): _____

Third round (30 seconds): _____

How many squeezes...
ACTUAL

First round (10 seconds): _____

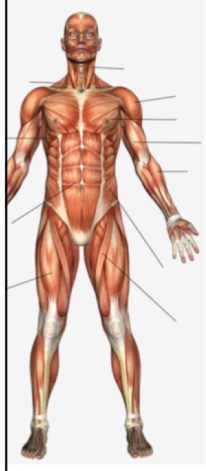
Second round (20 seconds): _____

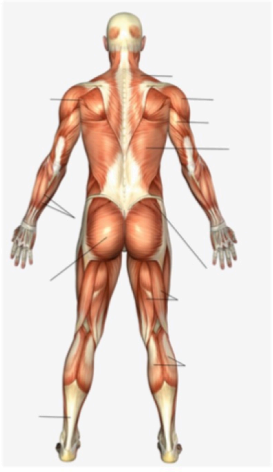
Third round (30 seconds): _____

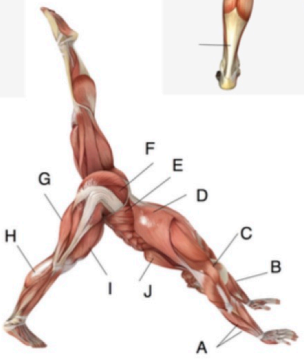
Was your hypothesis correct? Why or why not?

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ont and back views to label the side view:







Choices for A-K:
Biceps
Brachioradialis
Exterior oblique
Gastrocnemius
Gluteus maximum
Gluteus minimus
Latissiumus dorsi
Muscles to fingers
Pectoralis major
triceps

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