

Cornell Guided Notes

Human Anatomy & Physiology (Human Body Systems) | 2027-02-10

Name

Period

Date

Lesson

Lesson focus

Sarcomere and contraction

Key words and questions

Prepared details and student notes

Essential question
What is today's target?

Describe sarcomere structure and explain contraction using the sliding-filament model. Big idea: Every voluntary movement in the body is driven by sarcomeres shortening through actin-myosin cross-bridge cycling.

My notes, examples, and questions

Key words
What vocabulary unlocks the lesson?

- sarcomere
- actin
- myosin
- contraction
- tendon
- origin
- insertion
- lever

My notes, examples, and questions

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Cornell Notes - Continued

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Must-know ideas
What should I understand by the end?

- A sarcomere is the functional unit of a muscle fiber, bounded by Z-lines. It contains thick (myosin) and thin (actin) filaments.
- In the sliding-filament model, myosin heads pull actin toward the center of the sarcomere; the A-band stays constant while the I-band and H-zone narrow.
- ATP powers the cross-bridge cycle; without ATP, myosin heads cannot detach (explaining rigor mortis as a pathophysiology example).

My notes, examples, and questions

Process notes
What happens during class?

- 0-8: Intro: scale from whole muscle to sarcomere
- 8-25: Notes: sarcomere structure and sliding-filament mechanism
- 25-45: PLTW online task: sliding-filament mechanism
- 45-62: Label sarcomere diagram: Z-lines, A-band, I-band, actin, myosin
- 62-75: Write two-sentence explanation of band changes during shortening
- 75-80: Submit diagram and explanation; preview Maniken build

My notes, examples, and questions

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Steps and evidence What do I do and turn in?

- Read the notes on the sarcomere, actin (thin) and myosin (thick) filaments.
- Label a sarcomere diagram including the Z-lines, A-band, and I-band.
- Complete the PLTW online task on the sliding-filament mechanism.
- Explain in two sentences what happens to the bands when a muscle shortens.
- Submit your labeled sarcomere diagram and contraction explanation.

Evidence: Notebook check - Labeled sarcomere diagram (Z-lines, A-band, I-band, actin, myosin) plus a two-sentence sliding-filament contraction explanation.

My notes, examples, and questions

Checks for understanding How do I know I got it?

- You can label the parts of a sarcomere.
- You can explain contraction with the sliding-filament model.

My notes, examples, and questions

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Lab or safety notes
What must I handle carefully?

Supplies:

- Maniken model
- Clay or modeling material for muscle build
- Muscle reference diagrams
- Sculpting tools
- Lab notebook
- Camera or tablet to document the build

My notes, examples, and questions

Summary

Today's lesson focused on Sarcomere and contraction. The main target was: Describe sarcomere structure and explain contraction using the sliding-filament model. The evidence of learning is Notebook check: Labeled sarcomere diagram (Z-lines, A-band, I-band, actin, myosin) plus a two-sentence sliding-filament contraction explanation.. In my own words, the most important idea from today is:

My summary

My final question or connection