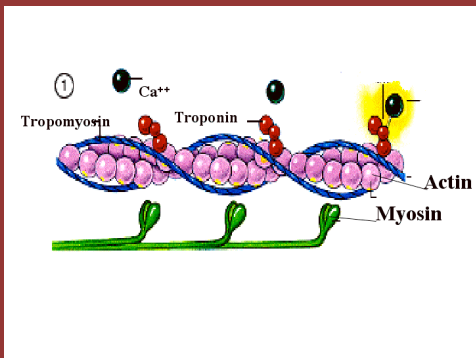


SLIDING FILAMENT THEORY OF MUSCLE CONTRACTIONS

10TH GRADE

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| Objective | <p>By the end of this activity, students should be able to:</p> <ul style="list-style-type: none"> • Identify myosin heads, troponin, tropomyosin, and actin in a picture of a sarcomere. • Describe the functions of the myosin heads, troponin, tropomyosin, actin, sarcoplasmic reticulum, and calcium ions. • Organize steps of the sliding filament theory in order |
| Materials | <ul style="list-style-type: none"> • Computer with a webcam or microphone • Facebook Account • Rounds application on Facebook • Paper and a writing utensil |
| Procedure | <ol style="list-style-type: none"> 1) The students are going to be paired up so they can complete this activity at their own homes, but together at the same time. <ul style="list-style-type: none"> • Have students arrange a time for both of them to meet via the rounds application. 2) Go to rounds.com and click the “Start Now” button and have them fill in their Facebook information <ul style="list-style-type: none"> • If students don’t have a Facebook, have them signup 3) Click “allow” on the next page. 4) You will now see the application within Facebook. 5) Hover your mouse over the right side of the screen and your friends will be listed. Click on your partner and you will video call them. 6) Once you have reached your partner, hover your mouse over the right side and activities will appear, find the Youtube icon and open it. |



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| <p style="text-align: center;">Procedure</p> | <p>7) Now Youtube will have opened and you and your partner should see it, search "sliding filament theory"</p> <ul style="list-style-type: none"> • Click on the second video that is 2:59 long. <p>8) As you watch the video talk with your partner and write down the function of the following:</p> <ul style="list-style-type: none"> • Myosin heads • Actin • Troponin • Tropomyosin • Calcium ions • Sarcoplasmic Reticulum <p>9) If at anytime during the video you are unsure about an idea, pause the video and discuss it with your partner.</p> <ul style="list-style-type: none"> • If you still do not fully understand the theory, please watch other videos with your partner until you feel that you understand. |
| <p style="text-align: center;">Assessment</p> | <p>QUIZ</p> <ul style="list-style-type: none"> • Correctly label a sarcomere with the following: <ul style="list-style-type: none"> ○ Actin ○ Myosin ○ Troponin ○ Tropomyosin • Match the functions with the correct structure • Given the steps of the sliding filament theory, arrange them in the correct order. |
| <p style="text-align: center;">Standards</p> | <p>AP 2.7 Name the components of a skeletal muscle fiber and describe their functions. Describe how the thin and thick filaments are organized in the sarcomere. Explain the molecular processes and biochemical mechanisms that provide energy for muscle contraction and relaxation.</p> |

