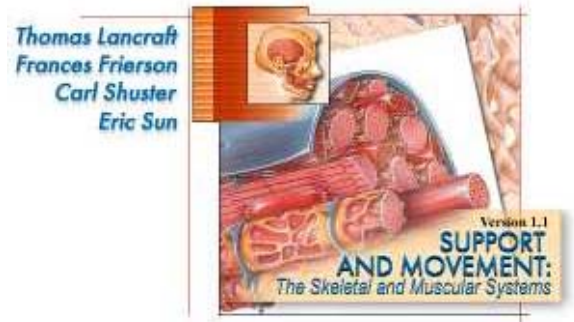


# Contraction of Skeletal Muscle Cells

## Directions:

- a. Click the "Contents" button,
- b. Open the *Muscular System* File,
- c. Click *Animations*,
- d. Click *Contraction of Skeletal Muscle Cells*



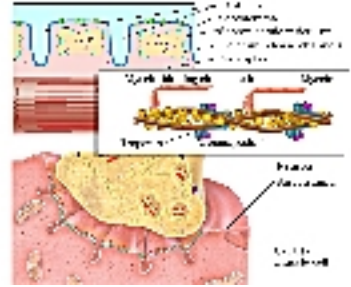
## Introduction

1. Describe the series of events started by a nerve impulse arriving at a neuromuscular junction.

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## Muscle Cell Structures

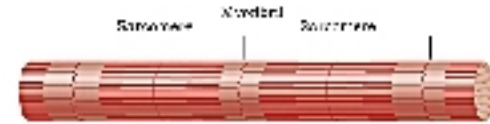
2. Define these muscle structures:

*Myofibrils* \_\_\_\_\_

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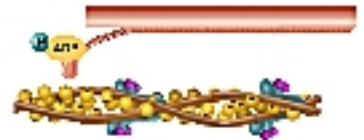
*Sarcomeres* \_\_\_\_\_

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3. Describe actin and myosin filament function. \_\_\_\_\_

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3. Explain the importance of the myosin binding sites on the actin filament.

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4. What is the function of the tropomyosin-troponin complex? \_\_\_\_\_

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5. What affect does calcium ions have on these filaments? \_\_\_\_\_

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6. Identify these parts of the myosin filament and the function of each.



*Myosin tail* \_\_\_\_\_

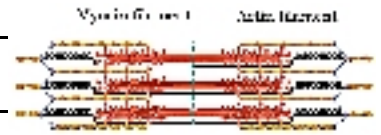
*Myosin crossbridge* \_\_\_\_\_

7. Explain the function of ATP with regard to the "power stroke." \_\_\_\_\_

\_\_\_\_\_

8. Identify the *titin filament* and describe its function. \_\_\_\_\_

\_\_\_\_\_



### Contraction of a Sarcomere

9.  $Ca^{+2}$  ions entering the sarcoplasm triggers a *contraction cycle*. Describe each of the following steps of a contraction cycle.

a. *ATP Hydrolysis* \_\_\_\_\_

\_\_\_\_\_



b. *Crossbridge Attachment* \_\_\_\_\_

\_\_\_\_\_



c. *Power Stroke* \_\_\_\_\_

\_\_\_\_\_

d. *Crossbridge Detachment* \_\_\_\_\_

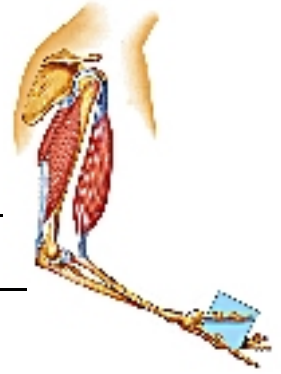
\_\_\_\_\_



10. How long will this process continue? \_\_\_\_\_

\_\_\_\_\_

## Contraction and Movement



11. Describe how each of the following successively contributes to gross body movement.

*Myosin* \_\_\_\_\_

*Actin* \_\_\_\_\_

*Dystrophin proteins and the sarcolemma* \_\_\_\_\_

\_\_\_\_\_

*Muscle cell* \_\_\_\_\_

*Entire Muscle* \_\_\_\_\_

*Tendon* \_\_\_\_\_

*Bone* \_\_\_\_\_

12. Contrast muscle origins and insertions. \_\_\_\_\_

\_\_\_\_\_