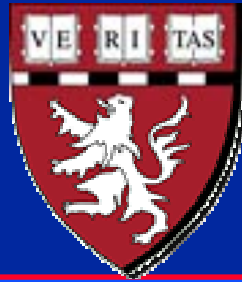




**Massachusetts Institute of Technology
Harvard Medical School
Brigham and Women's Hospital
VA Boston Healthcare System**



2.785j/3.97J/BEH.411/HST523J

MUSCLE CONTRACTION

M. Spector, Ph.D.

Diagrams of muscle fiber structure removed for copyright reasons.
See, for example, Slides 32-37 in Chapter 6 of
<http://kinesiology.boisestate.edu/rvhp/>

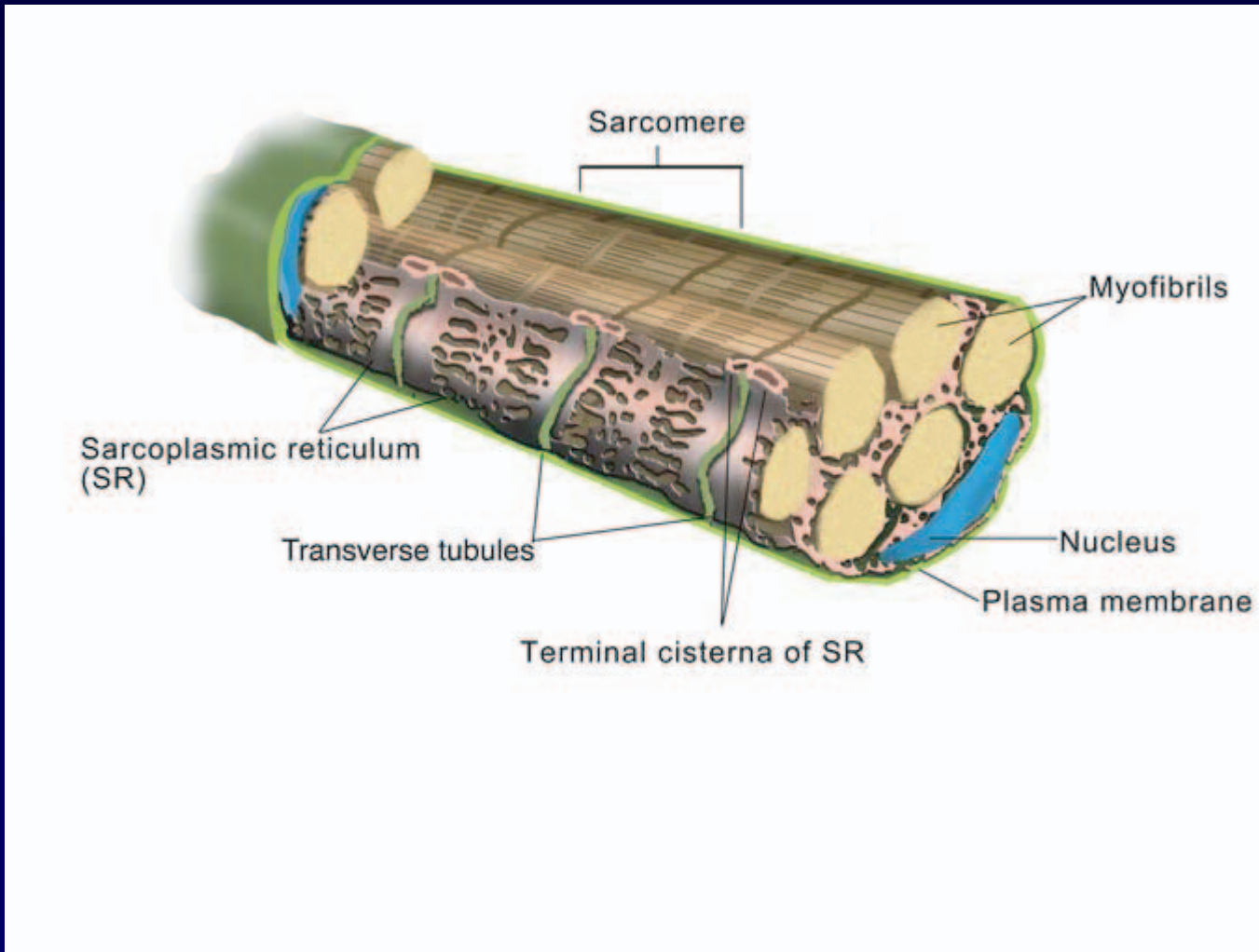


Figure by MIT OCW.

Diagrams removed for copyright reasons.
See the actin/myosin animations at
http://www.sci.sdsu.edu/movies/actin_myosin_gif.html

http://www.accessexcellence.org/AB/GG/muscle_Contract.html

Diagram removed for
copyright reasons.

(A) The myosin and actin filaments of a sarcomere overlap with the same relative polarity on either side of the midline. Recall that actin filaments are anchored by their plus ends to the Z disc and that myosin filaments are bipolar. (B) During contraction, the actin and myosin filaments slide past each other without shortening. The sliding motion is driven by the myosin heads walking toward the plus end of the adjacent actin filament.

Diagram removed for copyright reasons.
See Figure 18-29 in Lodish et al. *Molecular Cell Biology* 4th ed.
Available online at PubMed Bookshelf,
<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Books>

Sliding filament model of contraction in striated muscle. In the presence of ATP and Ca^{+2} the myosin heads, extending from the thick filaments, pivot pulling the actin thin filaments towards the center. The thin filaments are anchored and thus the movement shortens the sarcomere length.

Diagrams removed for
copyright reasons.

Figure 1
Length-tension relation for skeletal muscle

Figure 2
Experimental setup required to determine length-tension relation of muscle

LENGTH-TENSION CURVE

