#### **BIOLOGICAL FRAMEWORKS FOR ENGINEERS**

### Session #17 [Cell Movements]

#### General Objectives:

- ✓ Discuss the importance of cell motion in normal physiology and pathophysiology
- ✓ Discuss the mechanics of cytokinesis, cell migration, and cell contraction

#### Central Framework:

✓ Cell movement is central to the form and function of tissues in an organism and is accomplished using motor proteins.

#### **Interactive Activity:**

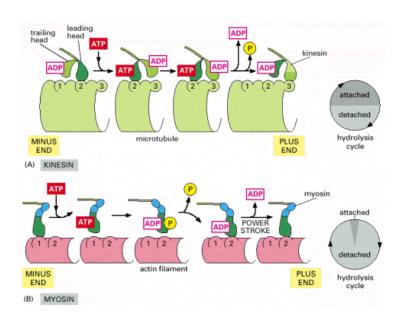
✓ Videos

#### <u>Session Outline:</u>

A. Molecular Motors

Kinesin & Dynein

Myosin



B. Cytokinesis

Prophase

Prometaphase

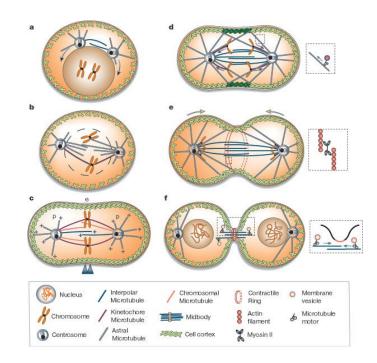
Metaphase

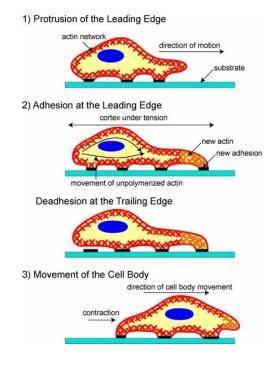
Anaphase A

Anaphase B

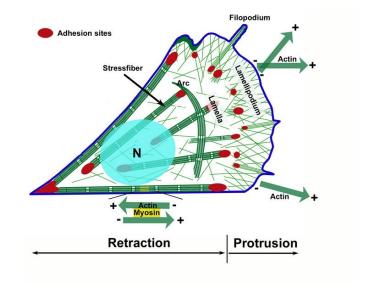
Telophase

C. Cell Migration

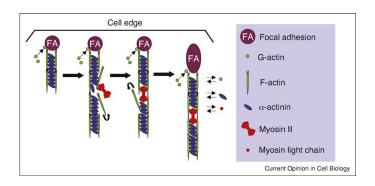




# Lamellipodium & Filopodia



Stress Fibers



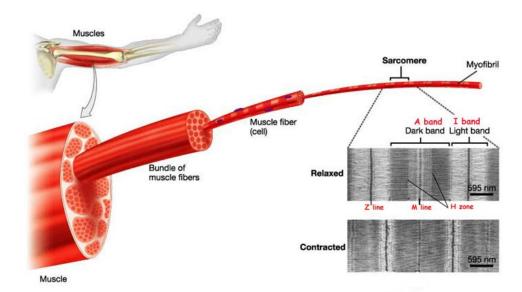
Multicellular Migration

D. Cell Contraction

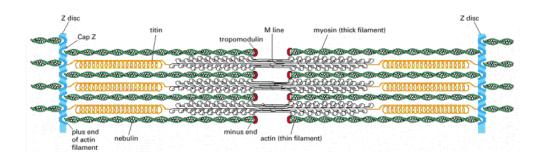
Wrinkling Membranes

Micropost arrays

## Muscle Cells



### Sarcomeres



## Cardiac Contraction