

BIOLOGICAL FRAMEWORKS FOR ENGINEERS

Session #16 [Cell Cytoskeleton]

General Objectives:

- ✓ Discuss the importance of cytoskeletal filaments
- ✓ Discuss mechanisms of regulating cell shape

Central Framework:

- ✓ Cell shape is central to the life of an organism and is accomplished via different mechanisms.

Interactive Activity:

- ✓ Videos of cell movement and cytoskeletal dynamics

Session Outline:

A. Cytoskeleton

Dynamics

Polymerization

Treadmilling

B. Actin

Actin Assembly

Actin Binding Proteins

C. Microtubules

Microtubule Assembly

Microtubule Instability

D. Intermediate Filaments

Intermediate Filament Assembly

Cytoskeletal Cross-linking

E. Molecular Motors

Kinesin & Dynein

Myosin