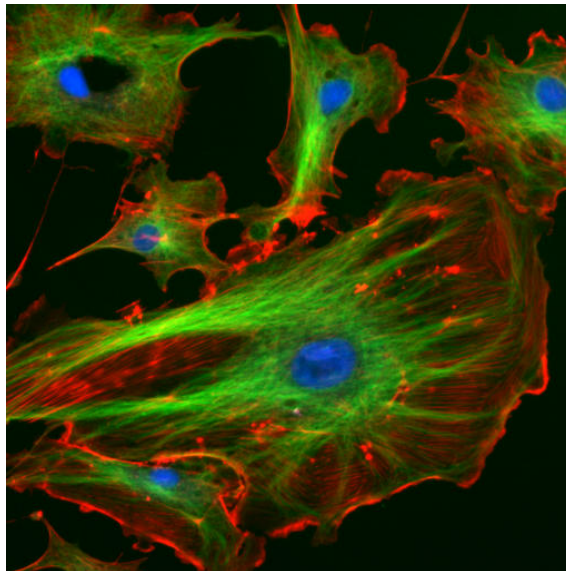


CONCEPT: OVERVIEW OF THE CYTOSKELETON

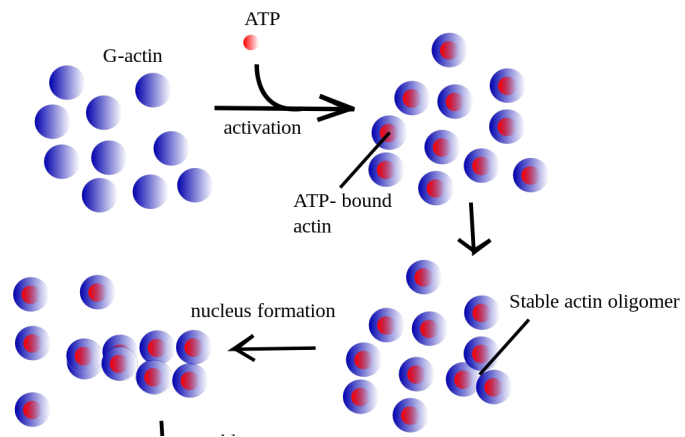
- The **cytoskeleton** is an intricate _____ of protein filaments that extend throughout the cytoplasm
 - It is a highly organized and dynamic structure (constantly moving and responding to the environment)
 - There are three main components of the cytoskeleton
 - **Intermediate filaments:** Provide great tensile strength to the cell and nucleus
 - Acts as a protective cage for DNA
 - **Microtubules:** Provide support and internal framework to the cell
 - Creates mitotic spindle in cell division; Also forms cilia and flagella
 - **Actin Filaments (microfilaments):** Provides the plasma membrane with strength and shape
 - Allows for cell movement

EXAMPLE: Actin is labeled in red, and microtubules are labeled in green



- Each component is created through _____ joining of small subunits noncovalently linked together
 - **Protofilaments** are long string of subunits joined end to end
 - Can twist around other protofilaments to form helical lattice
 - **Nucleation** is the initiation process of assembling subunits – requires an initial aggregation step

EXAMPLE: Nucleation of actin



PRACTICE

1. Which of the following is not a component of the cytoskeleton?
 - a. Intermediate filaments
 - b. Actin filaments
 - c. Nucleation
 - d. Microtubules

2. What is the name of the initiation process that begins to assemble the subunits of the cytoskeleton?
- a. Cytoskeleton Initiation
 - b. Support Initiation
 - c. Nucleation
 - d. Protofilament formation