CONCEPT: ACTIN BASED NON-MUSCLE MOVEMENTS

- There are three types of actin based non-muscle cellular movements

Type	Definition
Cell crawling (protrusion)	Cell drags itself forward by crawling over surfaces (Ex: amoebas, white blood cells, neutrophils)
Chemotaxis	Migrating cell respond to differing concentrations of a diffusible chemical
Cytoplasmic streaming	Cytosol streams back and forth within the cell (ex: slime molds and plant cells)

- **Cell crawling** uses four steps to move cells across a surface

1. *Protrusion:* Cell pushes actin based protrusion out from it's moving surface (driven by actin polymerization)

    - **Pseudopodia** (amoeba)

    - **Lamelipodium** is the dense leading portion which has **filopedia** protrusions at the leading edge

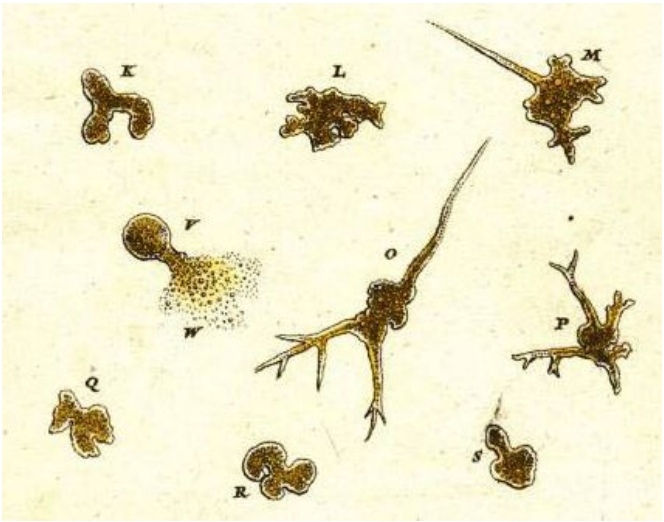
2. *Attachment:* Cellular protrusions attach to the surface

    - **Integrins** are transmembrane proteins that adhere to the *ECM* or the surface on which the cell is crawling

3. *Translocation:* The cell drags itself forward using the attached areas an anchorage points

4. *Detachment:* The cells detach from the surface

EXAMPLE: Pseudopodia extensions from an amoeba



PRACTICE:

1. True or False: Pseudopodia are used by ameobas for cell crawling.
    a. True
    b. False

2. Which of the following proteins are used so that the cell can attach to the surface on which it is crawling?
    a. ECM proteins
    b. Filaments
    c. Filopedia
    d. Integrins