CONCEPT: INTERMEDIATE FILAMENTS

● **Intermediate filaments** are cellular components that provide the cell with great _____ strength

□ Intermediate filaments are the most durable cytoskeletal filaments

- They allow the cell to withstand mechanical stress

- Strength provided by long intermediate filament strands that are wrapped together (like a rope)

□ Intermediate filaments are anchored to the plasma membrane and the _____

□ Intermediate filaments are formed by:

- Individual subunits that link together to form one filament

- Two filaments form dimers by binding via the alpha helical domain on the individual subunits

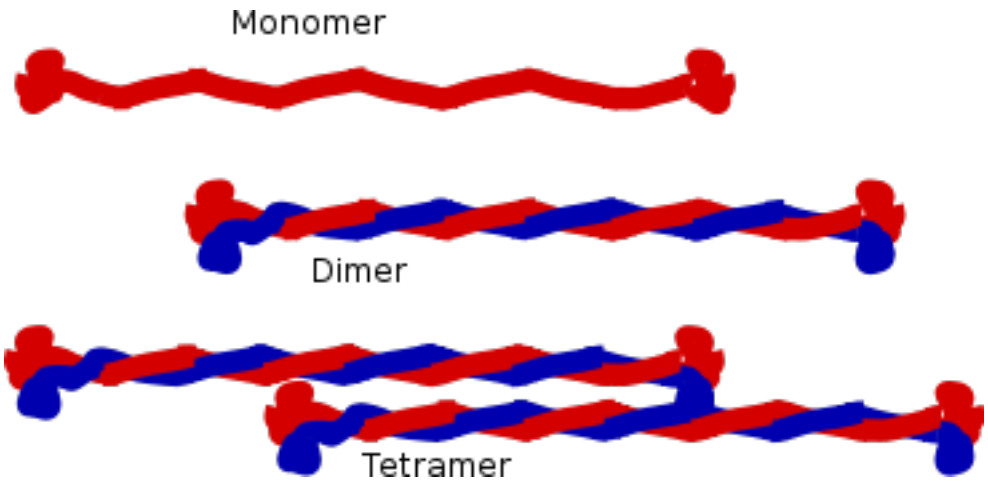
- Two dimer sets arrange themselves in opposite directions (anti-parallel) to form tetramers

- Two ends are the same

□ Lack of or mutated forms of intermediate filaments can cause severe diseases

- Ex: ALS, progeria

EXAMPLE: Intermediate Filaments



- There are four classes of intermediate filaments

Classes	Function
Keratin	Distributes stress in epithelial cells (like skin)
Vimentin and Vimentin-related	Forms network from nucleus into the cell periphery
Neurofilaments	Support the structure of the neuron
Nuclear lamins	Support nucleus; disassociate and re-form during cell division

PRACTICE:

1. Which of the following is not a class of intermediate filaments?
    a. Nuclear lamins
    b. Neurofilaments
    c. Vimentin
    d. Integrins

2. Two intermediate filament dimers are arranged in which of the following ways to create a tetramer?
    a. Parallel
    b. Anti-parallel
    c. End-to-End