

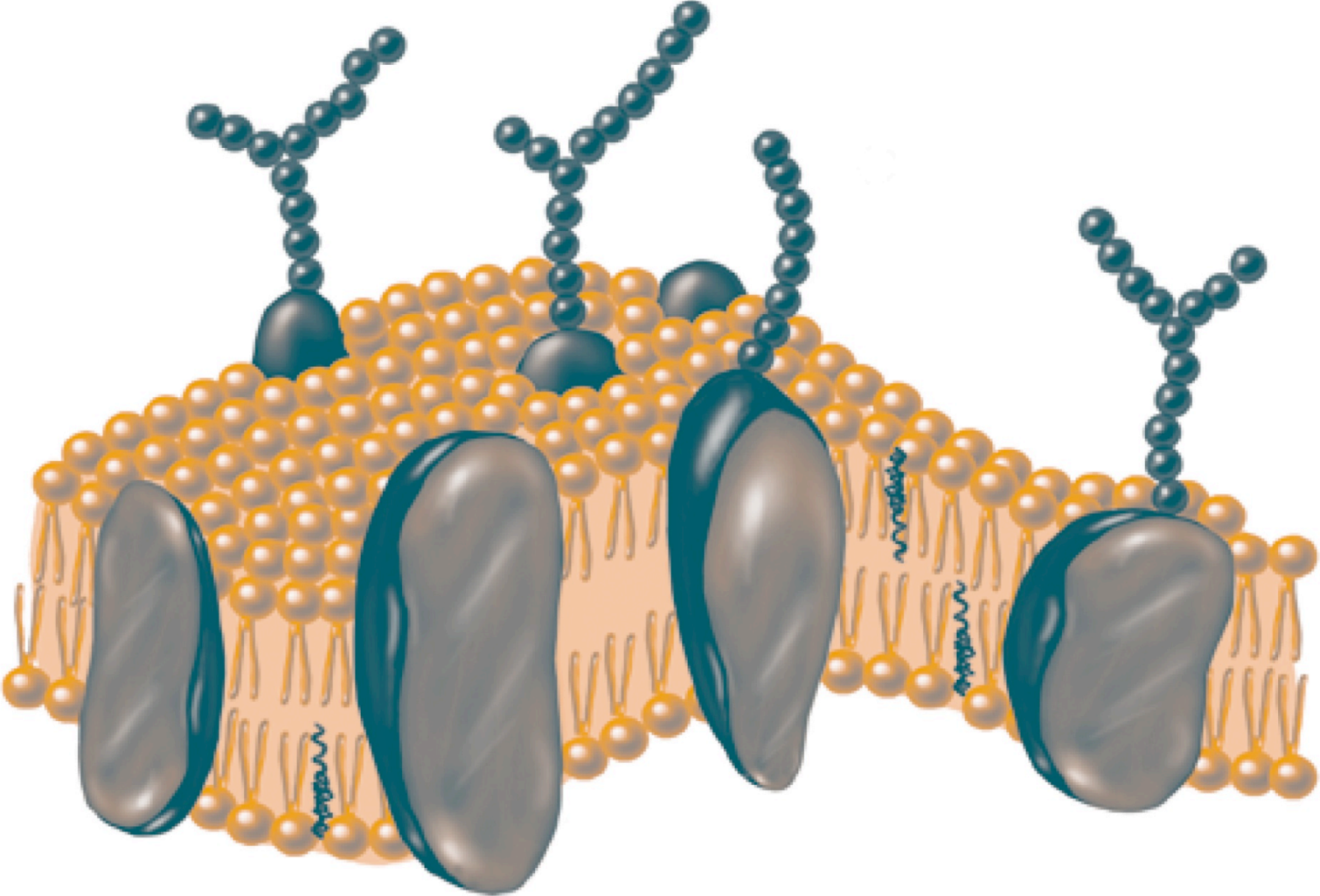
CARBOHYDRATES

STRUCTURE:

- C, H, O in 1:2:1 ratio
- Monomer – monosaccharide
- Simple carbs → sugars (mono & disaccharides)
- Complex carbs → polysaccharides

FUNCTIONS:

- Energy → between C-H bonds
 - Cell fuel – sugars (glucose)
 - Stored E – starch, glycogen
- Structural
 - Cellulose (plant cell walls)
 - Chitin (exoskeletons)
- Cell Identification
 - blood types (glycoproteins)



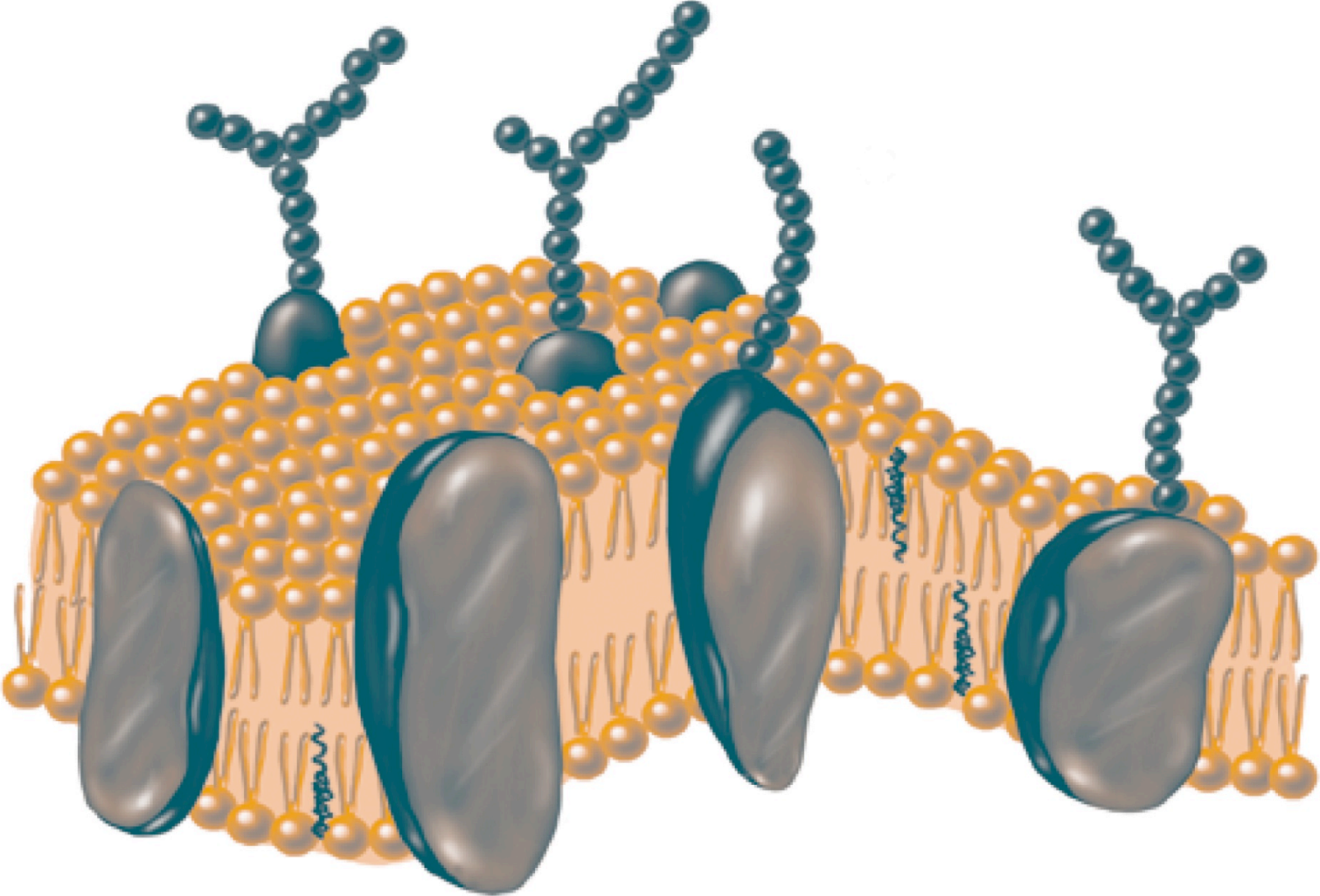
LIPIDS

STRUCTURE:

- **C, H, O - many more C & H**
- **Monomer – fatty acid**
- **Fatty acids connect to other molecules (like glycerol) to form triglyceride (just 1 example)**

FUNCTIONS:

- Energy Storage
 - More C-H bonds than carbs
- Cell Membranes
 - “skin” of EVERY CELL!
- Steroids
 - Chemical messengers
(testosterone, estrogen)



PROTEIN

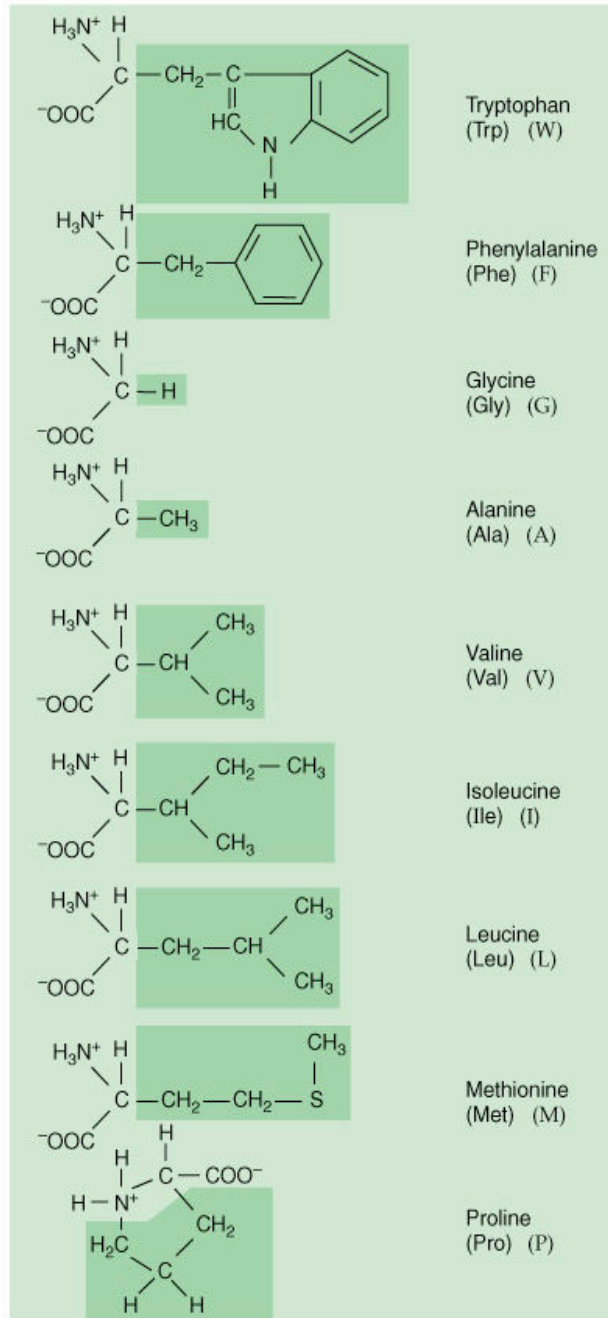
STRUCTURE:

- **C, H, O, N (sometimes Sulfer)**
- **Monomer – amino acid**
- **Amino acids link together via PEPTIDE bonds to form a polypeptide chain**
- **This chain folds up to form a functional protein**

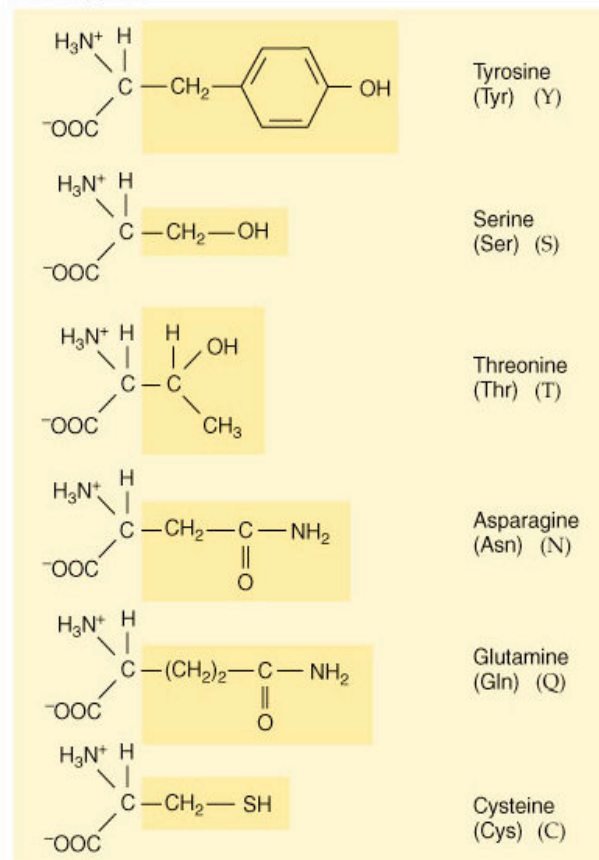
STRUCTURE (cont.):

- Each A.A. has different properties (polarity, charge, etc)
- These properties cause them to fold in specific ways
- 3-D shape is ESSENTIAL to proper protein function
 - Wrong shape and protein won't function

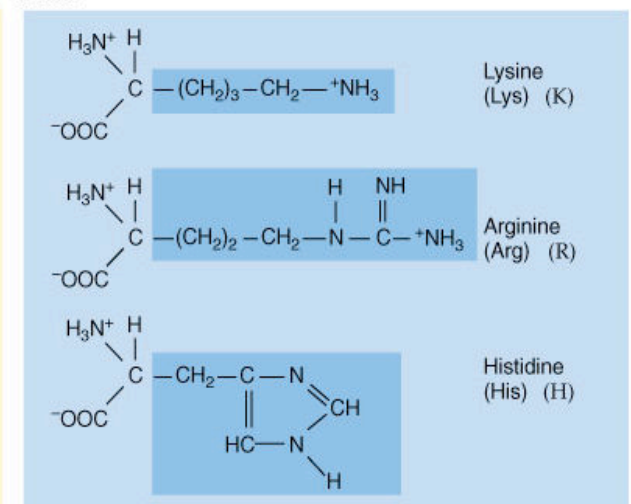
Neutral, nonpolar



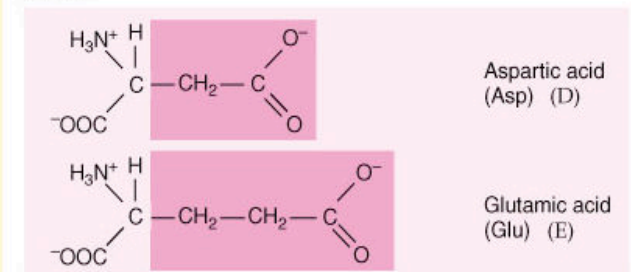
Neutral, polar



Basic



Acidic



FUNCTIONS:

- Enzymes (speed up chem rxns)
- Structural (collagen, keratin)
- Chemical Messengers (insulin)
- Transportation (hemoglobin)
- Storage (caesin)
- Defense (anti-bodies)

