MEMBRANE SKELETON

Spectrin is a cytoskeleton protein that lines the inside of the cell protein.

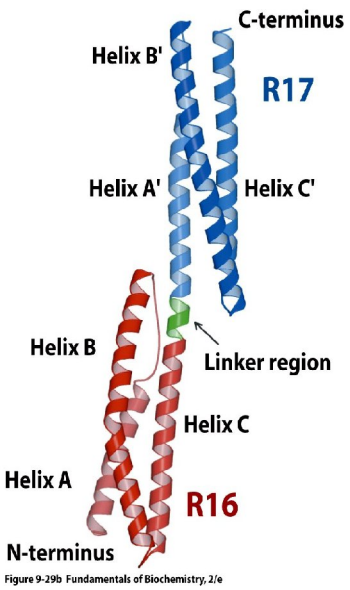


Figure 9-29b Fundamentals of Biochemistry, 2/e

- It interacts with **ankyrin**, **actin**, and other components of the cytoskeleton, forming a meshwork of proteins that restricts that the lateral movement of integral proteins. It is analogous to a "mooring rope."
- Structurally it consists of a set of three repeating α-helices, which makes it very strong.

Structure of spectrin: Repeating set of three α-helices

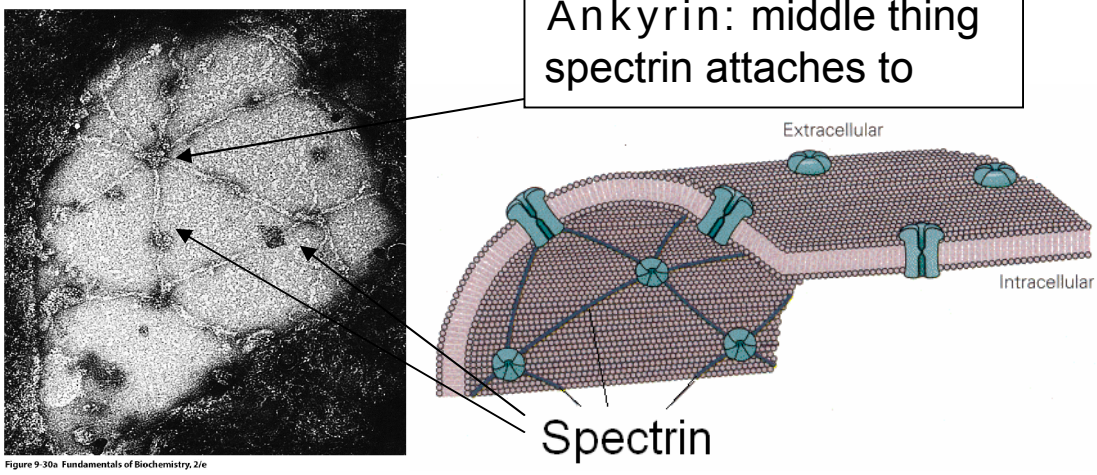


Figure 9-30a Fundamentals of Biochemistry, 2/e

Ankyrin: middle thing spectrin attaches to

Ankyrin is a globular cytoskeleton protein that mediates the attachment of integral membrane proteins. Akyrin connects to spectrin and is analogous to a "mooring."

Ankyrin has three domains:

- One connects to spectrin
- One is a variably sized C-terminus *(didn't mention in lecture)*
- One is a 33-residue motif consisting of two antiparralel α-helices separated by a less-ordered loop

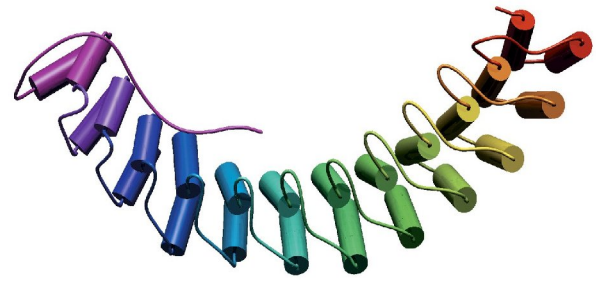
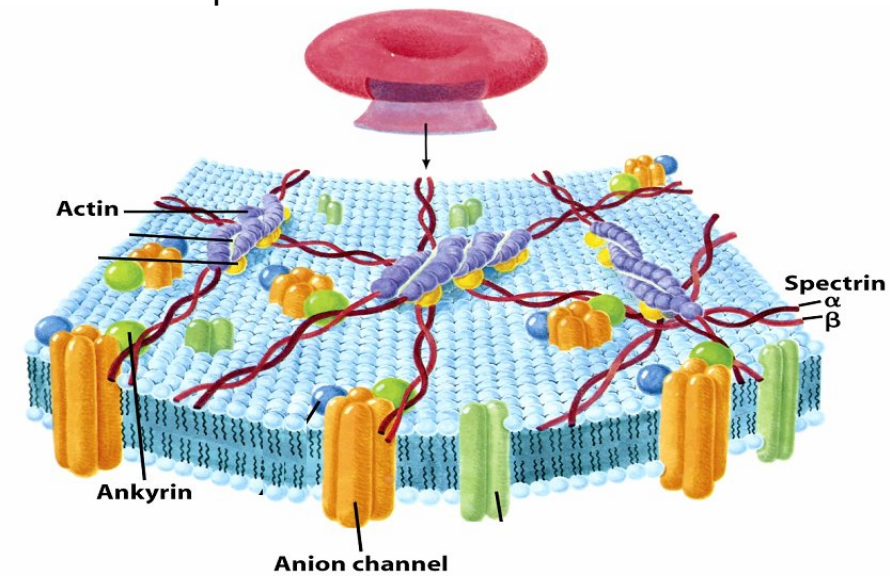


Figure 9-31c Fundamentals of Biochemistry, 2/e

The following is a cartoon representation of the INSIDE of the cell membrane:



The anchoring of proteins (along with lipid rafts) also contributes to lateral asymmetry of proteins.

- Some proteins can travel through the spectrin/akyrin mesh while others cannot.

A, B, C = different proteins

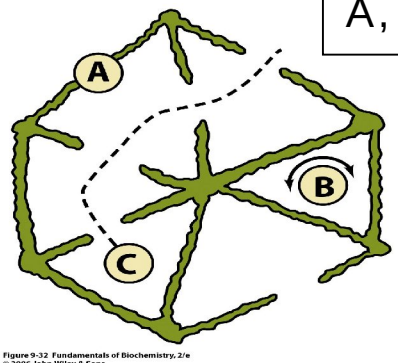


Figure 9-32 Fundamentals of Biochemistry, 2/e
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So, overall: MEMBRANES ARE ASYMMETRICAL LATERALLY & TRANSVERSELY DUE TO LIPID RAFTS AND PROTEIN MOVEMENT.

INTRO TO MYOGLOBIN & HEMOGLOBIN

Myoglobin stores O_2 in muscle.

- It consists of eight α-helices
- Tertiary structure
- It is a monomeric protein
- The heme group is a prosthetic group.

Prosthetic group = Non-protein part

Coordinate covalent bond = one atom donates both e- to form bond

  - Connected by a coordinate covalent bond with a His
    - The N on the histidine gives both e-
  - It consists of Fe (II) within a heterocyclic organic ring
  - Fe must be in its +2 oxidation state

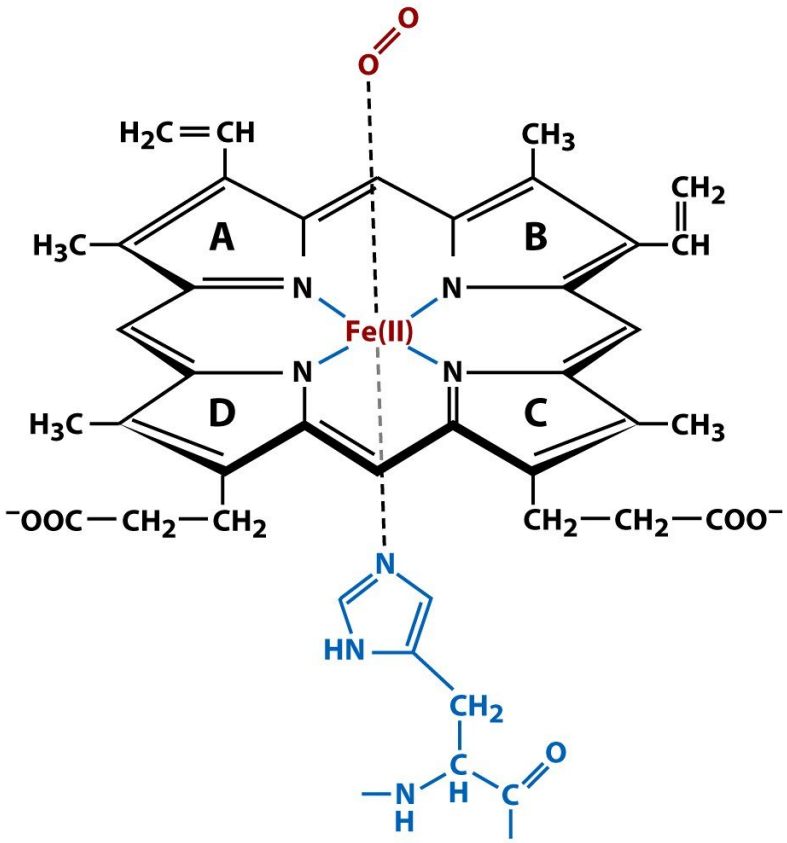

Figure 7-2 Fundamentals of Biochemistry, 2/e

I have some random stuff about diet written down (don't really recall how it relates):

The human diet used to be 1:1 ω6:ω3 fatty acids
Now it's 20:1 ω6:ω3 fatty acids

Ω-3 fatty acids are better for you. Canola oil is a good source.