Abstract:

Erythrocyte has bigger diameter than capillary but erythrocyte can through the capillary. Erythrocyte membrane is very elastic so the change of shape when entering capiler not influence erythrocyte membrane structure. The strength of this membrane is caused by cytoskeleton that prop up lipid bilayer membrane. When erythrocyte enter capillary, calcium level will increase that lead into many phosphorilation. Calcium elevation more than 10-6 M will cause calcium bind with calmodulin at the end of spectrin \( \alpha \)-COOH. Calsium-calmodulin binding activate PKC in adducin and protein 4.1. Activation of PKC cause spectrin binding site in F-actin opened and make spectrin boound to F-actin and lead to spectrin \( \epsilon \) shortness. These interaction is called horizontal interaction. Calcium elevation more than 10 -7 M, is caused vertical interaction through many phosforilation processes (spectrin-ankryn-band 3, spectrin-protein 4.1-band 3, spectrin-protein 4.1-glycophorin C and spectrin - protein 4.1- band 3), that pull on lipid bilayer membrane. By this horizontal and vertical interactions, erythrocyte membrane become stable and elastic when entering capillary.

(end)