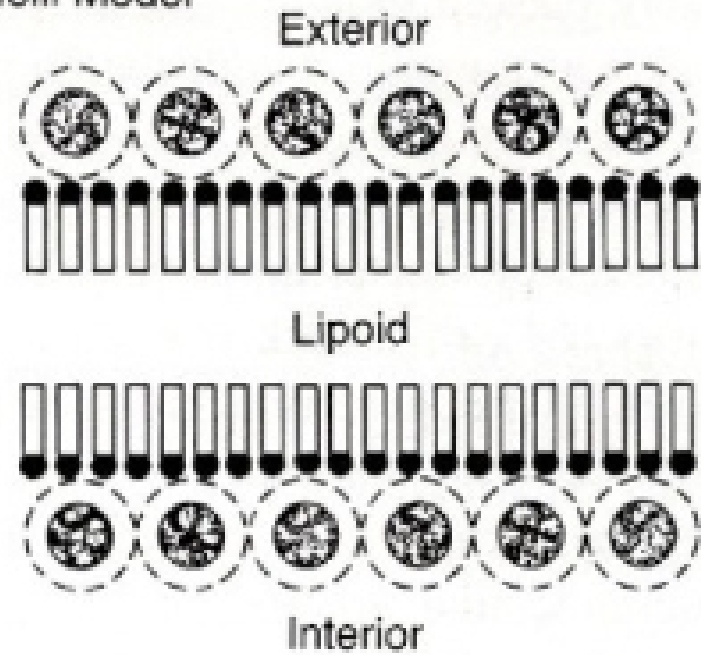
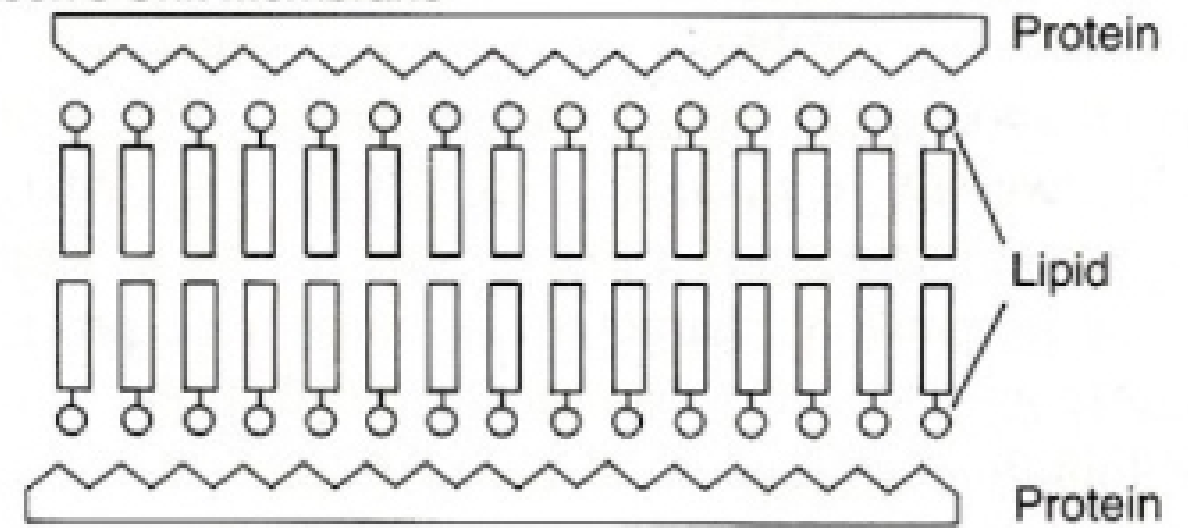


A Davson-Danielli Model



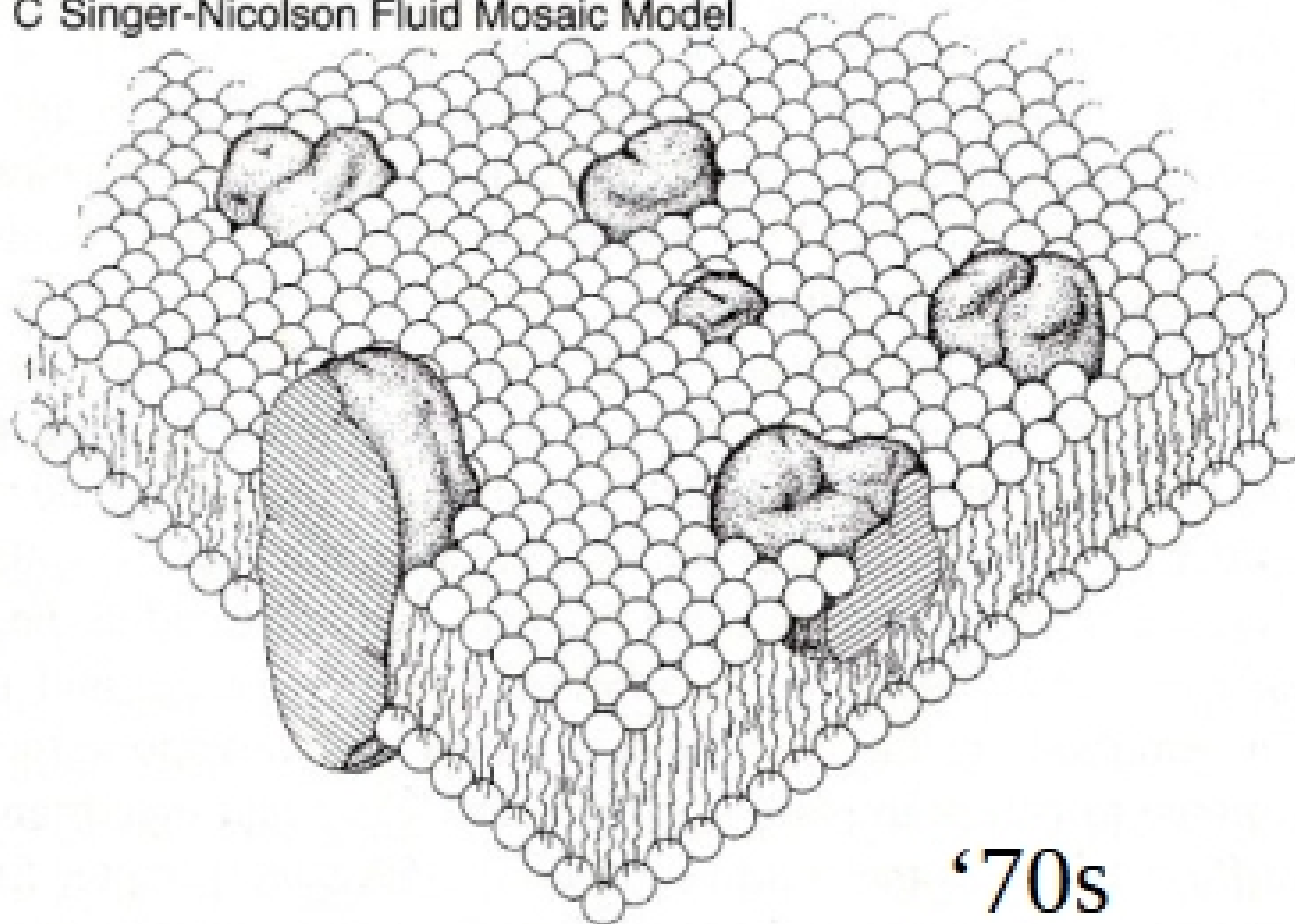
'40s

B Robertson's Unit Membrane

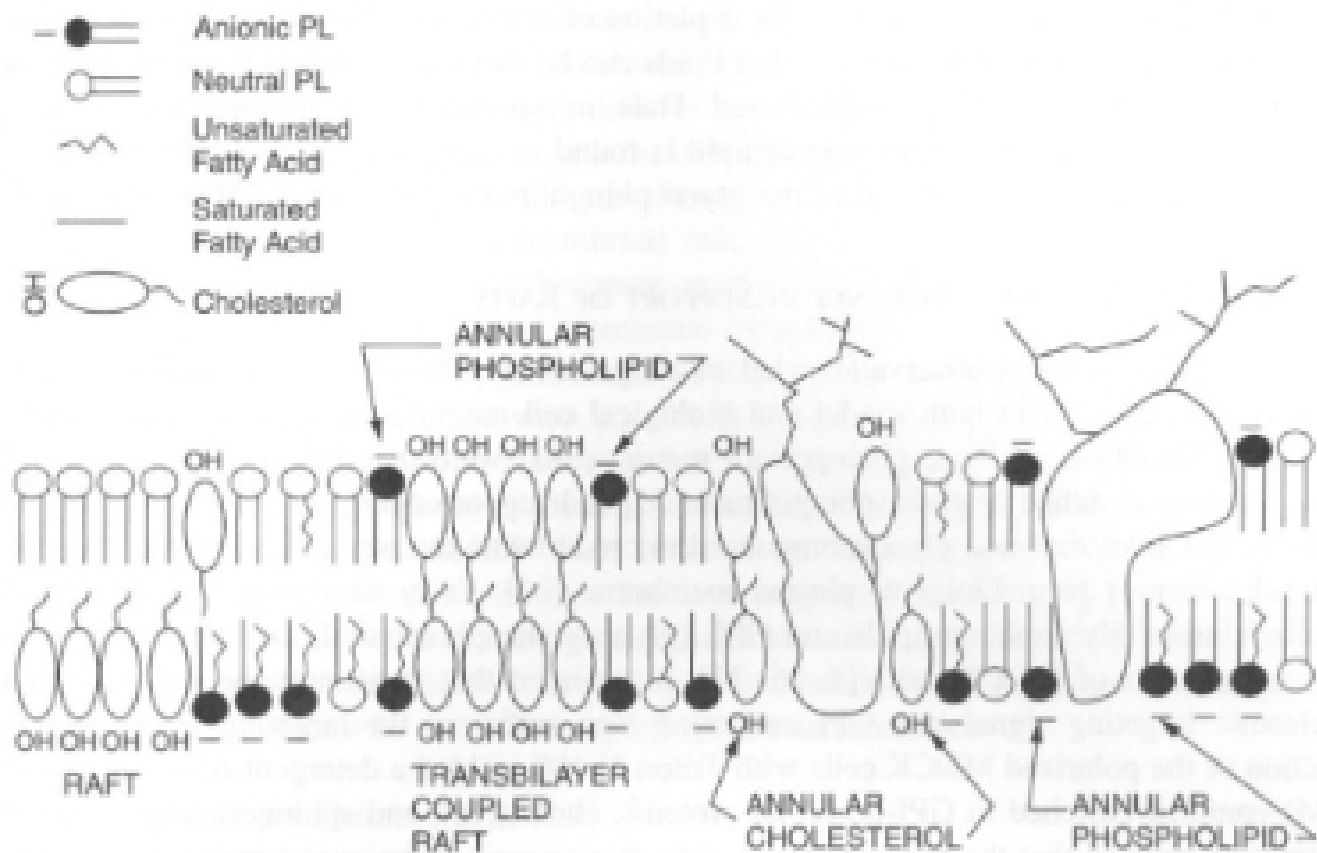


'50s

C Singer-Nicolson Fluid Mosaic Model



'70s



Membrane Rafts

Membrane Microdomains

Raft is a specific type of microdomain – sphingolipid/cholesterol rich region

“Separation of discrete liquid-ordered and liquid-disordered phase domains occurring with sufficient amounts of cholesterol”

Microdomain formation is believed to be involved in following cellular processes:

- Cell sorting
- Signal transduction
- Endocytosis
- Calcium homeostasis
- And others

Rafts: liquid ordered domain – lipids are fluid in that they have a high degree of lateral diffusion, but the acyl chains are closed packed and ordered. Glycosphingolipids (particularly sphingomyelin and glycosylphosphoinositol-GPI anchored proteins preferentially partition into rafts.)

The debate: Rafts in model membranes vs Rafts in Biological Membranes

Origin: TritonX 100 insoluble components isolated from biological membranes:
 Detergent Resistant Membranes DRM.
 Does DRM always equal a "raft"

TritonX100 can solubilize DOPC:chol but
 Not DPPC:chol

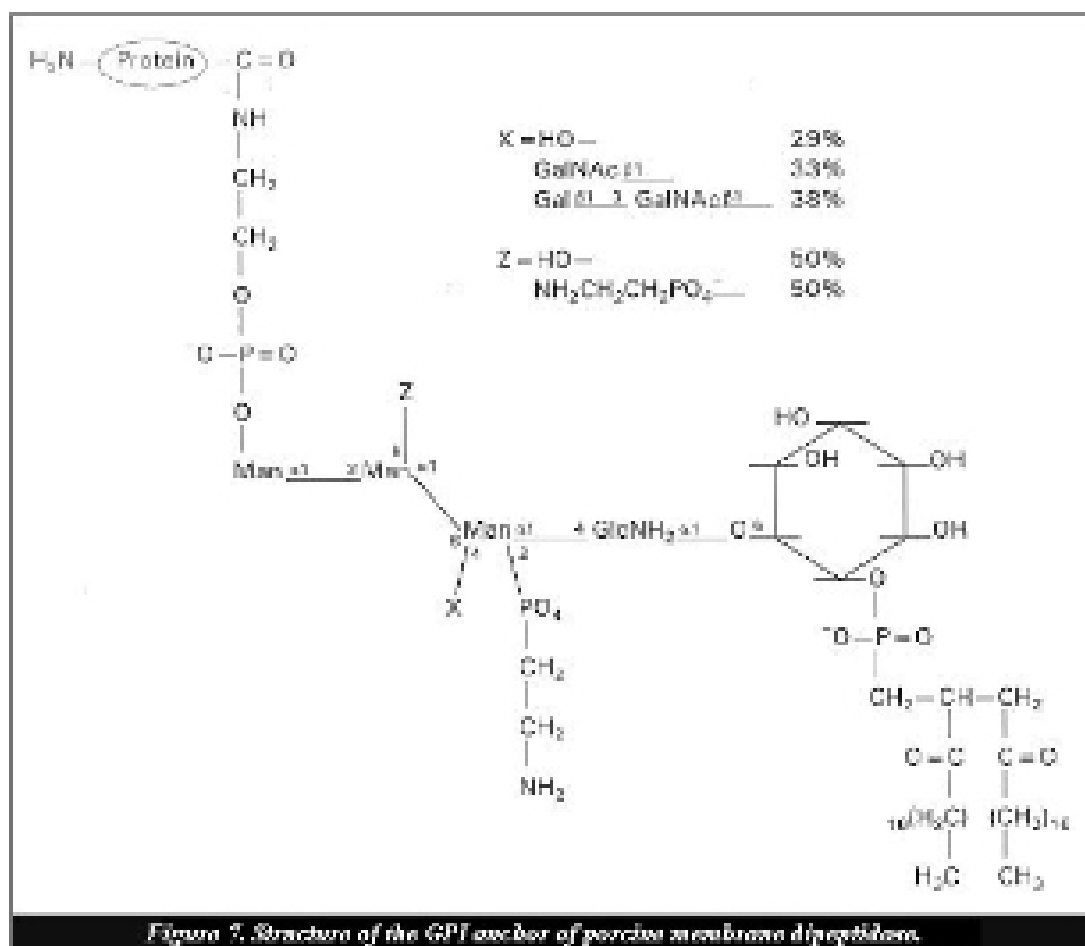
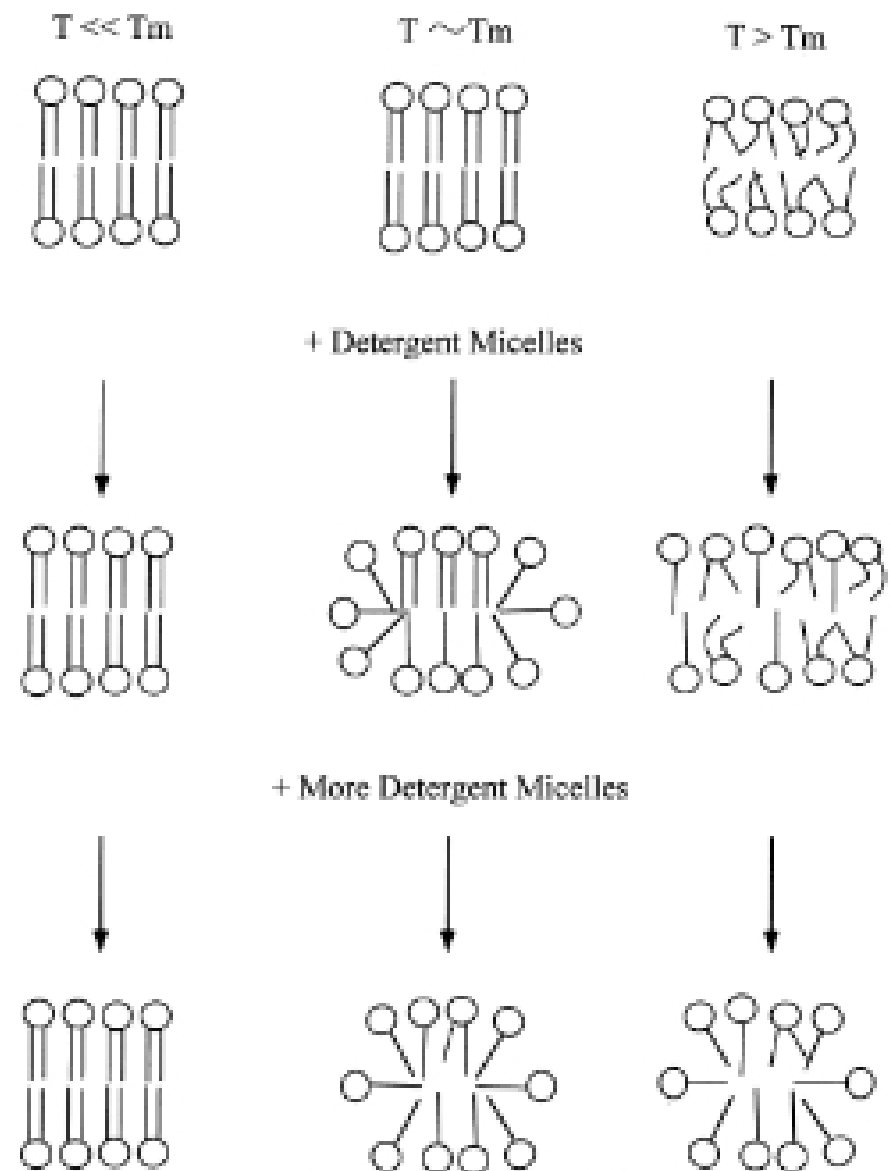


Fig. 2. A schematic illustration of the effect of temperature on solubilization by detergent. At $T \ll T_m$, lipids with long, saturated acyl chains are insoluble, and do not bind detergent well. At T close to T_m , detergents can bind and micelles form at low detergent concentrations due to lipid packing behavior (see text for details). At $T > T_m$, detergents bind well, but form mixed bilayers with lipid at subsaturating concentrations. At higher detergent concentrations micelles form.