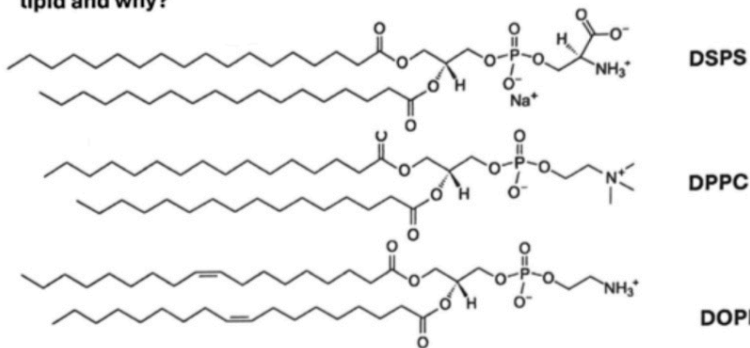


Name: _____ Student number: _____

- 1) Why do lipid bilayers form? What kind of lipid would you need to form bilayers?
- 2) What are the functions that lipid membranes can have in a cell?
- 3) The lipids below are DSPPS(1,2-distearoyl-sn-glycero-3-phosphoserine), DPPC (1,2-dipalmitoyl-sn-glycero-3-phosphocholine) and DOPE ((1,2-dioleoyl-sn-glycero-3-phosphoethanolamine). What properties would you assign to which lipid and why?



- i) chain melting temperature (T_m): A -16°C , B 41°C , C 68°C
- ii) A Tendency to form hexagonal phases, B perfect bilayer lipid
- iii) Function in biomembranes: A apoptotic signal, B promotes curvature in mitochondria, C major plasma membrane lipid
- 4) Are double bonds in unsaturated lipids in biomembranes typically cis or trans? What are the consequences of this?
- 5) What kind of synapses between cells do you know? Briefly describe the mechanisms of signal transduction.

6) Which of the following is true (multiple answers possible)?

A Biomembranes are typically in a gel-like state

B In biomembranes, some proteins can be attached to lipid bilayers via myristoyl anchors

C Lipid bilayers are formed by hydrophobic molecules

D Membranes of Gram-positive and Gram-negative bacteria are rich in negatively charged lipids

E Cholesterol decreases the packing density of gel-like membranes

F During controlled cell death (apoptosis), the plasma membrane becomes asymmetric (i.e. the lipid composition of the outer and inner leaflet is not the same anymore)