

Lipids

Biology

Triglycerides and phospholipids, and why the difference matters.

Triglyceride

- Glycerol + 3 fatty acids
- Ester bonds, formed by condensation
- Energy storage — 2× the energy of carbohydrate
- Hydrophobic throughout
- Insulation and protection

Phospholipid

- Glycerol + 2 fatty acids + phosphate
- Hydrophilic head, hydrophobic tails
- Amphipathic
- Forms bilayers spontaneously in water
- The basis of all cell membranes

THE DIFFERENCE THAT MATTERS

Saturated fatty acids have no C=C double bonds and pack tightly. Unsaturated ones kink, and stay fluid at lower temperatures.

Membrane fluidity is tuned by the proportion of unsaturated tails and by cholesterol between them.