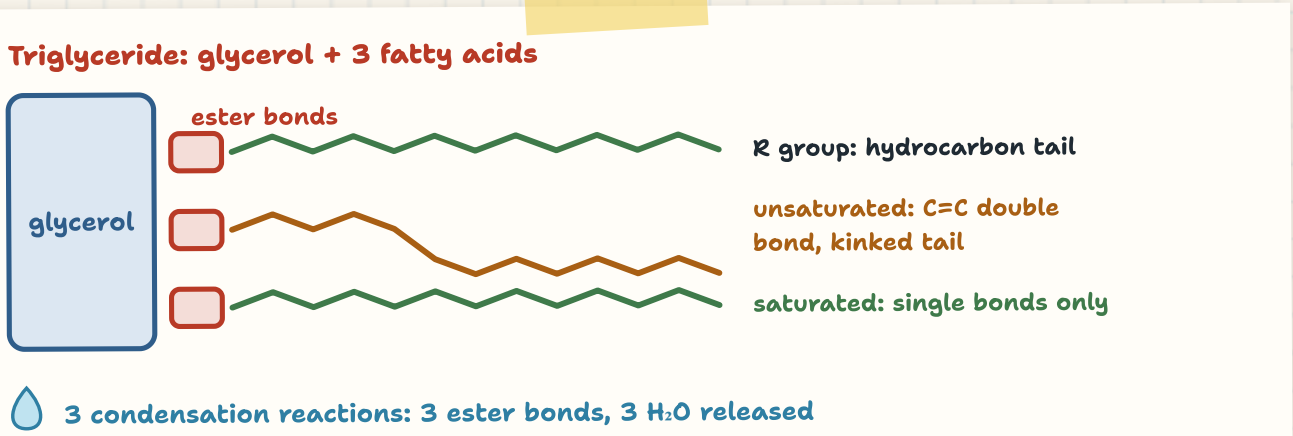
Triglycerides: Saturated vs Unsaturated Fats

A triglyceride is one glycerol joined to three fatty acids by ester bonds; the fatty-acid tail is saturated or unsaturated.



Key terms

glycerol	the backbone of a triglyceride; three carbons, each with an OH group.
fatty acid	a carboxyl group at one end and a long hydrocarbon tail (the R group) at the other.
ester bond	formed in a condensation reaction between an OH on glycerol and the carboxyl group of a fatty acid.
triglyceride	one glycerol + three fatty acids, by condensation: three ester bonds and three molecules of water released.
saturated	no carbon-carbon double bonds in the R group; the tail is straight.
unsaturated	at least one carbon-carbon double bond (C=C) in the R group; the tail is kinked.

I can...

- [ ] Triglycerides and phospholipids are two groups of lipid
- [ ] Triglyceride = one glycerol + three fatty acids by condensation
- [ ] Condensation of glycerol and fatty acid forms an ester bond
- [ ] R-group of a fatty acid may be saturated or unsaturated
- [ ] Recognise saturated and unsaturated fatty acids from diagrams

EXAM TRAP

A triglyceride is not a polymer: it is one glycerol with three fatty acids, not a chain of repeating units. Unsaturated means a C=C double bond in the tail, not "no hydrogen". Do not forget the three waters.

4 marks: what earns them

1. Formed by a condensation reaction, which releases water
   Not: hydrolysis; water is added; a polymerisation reaction
2. One glycerol joins to three fatty acids
   Not: one fatty acid and three glycerols; fatty acids join to each other
3. Each join is an ester bond
   Not: glycosidic bond; peptide bond; hydrogen bond
4. Saturated: no carbon-carbon double bonds in the R group; unsaturated: one or more carbon-carbon double bonds in the R group
   Not: no hydrogen; double bond to oxygen; a statement about only one type

Remember

Glycerol + 3 fatty acids = 3 ester bonds + 3 H_2O.

Look along the tail: C=C means unsaturated.

Only a carbon-carbon double bond counts (not C=O).

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