

LIPIDS

rvdsd 27 Sept 95, 1 Oct 01, 7 Oct 02, 1 Oct 04, 5 Oct 05, 28sept07, 6Oct08, 2Oct09
 BKH: 63-73, 5th: 66-72, BKH 6th: 66-70, 7th: 66-71

LIPIDS: biological hydrocarbons: functional definition: cell extract soluble in chloroform or ether

six types: **fatty acids** sphingolipids
 (p 67) **triglycerides** **steroids**
phospholipids terpenes

FATTY ACIDS:

even number carbons because built from acetyl CoA (in two carbon unit additions)

saturated versus unsaturated, mono, poly. (p. 68)

cis versus *trans* (*trans* associated with heart disease) *cis* natural, heat rotates to *trans*, more stable.

Trans packs more evenly, solid at lower temp.

Desaturase in N Atlantic fish converts satd to unsatd, soften membranes. (Cold H₂O fish healthier)

most common FA C-16 palmitate if saturated, palmitoleate if monounsatd

C -18 stearate if satd, oleate if monounsatd

Omega 3 fatty acids: omega carbon is methyl end: lower triglycerides,
 essential fatty acid, inhibit clotting. linolenic acid:

TRIGLYCERIDES:

glycerol esterified to three fatty acids
 (p 67)

store energy 2x density of energy as carbohydrates

unsaturated prevents tight packing choline: trimethylethanolamine:

PHOSPHOLIPIDS:

amphipathic membrane components

phosphoglycerides basic components phosphatidic acid

p 69: esterified to serine, ethanolamine, inositol

SPHINGOLIPIDS: (p 67)

long chain R-OH, NH₂ at C-2, based on sphingosine (18 carbon,
 ethylene at C-4.

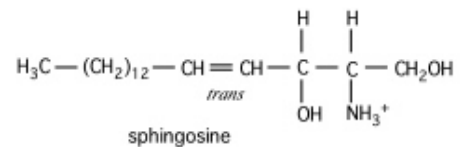
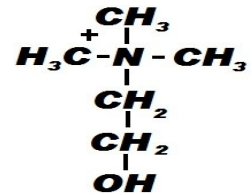
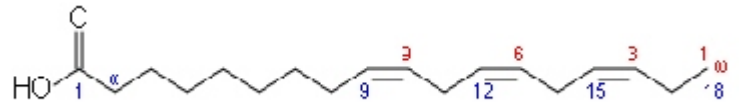
sphinx: enigmatic monster that strangled

(also squeezed, bind tight)

forms amide bonds at N with FA, forming **ceramide**.

#1-OH can bond with variety of R groups

forming among others, **sphingomyelins**, (40%
 of membranes in myelin sheath)



STEROIDS: (p 70)

cholesterol backbone, substituted at diff points

Cholesterol is only steroid found in membranes (p67).

Also serve as hormones and biles acids, precursor to vitamin D (7 dehydrocholesterol)

TERPENES:

synthesized from 5 carbon monomer, isoprene: CH₂=C(CH₃)-CH=CH₂:

Vit A

carotenes (photosynthesis)

quinones

coenzyme Q (electron transport chain)

etc.

