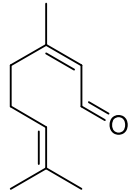
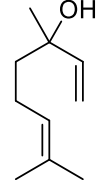


•Terpene



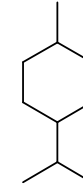
Citral
Lemongrasöl

Zitronengras (*Cymbopogon citratus*)

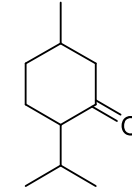


Linalool
Lavendelöl

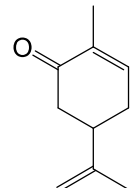
Lavendel (*Lavandula angustifolia*)



Menthan
Pfefferminz

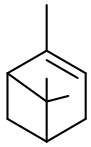


Menthon
Pfefferminzöl



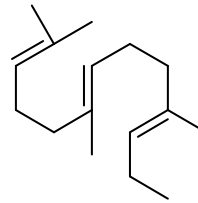
Carvon
Pfefferminzöl

Pfefferminze (*Mentha*)



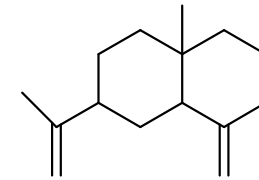
α -Pinen
Kiefernharz

Kiefer (*Pinus*)



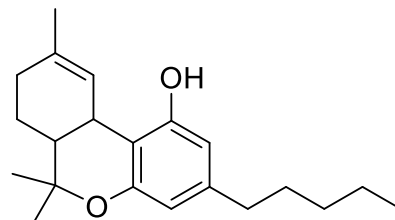
Farnesol
Maiglöckchen

Maiglöckchen (*Convallaria majalis*)



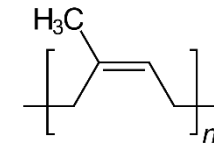
β -Selenin
Sellerie

Sellerie (*Apium graveolens*)



Δ^9 -Tetrahydrocannabinol

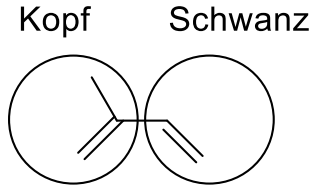
Hanf (*Cannabis*)



Kautschukbaum (*Hevea brasiliensis*)

•Terpene, Isoprenoidlipide, Steroide, Carotinoide

Isopren C₅H₉

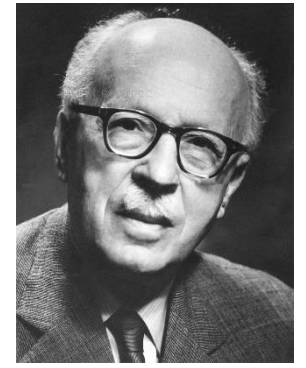


Isoprenregel: Otto Wallach 1887
Terpene C₁₀-Körper aus 2 Isoprenen

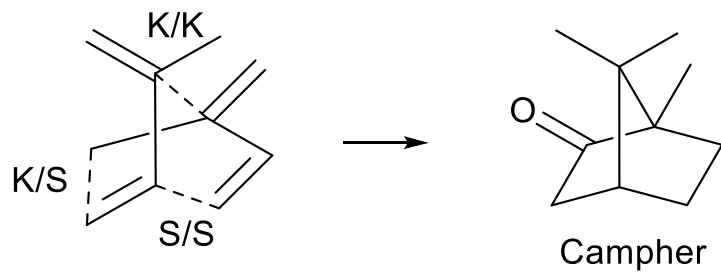
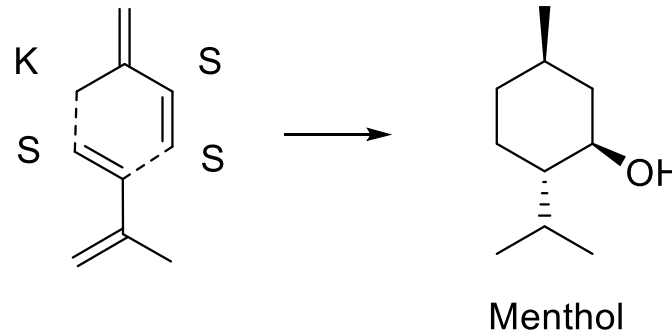
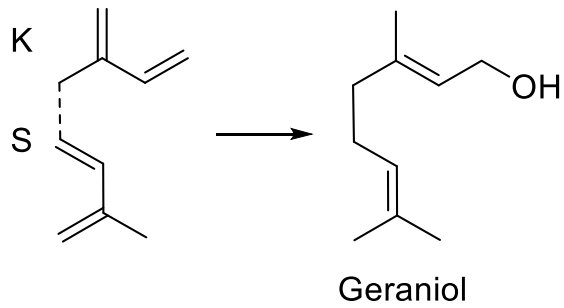
Leopold Ruzicka 1922
Kopf/Kopf, Kopf/Schwanz, Schwanz/Schwanz



Otto Wallach
1847 – 1931
Nobelpreis 1910



Leopold Ruzicka
1887 – 1976
Nobelpreis 1939



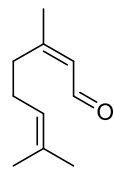
Einteilung der Terpene:

hemi-Terpene	C ₅
mono-Terpene	C ₁₀
sesqui-Terpene	C ₁₅
di-Terpene	C ₂₀
tri-Terpene	C ₂₅ (Steroide)

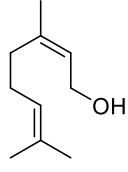
•Terpene, Isoprenoidlipide, Steroide, Carotinoide

- Monoterpene

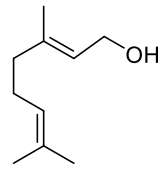
- acyclische



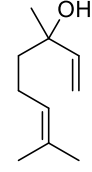
Citral
Lemongrasöl



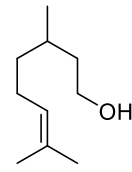
Nerol (cis)
Bergamotteöl



Geraniol (trans)
Rosenöl

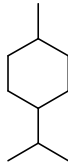


Linalool
Lavendelöl

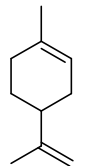


Citronellol
Zitronenöl

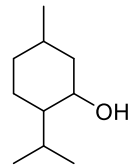
-monocyclische



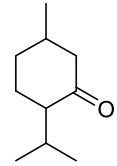
Menthan
Pfefferminz



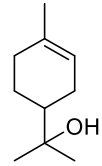
Limonen
Fichte



Menthol

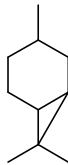


Menthon
Pfefferminzöl



Terpeneol
Cardamonöl

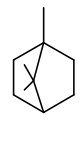
-bicyclische



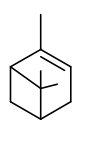
Caran



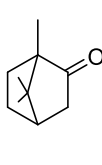
Pinan



Bornan

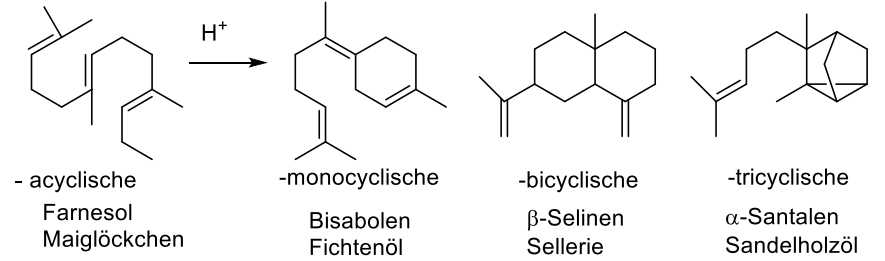


α-Pinen
Kiefernharz

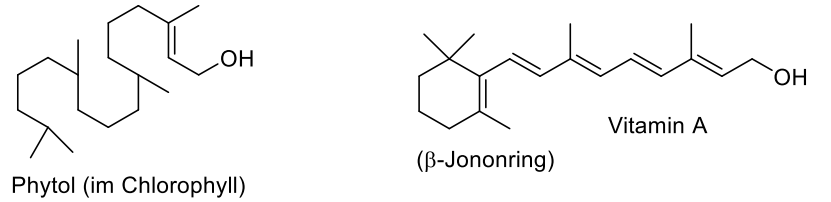


Campher

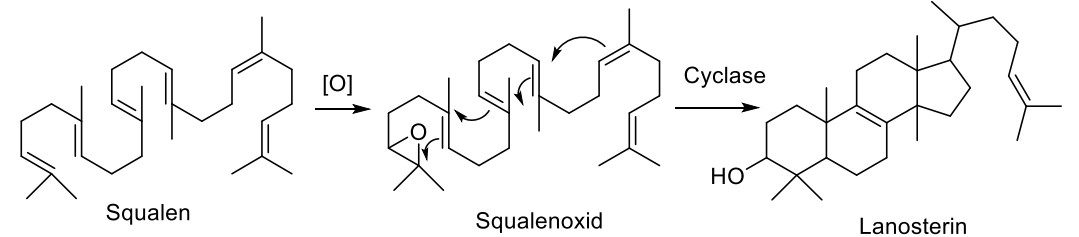
-Sesquiterpene



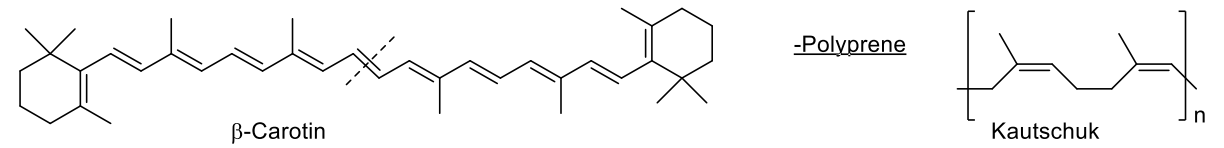
-Diterpene



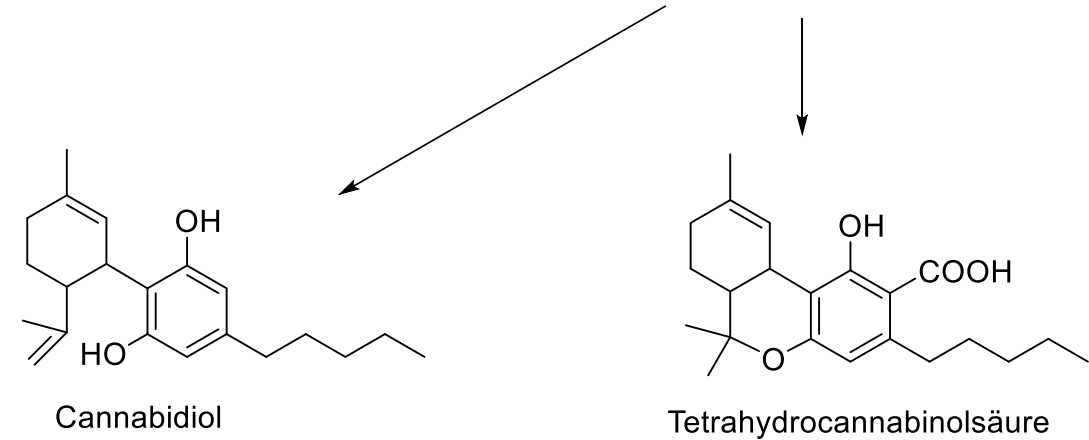
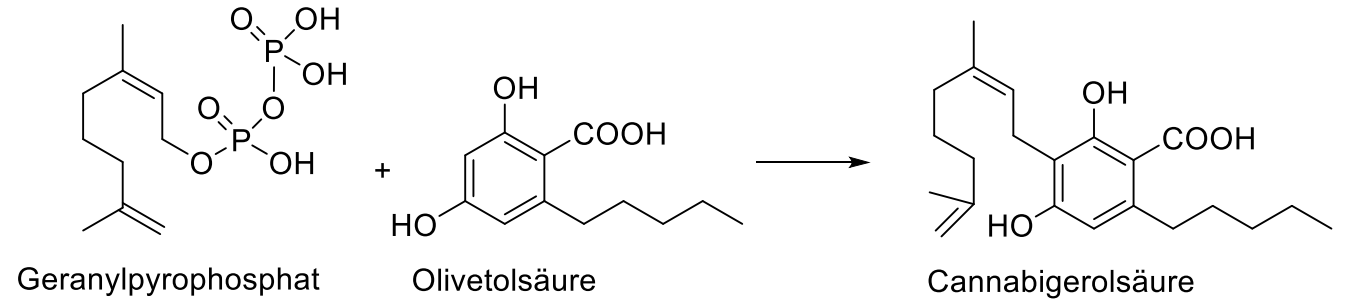
-Triterpene



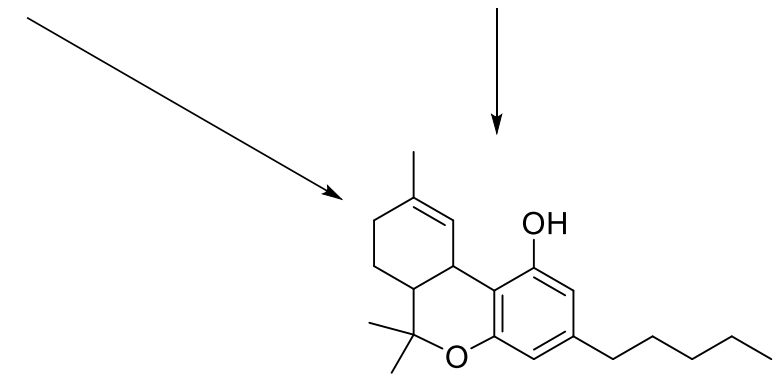
-Tetraterpene



Cannabinoide (Terpenphenole)



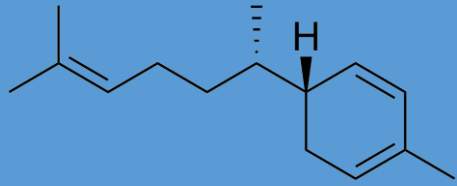
Tetrahydrocannabinolsäure



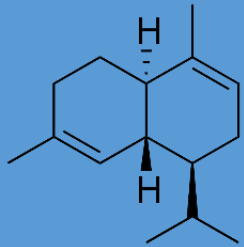
Δ^9 -Tetrahydrocannabinol



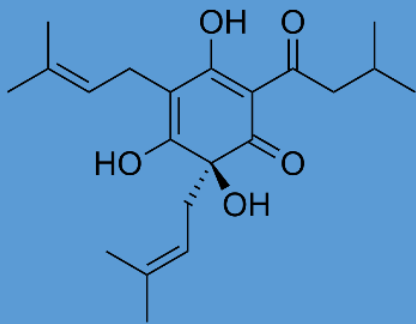
Sesquiterpene



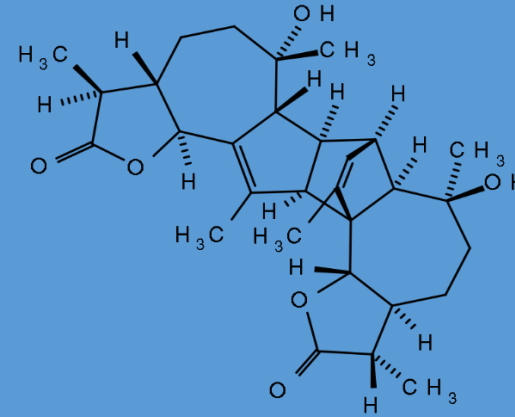
Zigiberen (Ingwer)



Cadalen (Wachholder)

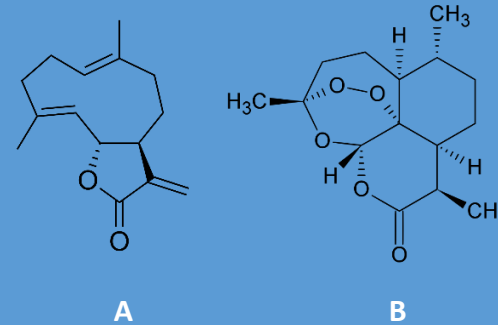


(LupHumulonulinsäure)
(Hopfen; Cannabaceae)



Sesquiterpenlactone

Absinthin (Wermut)
(Gujanolide)

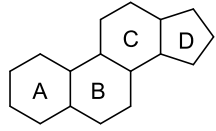


A: Germacranolide (Asteraceae)

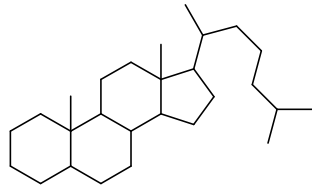
B: Artemisin (Wermut)
(gegen Malaria)

Steroide (Tri-Terpene C₂₅)

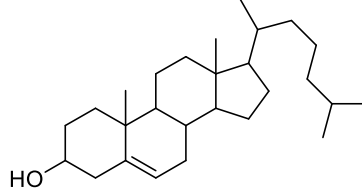
Grundkörper



Gonan

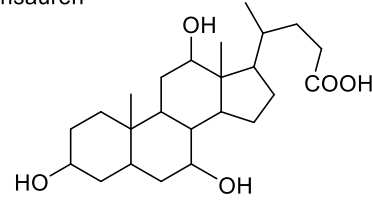


Cholestan



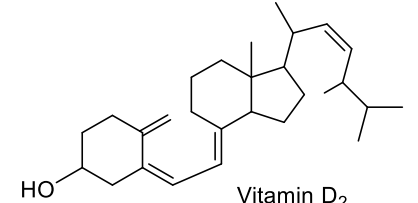
Cholesterin

Gallensäuren

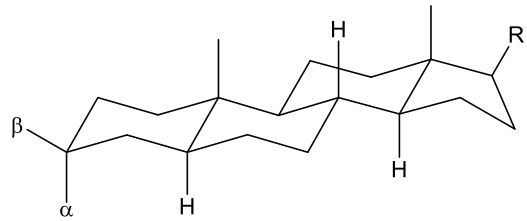


Cholsäure

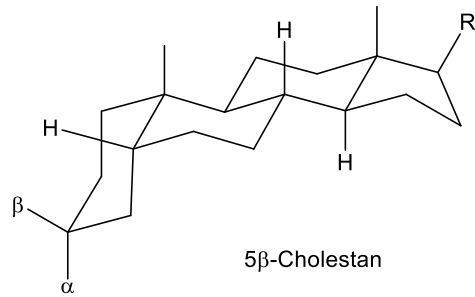
Vitamine



Vitamin D₂

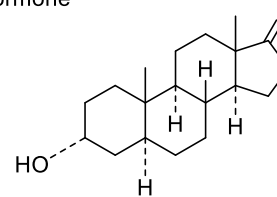


5 α -Cholestan

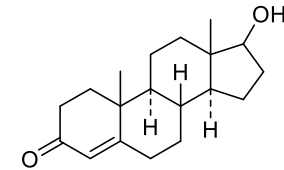


5 β -Cholestan

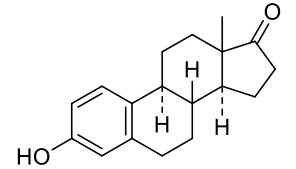
Hormone



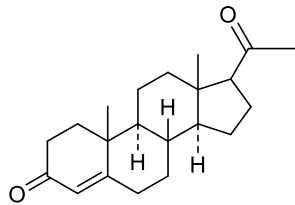
Androsteron



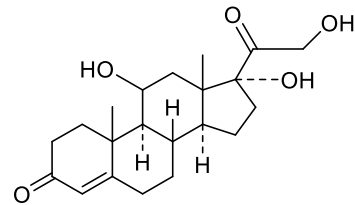
Testosteron



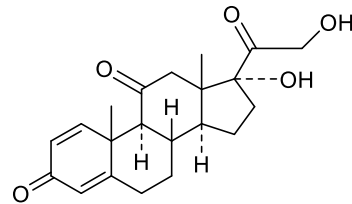
Östron



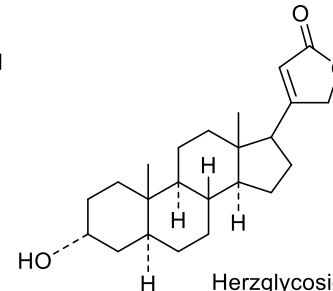
Progesteron



Cortisol

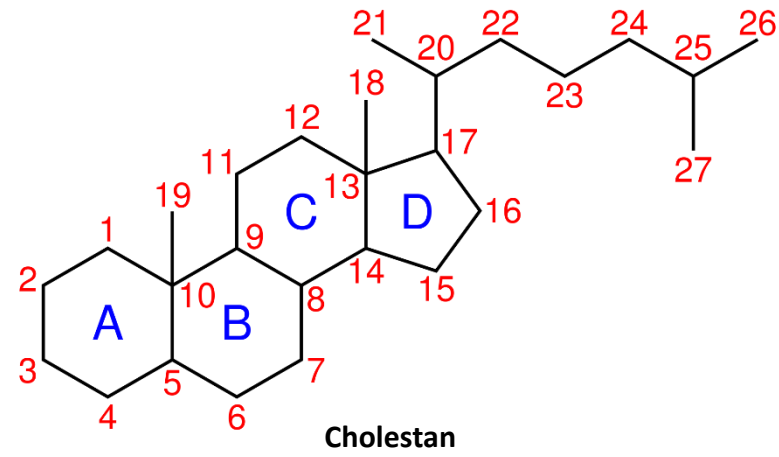


Prednison

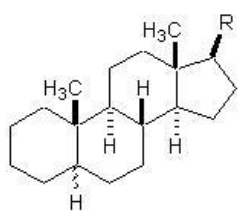
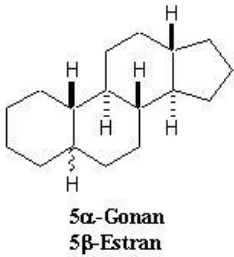


Herzglycosid
Digitoxigenin
(Fingerhut)

Numbering

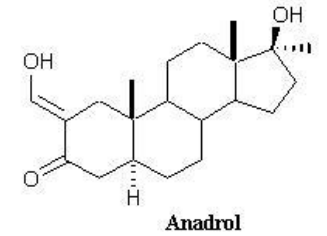
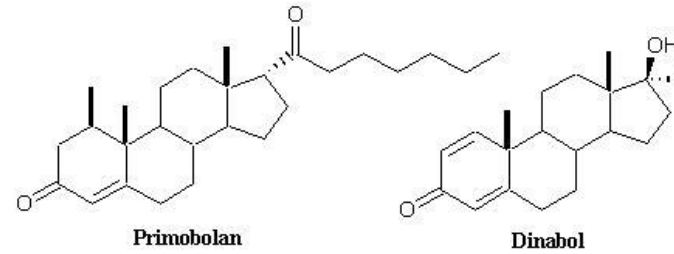


Steroide



R	Trivialname
H	5ξ-Androstan
C ₂ H ₅	5ξ-Pregnan
CH(CH ₃)CH ₂ CH ₂ CH ₃	5ξ-Cholan
CH(CH ₃)CH ₂ CH ₂ CH ₂ CH(CH ₃) ₂	5ξ-Cholestan
CH(CH ₃)CH ₂ CH ₂ CH(CH ₃)CH(CH ₃) ₂	5ξ-Ergostan
CH(CH ₃)CH ₂ CH ₂ CH(C ₂ H ₅)CH(CH ₃) ₂	5ξ-Stigmastan

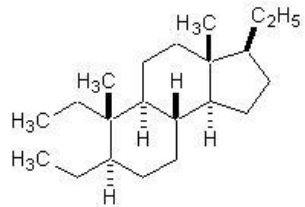
Anabole Steroide



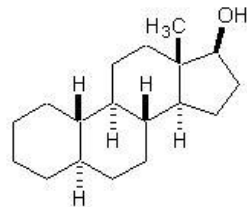
Ringspaltung = seco

ein CH₂ weniger = nor

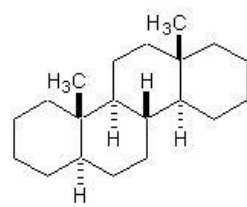
ein CH₂ mehr = homo



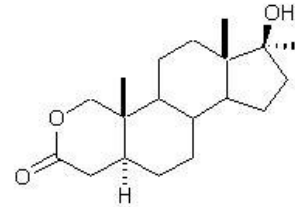
2,3-Seco-5α-Pregnan



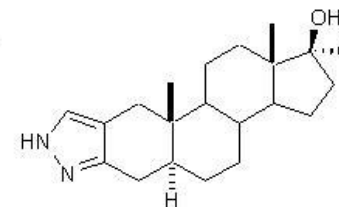
19-Nor-5α-Androstan-17β-ol
5α-Estran-17β-ol



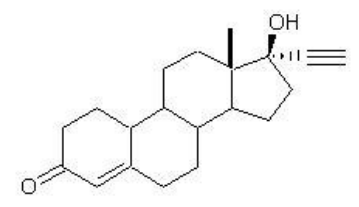
D-Homo-5α-Androstan



Oxandrolon



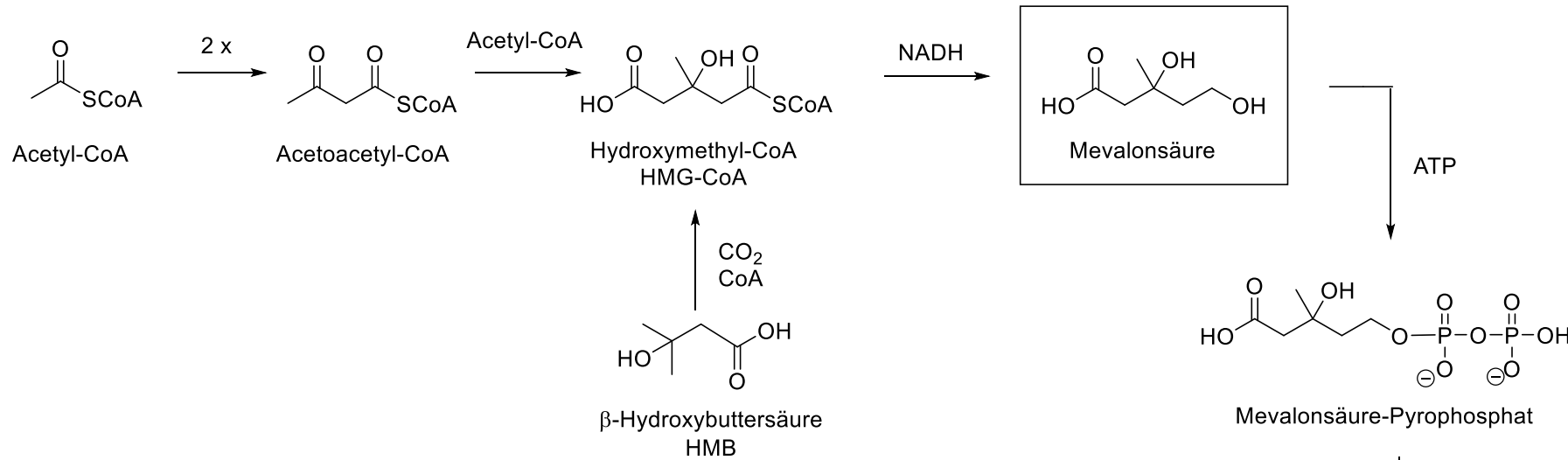
Stanozolon



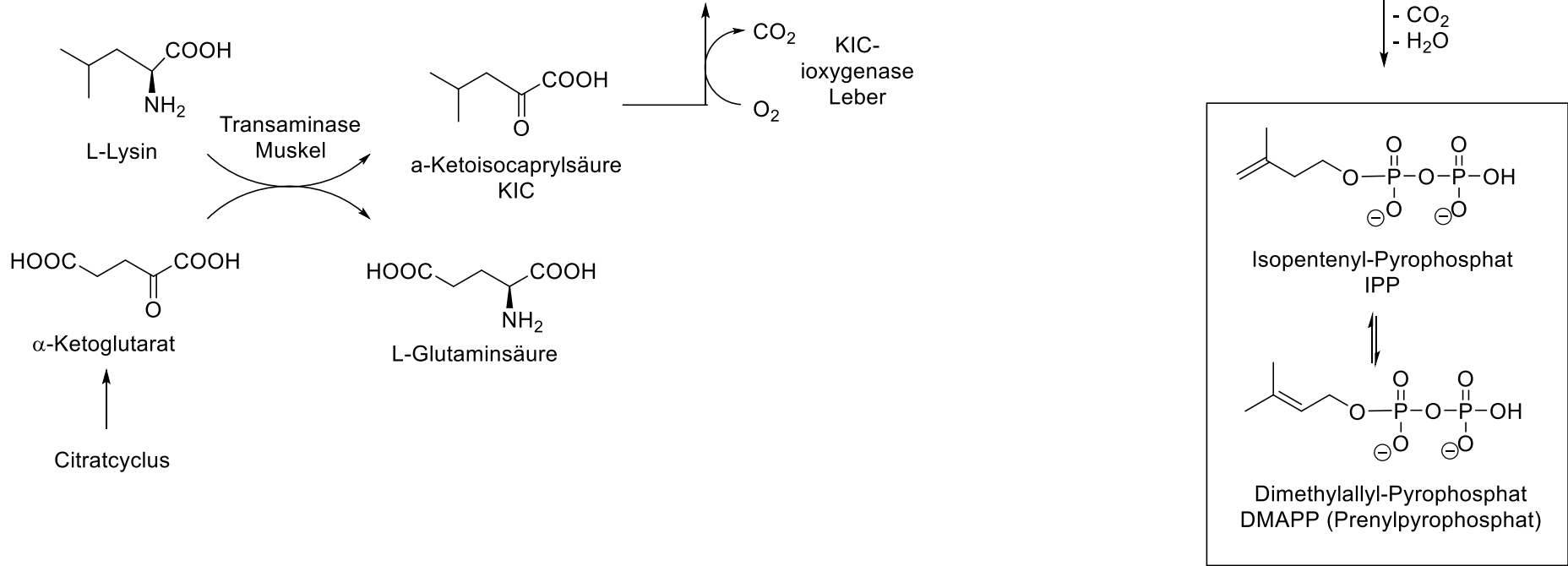
Tetrahydrogestrinol (THG)

Biosynthese / Mevalonsäureweg

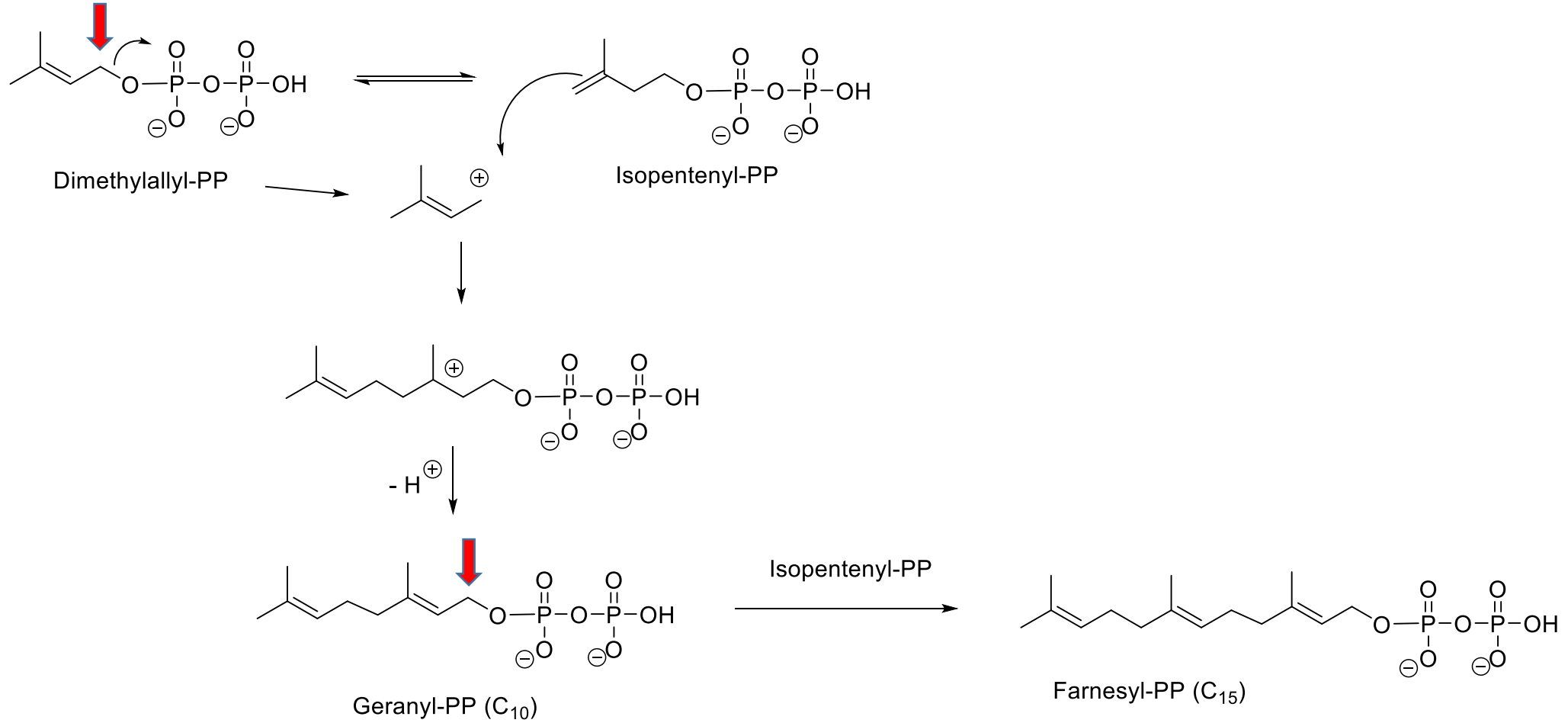
aus Acetyl-CoA



aus L-Lysin



Biosynthese / Geranyl- und Farnesyl-Pyrophosphat



Biosynthese / Squalen und Steroide

Squalen Etymologie

Lat. Squalus = Haifisch

Erstmals aus Haifisch-Leberöl
isoliert

