

27c. Karotenoidy

tetraterpeny – 40C

Syntéza **geranylgeranyldifosfátu** (20C)– řetězení hlava-ocas

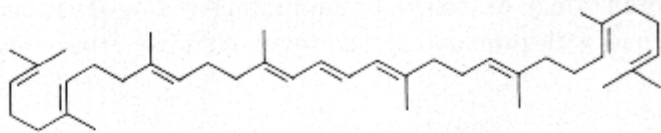
2 GGdP – **fytoen** (40C, fytoensyntáza – analogie se skvalensyntasou)

Isomerace – *trans*-fytoen, dehydrogenace (desaturasy fytoenu a ζ -karotenu) – produkce lykopenu

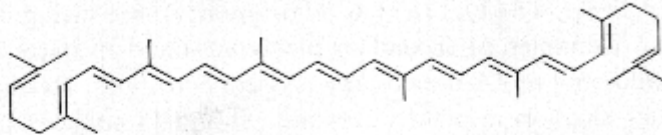
Uzavírání kruhů (iononové kruhy – vždy 1 je β)

- β -karoten (též zeaxanthin, neoxanthin, violaxanthin a antheraxanthin) mají oba β
- α -karoten – druhý α
- γ -karoten – neuzavřeny (pseudoionon)

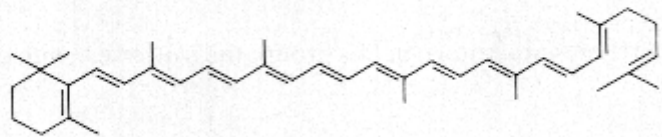
phytoene (C₄₀H₆₄; colorless; λ_{\max} , 285 nm)



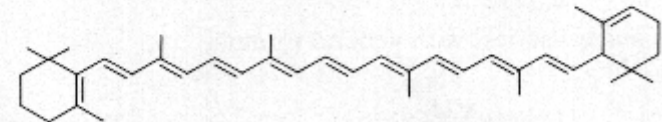
lycopene (C₄₀H₅₆; red; λ_{\max} , 476 nm)



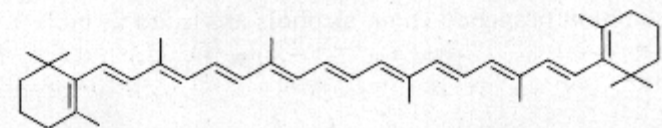
γ -*carotene* (C₄₀H₅₆; orange; λ_{\max} , 460 nm)



α -*carotene* (C₄₀H₅₆; orange; λ_{\max} , 456 nm)

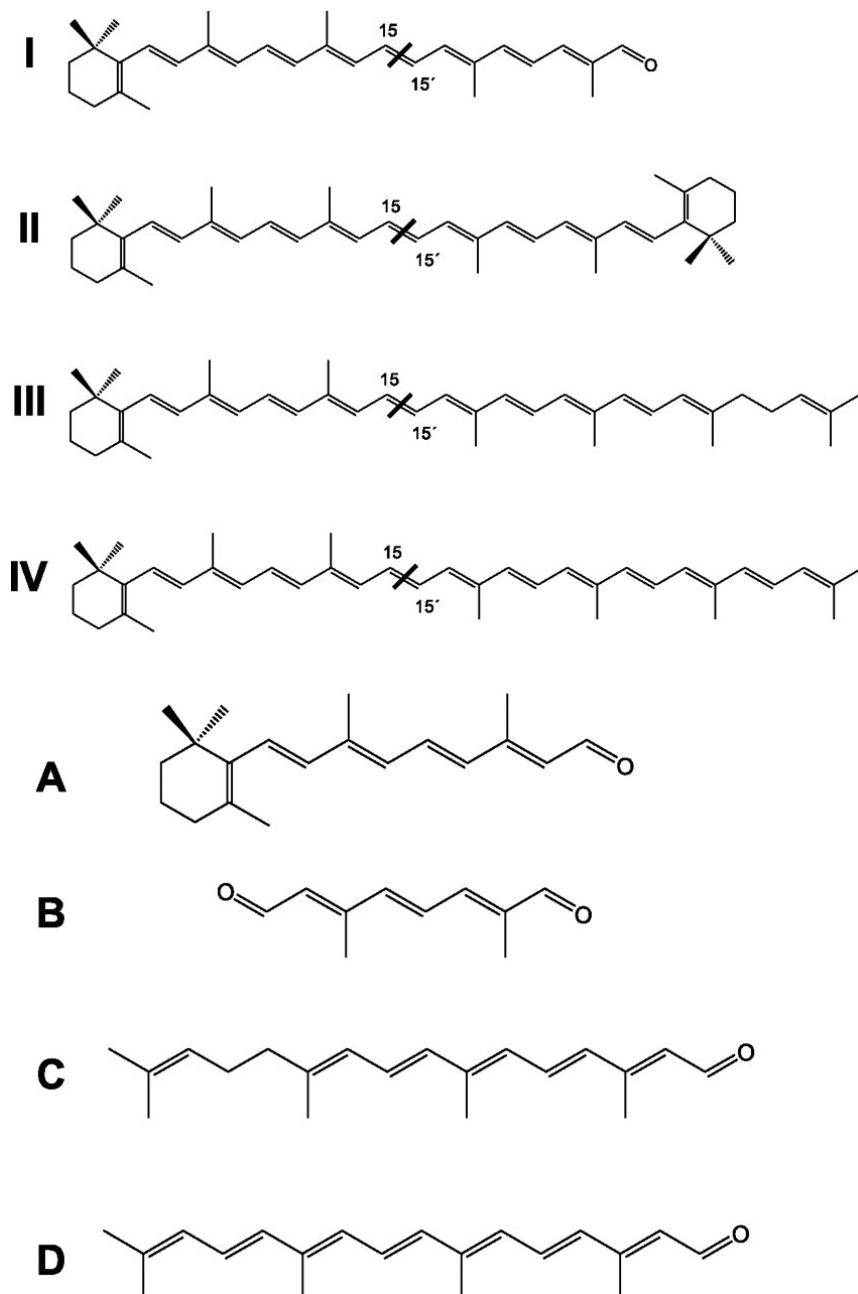


β -*carotene* (C₄₀H₅₆; orange; λ_{\max} , 463 nm)



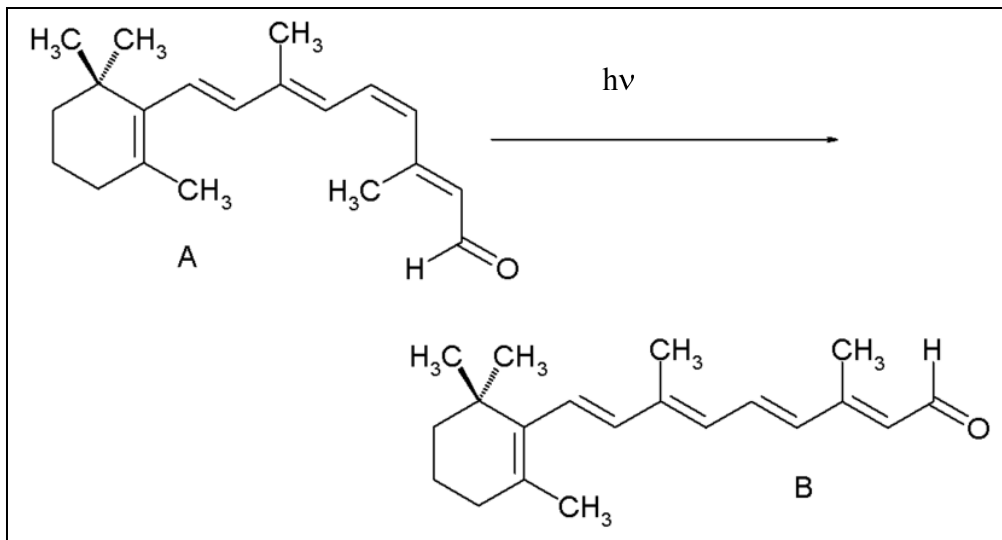
Rostlinná barviva, anténní (LHS) systém atd.
Antioxidanty, **prekursory vitamínu A**

Karotenasa (dioxygenasa) – aldehydy

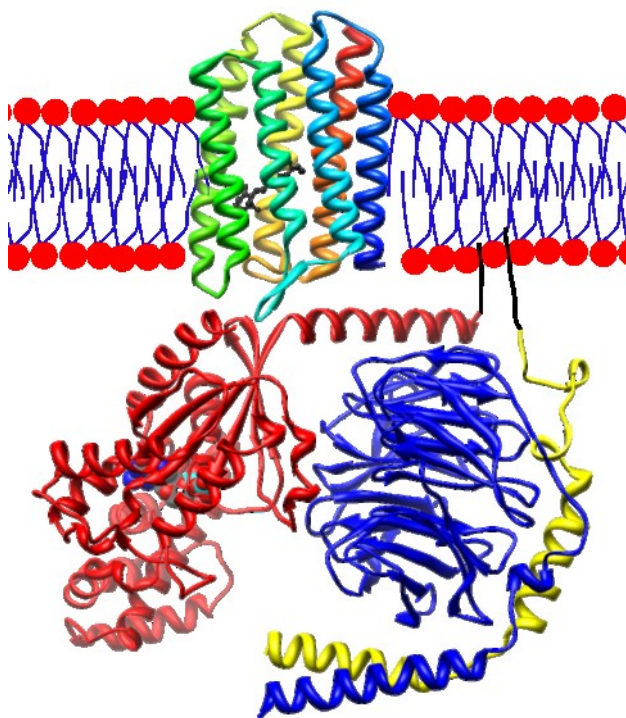


Štěpení karotenoidů karotenasou. II – β -karoten, IV – γ -karoten, A - retinal

Vitamíny A – formy (retinal, retinol, kys. retinová)



Izomerizace retinalu pohlcením fotonu.



Rhodopsin v membráně, černě retinal. Transducin - G_α červeně, G_β modře, G_γ žlutě, GDP v G_α .