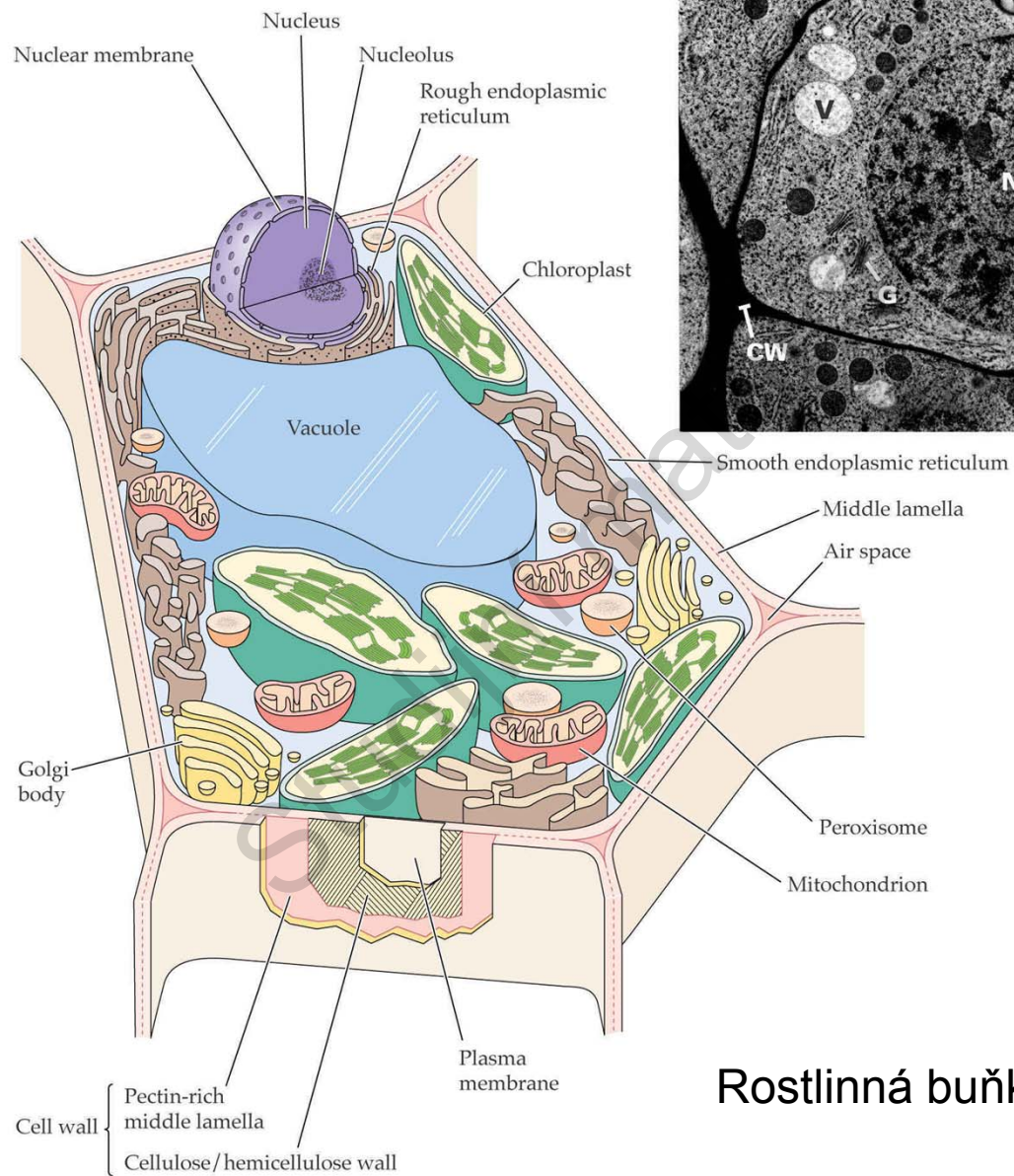


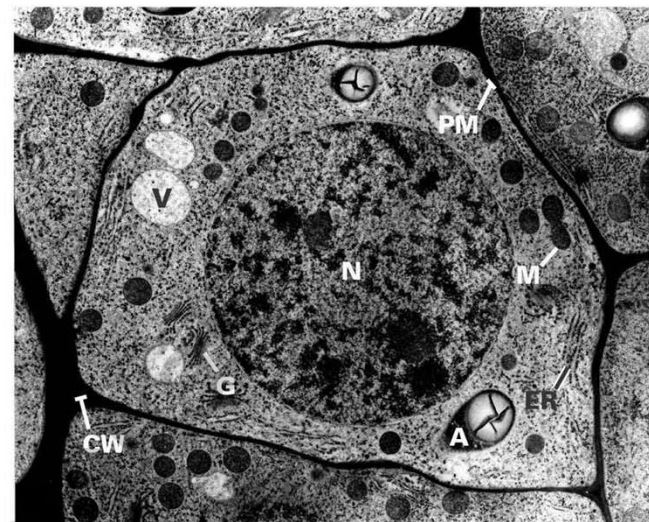
# Struktura buněčné stěny rostlin

Studijní materiály

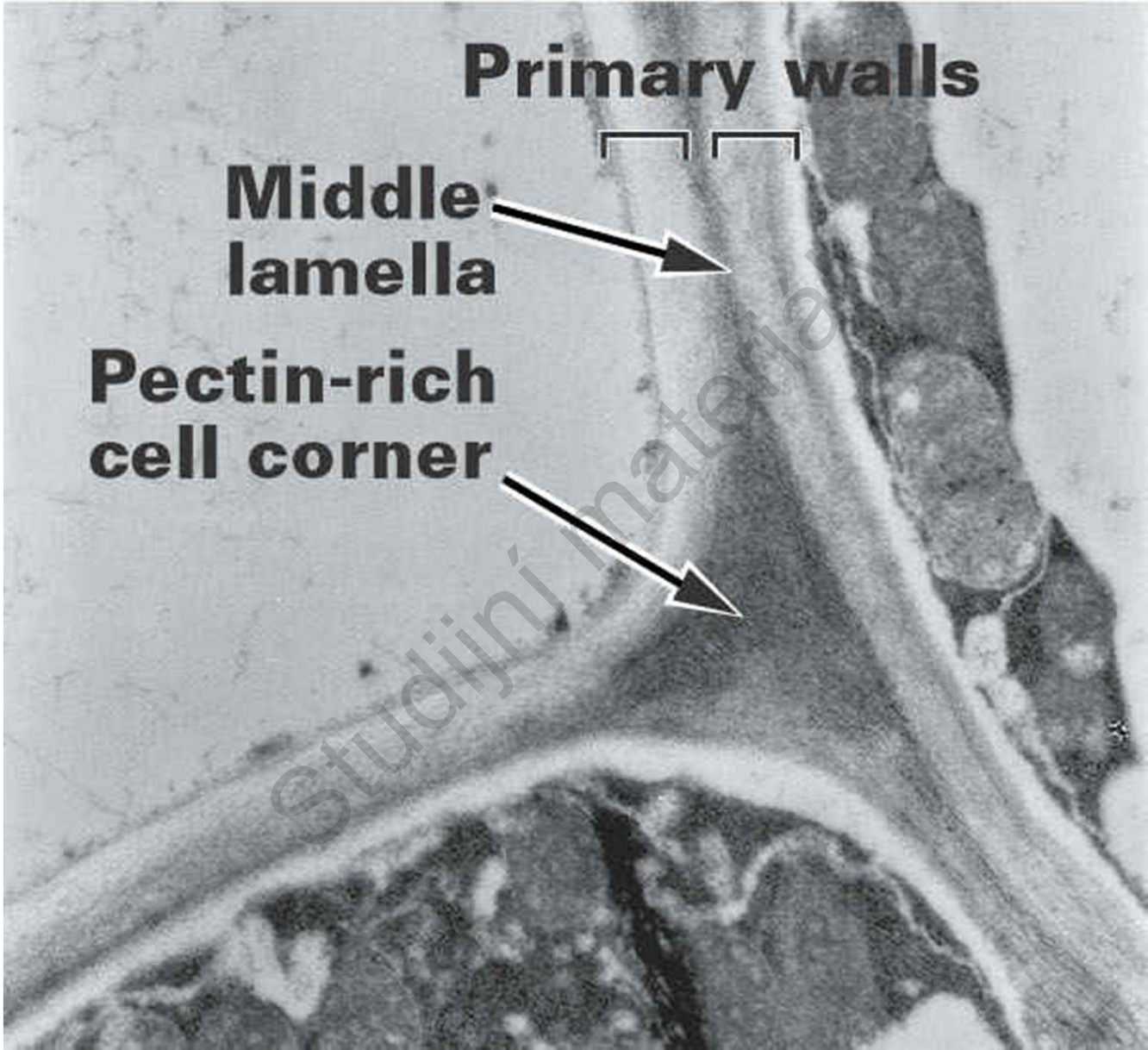
(A) Mesophyll



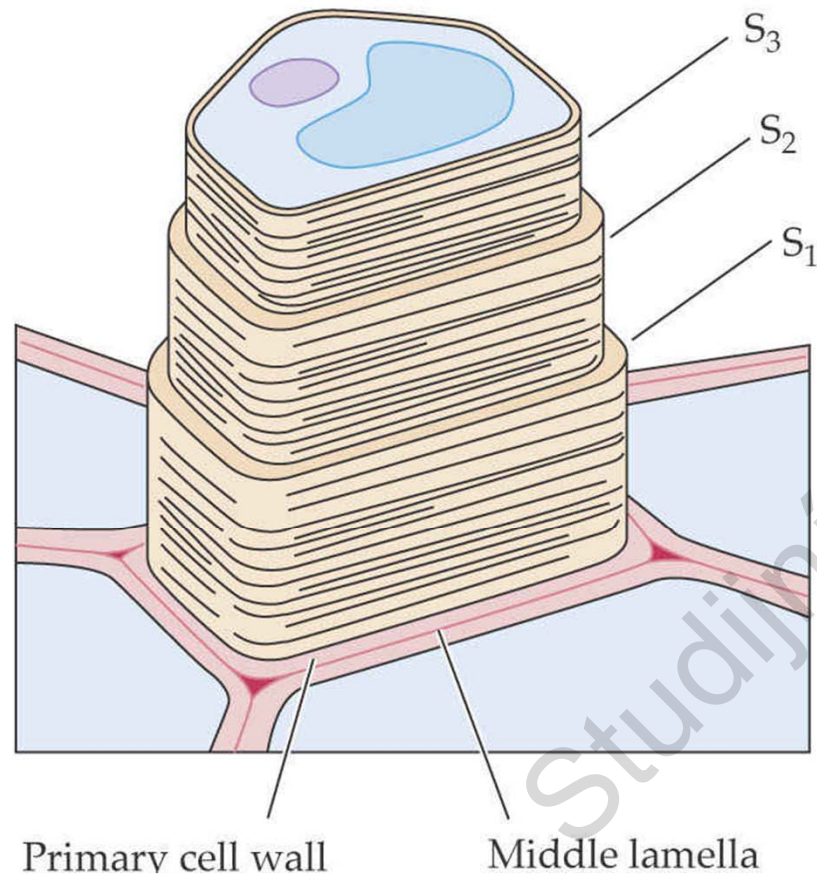
(B)



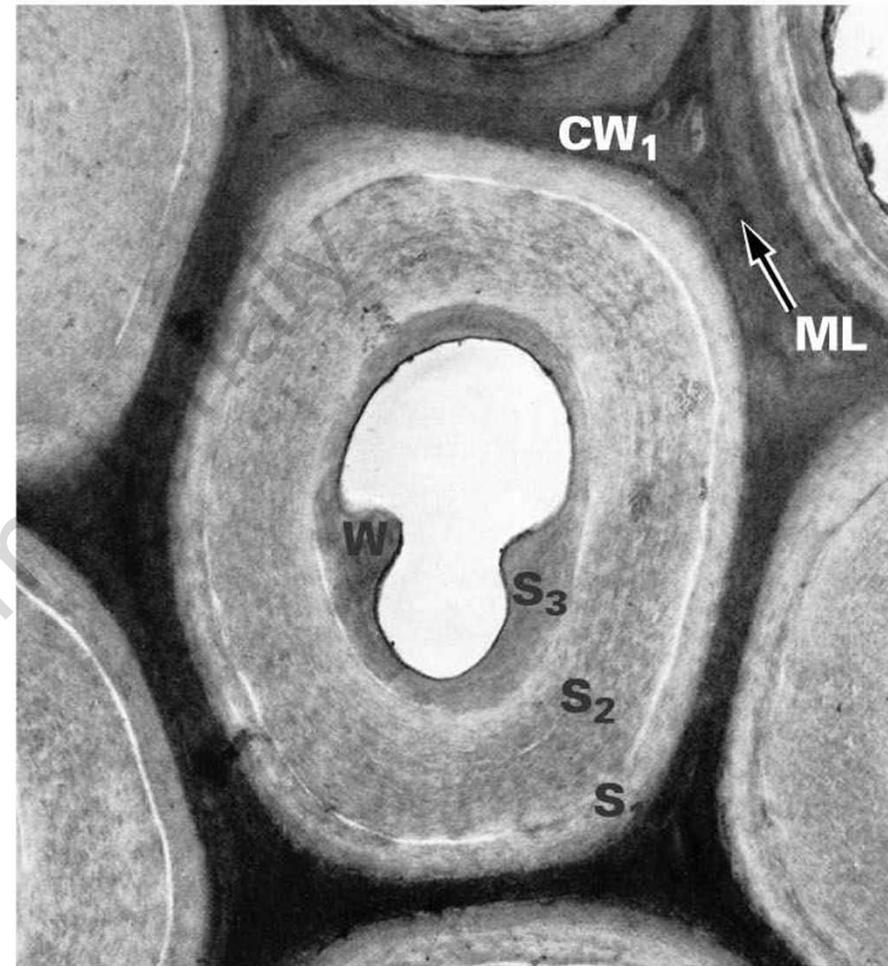
Rostlinná buňka



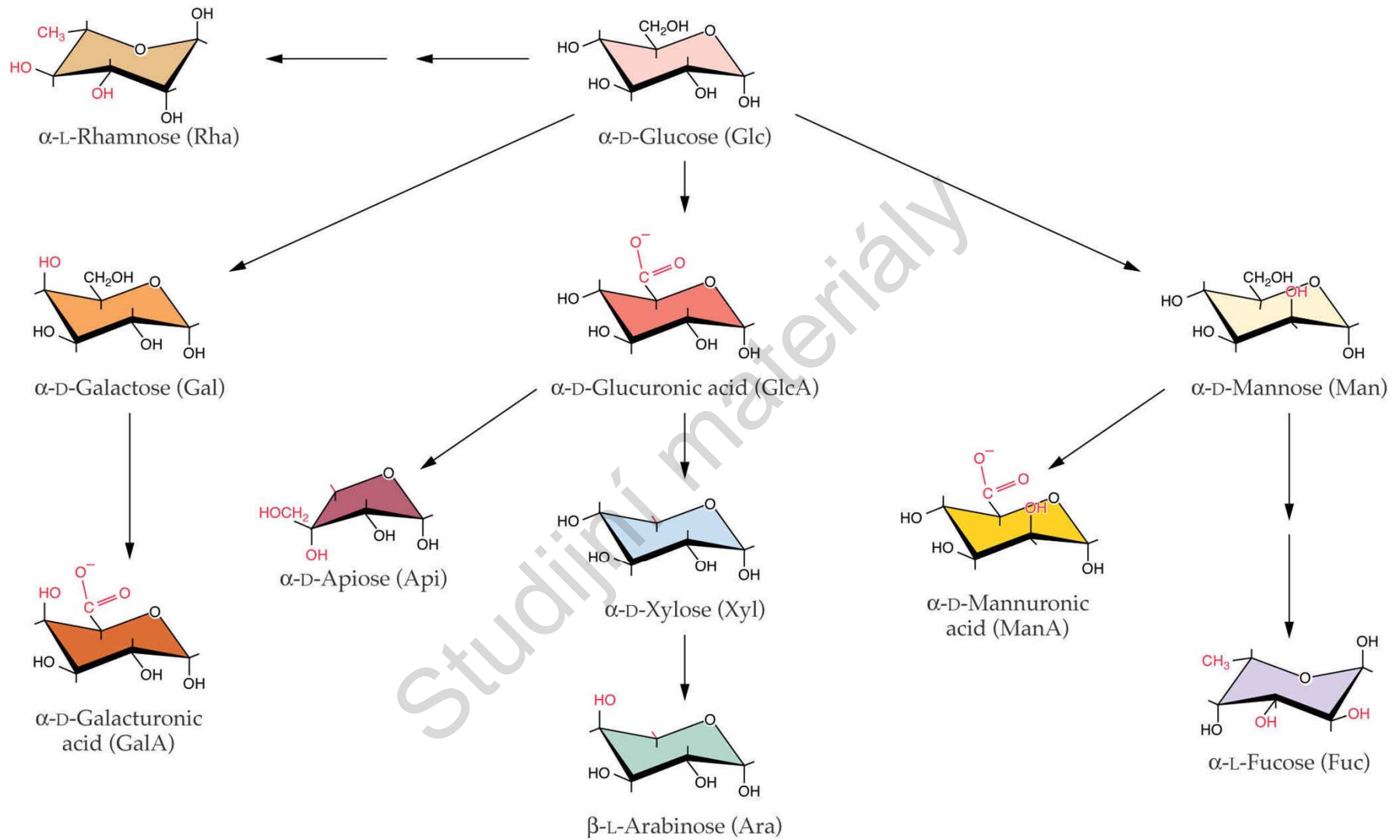
(A)



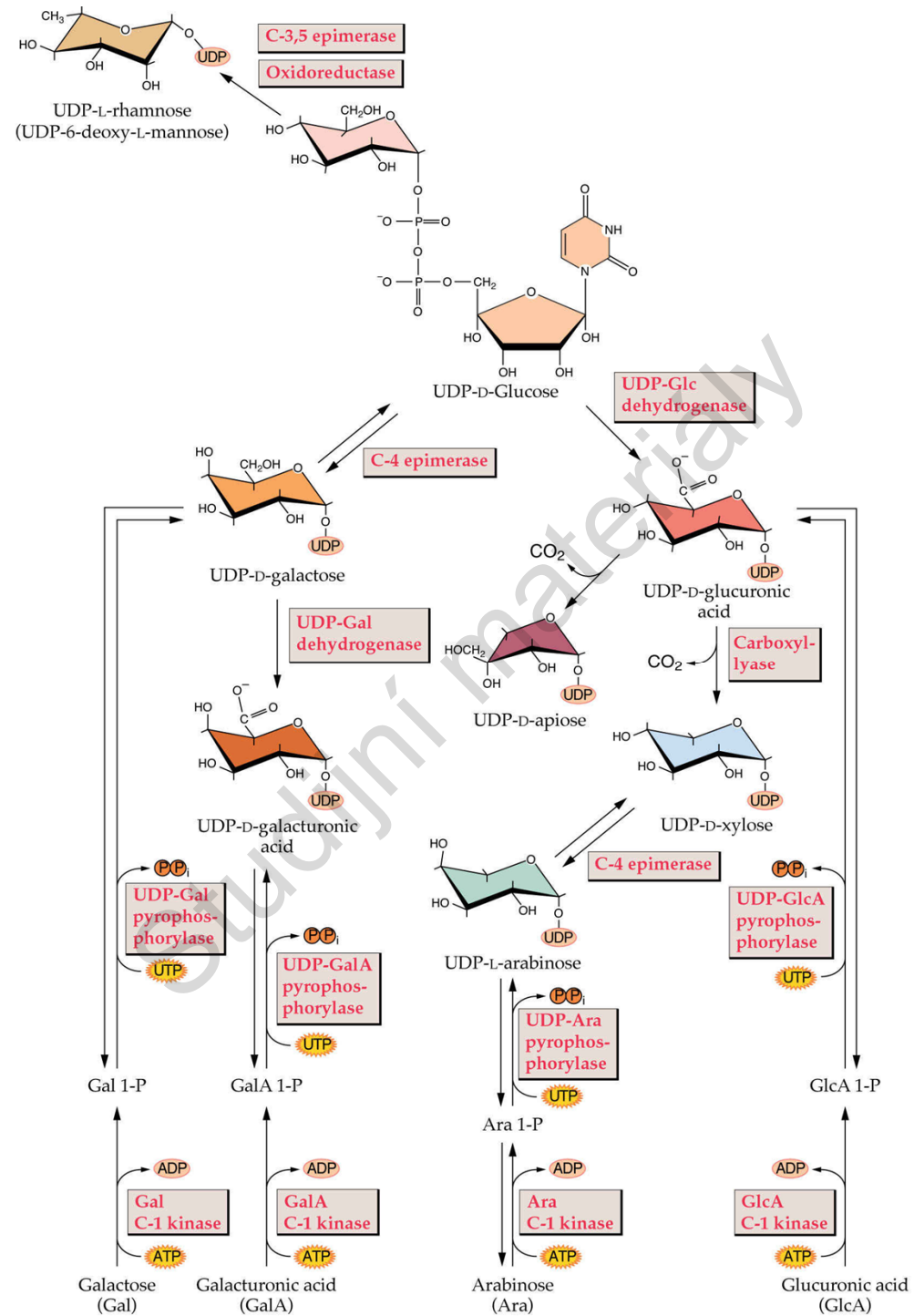
(B)

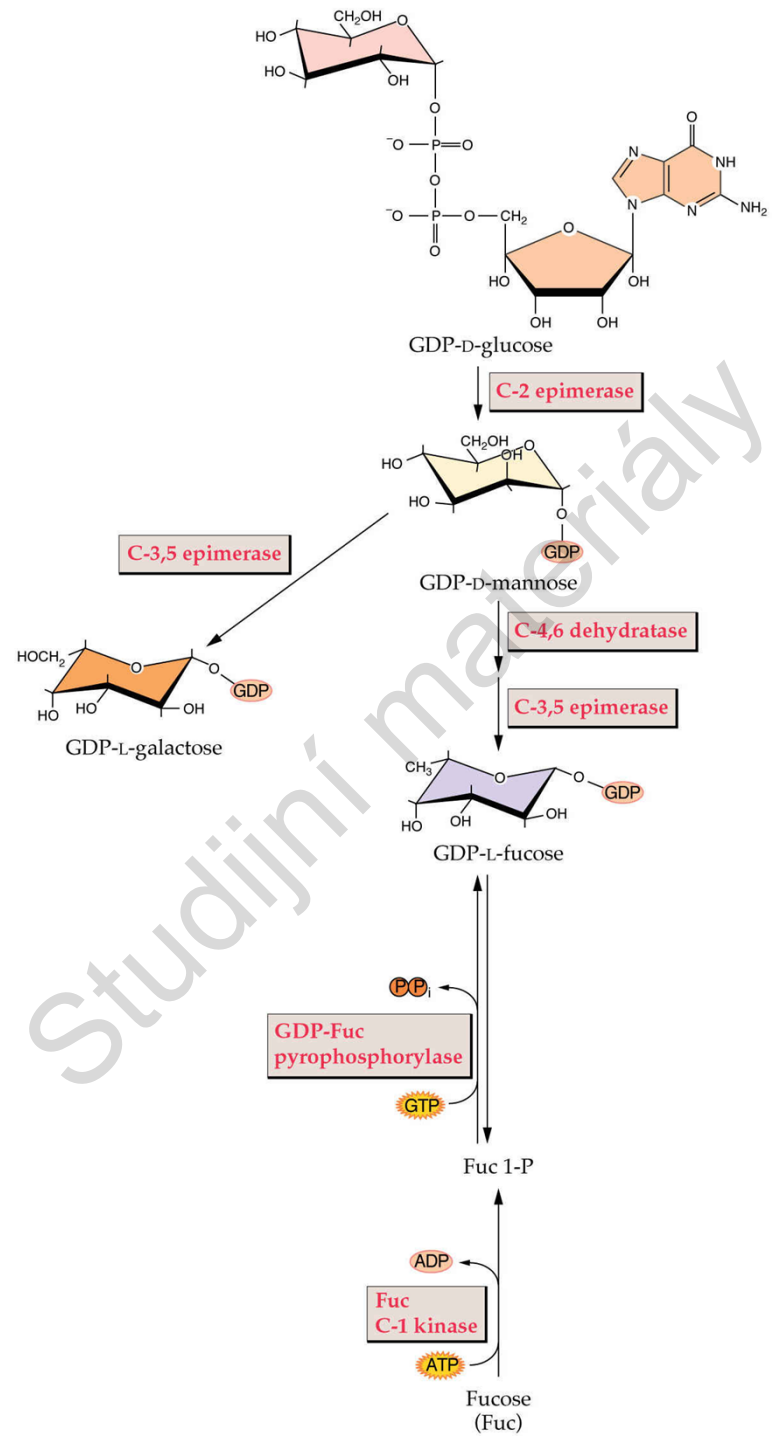


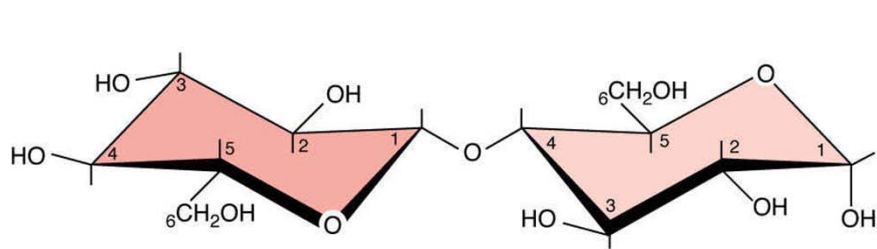
Struktura buněčné stěny. S1-S3 – sekundární stěny



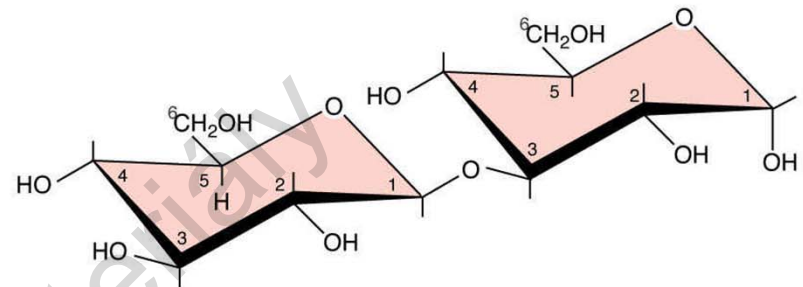
## Monosacharidy rostlinné buňky







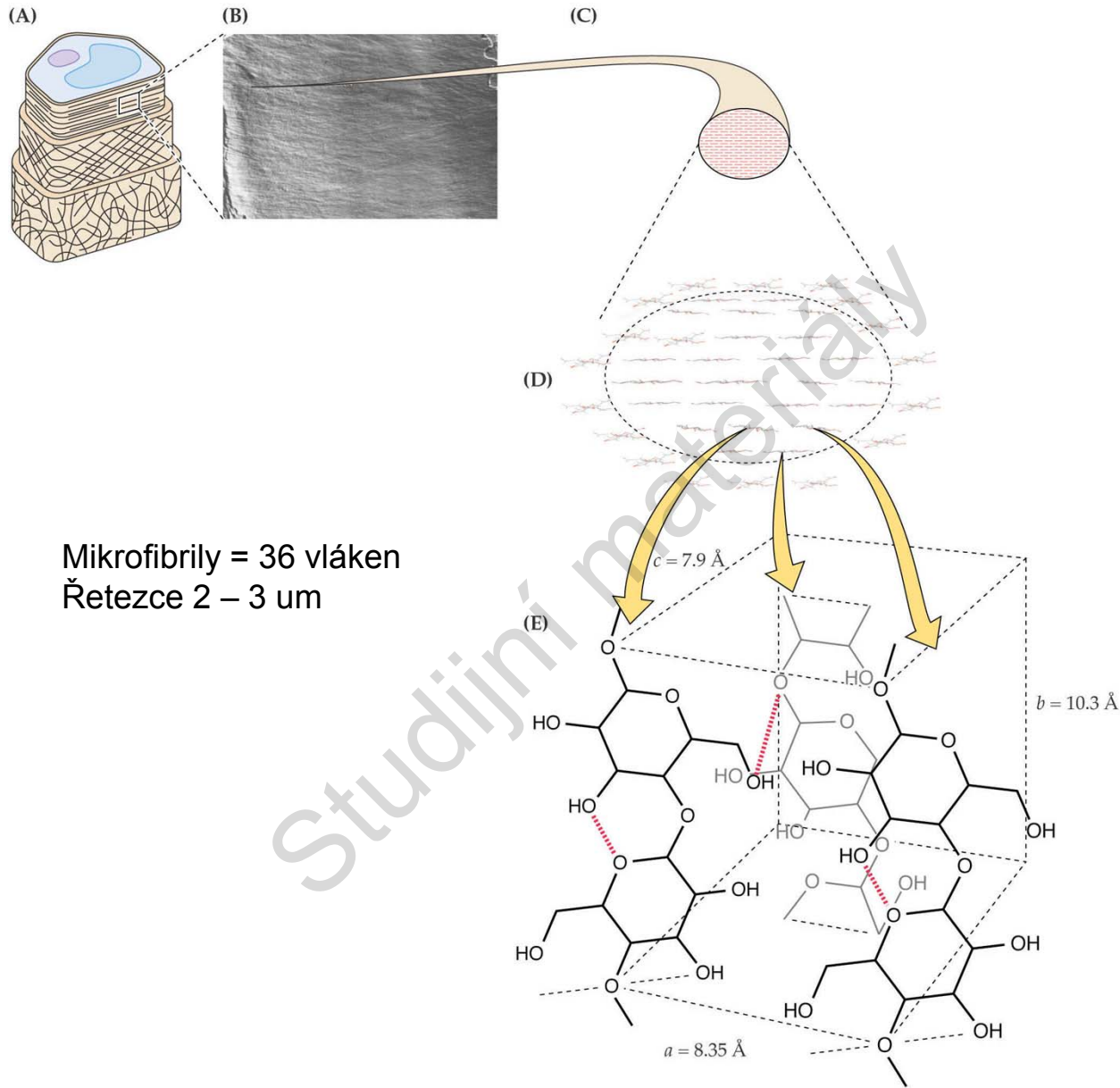
**Cellobiose**  
**( $\beta$ -D-Glucosyl-(1 $\rightarrow$ 4)-D-glucose)**



**Laminaribiose**  
**( $\beta$ -D-Glucosyl-(1 $\rightarrow$ 3)-D-glucose)**

Studijní materiál



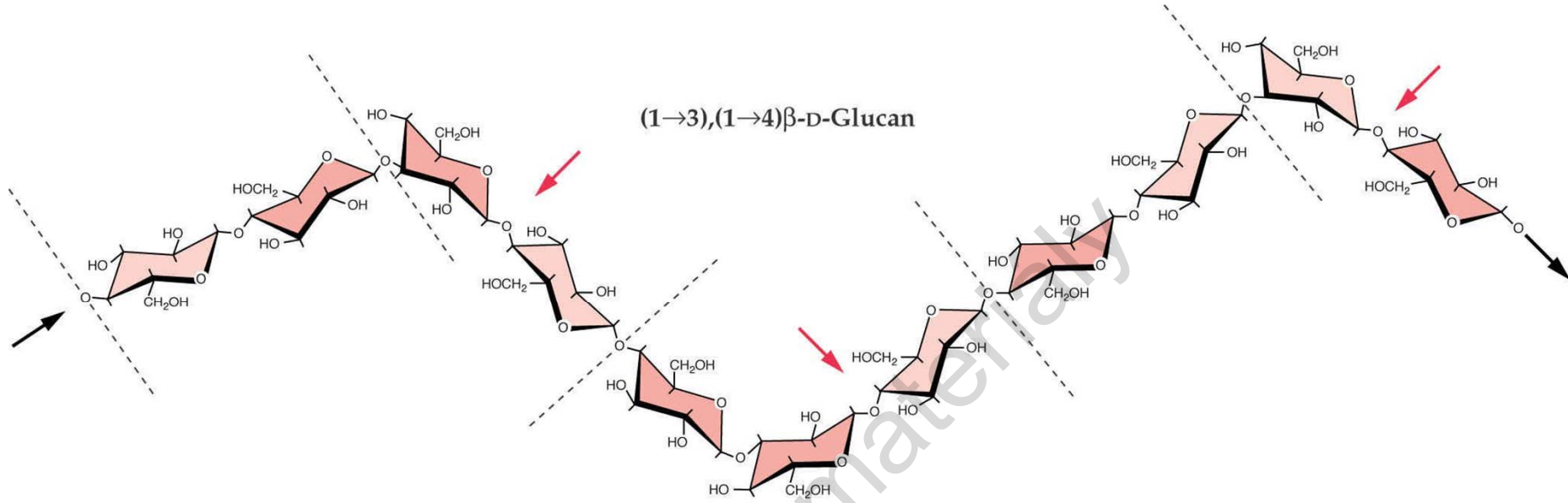


Mikrofibrily = 36 vláken  
 Řetězce 2 – 3  $\mu\text{m}$









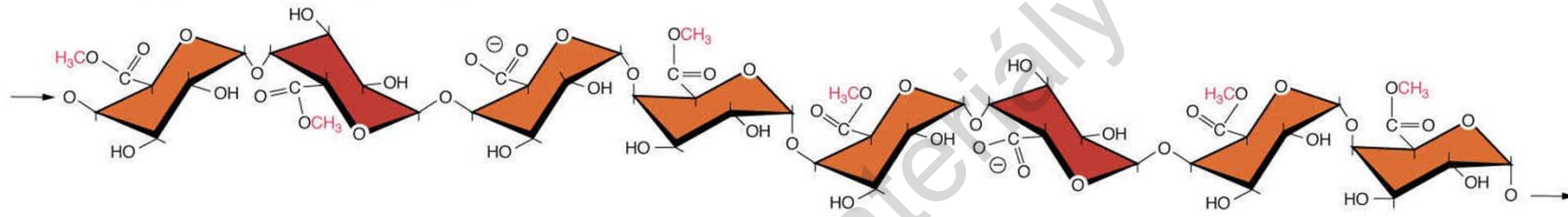
→4)β-D-Glc-(1→4)β-D-Glc-(1→3)β-D-Glc-(1→4)β-D-Glc-(1→4)β-D-Glc-(1→3)β-D-Glc-(1→4)β-D-Glc-(1→4)β-D-Glc-(1→4)β-D-Glc-(1→4)β-D-Glc-(1→3)β-D-Glc-(1→4)β-D-Glc-(1→

Struktura 1-4,1-3 glukanu



**Homogalacturonan (HGA)**

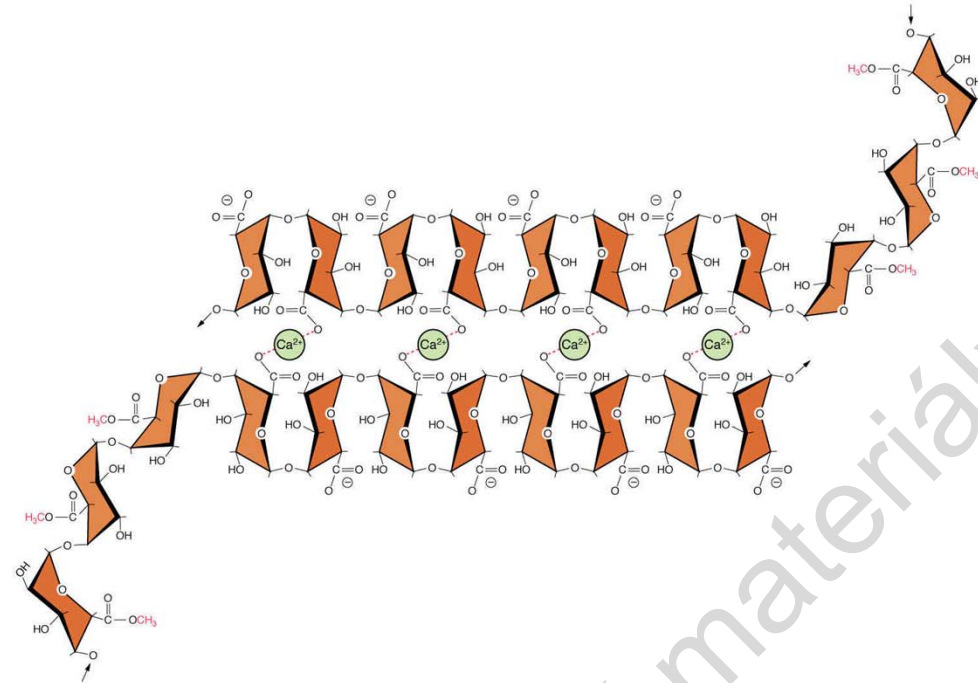
**(A)**



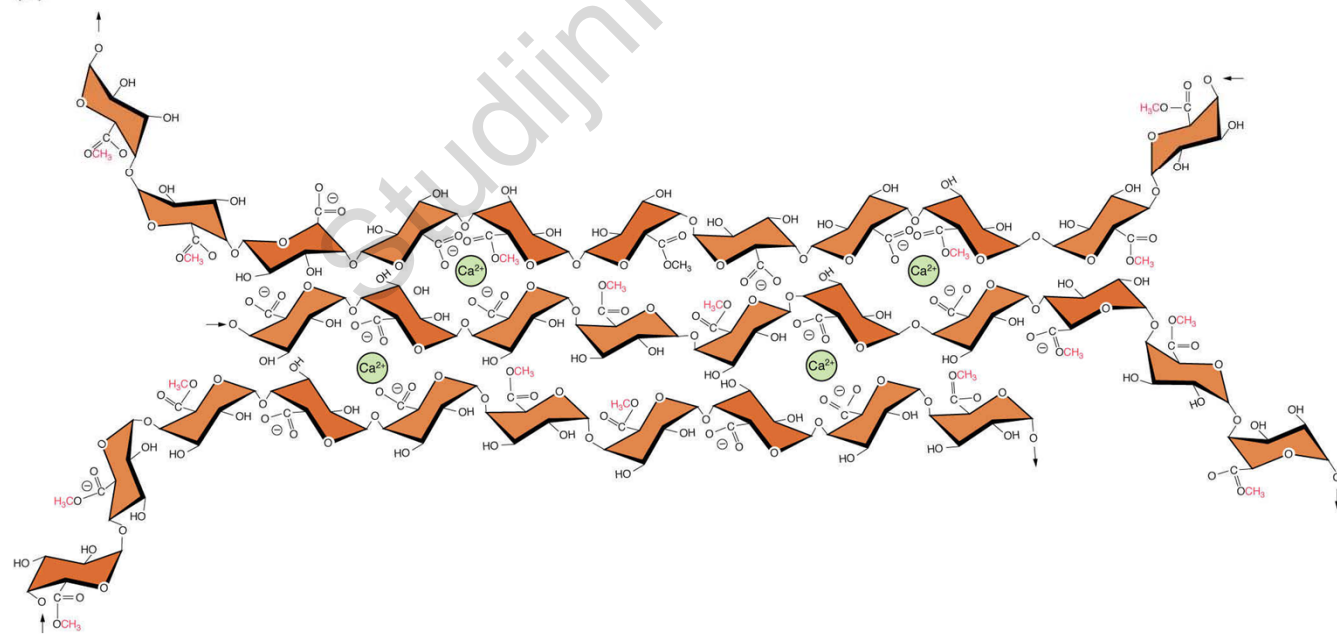
Pektiny - homogalakturonan

Studijní materiál

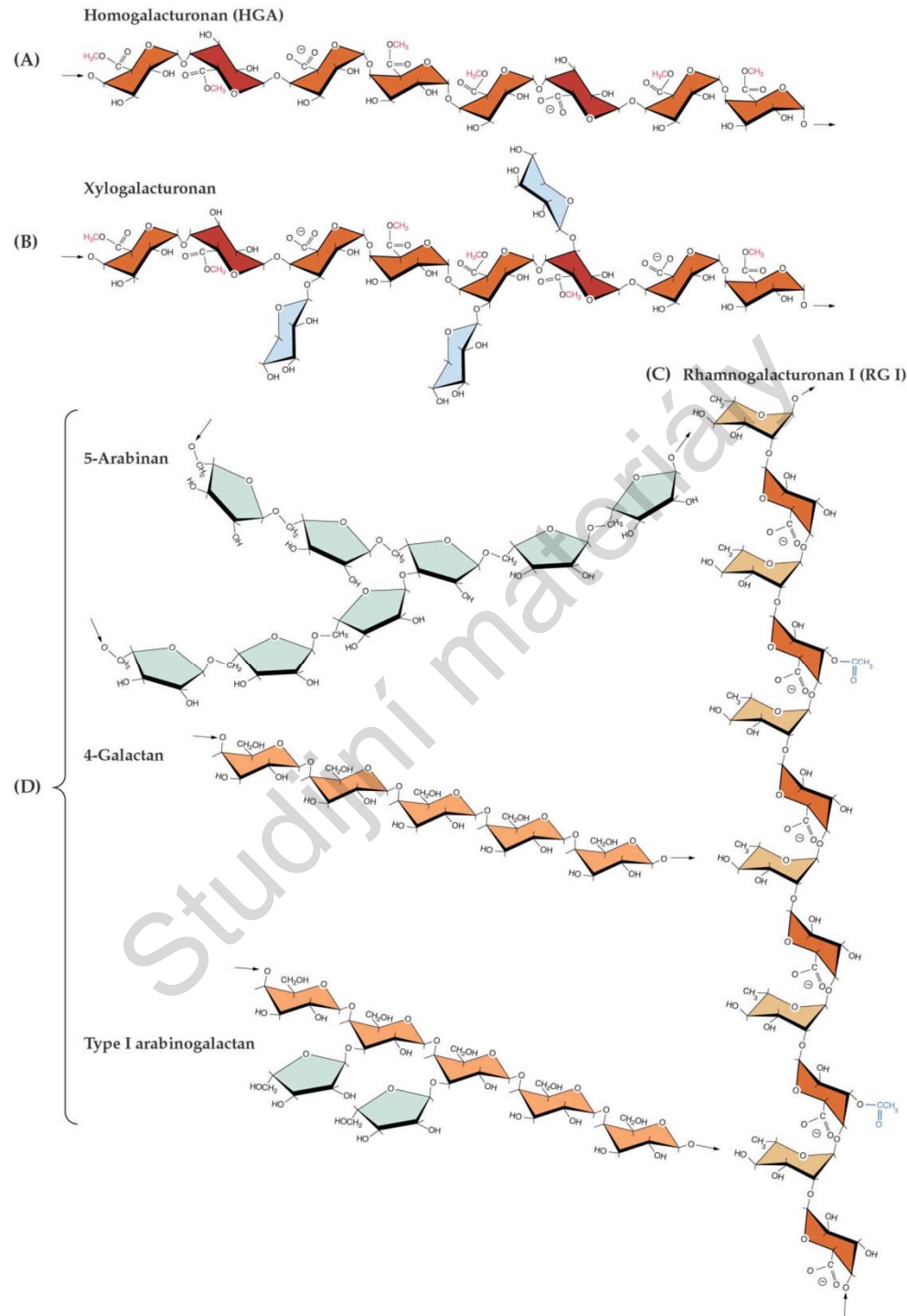
(A)



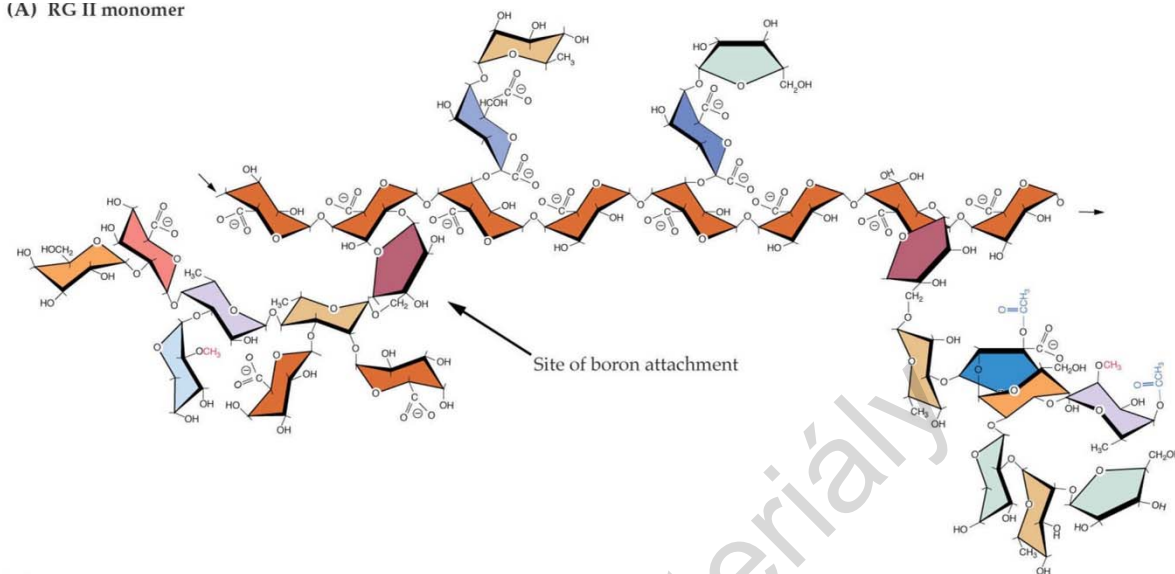
(B)



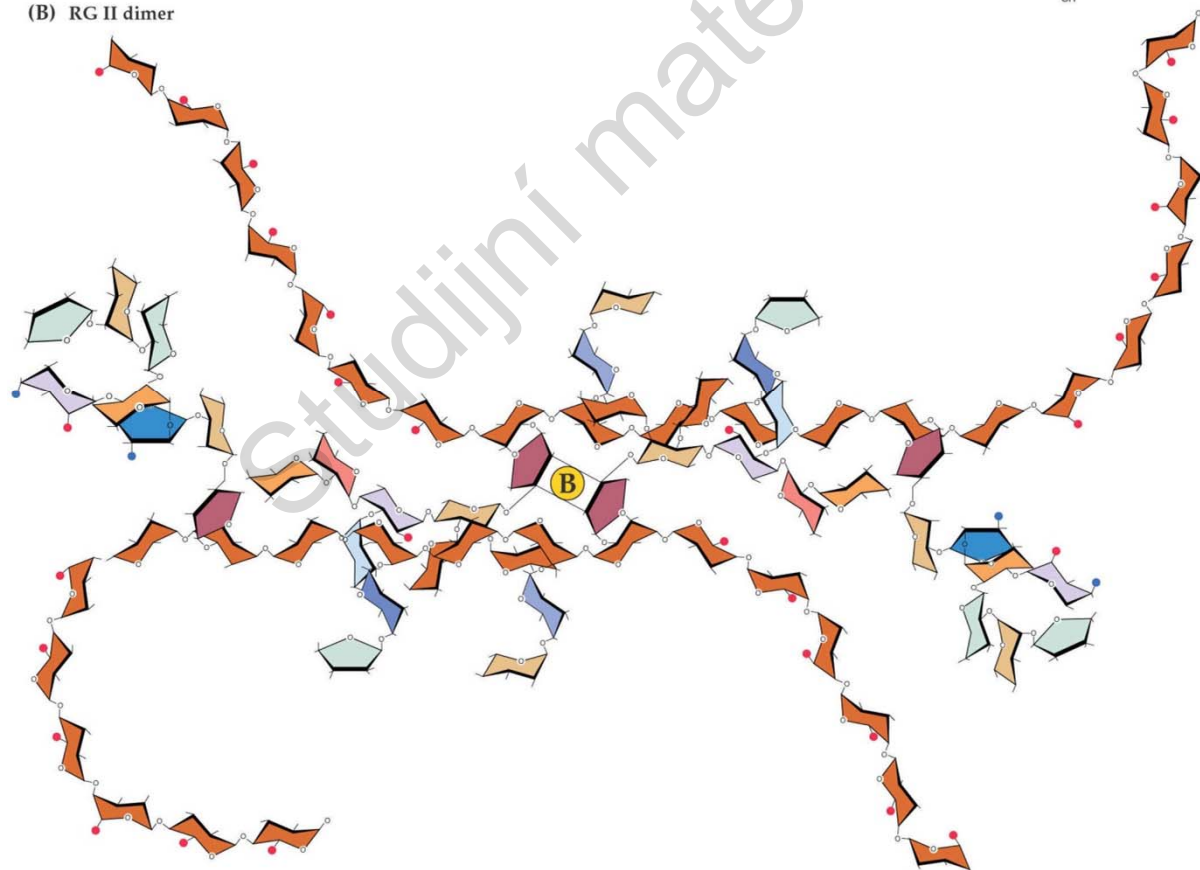


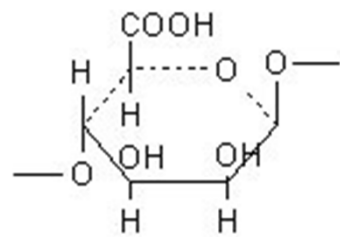


(A) RG II monomer

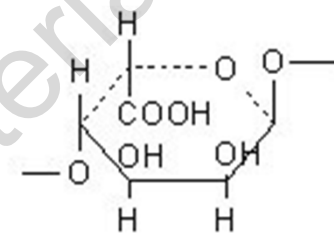


(B) RG II dimer





kys.  $\beta$ -D-mannuronová



kys.  $\alpha$ -D-guluronová

Algináty



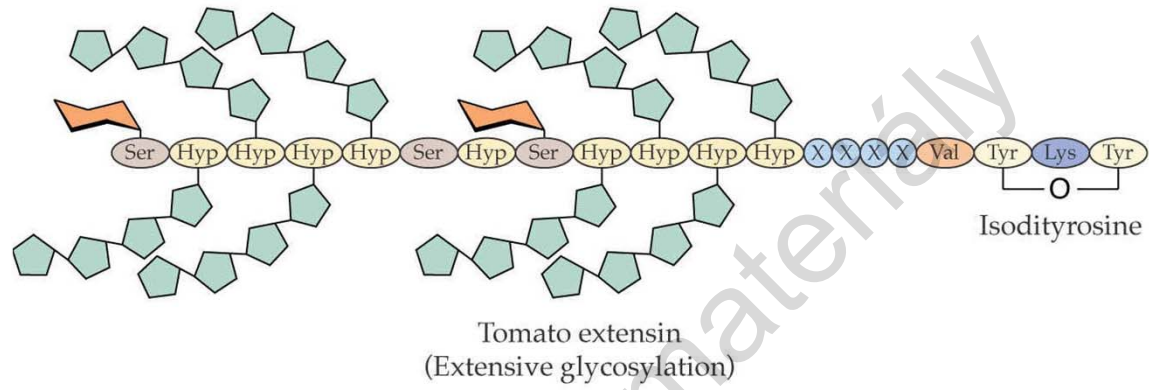
Soybean PRP  
(Low glycosylation)



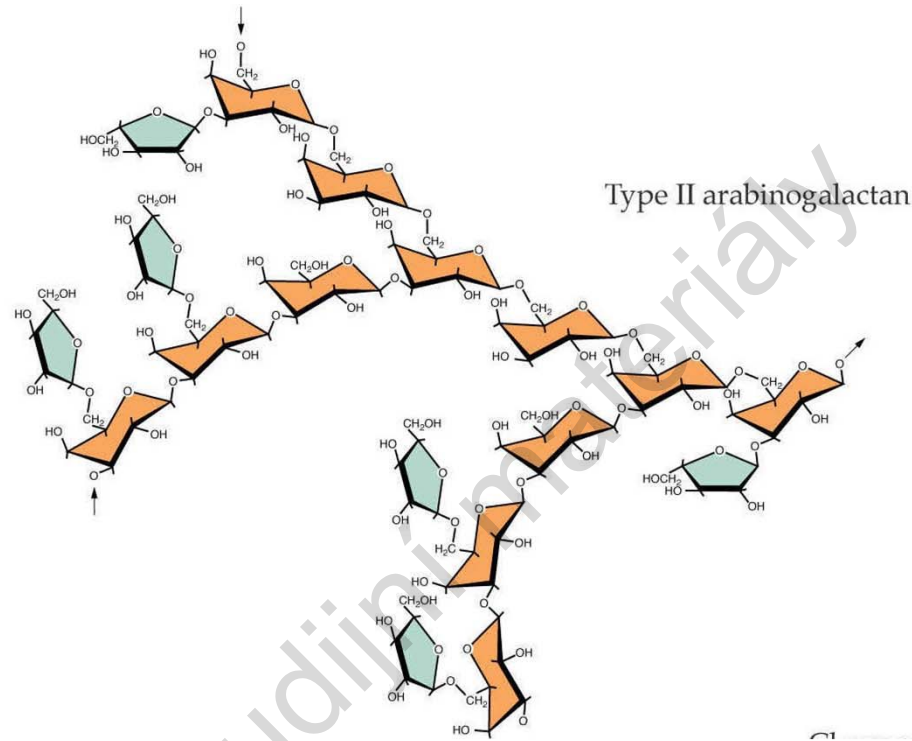
Petunia GRP  
(No glycosylation)

Bílkoviny buněčné stěny – PRP a GRP

(A)

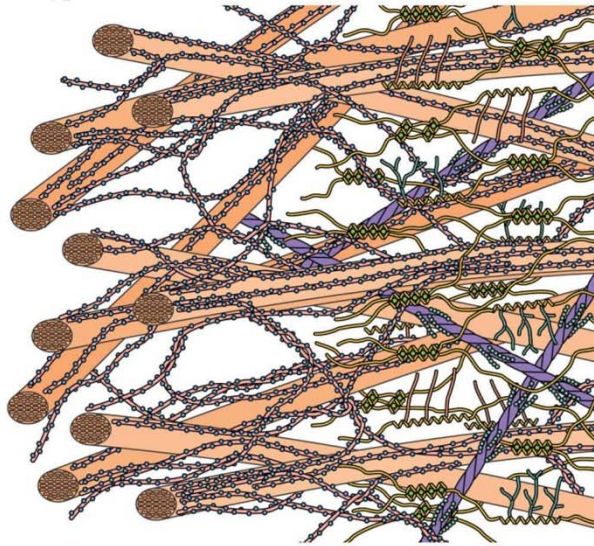


Bílkoviny buněčné stěny – extensin z rajčete

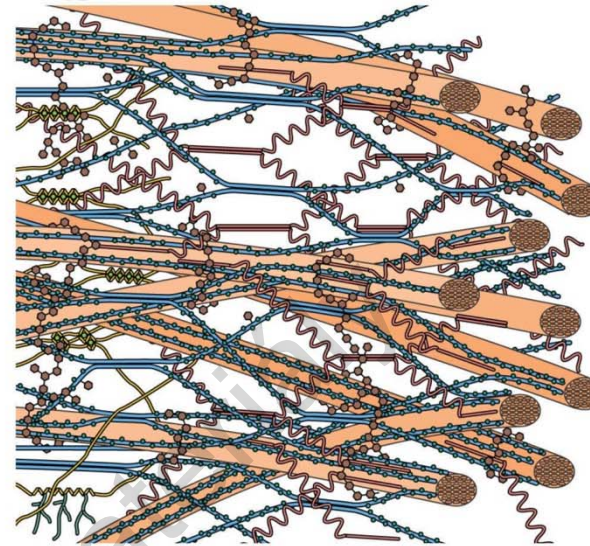


Studiermaterial

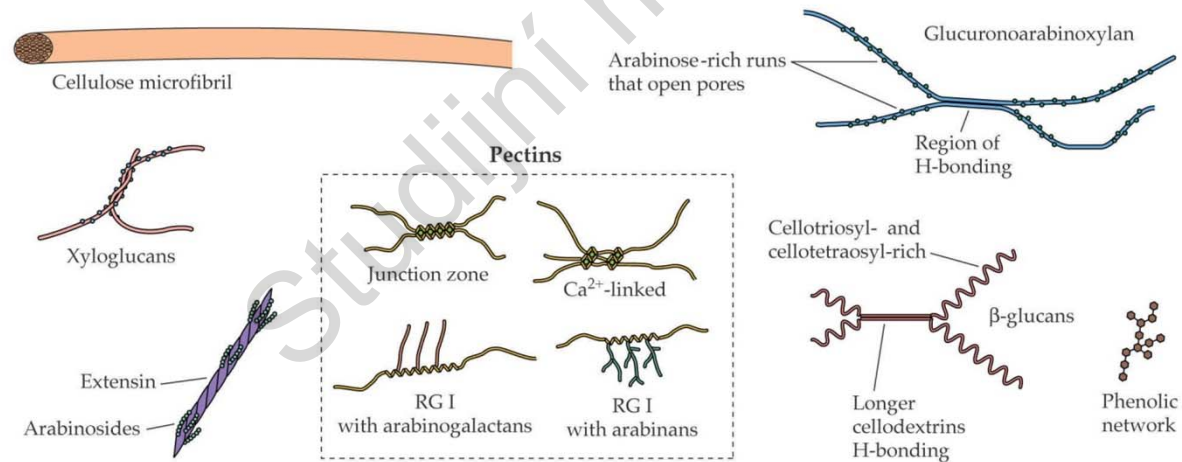
(A) Type I wall



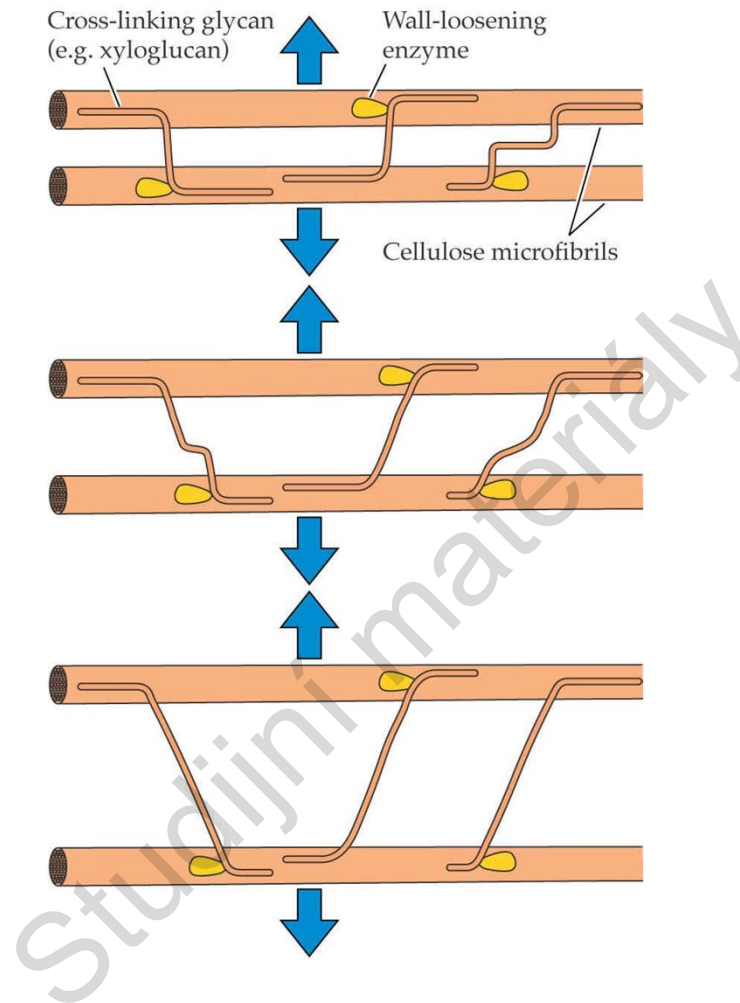
(B) Type II wall



Key:

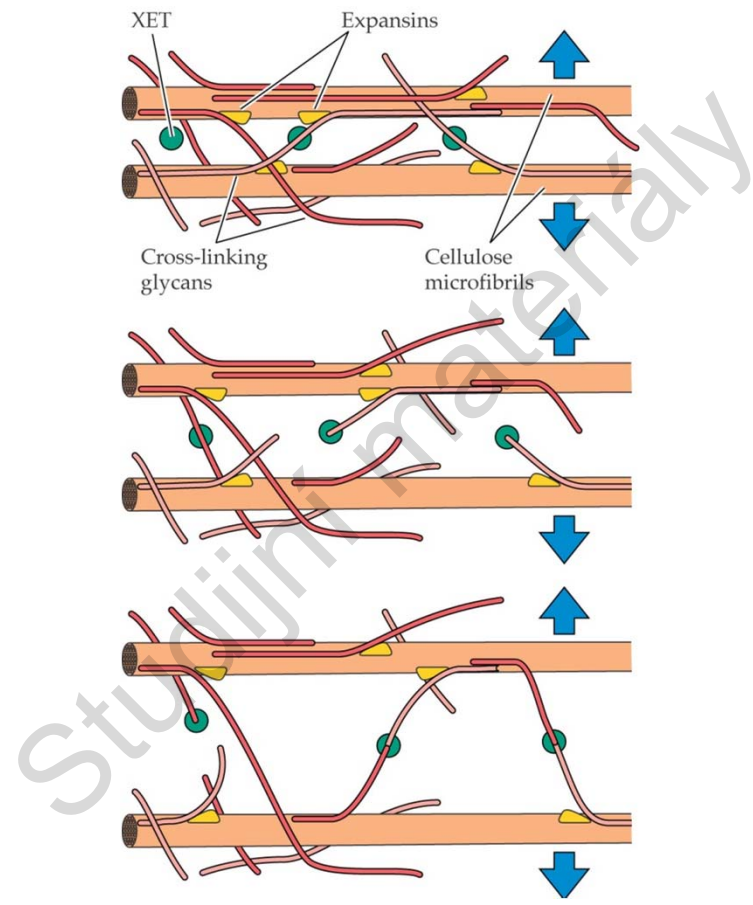


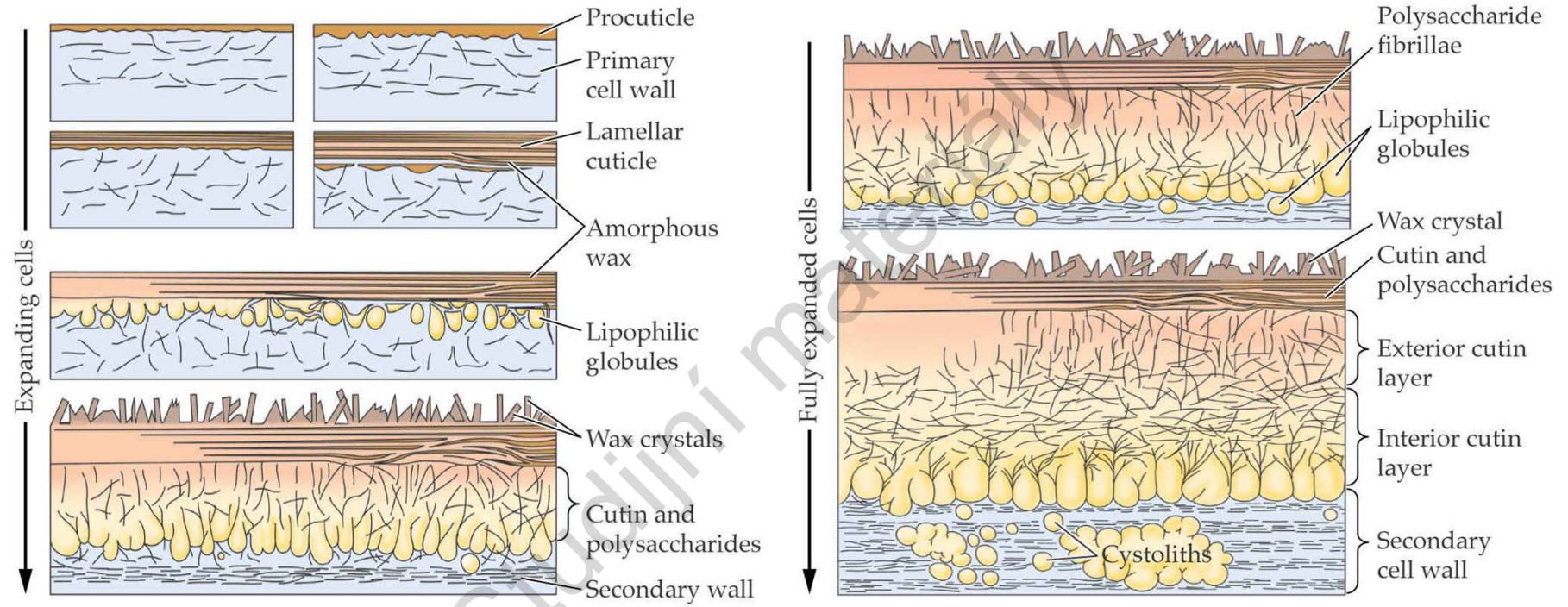
## Struktura a vazby složek buněčné stěny



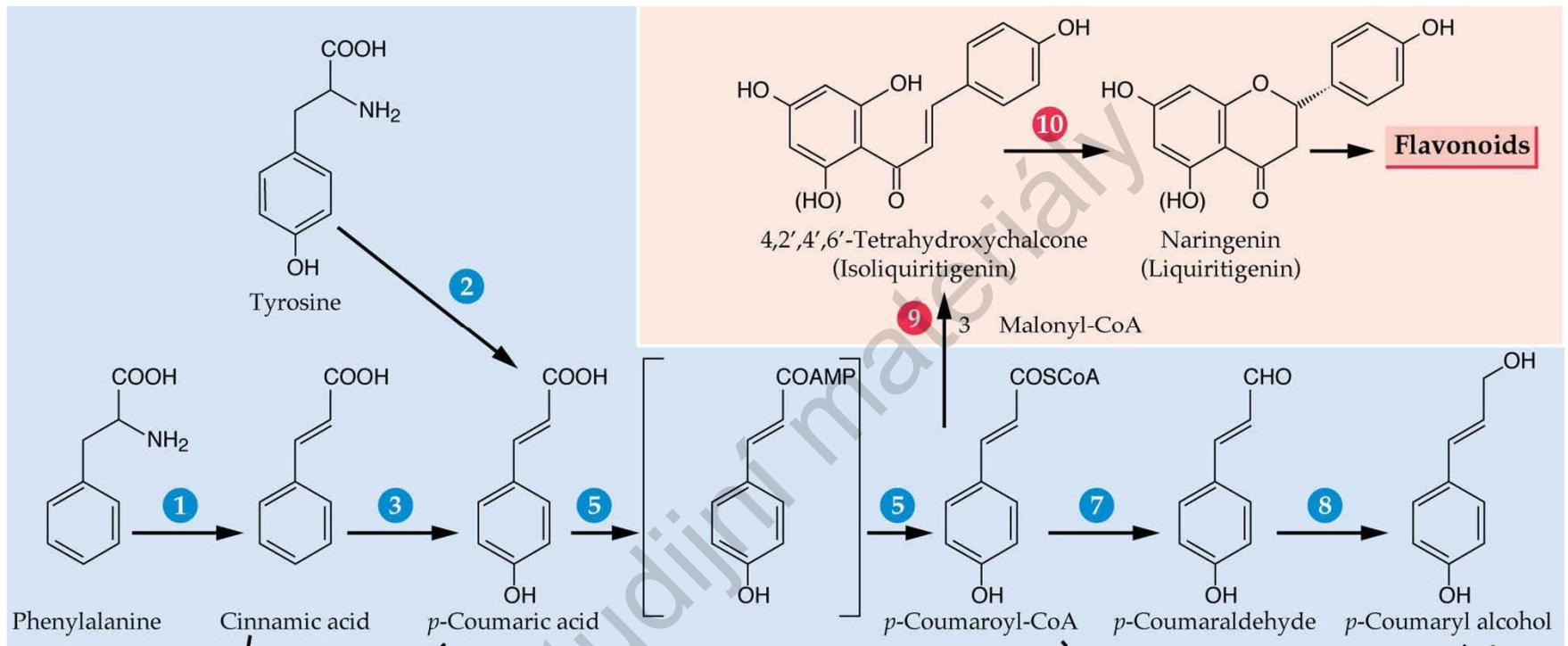
Růst buněčné stěny, interakce krystalických a amorfních složek



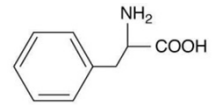






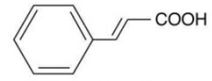


Syntéza prekurzorů ligninu



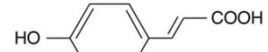
Phenylalanine

Phenylalanine ammonia lyase



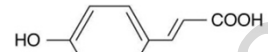
*trans*-Cinnamic acid

C-4 hydroxylase



*p*-Coumaric acid

C-3 hydroxylase



Caffeic acid

O-Methyltransferase



Ferulic acid

Ferulate-5-hydroxylase

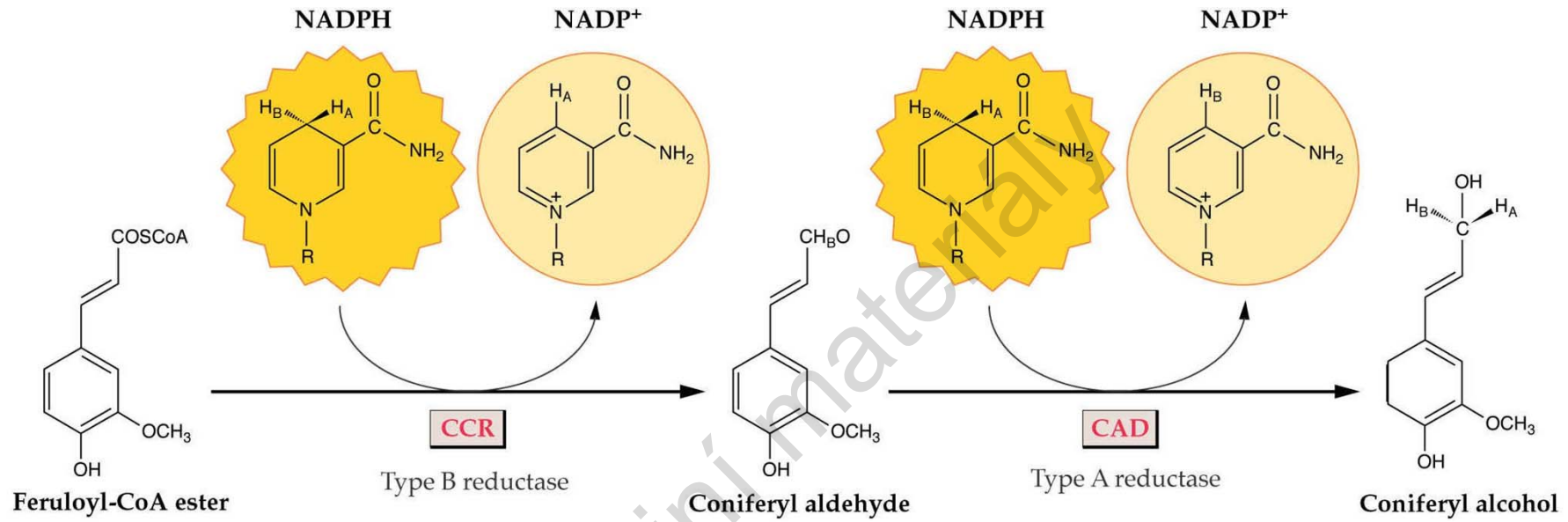


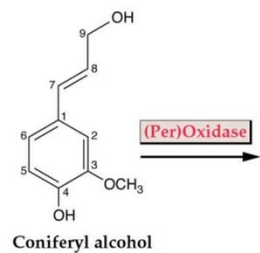
5-Hydroxyferulic acid

O-Methyltransferase

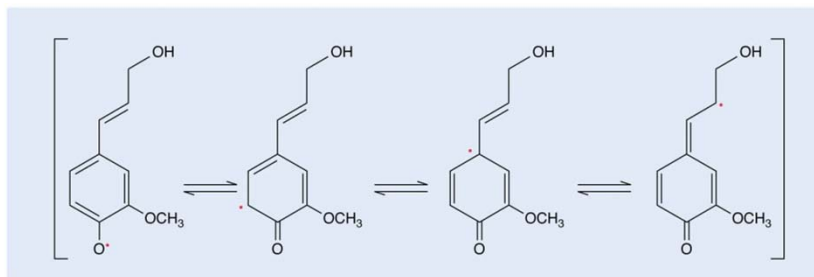


Sinapic acid

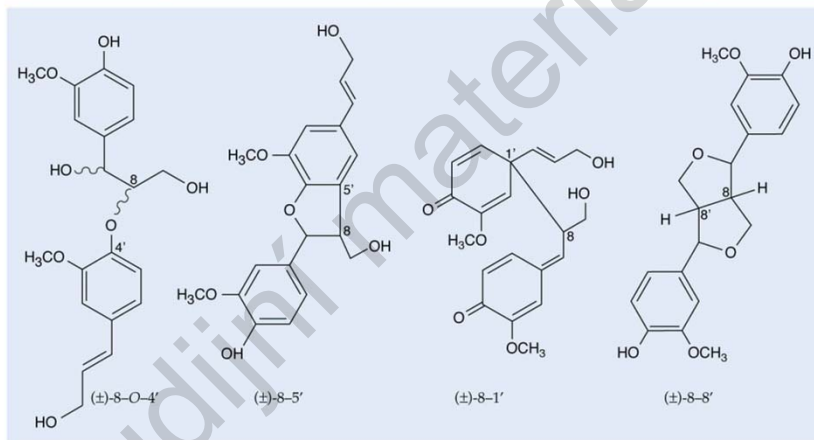




(Per)Oxidase



Coupling with neighboring free radical by way of a nonenzymatic process, followed by either intramolecular cyclization or reaction with H<sub>2</sub>O

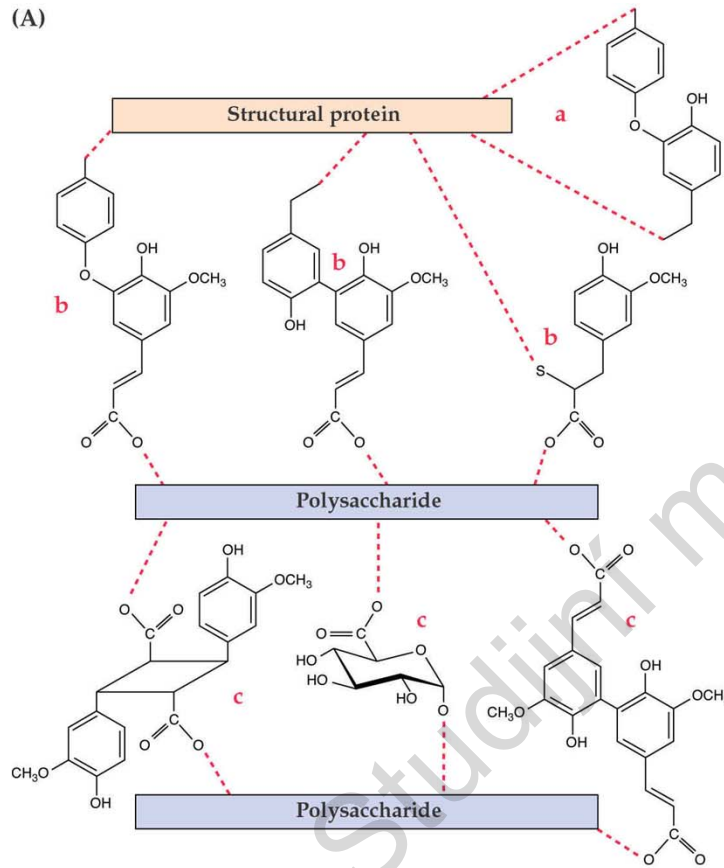


Repetition of process (enzymatic oxidation followed by nonenzymatic coupling)

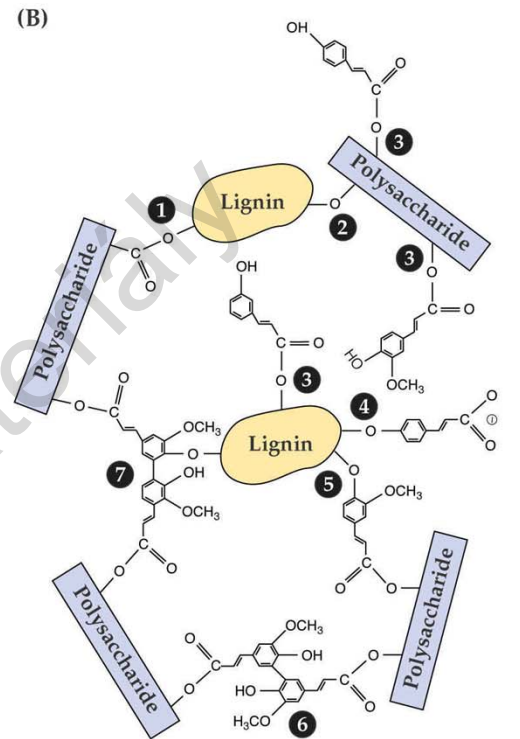
"Lignin" polymer formation in vitro

Syntéza ligninu radikálovou polymerací

(A)



(B)



- 1 Direct ester linkage
- 2 Direct ether linkage
- 3 Hydroxycinnamic acid ester
- 4 Hydroxycinnamic acid ether
- 5 Ferulic acid bridge
- 6 Dehydrodiferulic acid diester bridge
- 7 Dehydrodiferulic acid diester-ether bridge