

# ANATOMSKA GRAĐA STABLA

- nasledna osnova
- sistematska pripadnost
- uticaj faktora spoljne sredine

## PRIMARNA

skoro sve monokotile

neke zeljaste dikotile

## SEKUNDARNA

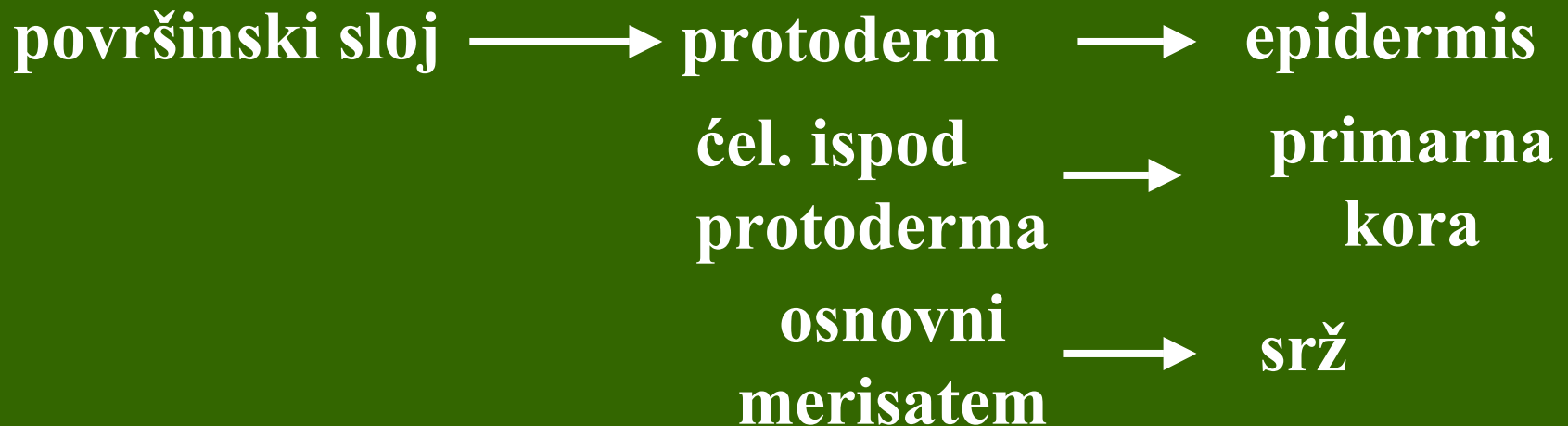
golosemenice

drvenaste dikotile

# ANATOMSKA GRAĐA STABLA

## POSTANAK PRIMARNE GRAĐE

**Vrh vegetacione kupe** ćelije se razlikuju :  
po intezivnosti deobe i  
morfološkim osobinama



### prokambijum

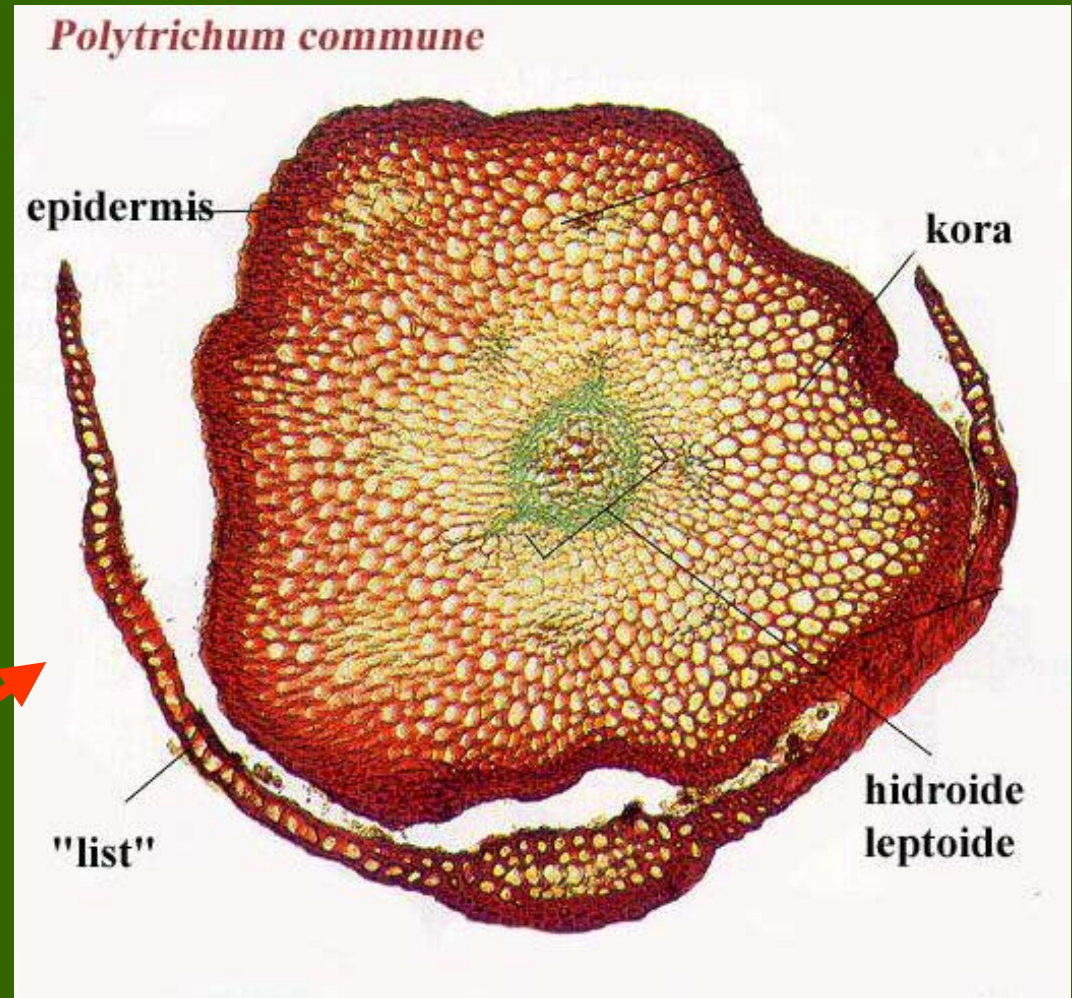
(provodna tkiva, pericikl, parenhim, sklerenhim)

# PRIMARNA ANATOMSKA GRAĐA STABLA MAHOVINE

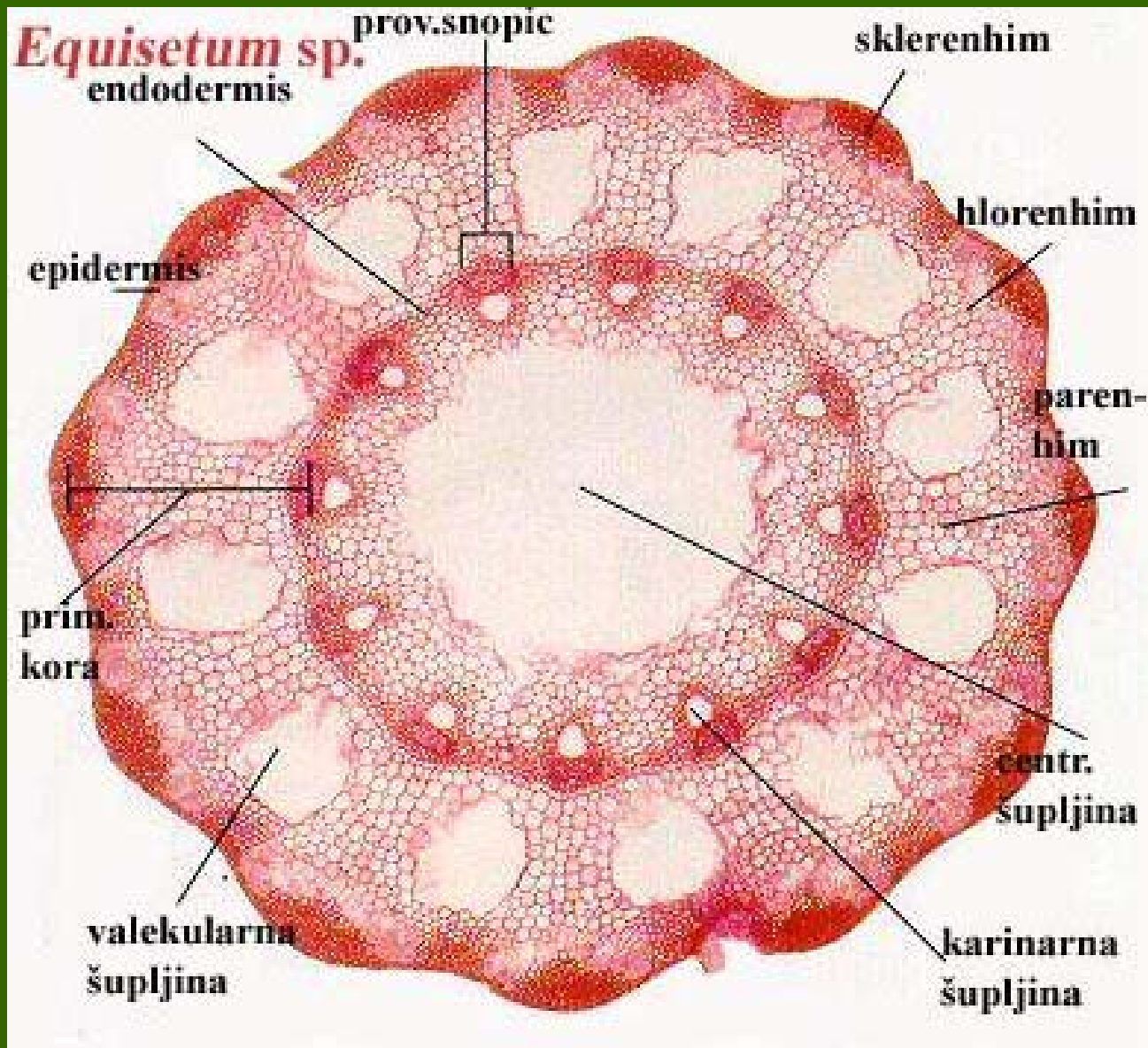
- najprimitivnija građa stabla
- osnovne funkcije: provođenje materija i mehanička potpora
- primitivno provodno tkivo
- nesavršeno pokorično
- poikilohidrična organizacija

# PRIMARNA ANATOMSKA GRAĐA STABLA MAHOVINE

## MAHOVINE



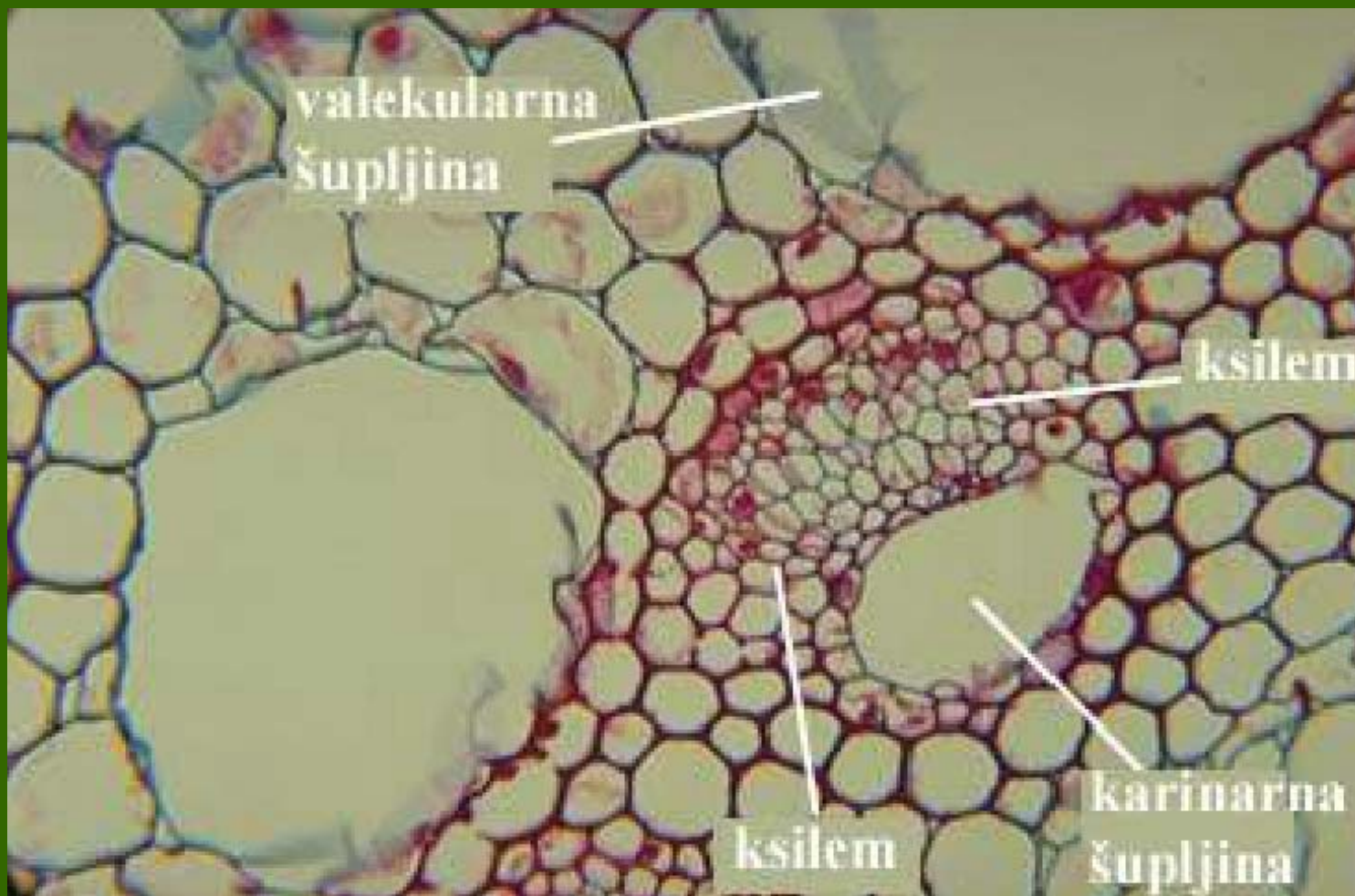
# PRIMARNA ANATOMSKA GRAĐA STABLA RASTAVIĆI



sterilno stablo

# PRIMARNA ANATOMSKA GRAĐA STABLA

## RASTAVIĆI



# PRIMARNA ANATOMSKA GRAĐA STABLA

## PAPRATI

*Polypodium sp.*



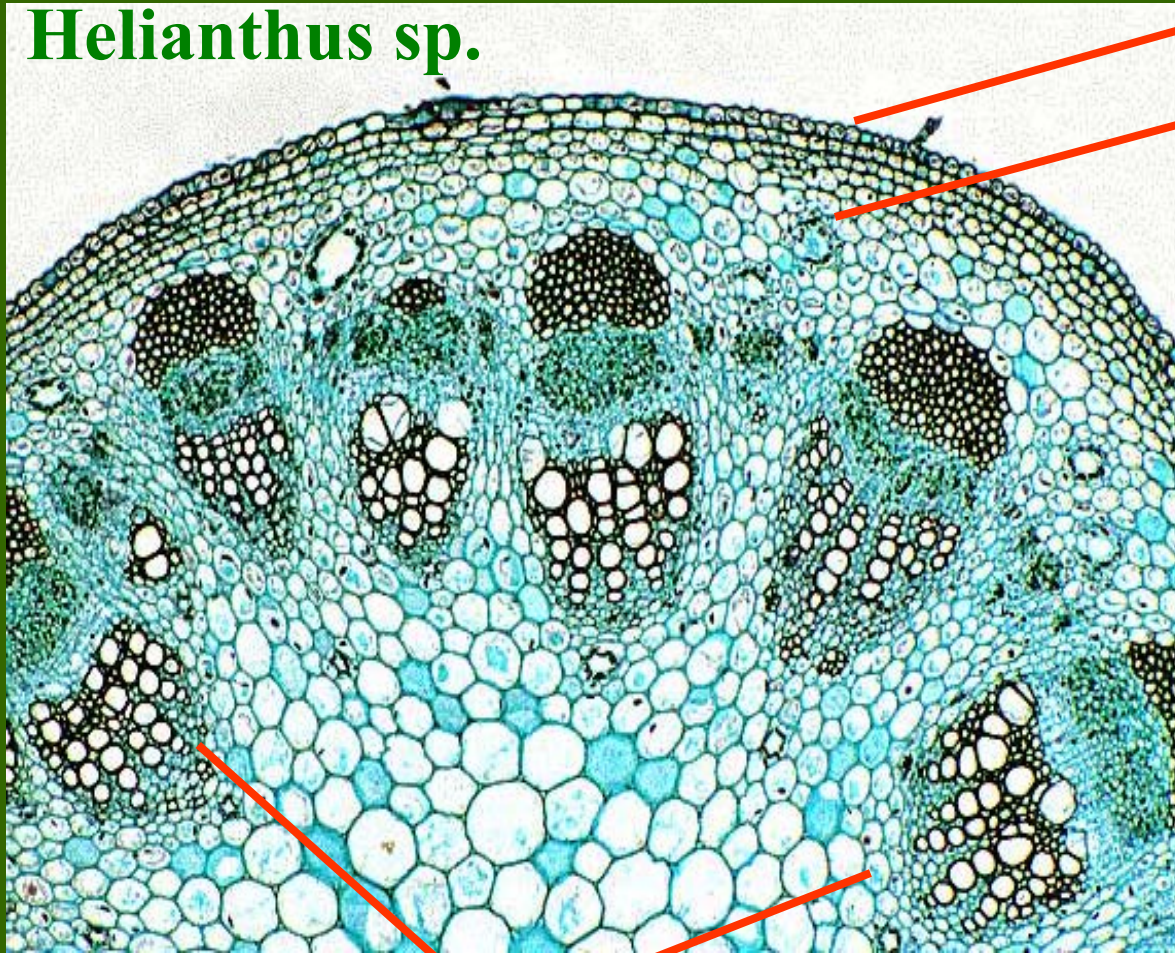
epidermis

parenhim

hadrocentrični  
provodni  
snopić

# PRIMARNA ANATOMSKA GRAĐA STABLA DIKOTILE

*Helianthus* sp.



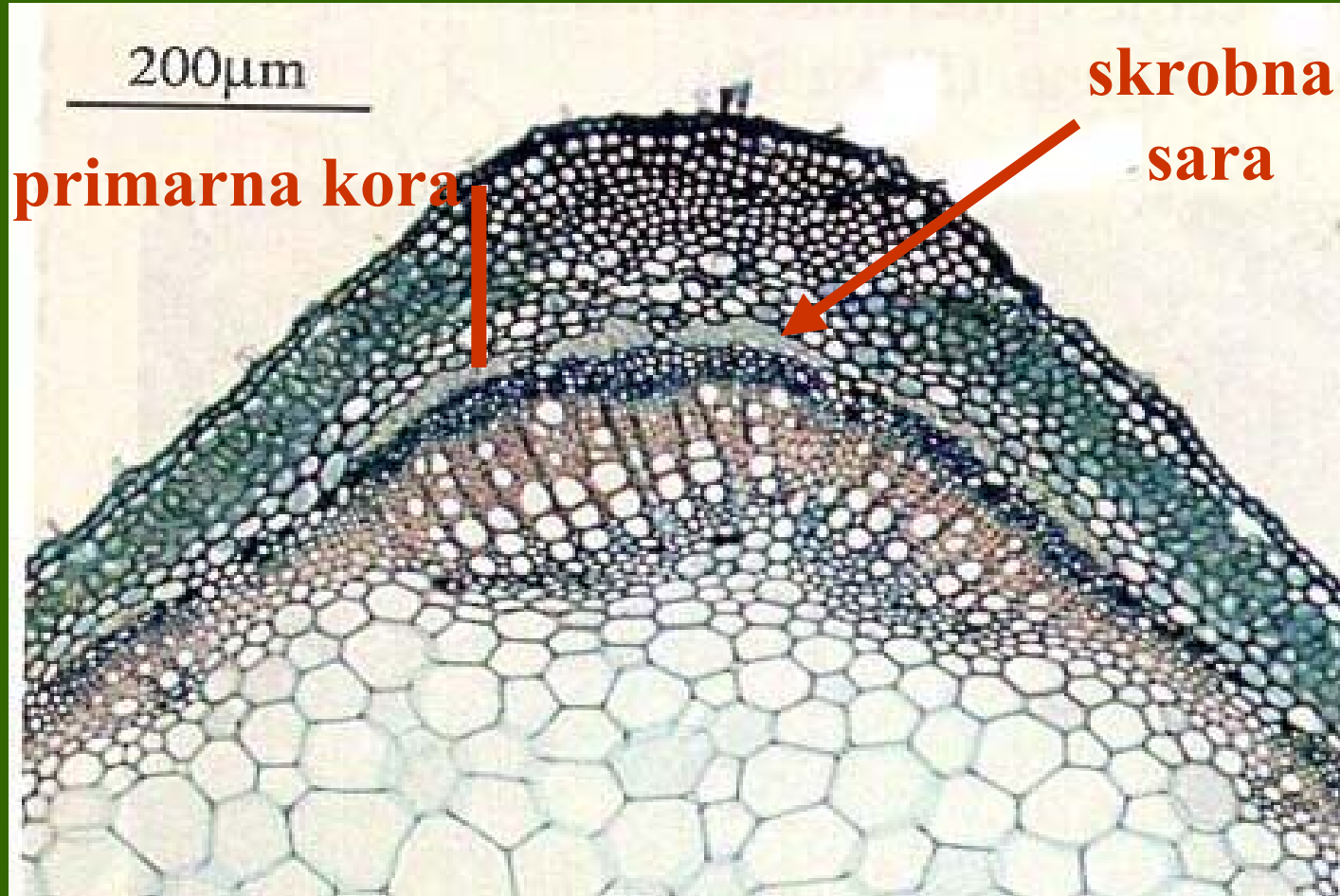
epidermis  
primarna kora

centralni cilindar



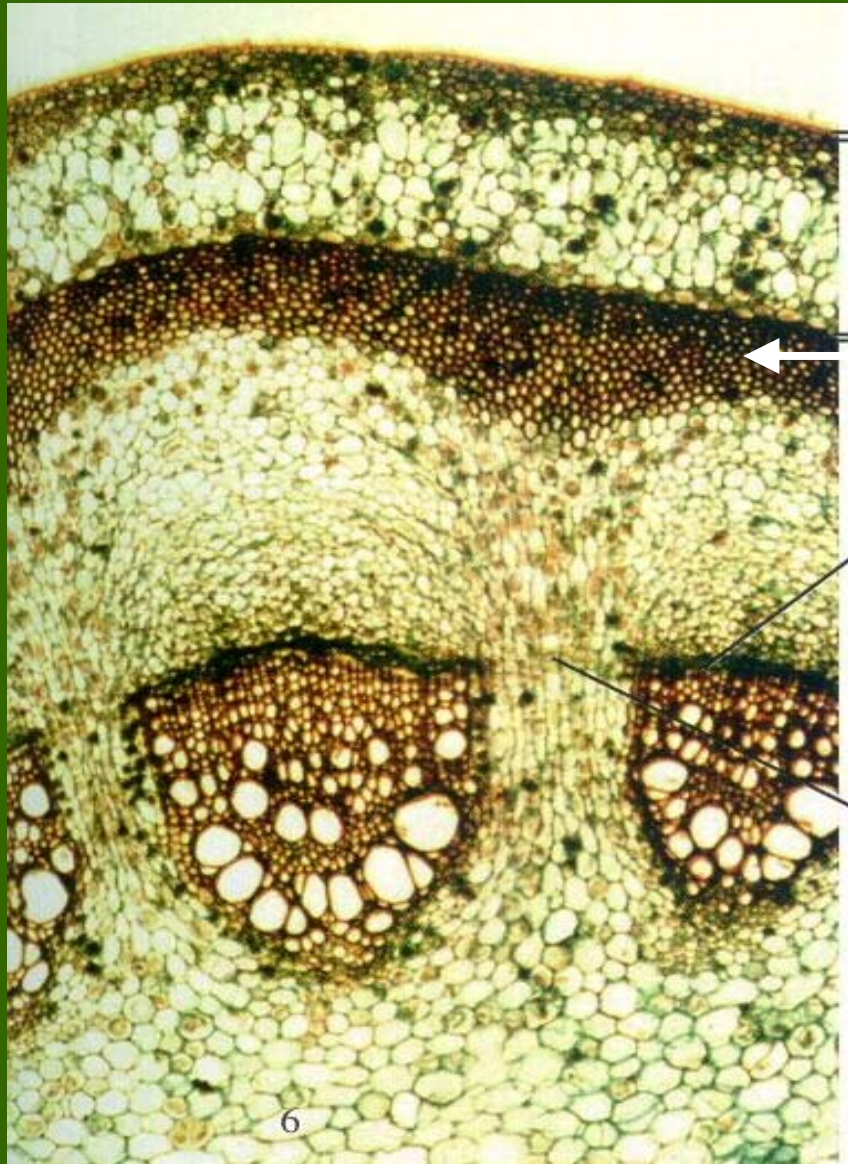
# PRIMARNA ANATOMSKA GRAĐA STABLA

## DIKOTILE – *Lamium sp.*



- prisustvo endoderma ima sistematski karakter

# PRIMARNA ANATOMSKA GRAĐA STABLA DIKOTILE



epidermis

primarna kora

višeslojni pericikl  
(kontinuiran)

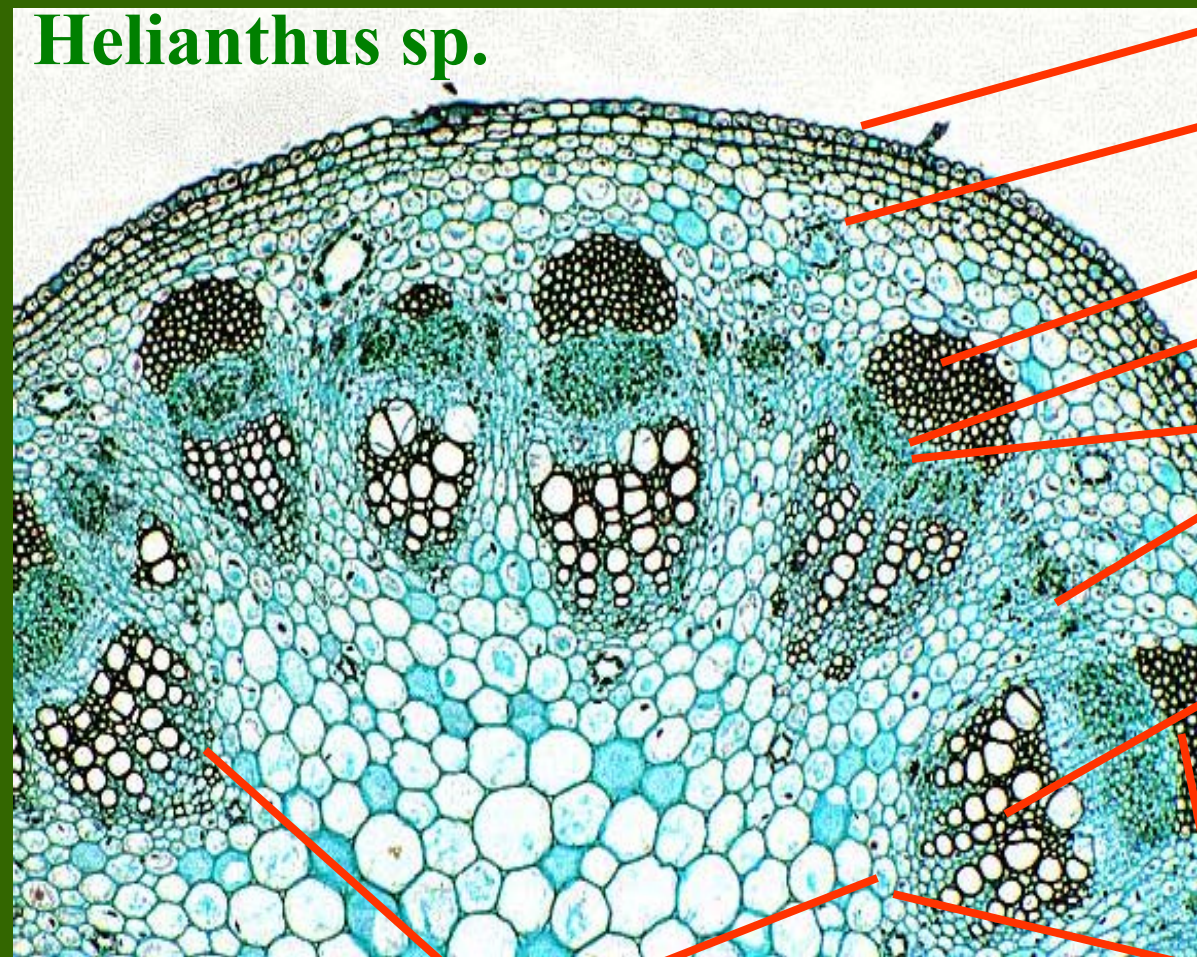
centralni cilindar

*Aristolochia  
clematitis*

# PRIMARNA ANATOMSKA GRAĐA STABLA

## DIKOTILE

*Helianthus sp.*



epidermis

primarna kora

likina vlakna

floem

fascikularni kambijum

interfascikularni kamb.

ksilem

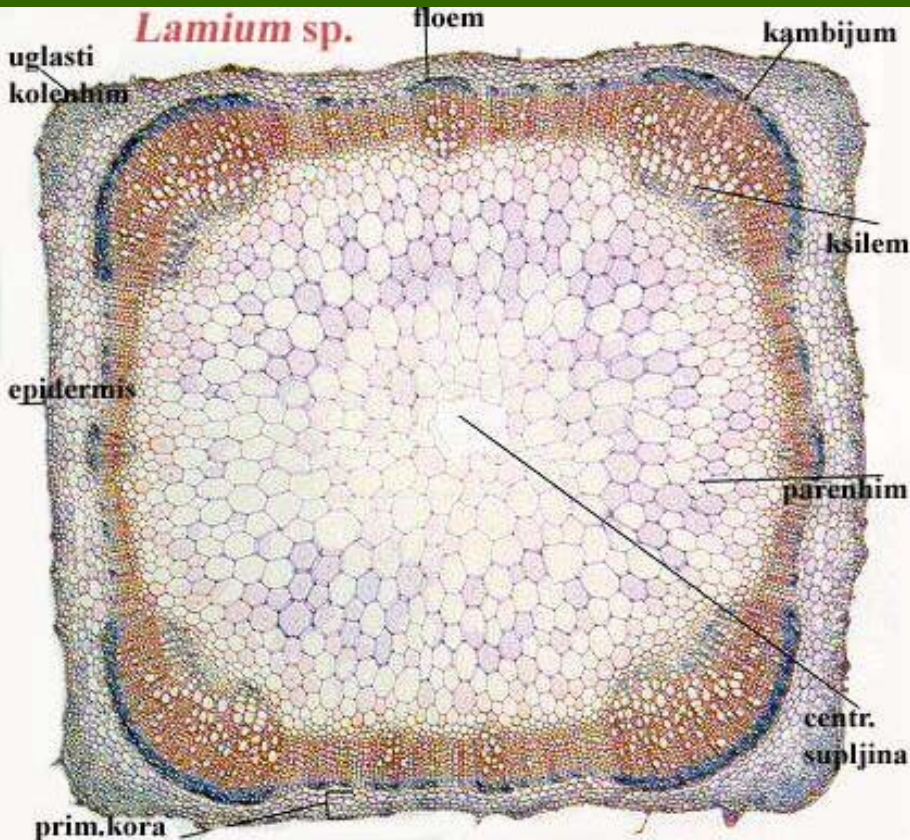
kolateralni otvoreni  
provodni snopici

centralni cilindar

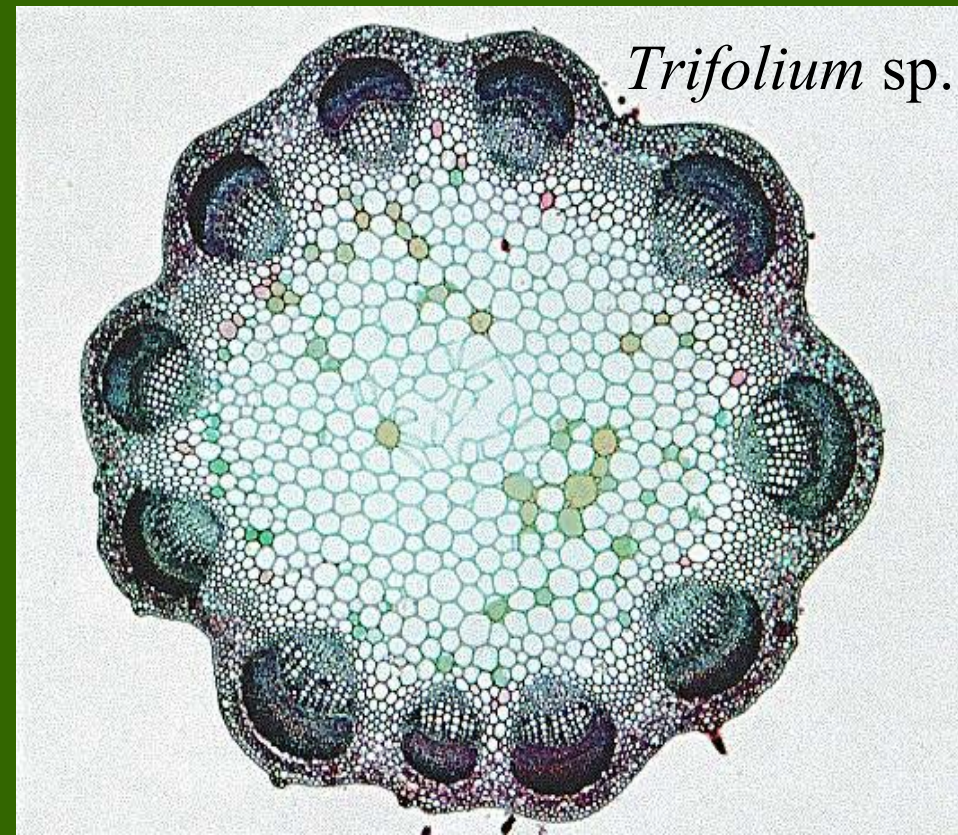
# PRIMARNA ANATOMSKA GRAĐA STABLA

## DIKOTILE

Tip stabla bez  
diferenciranih snopića  
(filogenetski stariji)

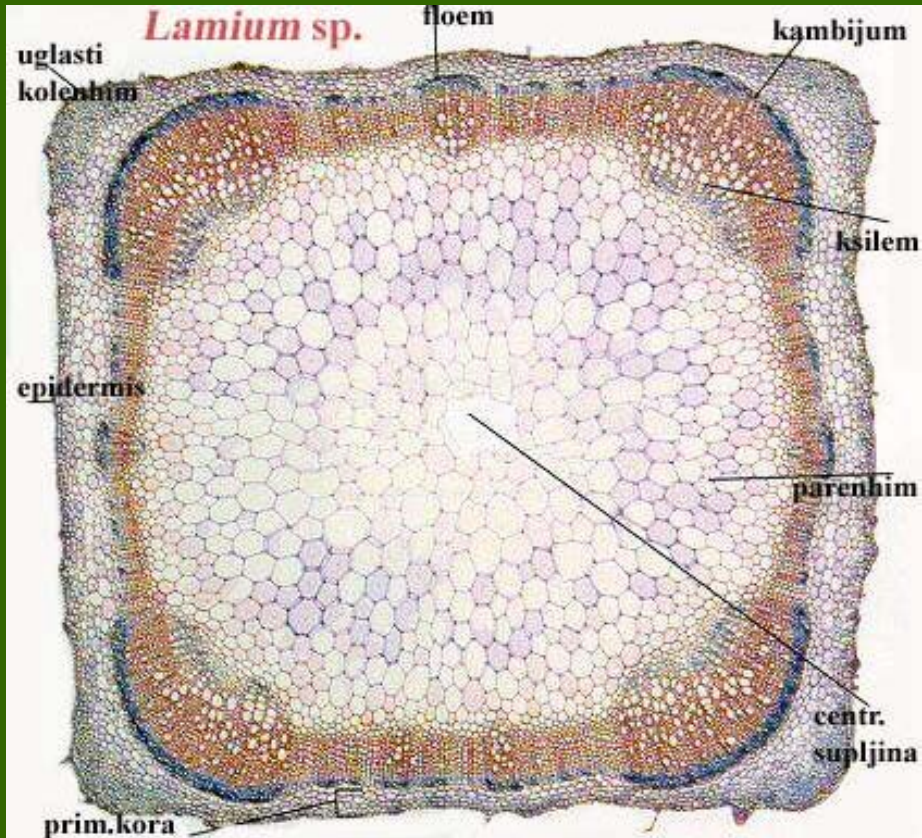


Tip stabla sa diferenciranim  
snopićima



# PRIMARNA ANATOMSKA GRAĐA STABLA DIKOTILE

Tip stabla bez diferenciranih snopića  
(filogenetski stariji)

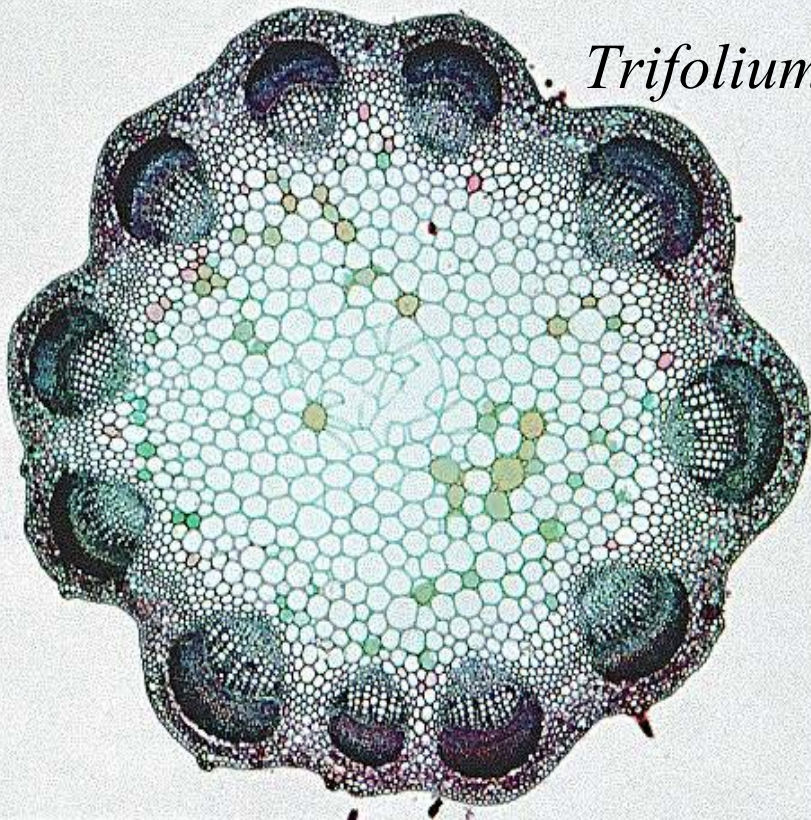


- kambijum u obliku cilindra, primarnog porekla
- većina drvenastih vrsta

# PRIMARNA ANATOMSKA GRAĐA STABLA DIKOTILE

Tip stabla sa diferenciranim snopićima

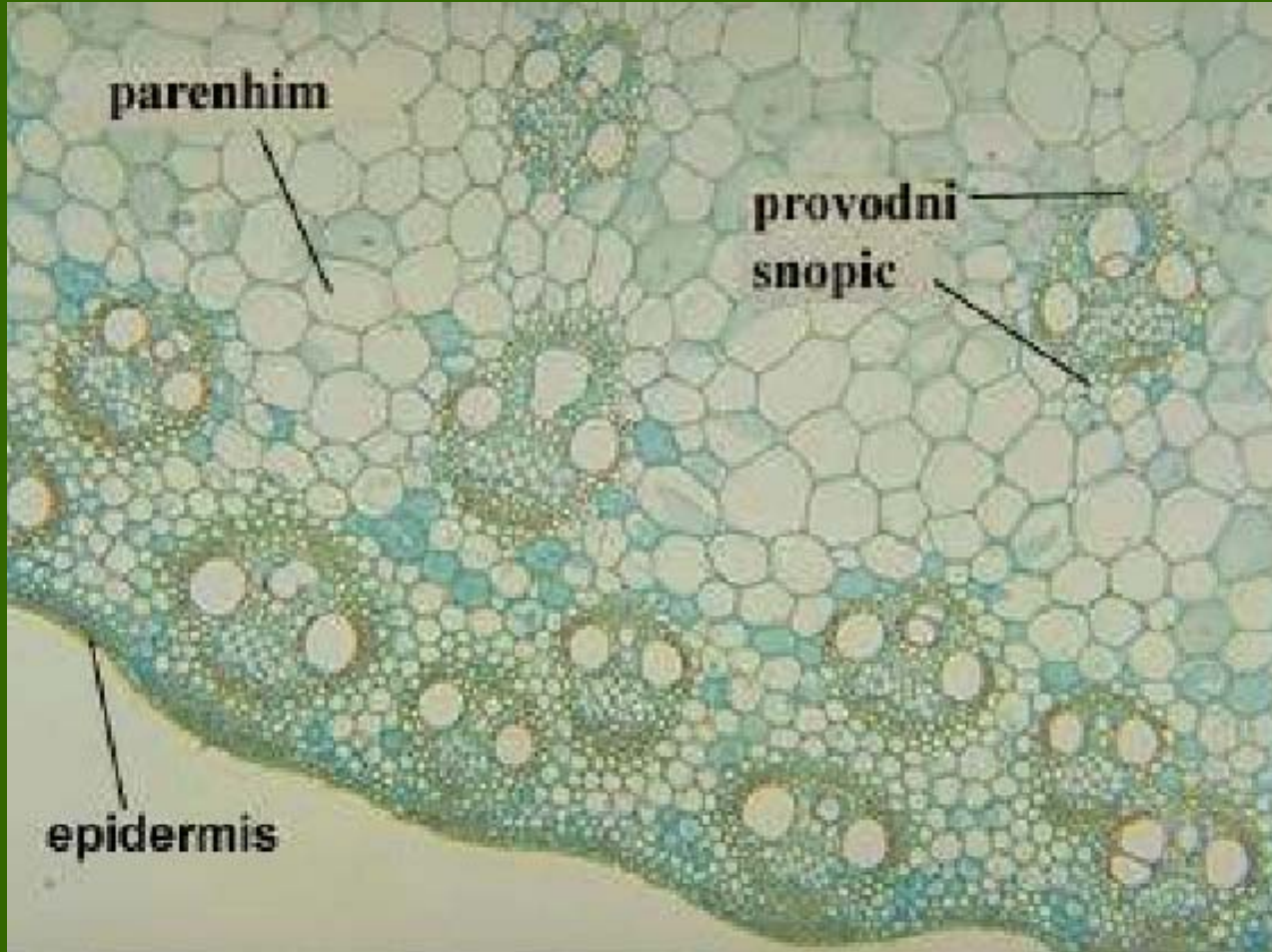
*Trifolium* sp.



- kolateralni otvoreni snopići
- fascikularni kambijum  
(primarnog porekla)
- interfascikularni kambijum  
(sekundarnog porekla)

# PRIMARNA ANATOMSKA GRAĐA STABLA MONOKOTILE

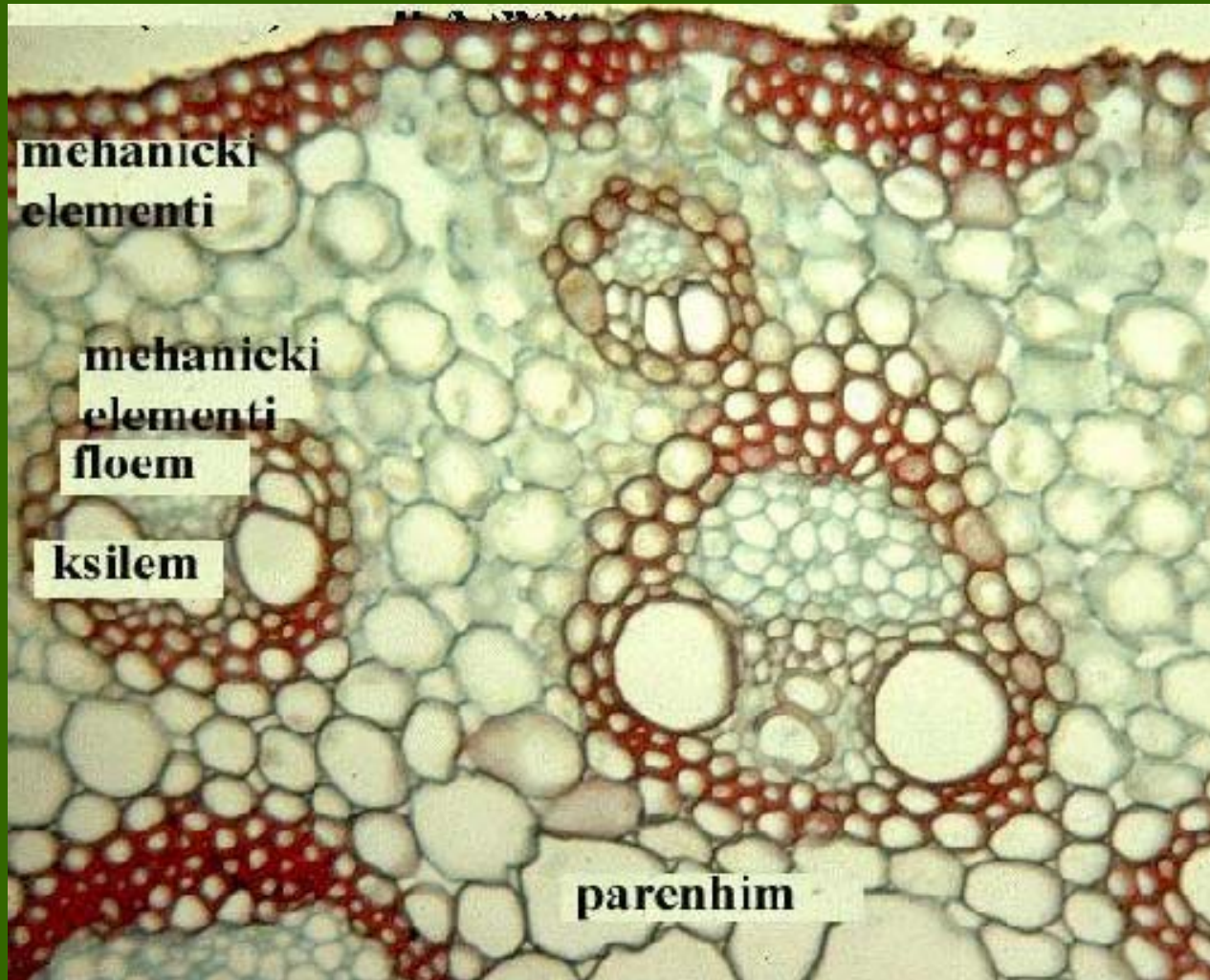
*Zea mays*



nema jasne granice između prim. kore i cen. cilindra

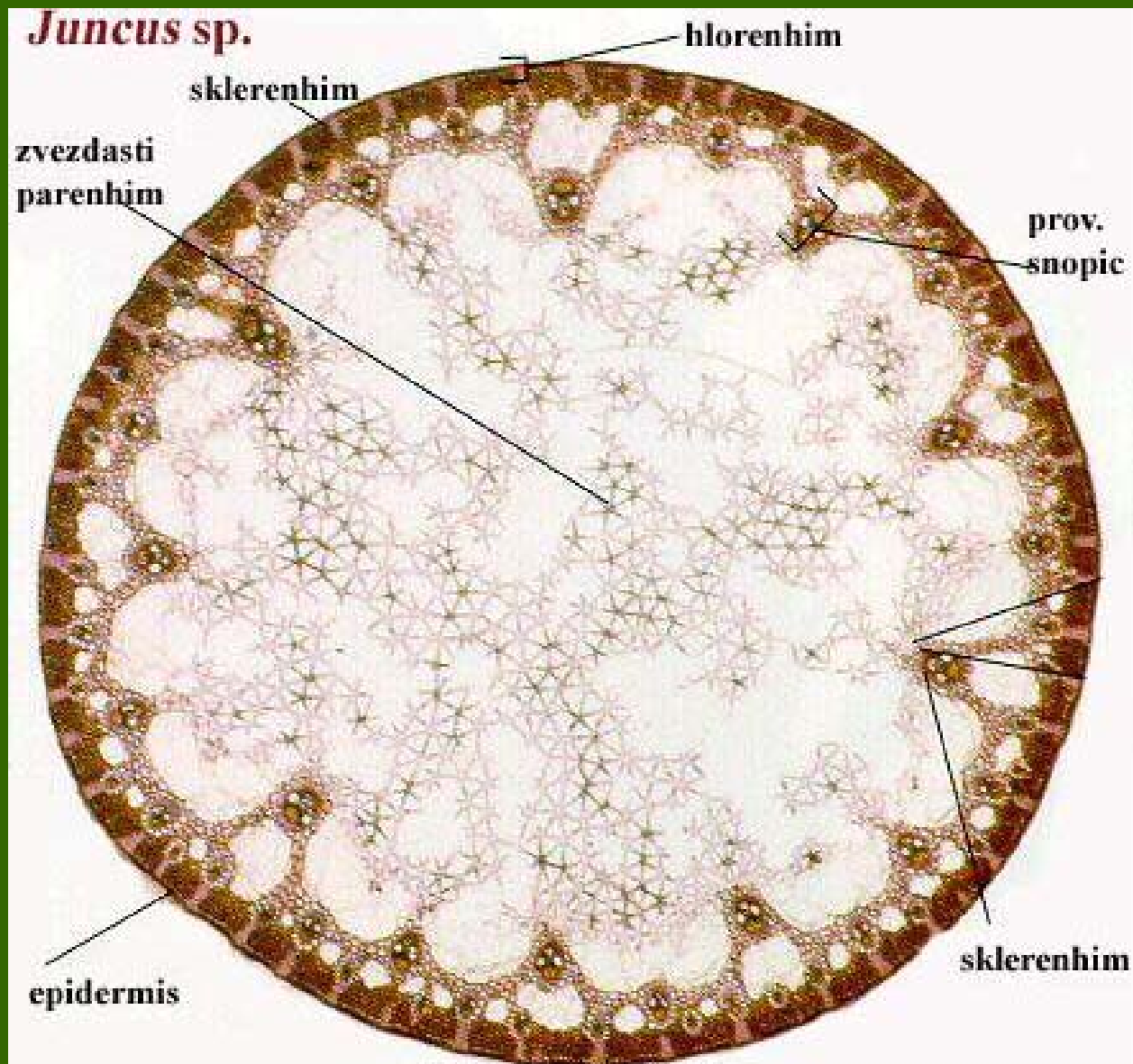
# PRIMARNA ANATOMSKA GRAĐA STABLA MONOKOTILE

*Zea mays*





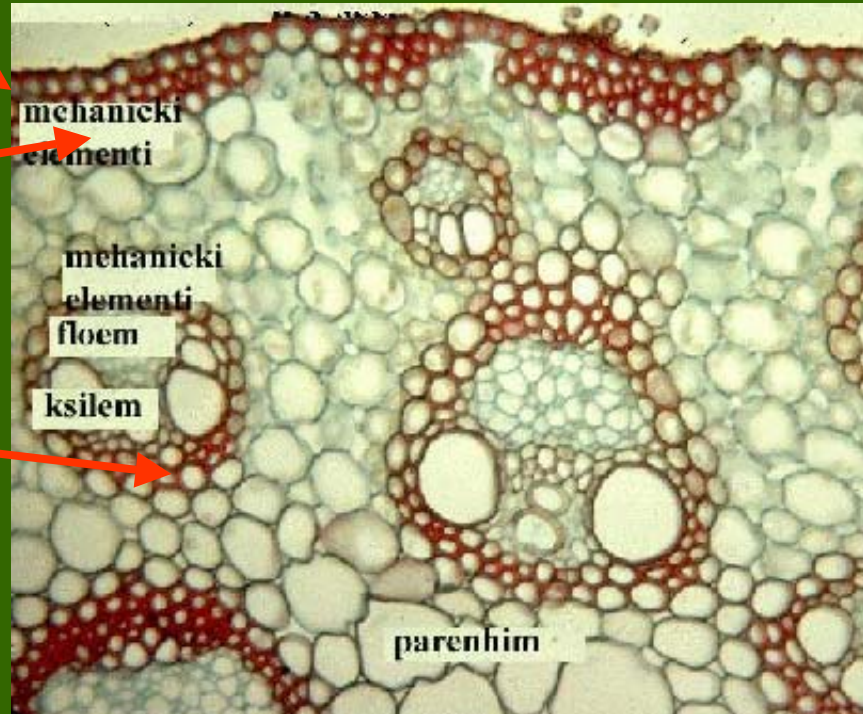
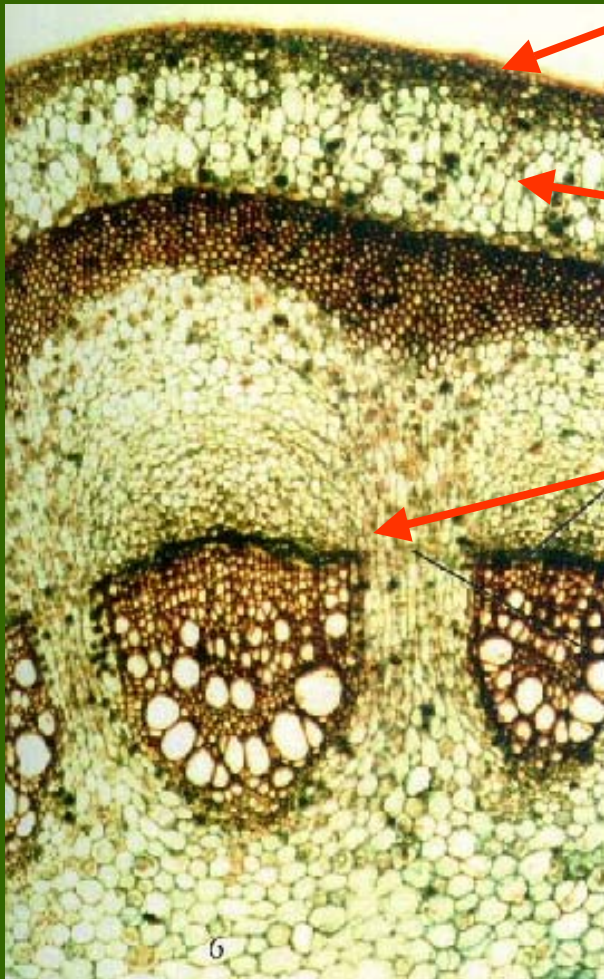
# PRIMARNA ANATOMSKA GRAĐA STABLA MONOKOTILE



# PRIMARNA ANATOMSKA GRAĐA STABLA

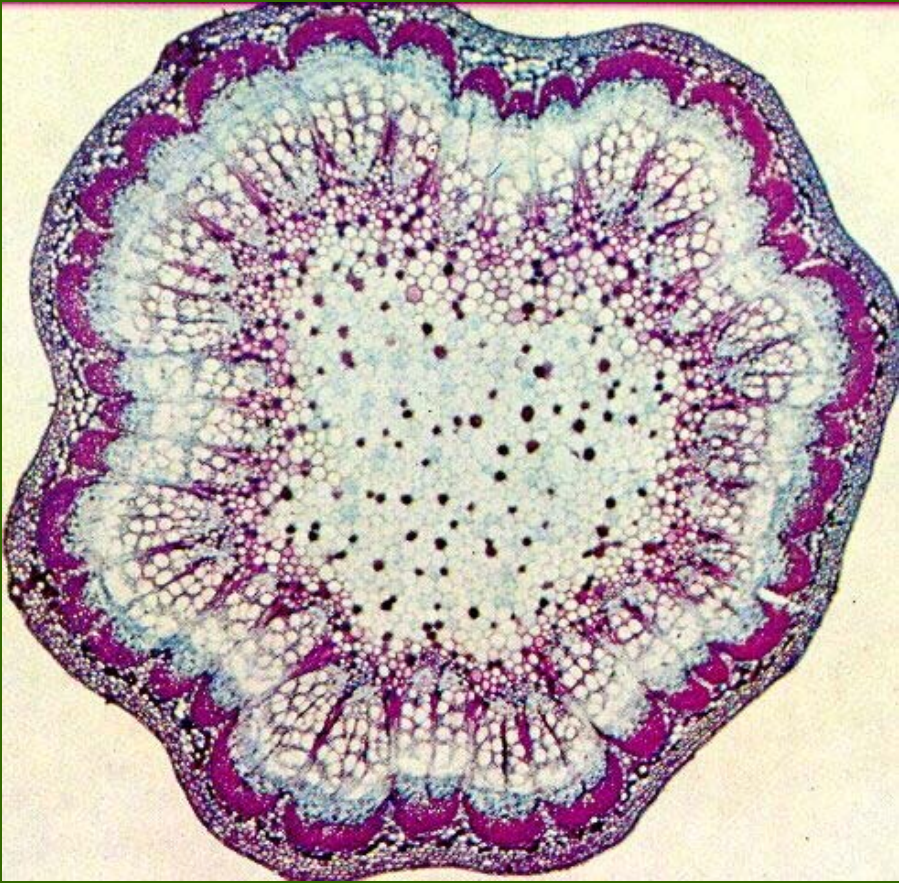
## DIKOTILE

## MONOKOTILE

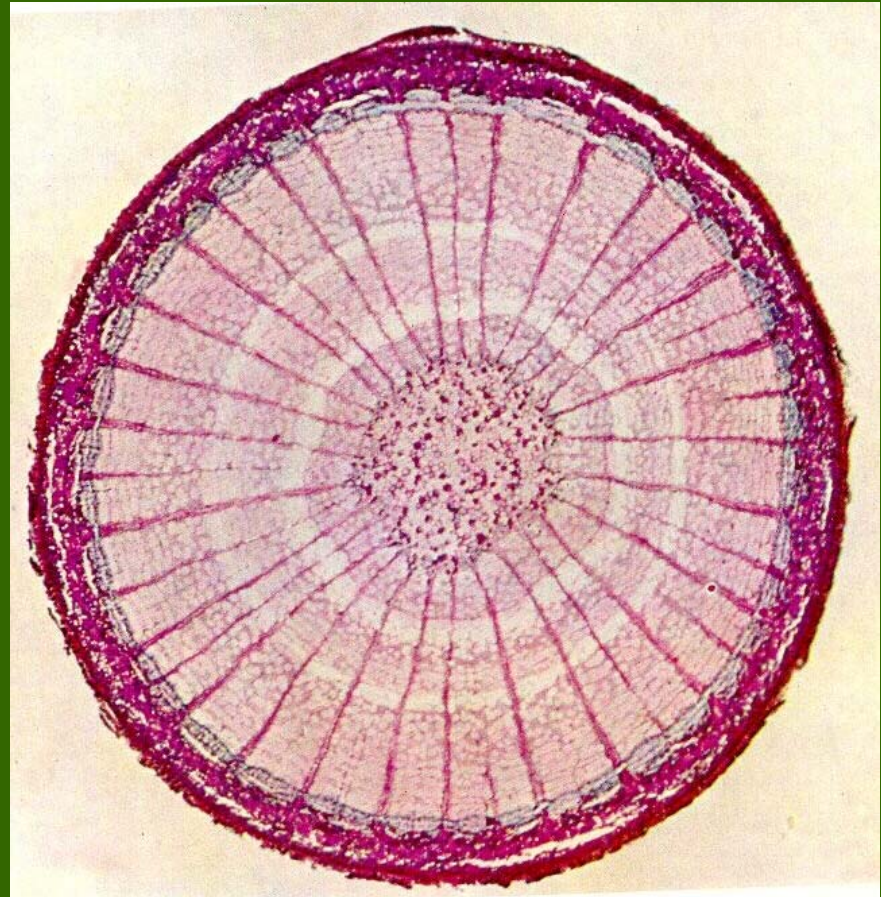


# ANATOMSKA GRAĐA STABLA

primarna



sekundarna



*Platanus sp.*

# ANATOMSKA GRAĐA STABLA

## SEKUNDARNA

### SEKUNDARNO DEBLJANJE

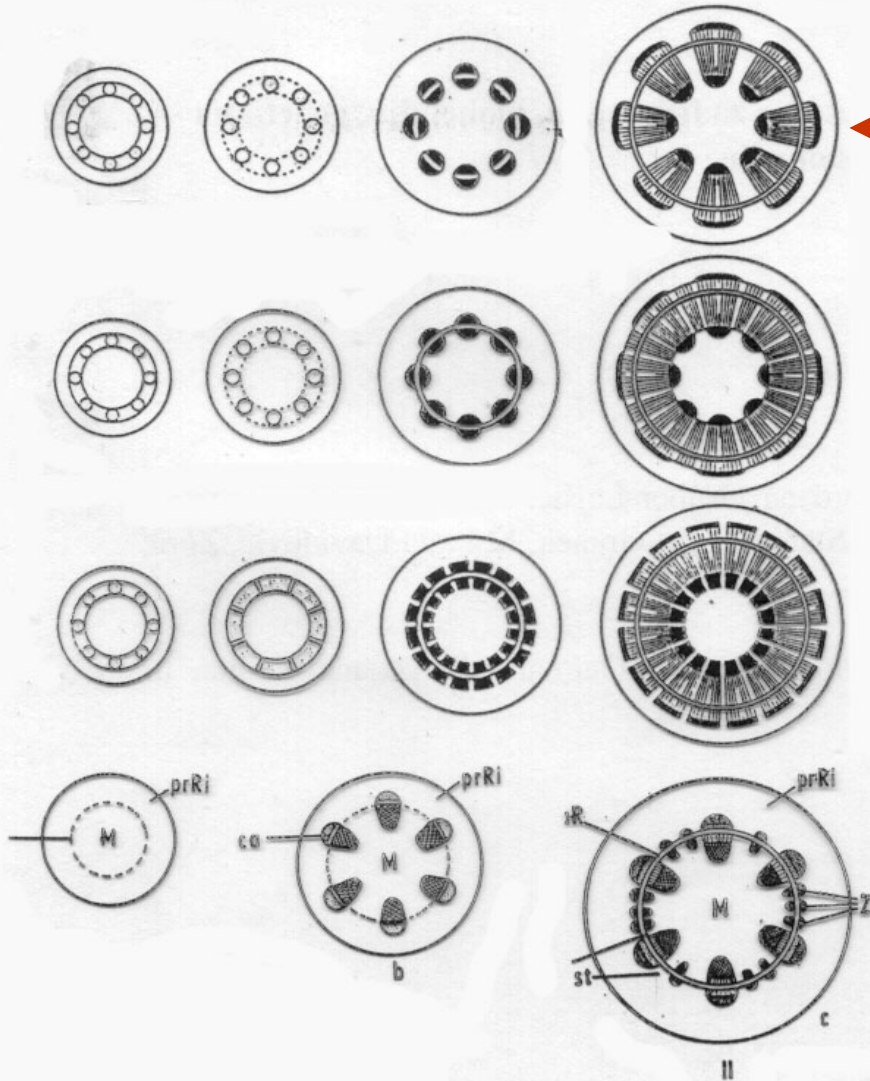
U vezi je sa: razvojem obimne krune  
ogromnog broja listova  
snažnog korenovog sistema

što zahteva – umnožavanje provodnih i  
mehaničkih elemenata

Neophodno- obrazovanje lateralnih meristema

Uslov - obrazovanje kambijalnog prstema

# TIPOVI NASTANKA KAMBIJALNOG PRSTENA



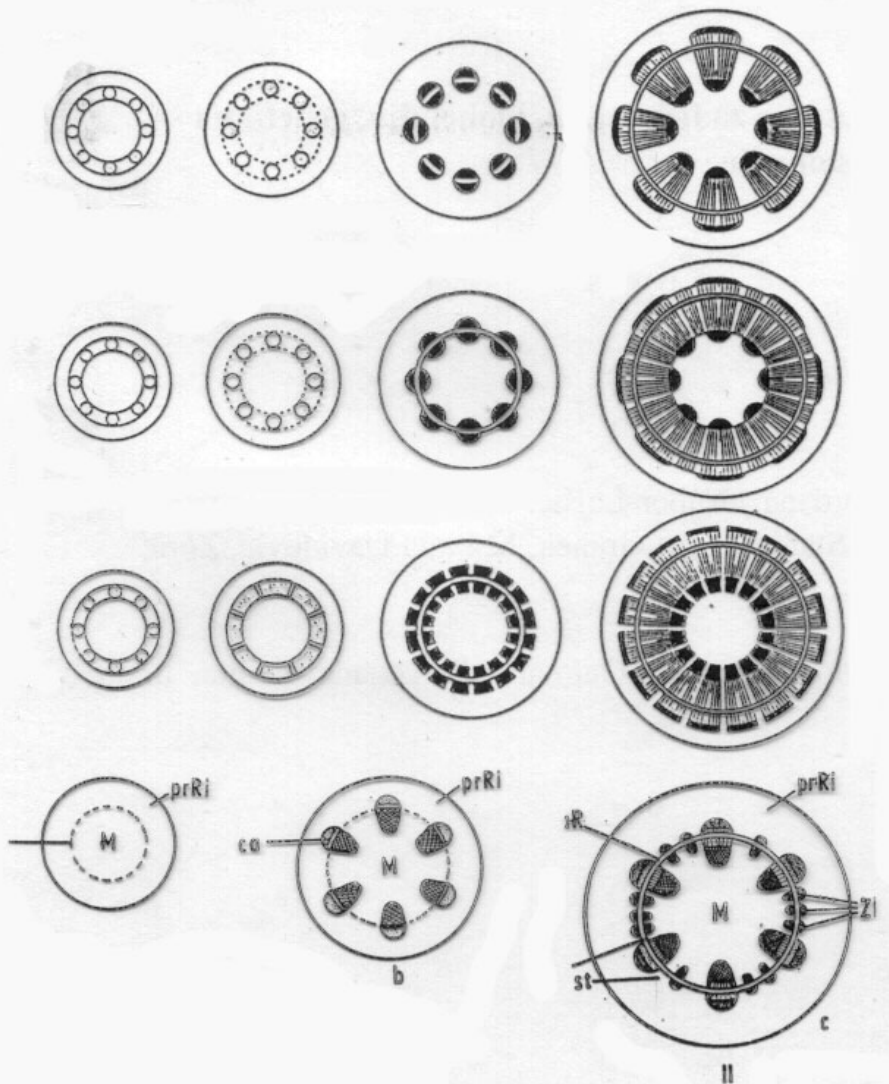
*Aristolochia tip*

- c.c. ima diferencirane provodne snopiće
- stvaranje interfasc. kamb. (produkuje parenh.ćel.)

■ primarna tkiva

▨▨▨▨▨ sekundarna tkiva

# TIPOVI NASTANKA KAMBIJALNOG PRSTENA



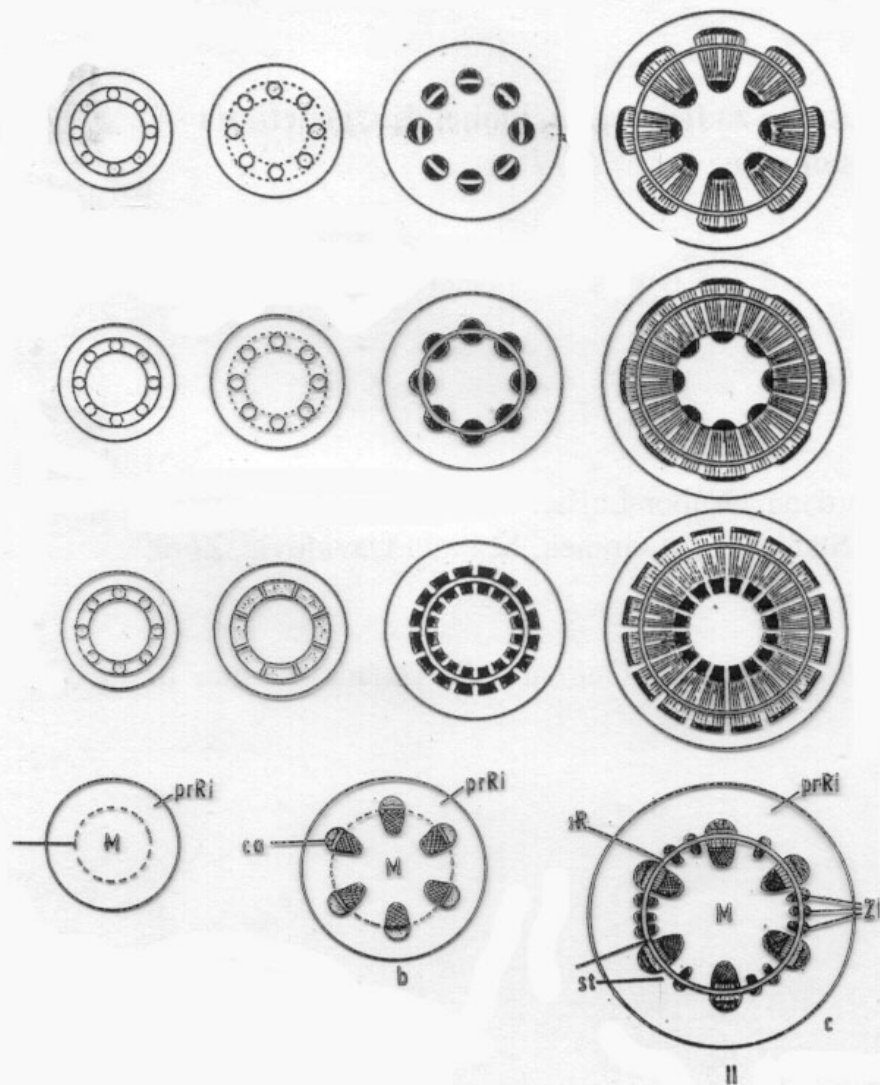
- interf. kamb. stvara nove snopiće- međusnopiće
- između snop. ostaci prim sržnih zraka

*Helianthus tip*

■ primarna tkiva

▨ sekundarna tkiva

# TIPOVI NASTANKA KAMBIJALNOG PRSTENA



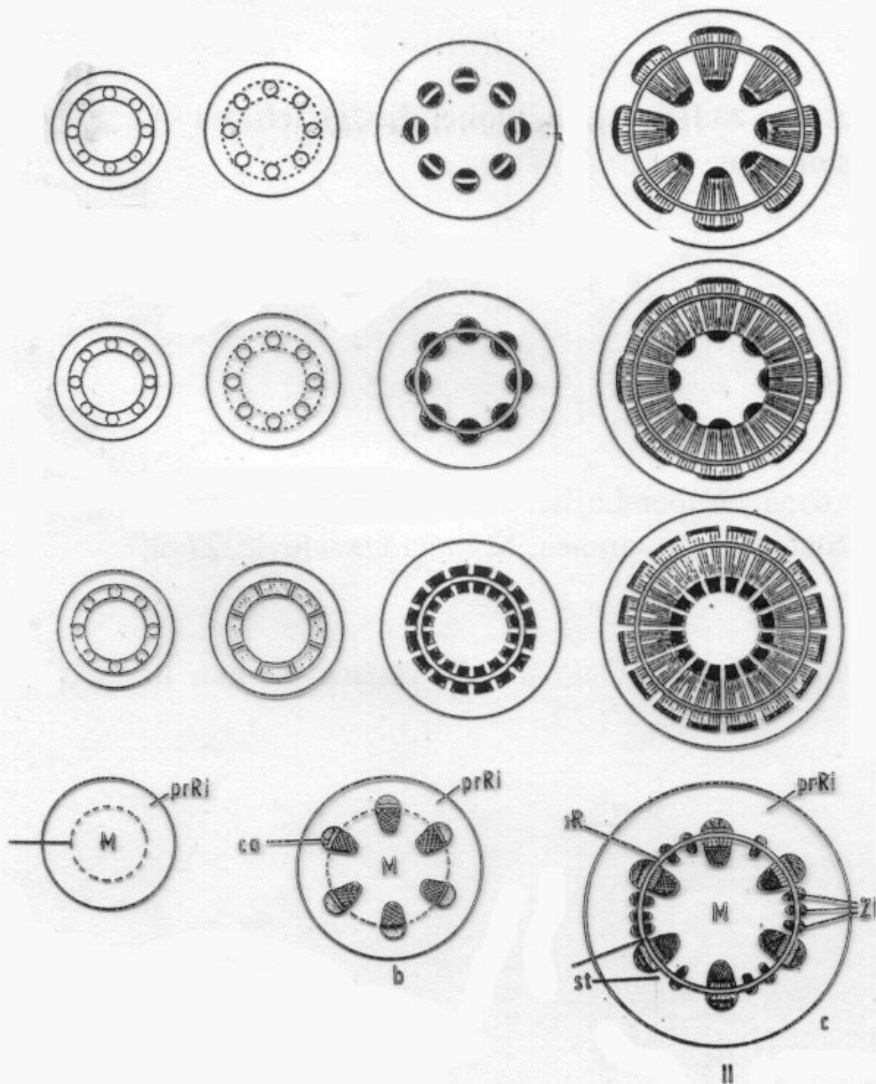
- kod tipa stabla bez provodnih snopića
- teško utvrditi gde počinje sekundarna građa

*Tilia tip*

■ primarna tkiva

▨▨▨▨▨ sekundarna tkiva

# TIPOVI NASTANKA KAMBIJALNOG PRSTENA



← *Ricinus tip*

- c.c. ima diferencirane provodne snopiće
- stvaranje interfasc. kamb. kasnije
- kao i u *Tilia* tipa stvara nove elemente

■ primarna tkiva

▨ sekundarna tkiva



sitaste cevi + sklerenhim + parenhim za + korini  
ćelije pratilice (likina vlakna) magacioniranje zraci

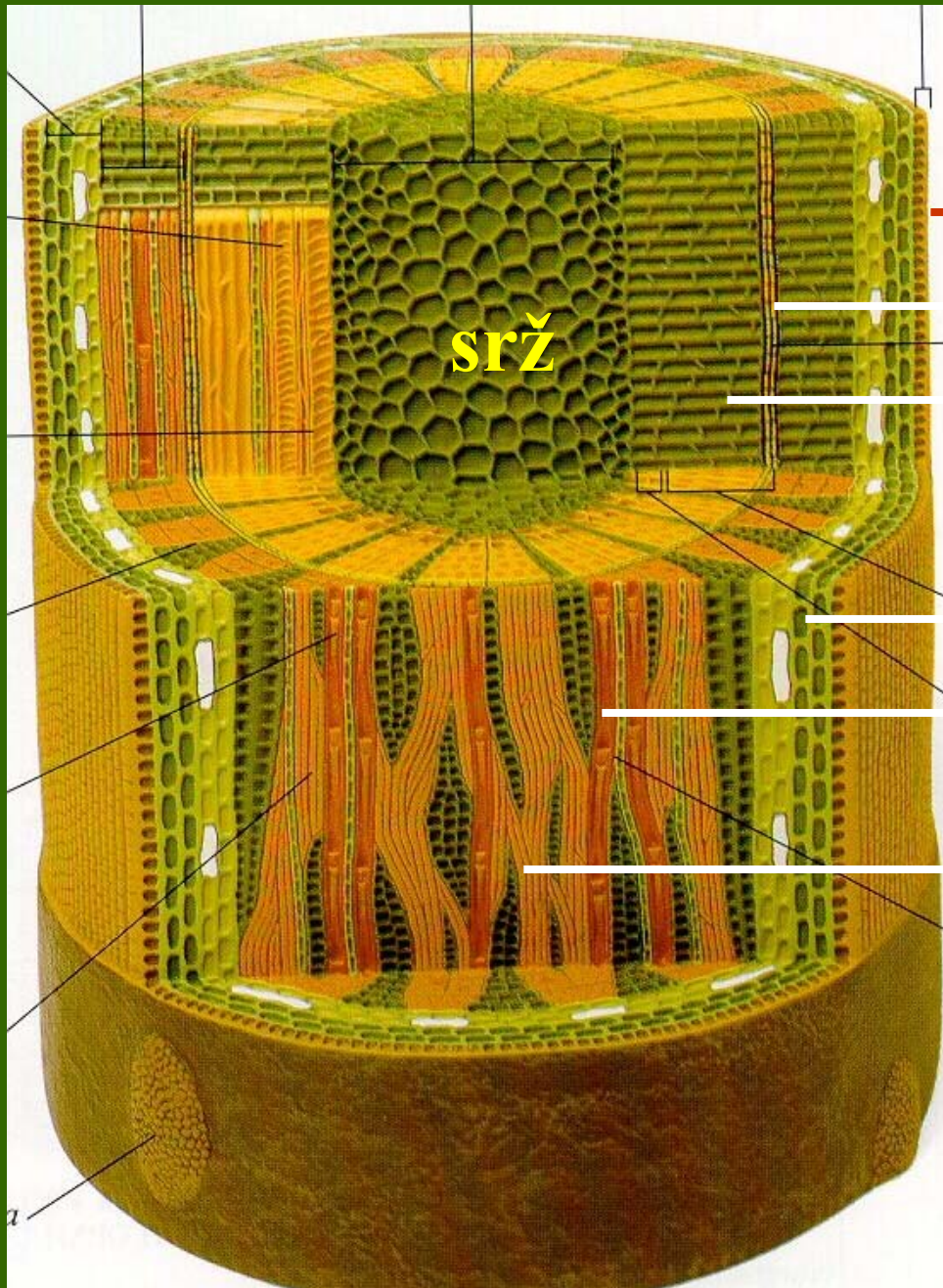
SEKUNDARNA KORA  
(sekundarno floem)

KAMBIJALNI PRSTEN

SEKUNDARNO DRVO  
(sekundarni ksilem)

traheje + sklerenhim + parenhim za + drveni  
traheide (drvena vlakna) magacioniranje zraci

# SEKUNDARNA ANATOMSKA GRAĐA STABLA



pluta

kambijum

sek. drvo

prim. kora

sek. floem

sek. kora

likina vlakna

# ANATOMSKA GRAĐA STABLA

## SEKUNDARNA

**POKORIČNO TKIVO** - ostaci epidermisa,  
periderm ili mrtva kora,

**SEKUNDARNA KORA** - ostaci primarne kore,  
(FLOEM) grupe mehaničkih elemenata,  
sekundarni floem

**KAMBIJALNA ZONA** - vretenaste ćelije (prov. elementi),  
- izodijametrične ćelije (sržni zraci)

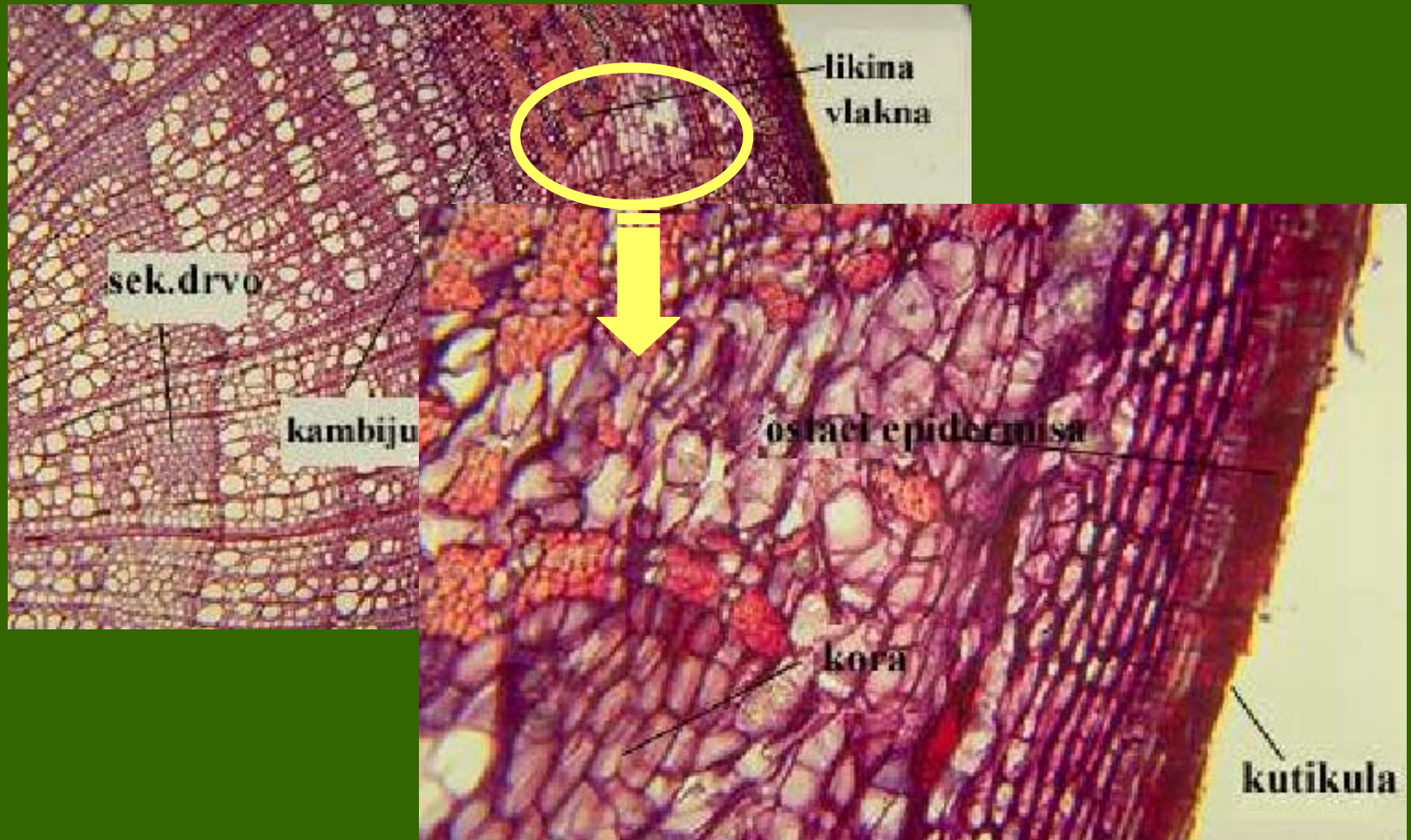
**SEKUNDARNO DRVO** – ksilemski elementi  
(KSILEM)

**PRIMARNO DRVO** – ksilemski elementi, srž  
(KSILEM)

# SEKUNDARNA ANATOMSKA GRAĐA STABLA

**DIKOTILE** Tilia sp.

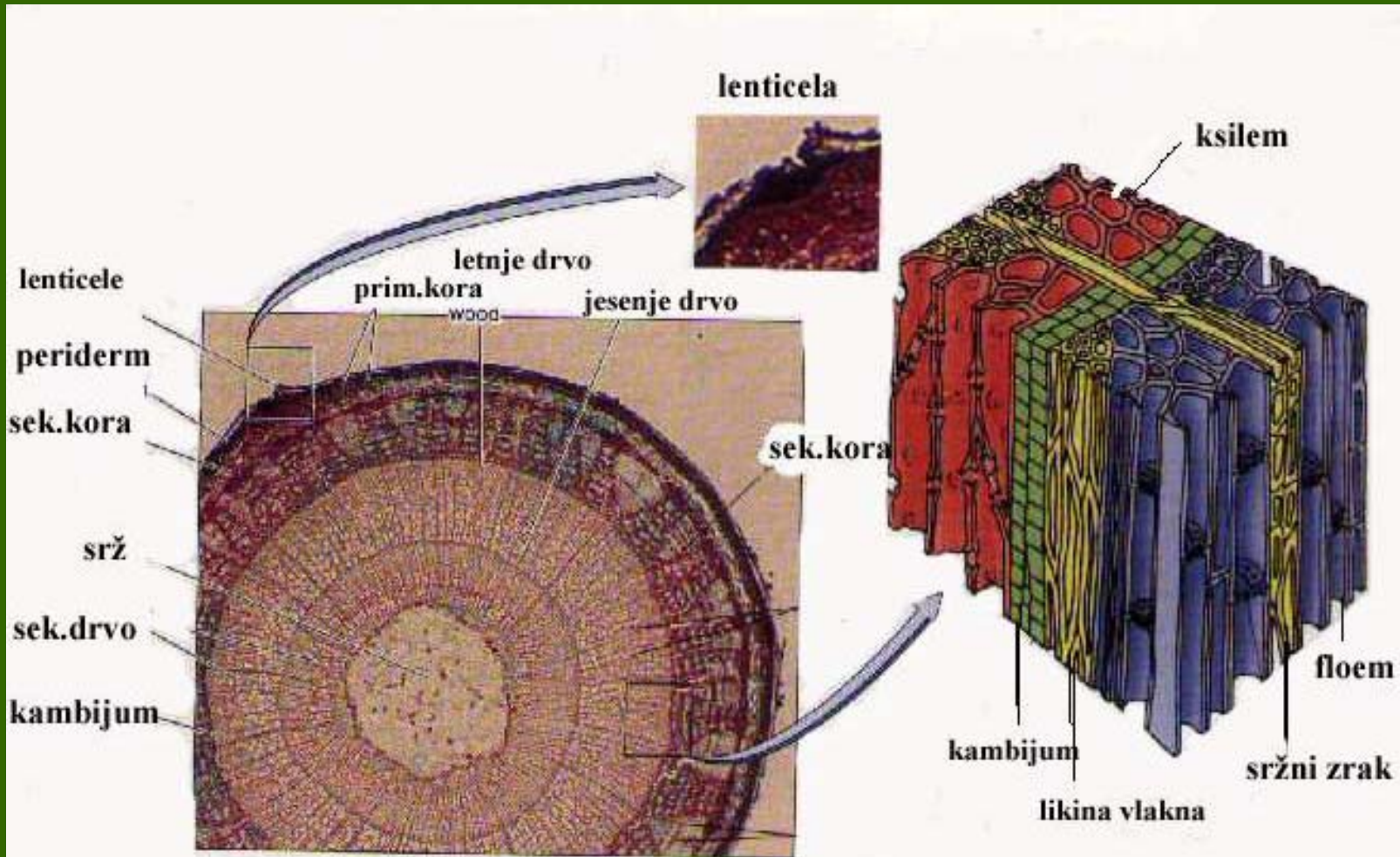
**SEKUNDARNA KORA**



# SEKUNDARNA ANATOMSKA GRAĐA STABLA

**DIKOTILE** Tilia sp.

**SEKUNDARNA KORA**



# ANATOMSKA GRAĐA STABLA

## SEKUNDARNA

**POKORIČNO TKIVO** - ostaci epidermisa,  
periderm ili mrtva kora,

**SEKUNDARNA KORA** – ostaci primarne kore,  
(FLOEM) grupe mehaničkih elemenata,  
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**KAMBIJALNA ZONA** - vretenaste ćelije (prov. elementi),  
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**SEKUNDARNO DRVO** - ksilemski elementi  
(KSILEM)

**PRIMARNO DRVO** – ksilemski elementi, srž  
(KSILEM)

# SEKUNDARNA ANATOMSKA GRAĐA STABLA DIKOTILE

## SEKUNDARNO DRVO

- ima više vrsta tkiva
- svi elementi sek.drвета su lignifikovani

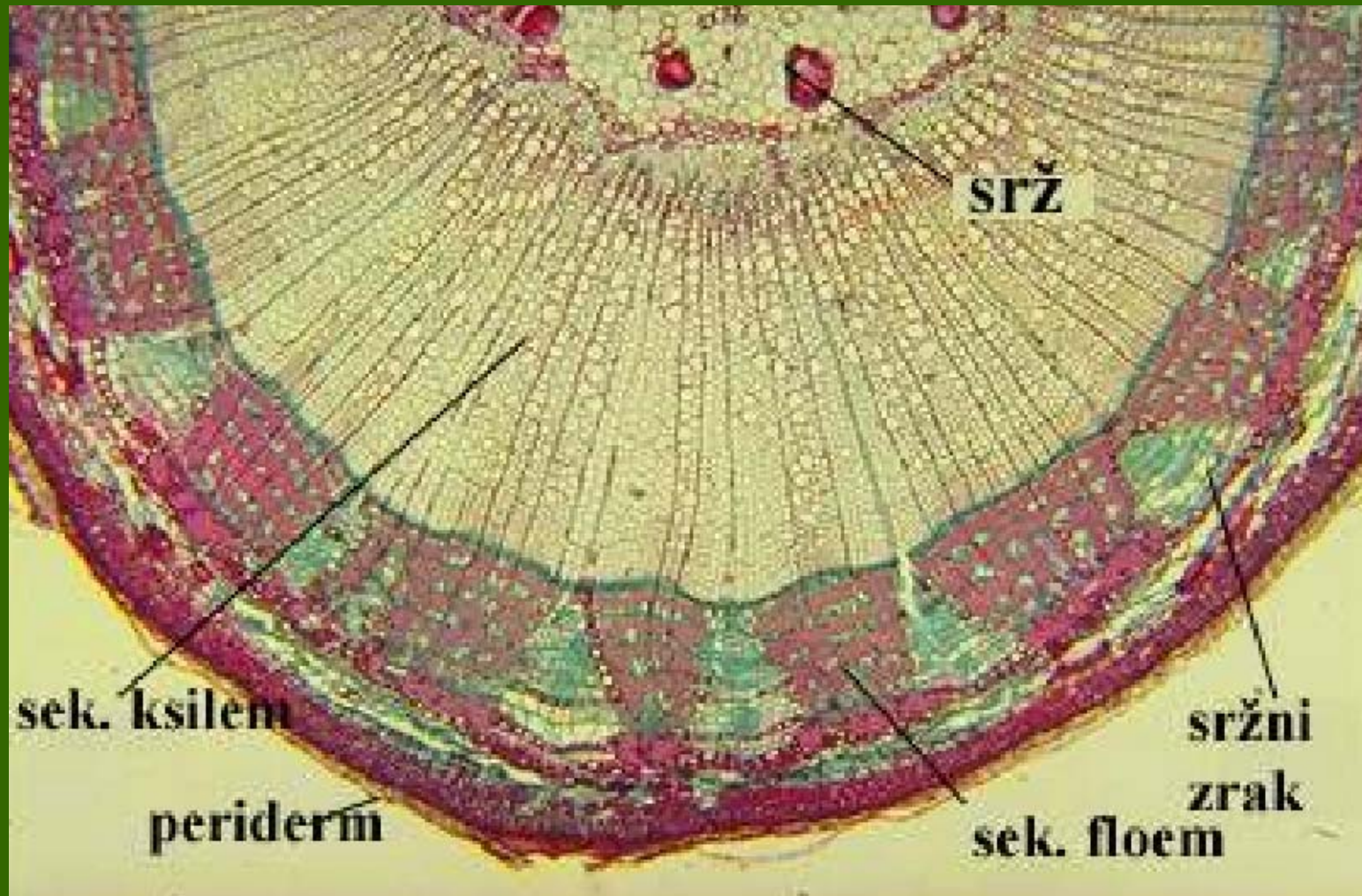
**Grade ga:** ksilemski elementi,

mehanički

parenhimski

tkiva za lučenje (u nekim slučajevima)

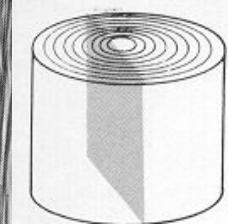
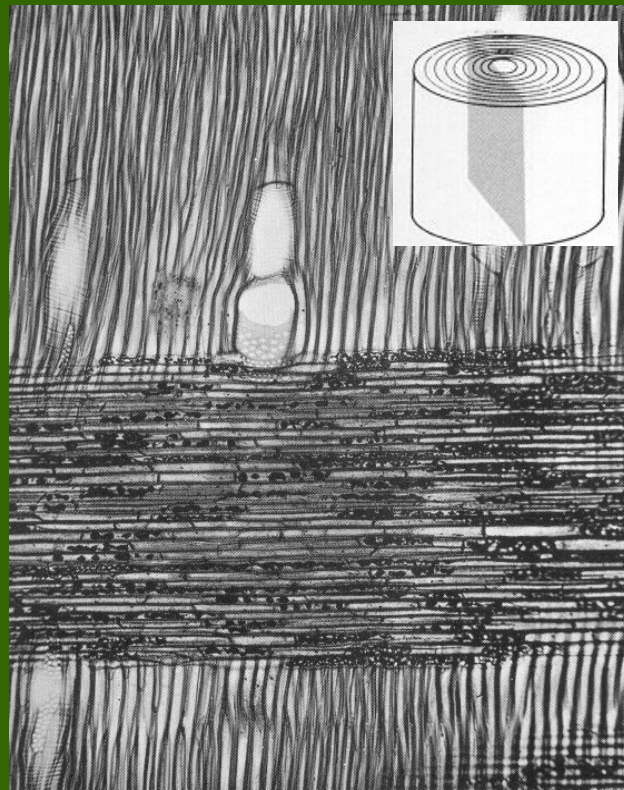
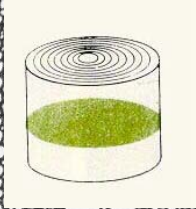
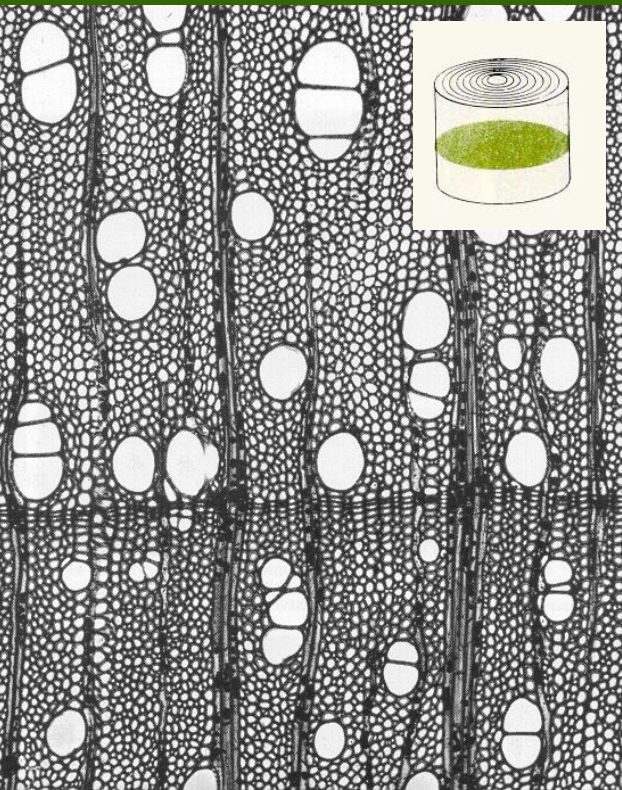
# SEKUNDARNA ANATOMSKA GRAĐA STABLA DIKOTILE Tilia sp.



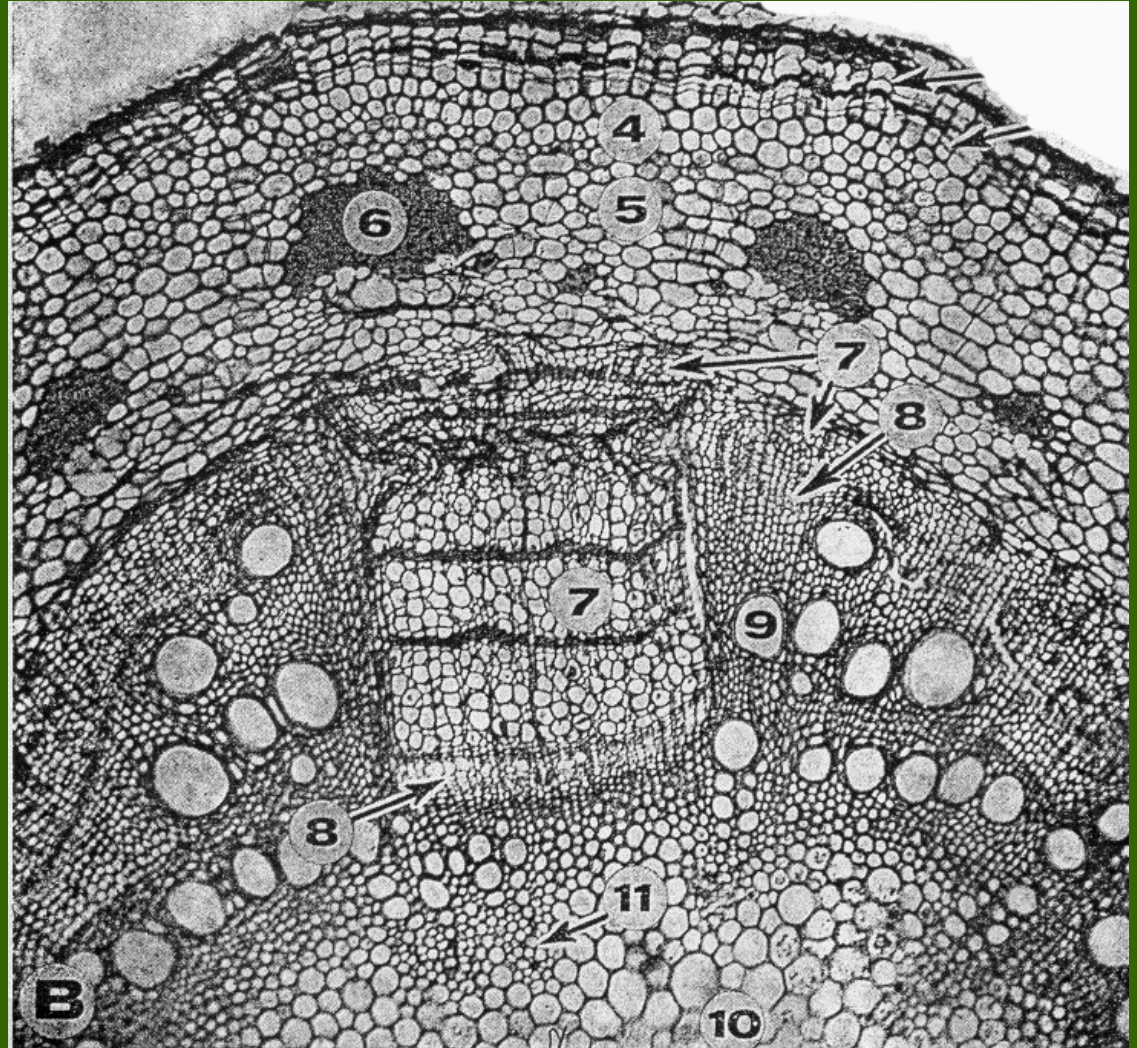
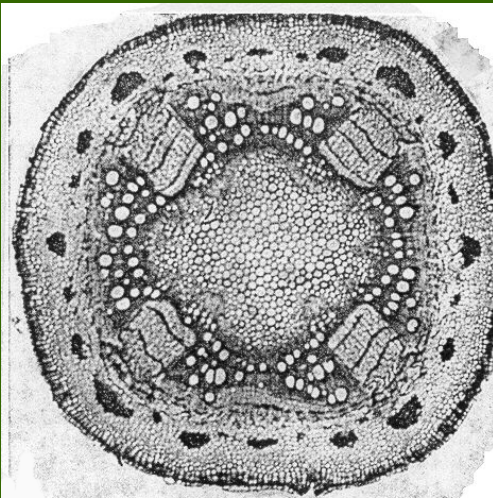
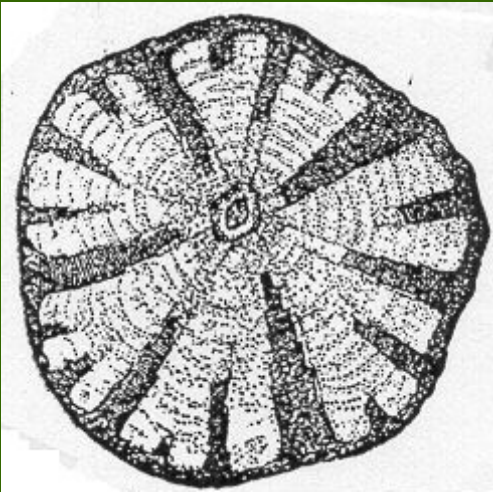


# SEKUNDARNA ANATOMSKA GRAĐA STABLA DIKOTILE

## SEKUNDARNO DRVO

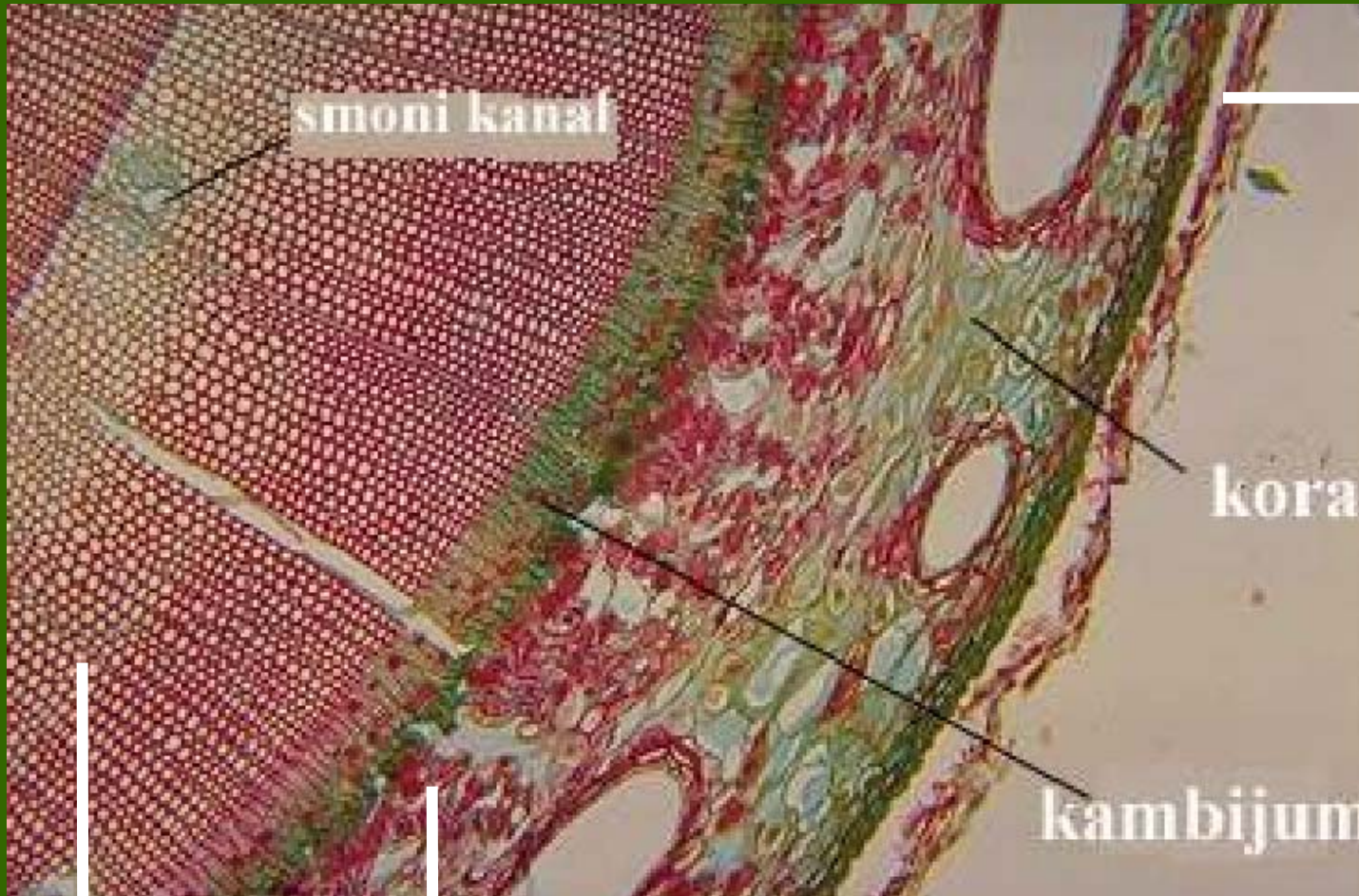


# ATIPSKO DEBLJANJE STABLA



*Bignonia sp.*

# SEKUNDARNA ANATOMSKA GRAĐA STABLA GOLOSEMENICE



periderm

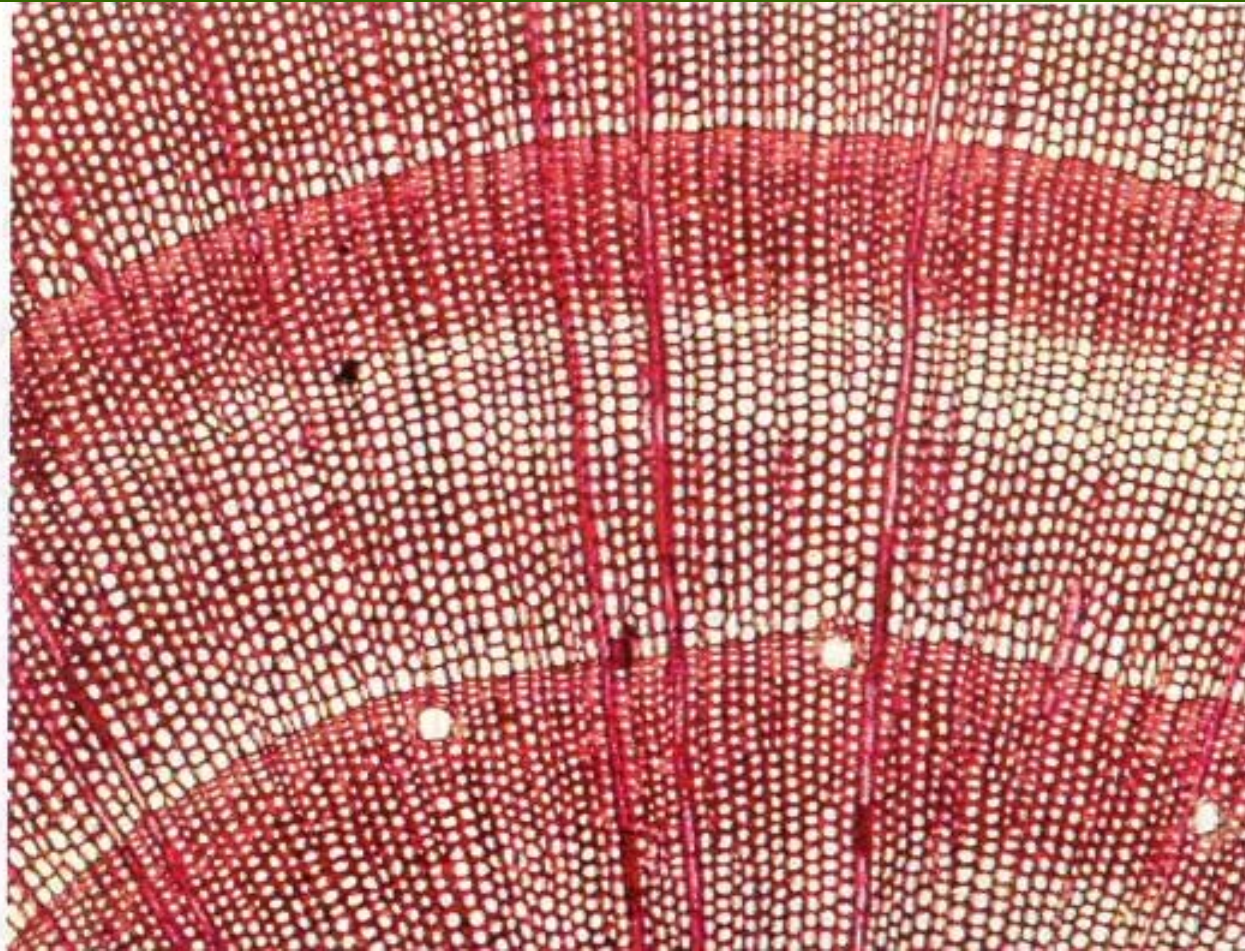
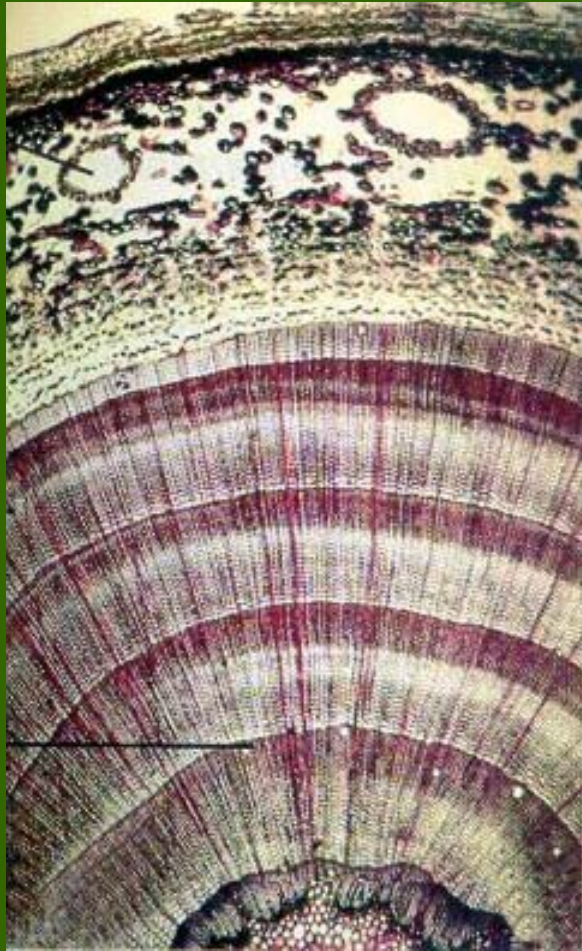
smoni kanal

kora

kambijum

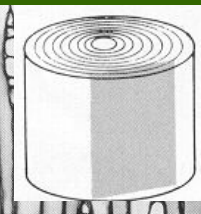
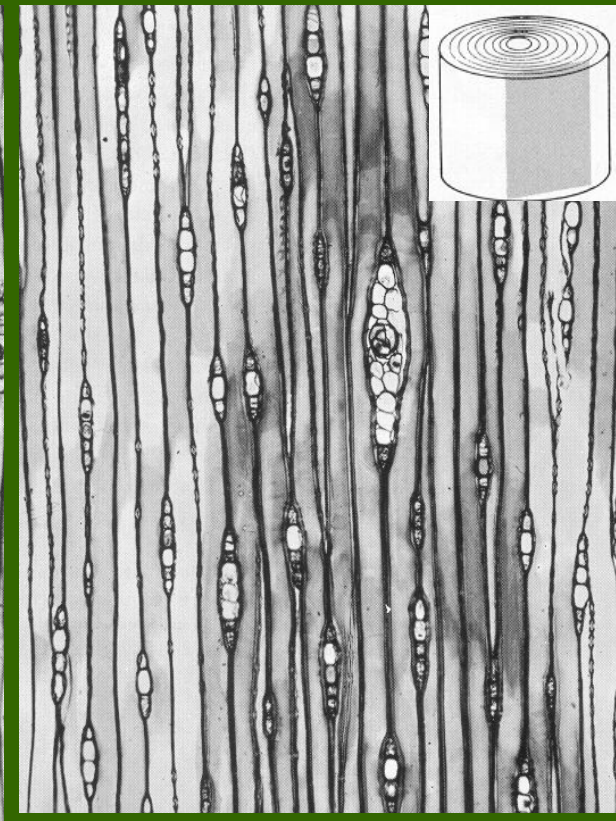
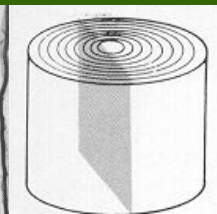
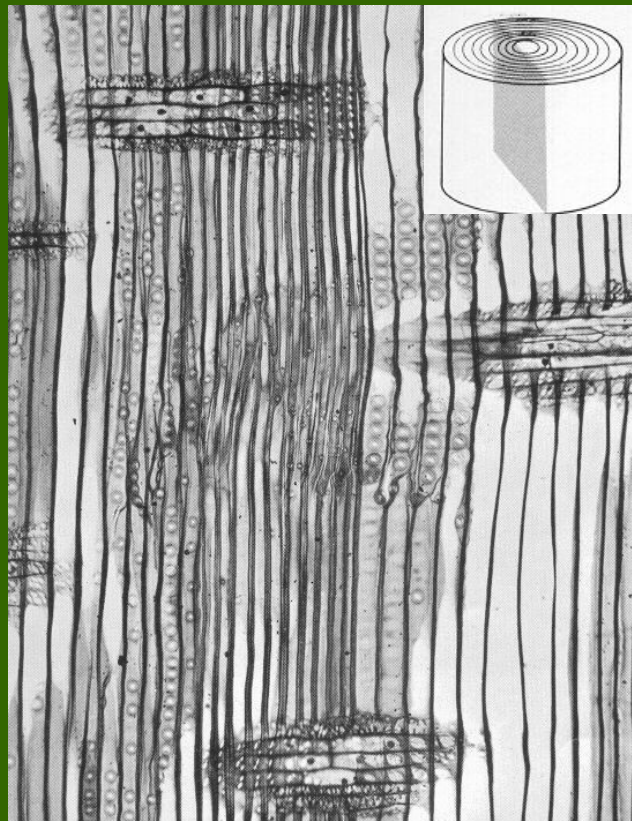
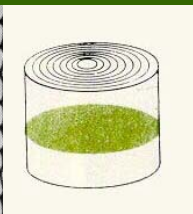
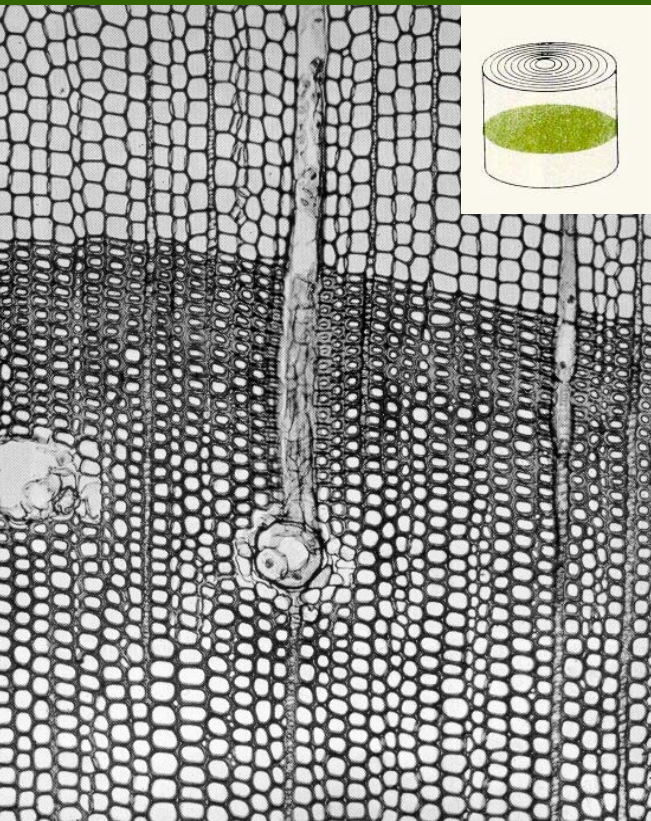
sekundarno drvo  
sekundarna kora

# SEKUNDARNA ANATOMSKA GRAĐA STABLA GOLOSEMENICE – *Picea sp.*



samo sitaste ćelije i traheide

# SEKUNDARNA ANATOMSKA GRAĐA STABLA GOLOSEMENICE - SEKUNDARNO DRVO



# SEKUNDARNA ANATOMSKA GRAĐA STABLA

*Pinus sp.*

jedrac  
(duramen)

neaktivni  
sekundarni  
ksilem

aktivni  
sekundarni  
ksilem

beljika  
(albumum)

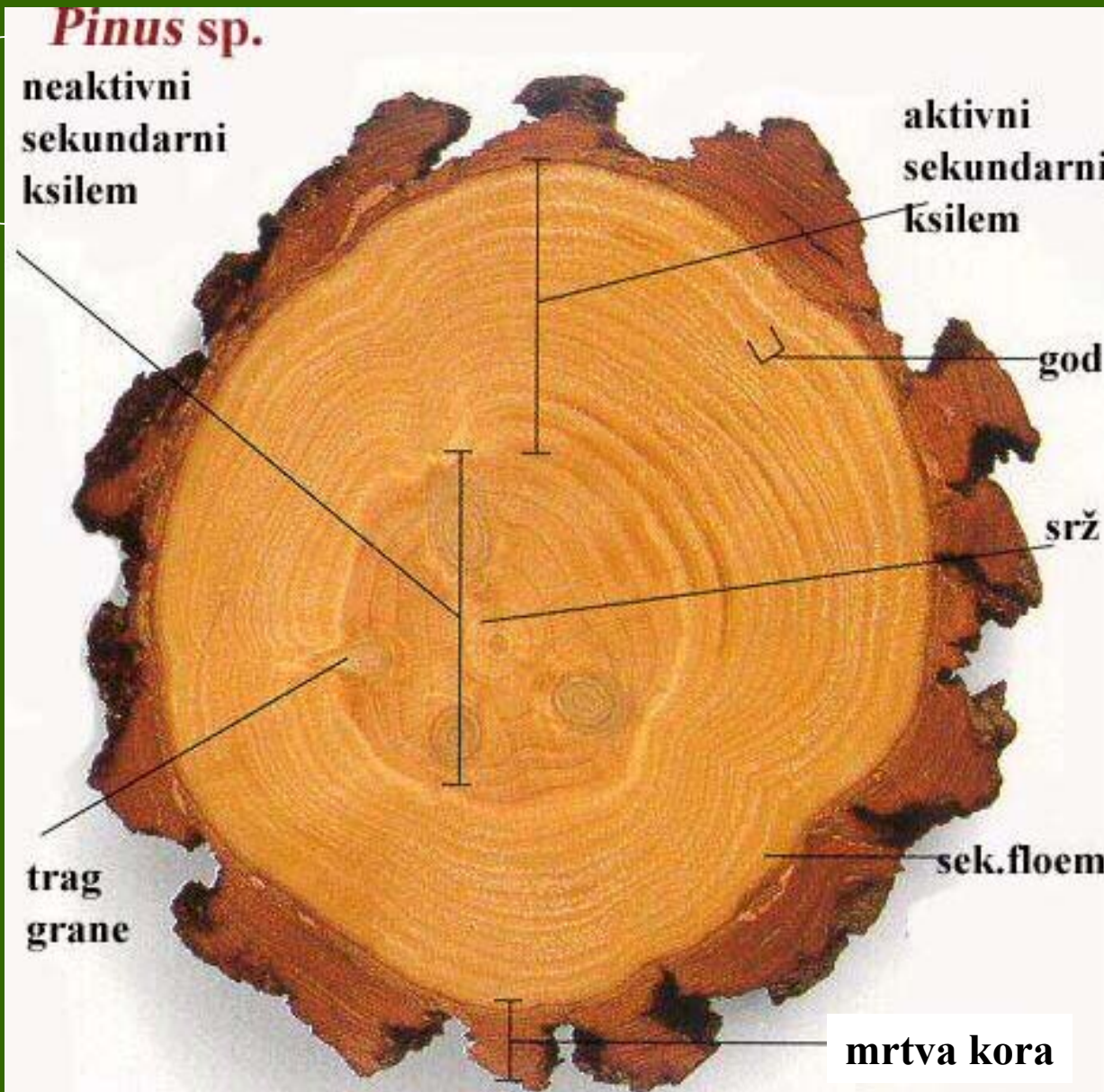
trag  
grane

god

srž

sek.floem

mrtva kora



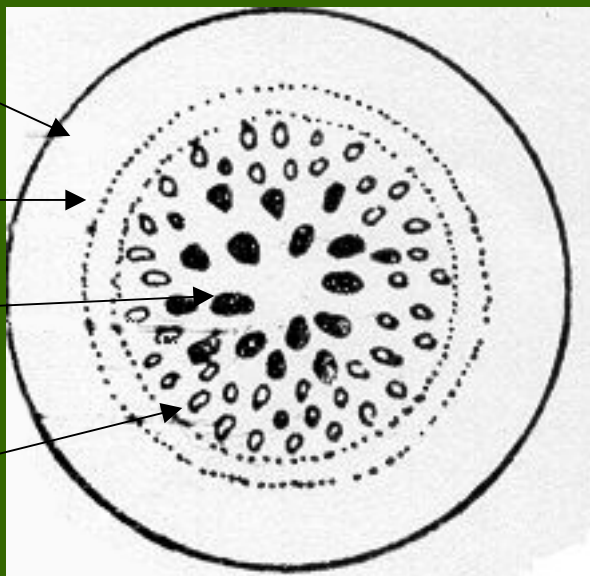
# SEKUNDARNO DEBLJANJE STABLA MONOKOTILA

primarna kora

kambijum

primarni  
snopići

sekundarni  
snopići



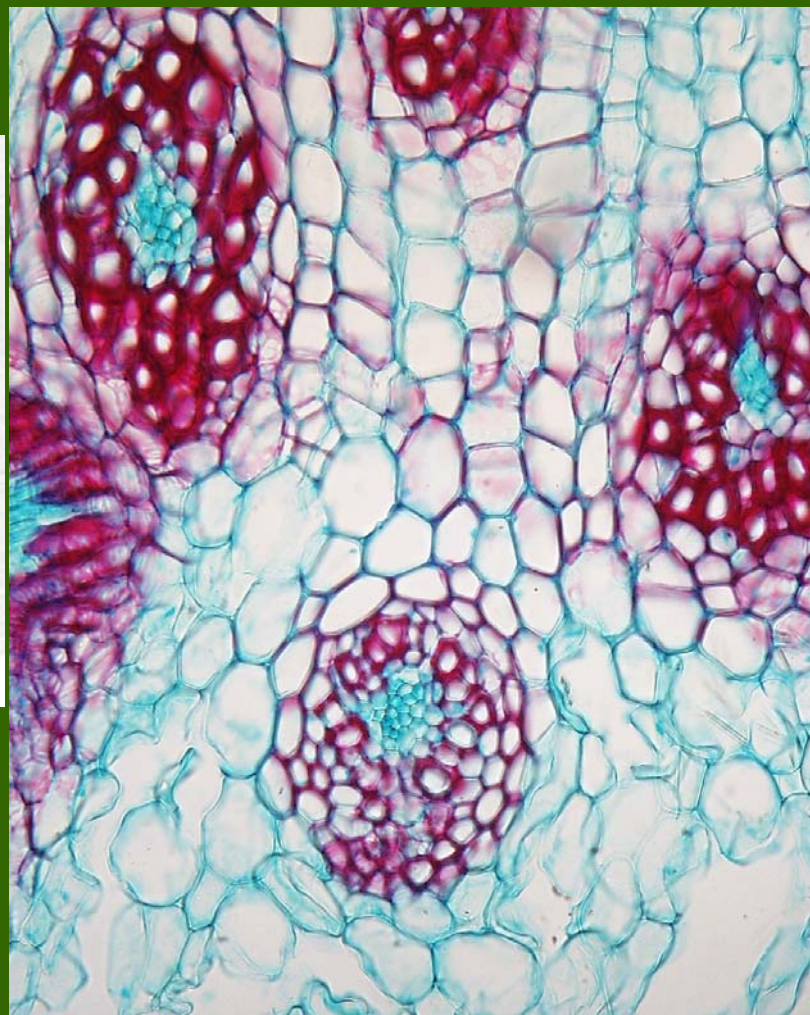
**parenhim kore**



**KAMBIJUM**



**leptocentrični prov. snop**  
**parenhimske ćelije**



*Dracaena sp.*

# ANATOMSKA GRAĐA STABLA VODENIH BILJAKA

