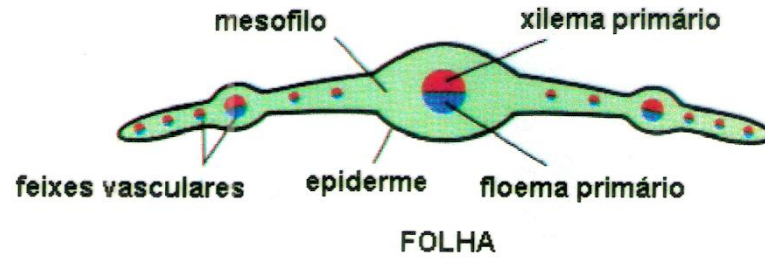


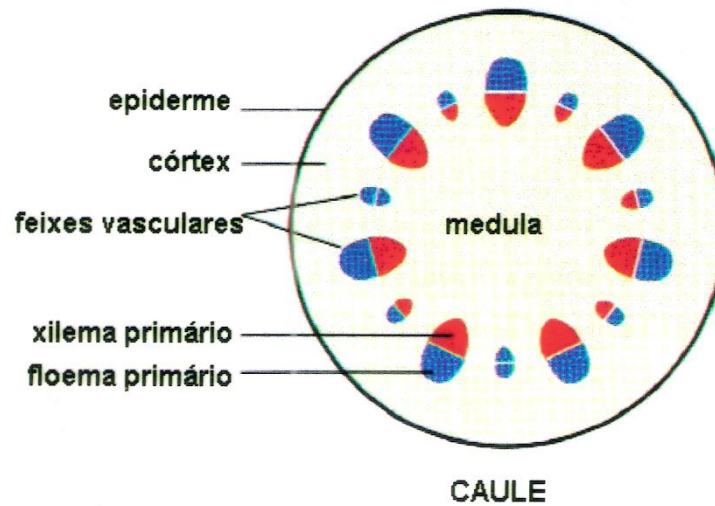
**UNIVERSIDADE FEDERAL DO
OESTE DO PARÁ**

**BOTÂNICA
ANATOMIA DO CAULE**

Professora: Cristina Aledi Felsemburgh

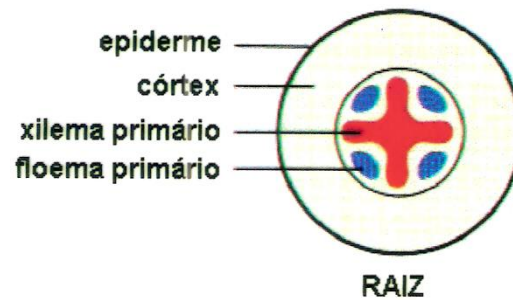


**O
R
I
G
E
M**



**MERISTEMA
APICAL DE
PARTE AÉREA**

**O
R
I
G
E
M**

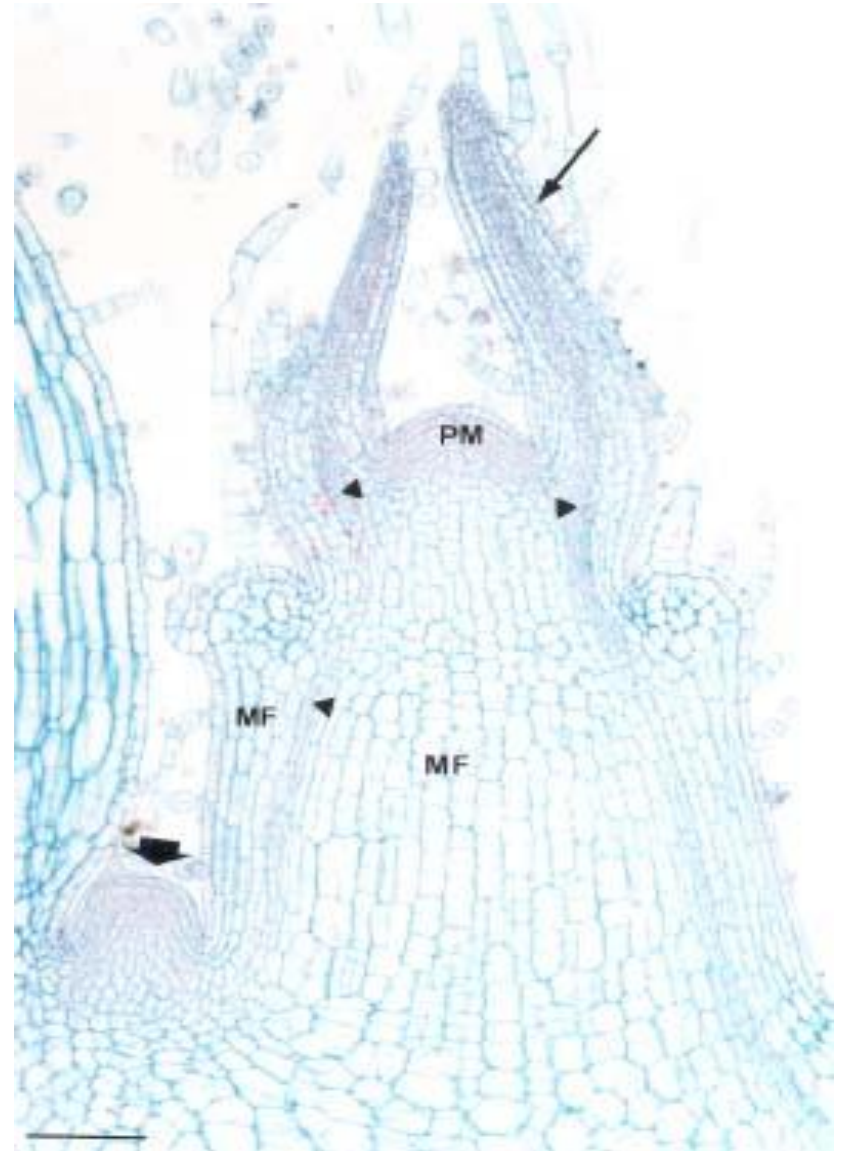


**MERISTEMA
APICAL DE RAIZ**

Anatomia do Caule

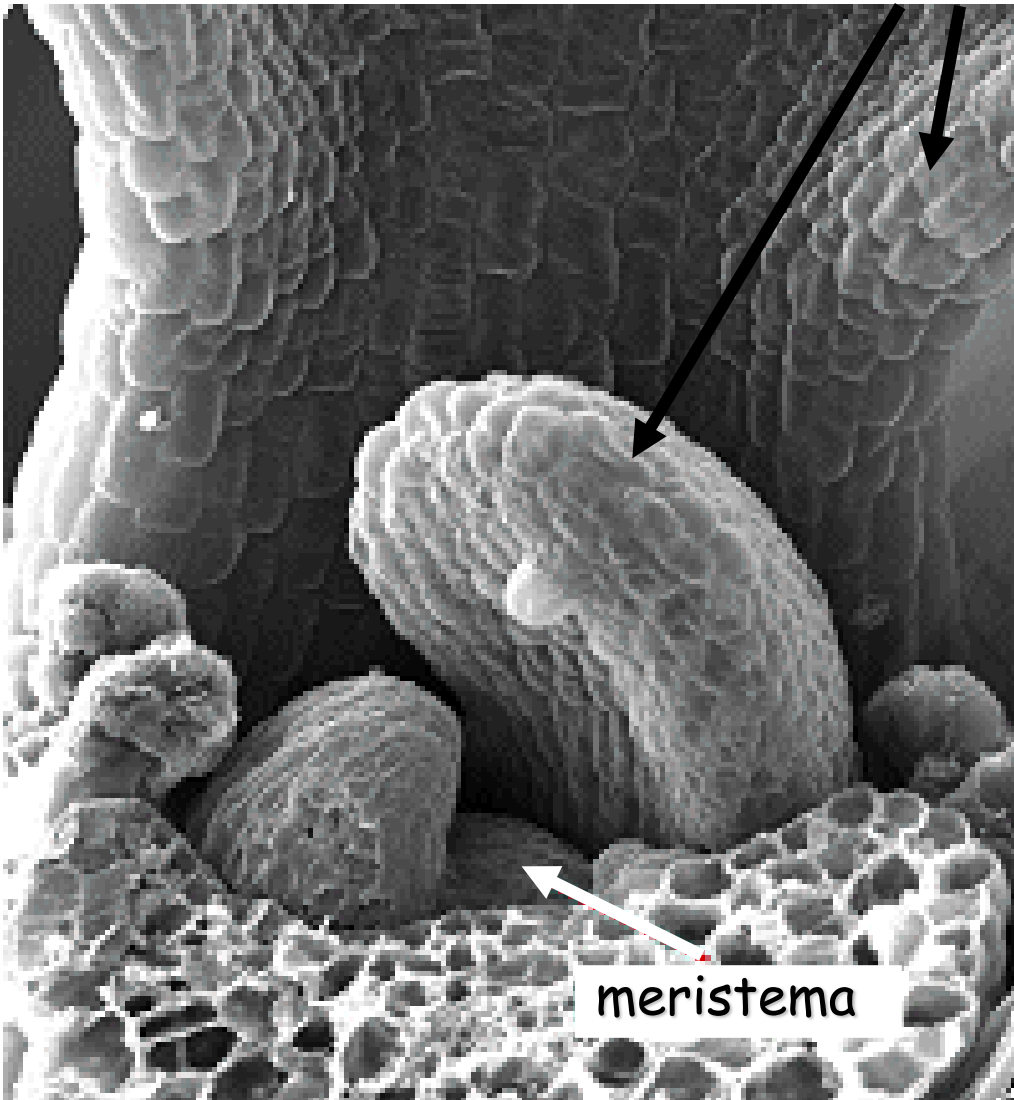
Funções:

- 1- Sustentação;
- 2- Contato.

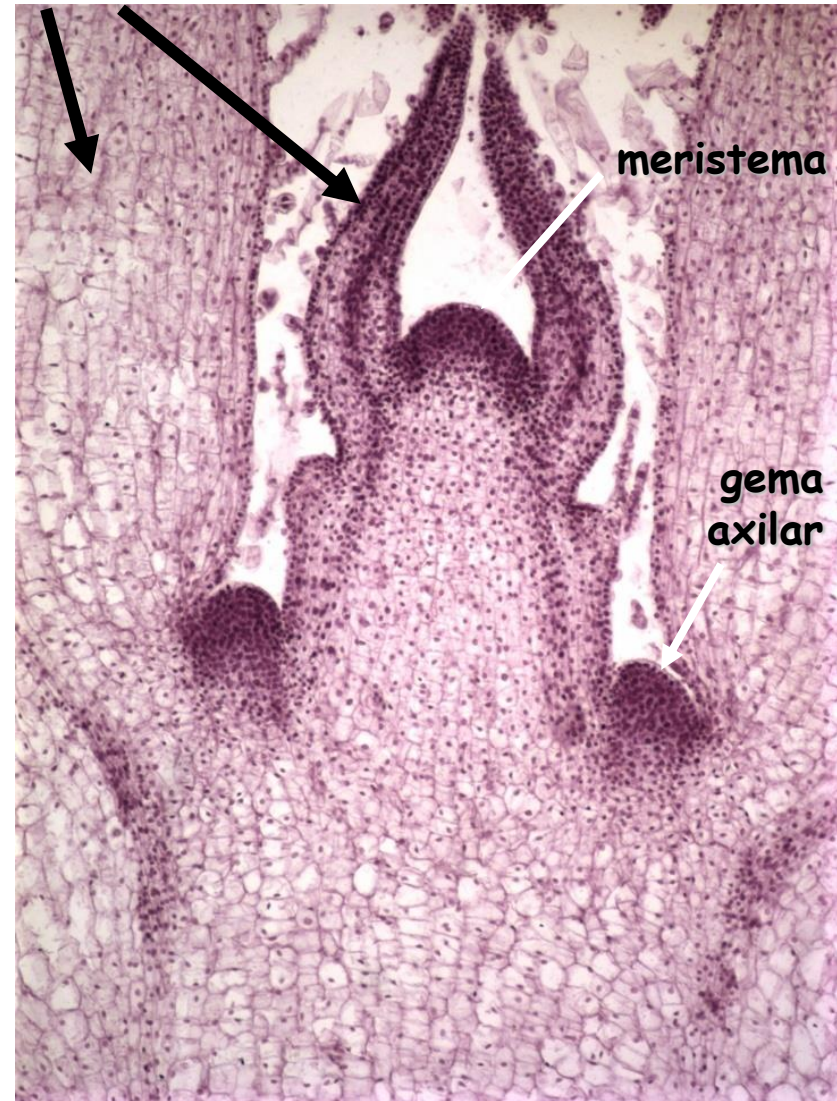


MERISTEMA APICAL DE PARTE AÉREA

primórdios foliares

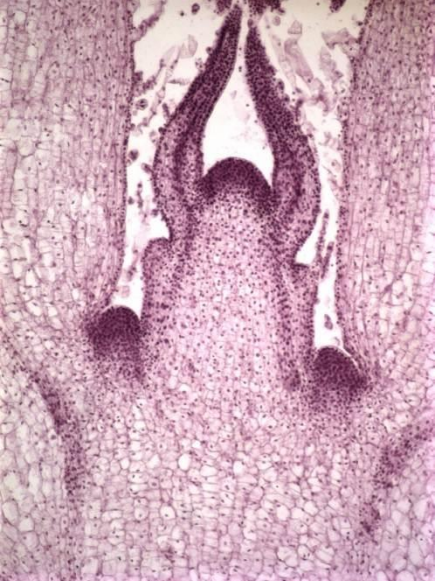


Arabidopsis thaliana (Brassicaceae)

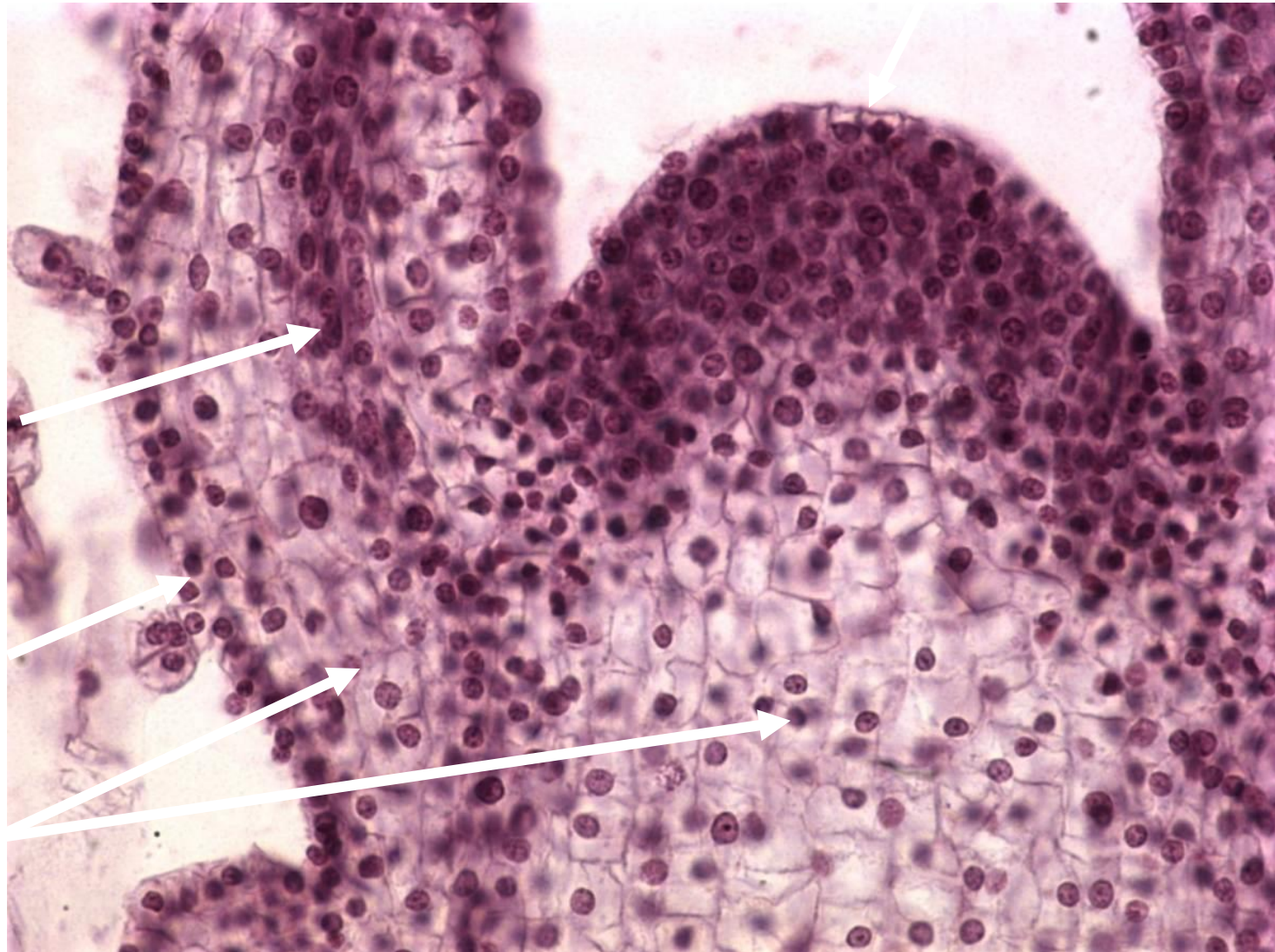


Coleus blumei (Lamiaceae)

MERISTEMA APICAL DE PARTE AÉREA



promeristema



procâmbio

protoderme

meristema
fundamental

**CAULE:
CRESCIMENTO
PRIMÁRIO**

Estrutura Primária:

Três sistemas de tecidos:

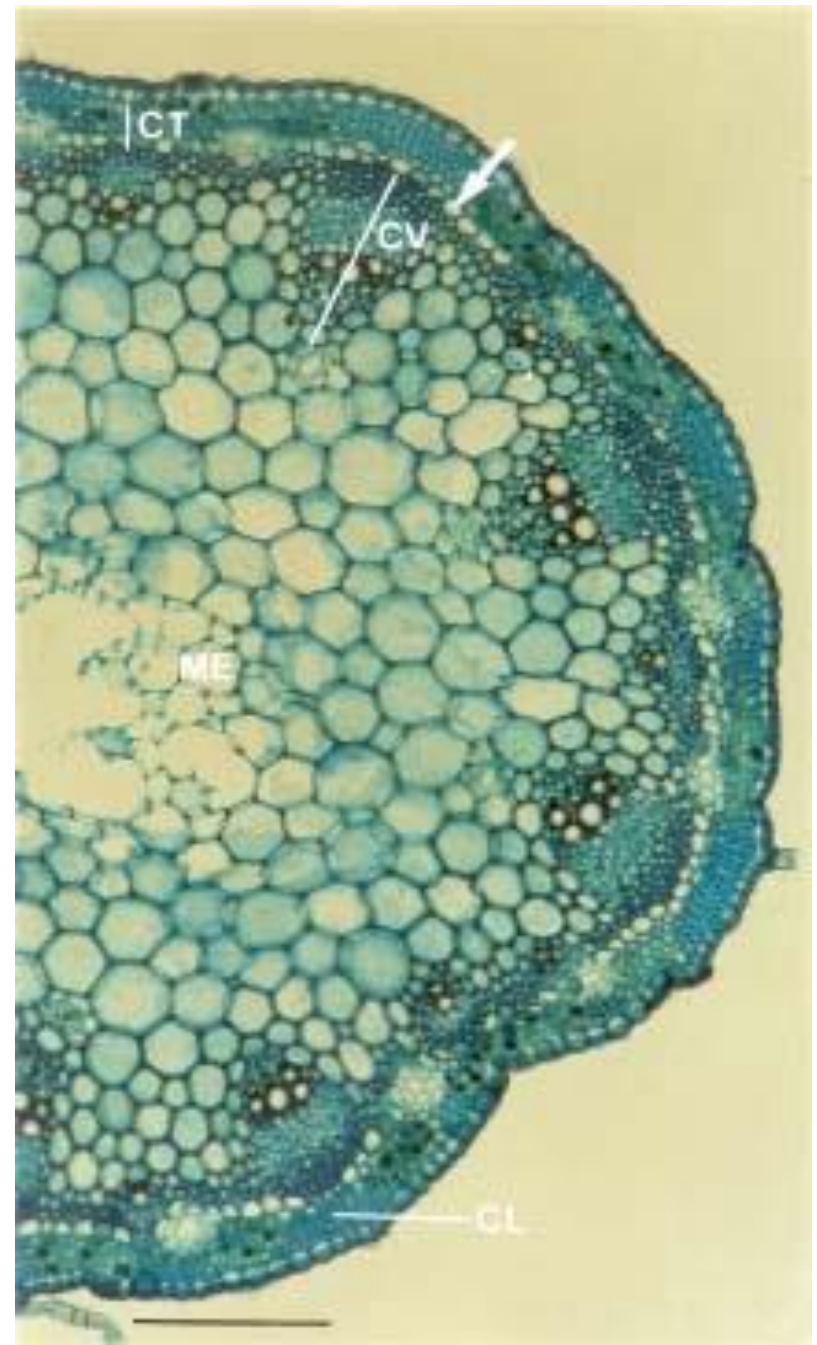
- dérmico
- fundamental
- vascular

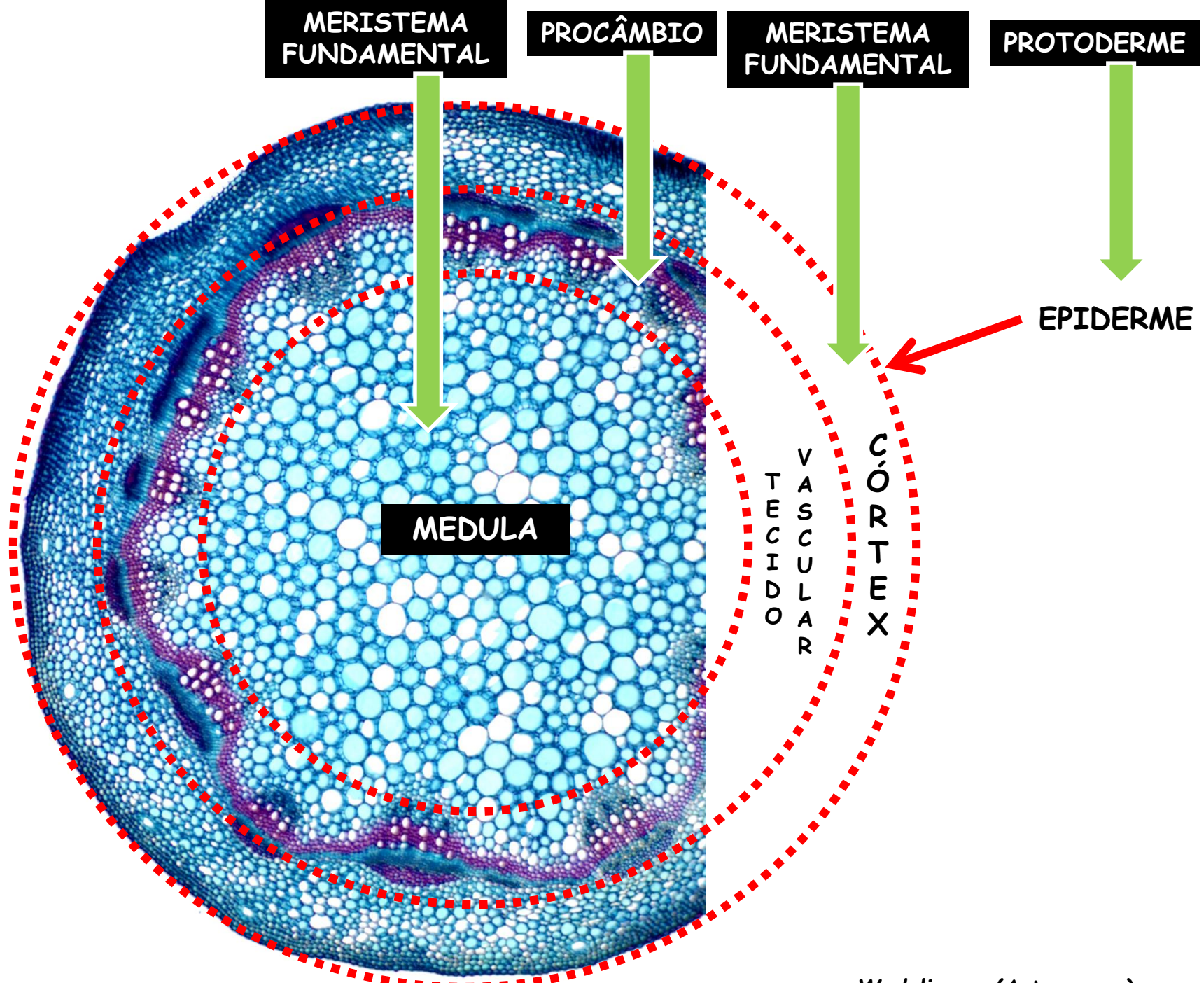
Epiderme: unisseriada; células vivas, pode ser recoberta com cutícula e apresentar estômatos e tricomas.

Córtex: entre a epiderme e o cilindro vascular.

Medula: parte mais interna.

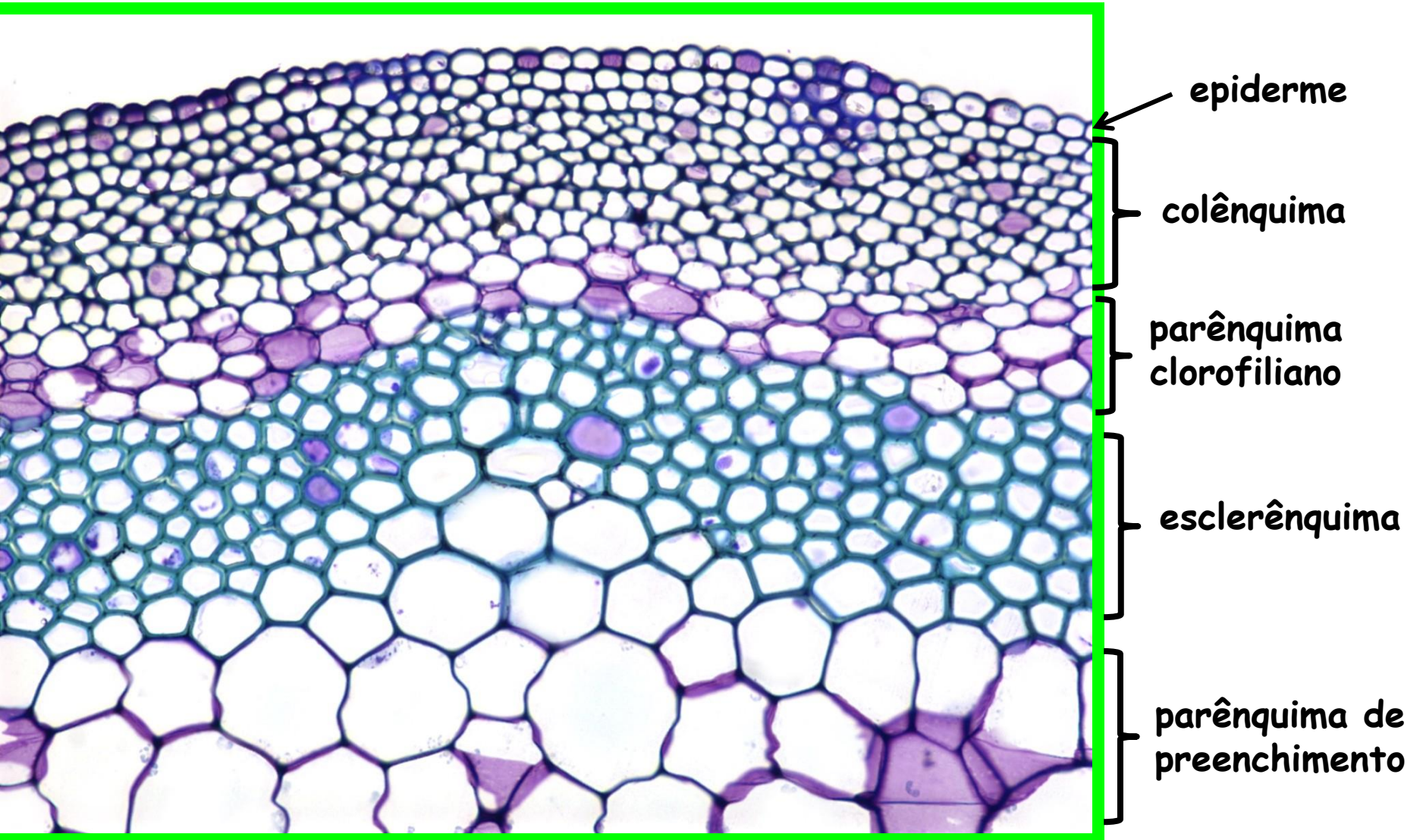
Sistema vascular: periciclo e feixes vasculares



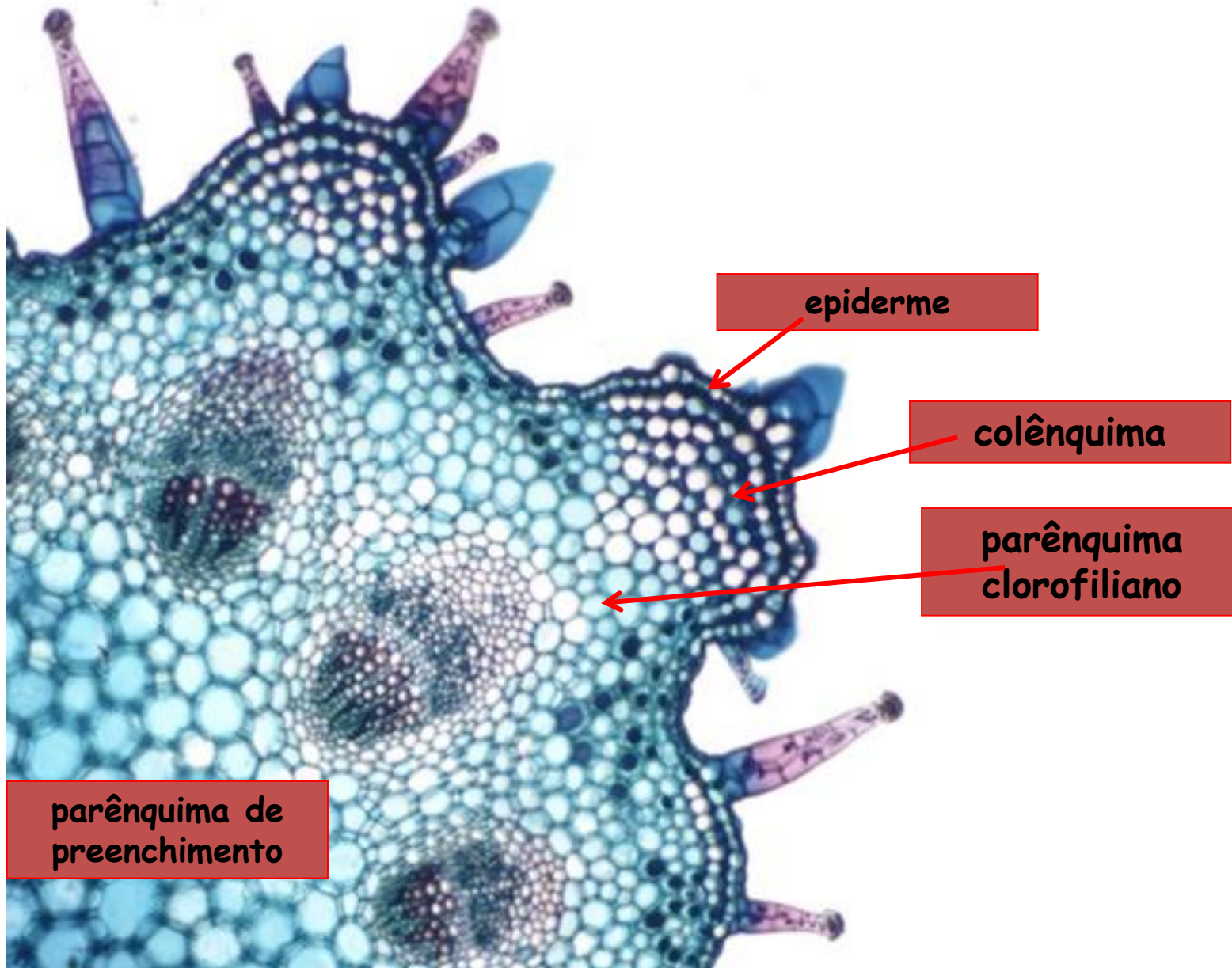


Wedelia sp. (Asteraceae)

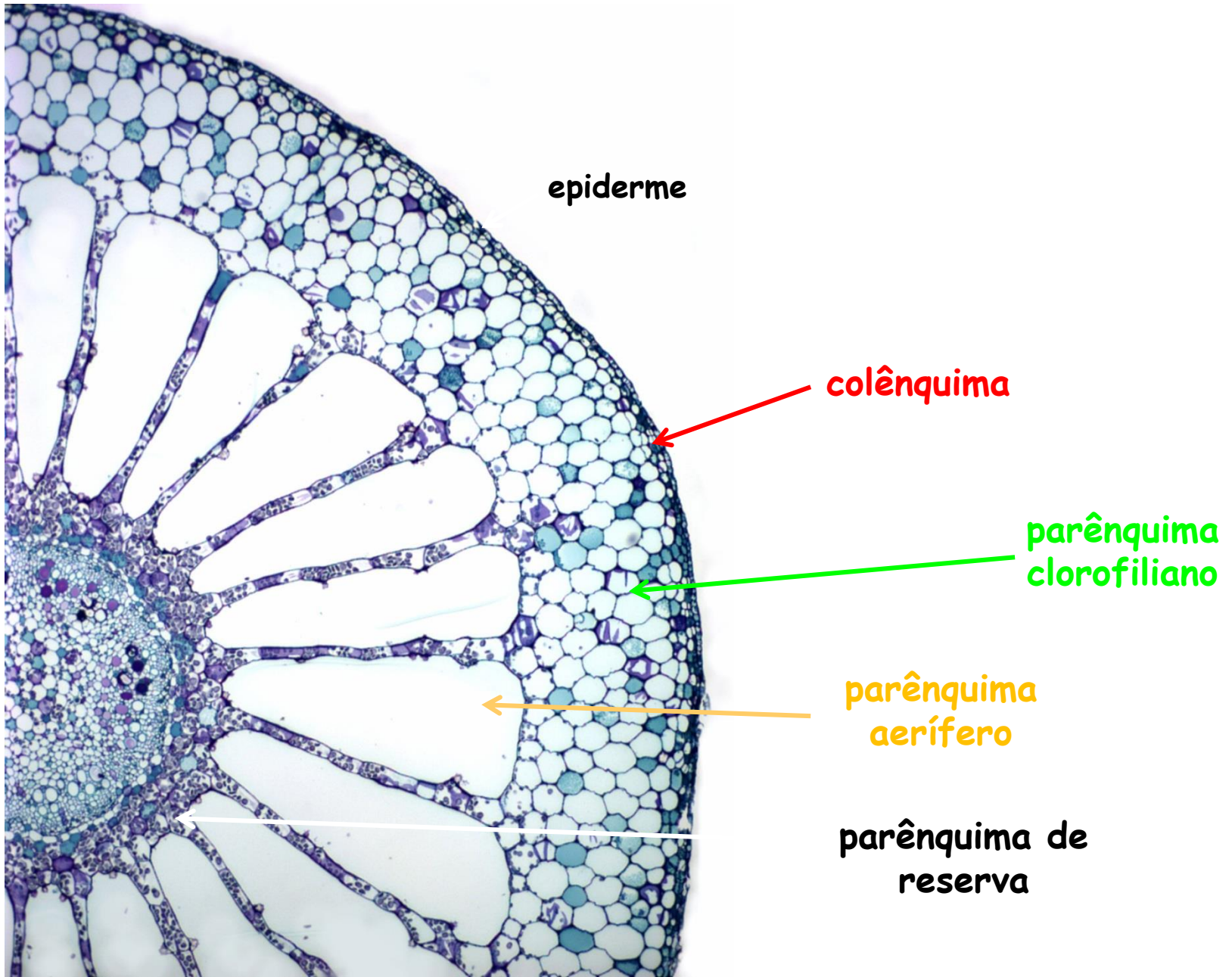
CÓRTEX



CÓRTEX



CÓRTEX

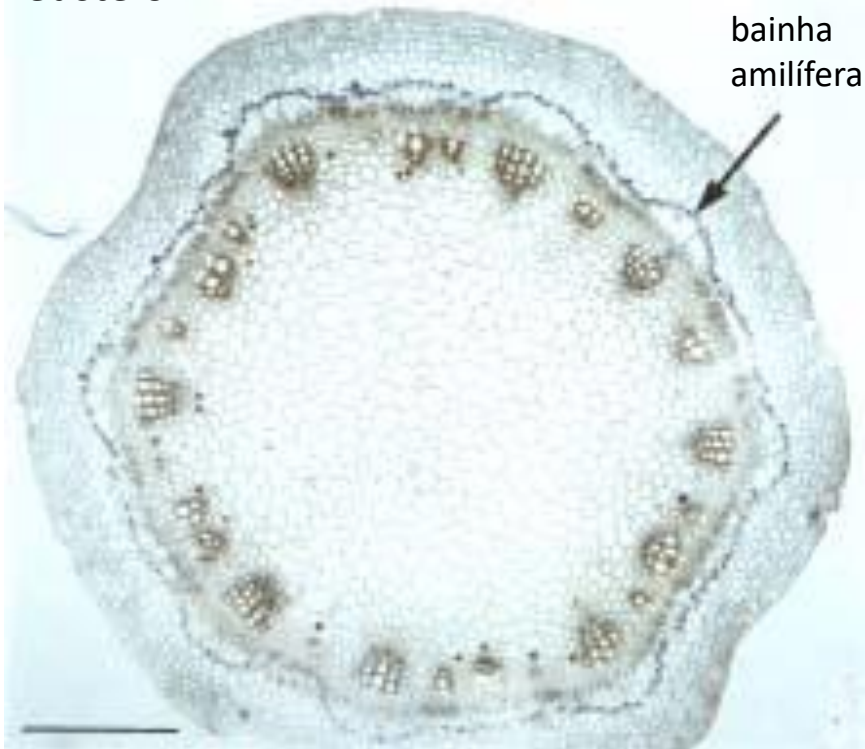


Sistema vascular:

Eudicotiledôneas

- Cilindro oco
- Anel de feixes

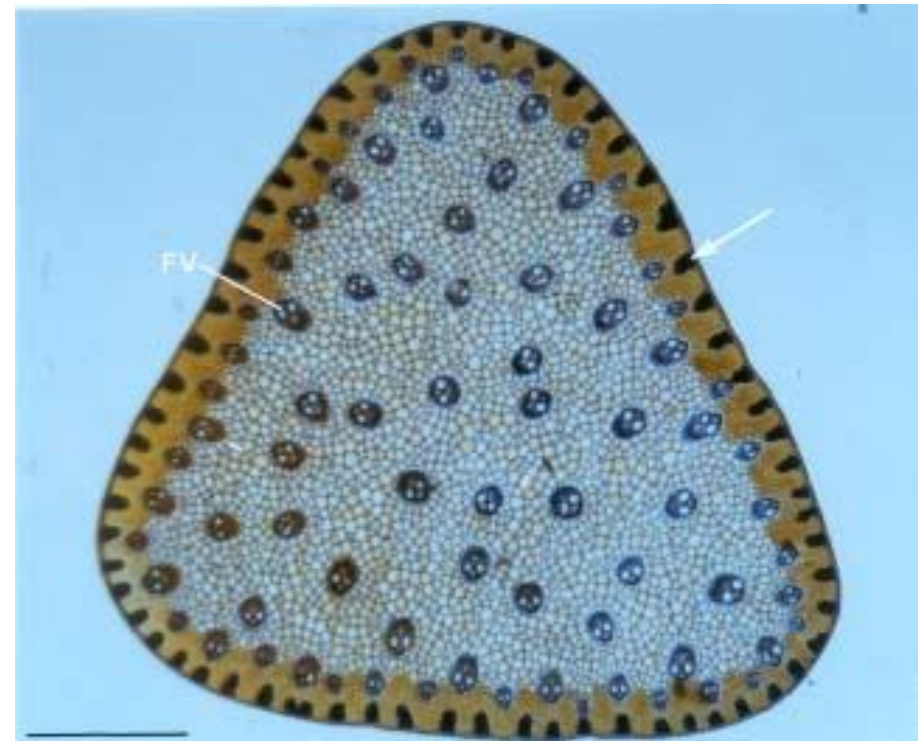
eustelo



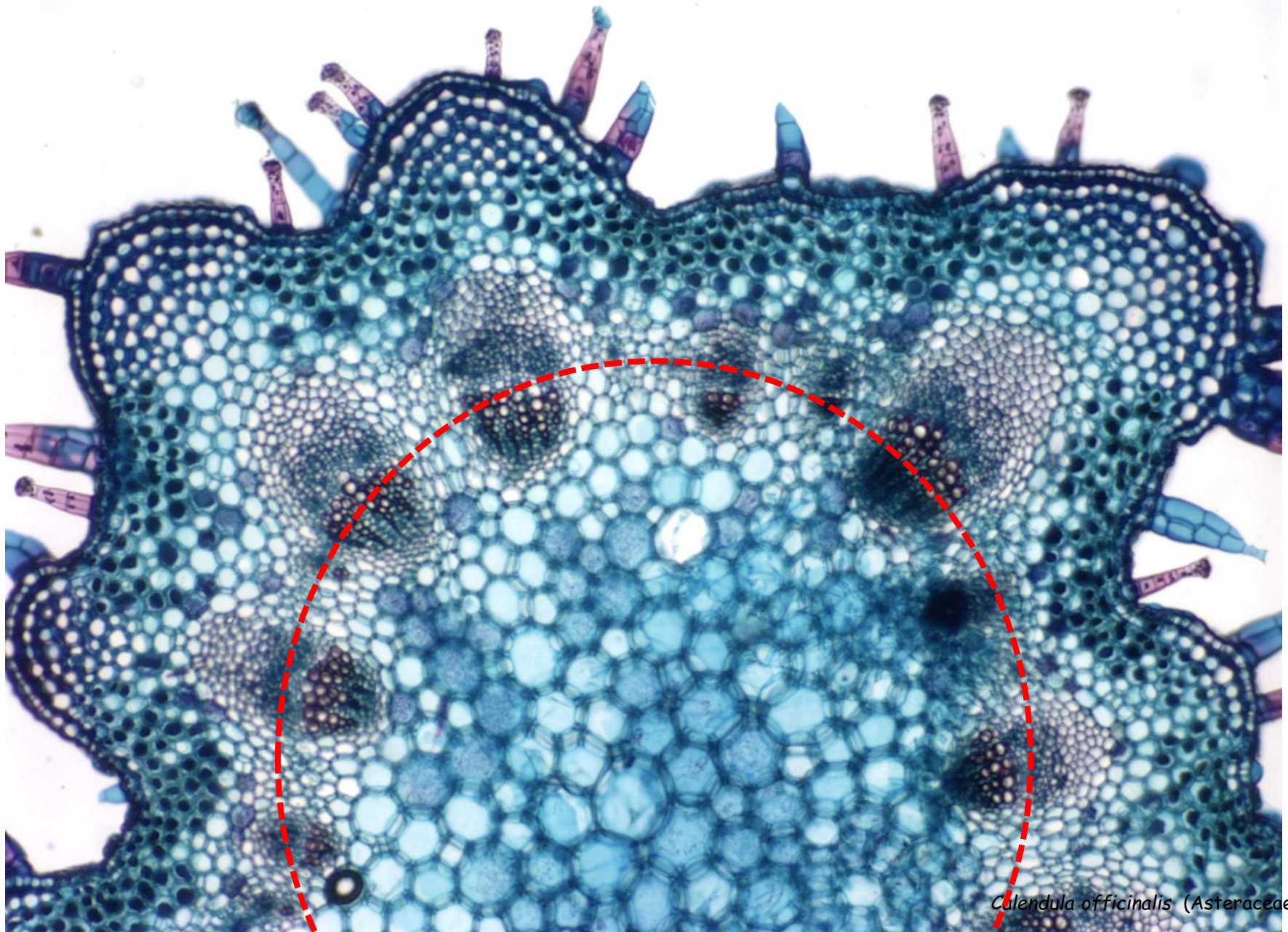
Monocotiledôneas

- Dispersos

atactostelo

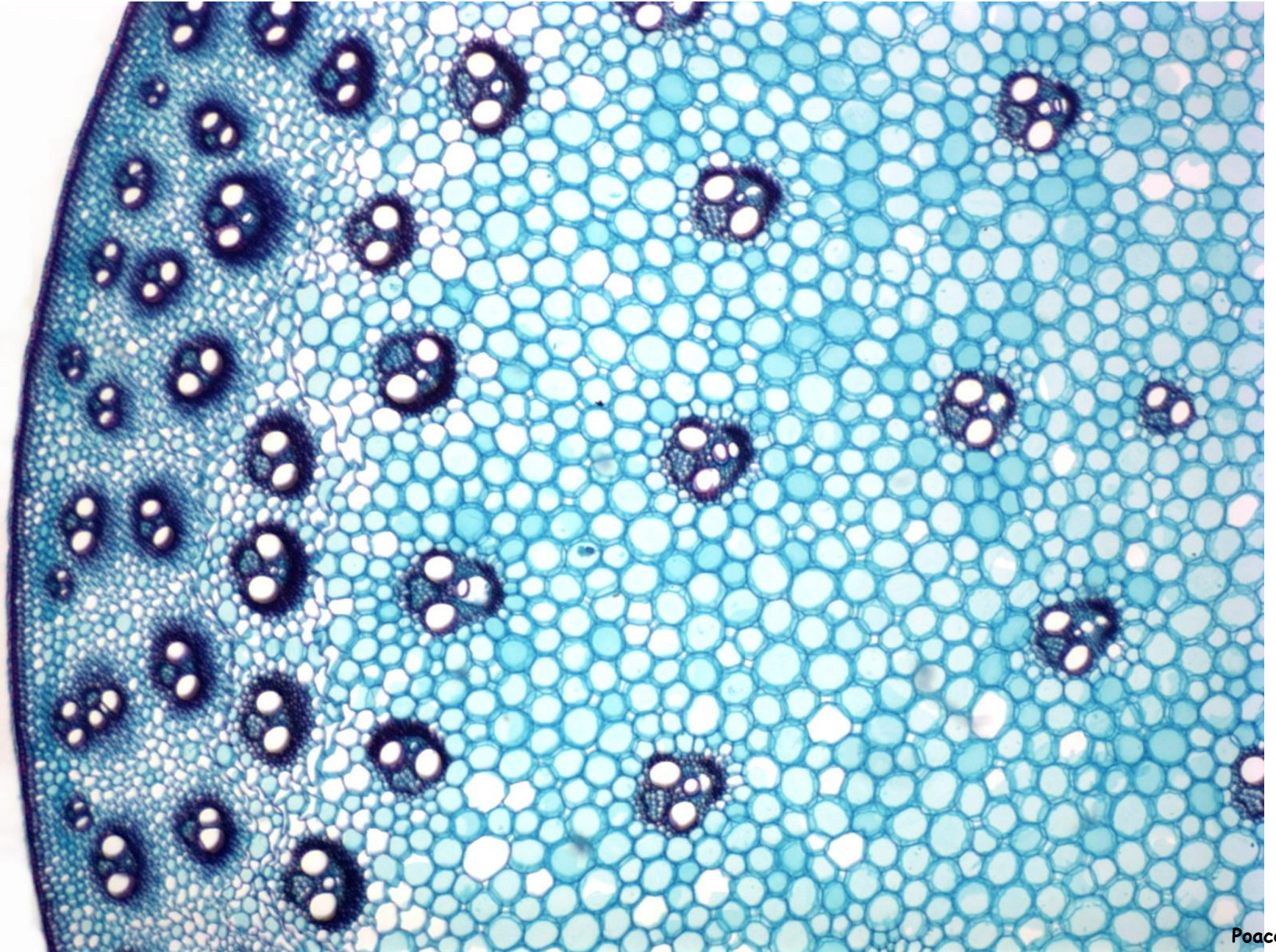


ESTELO: Eustelo (EUDICOTILEDÔNEAS) eu = organizado



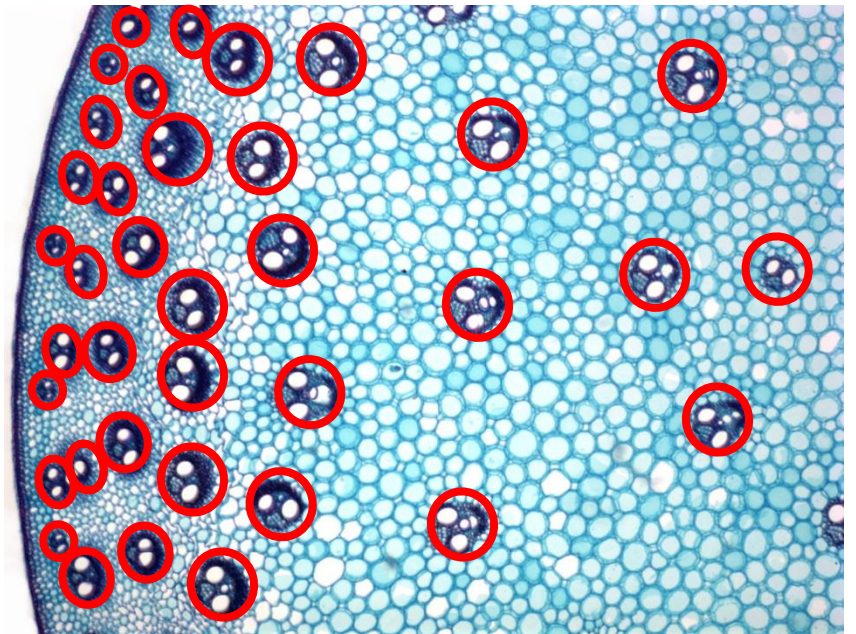
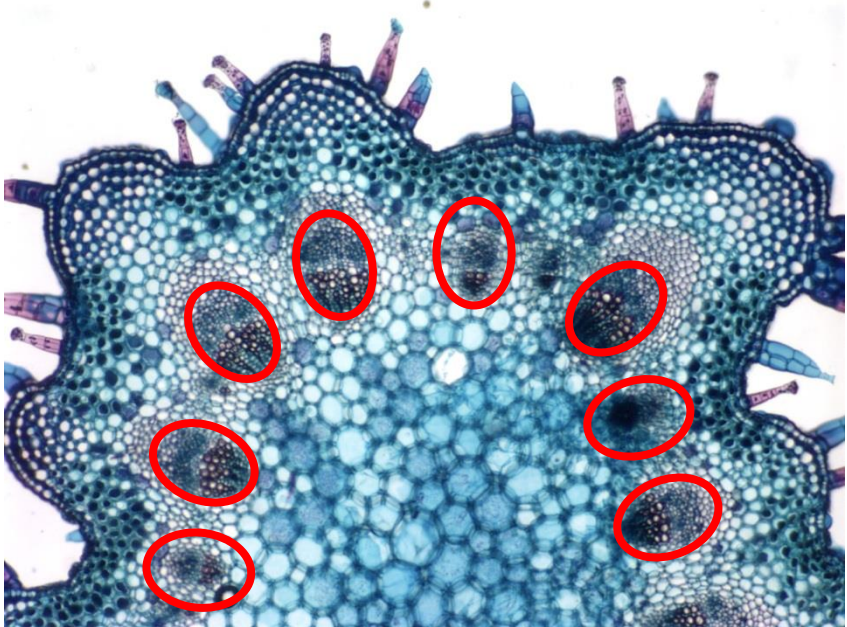
Calendula officinalis (Asteraceae)

ESTELO: Atactostelo (Monocotiledôneas) atacto=disperso



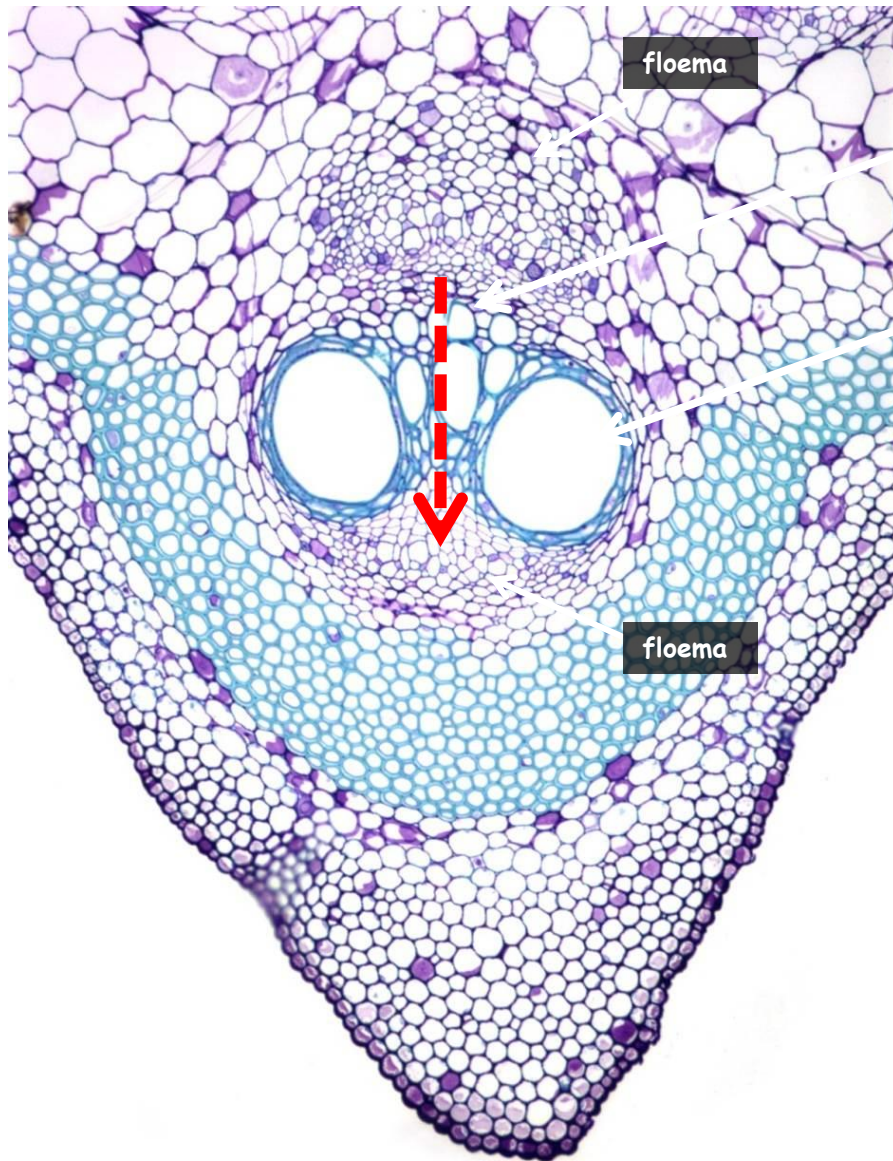
ESTELO: eustelo e atactostelo

FEIXES VASCULARES



ESTELO: maturação centrífuga do xilema

Luffa sp. (Cucurbitaceae)



PROTOXILEMA

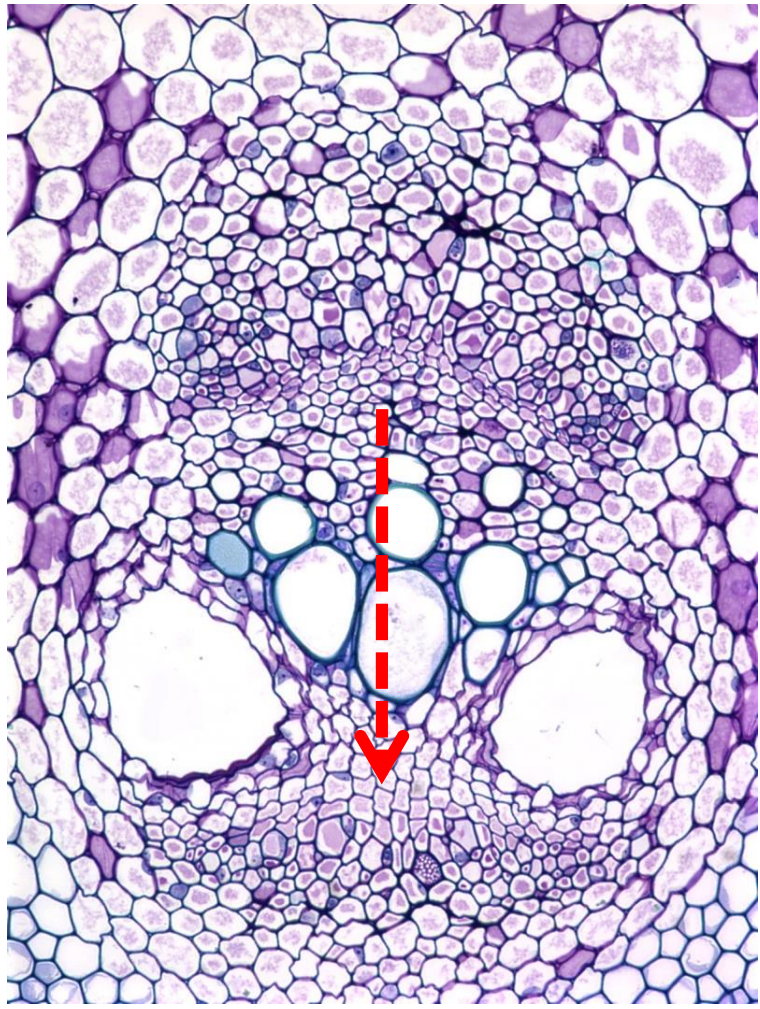
METAXILEMA

**CAULE É UM ÓRGÃO
ENDARCO!**

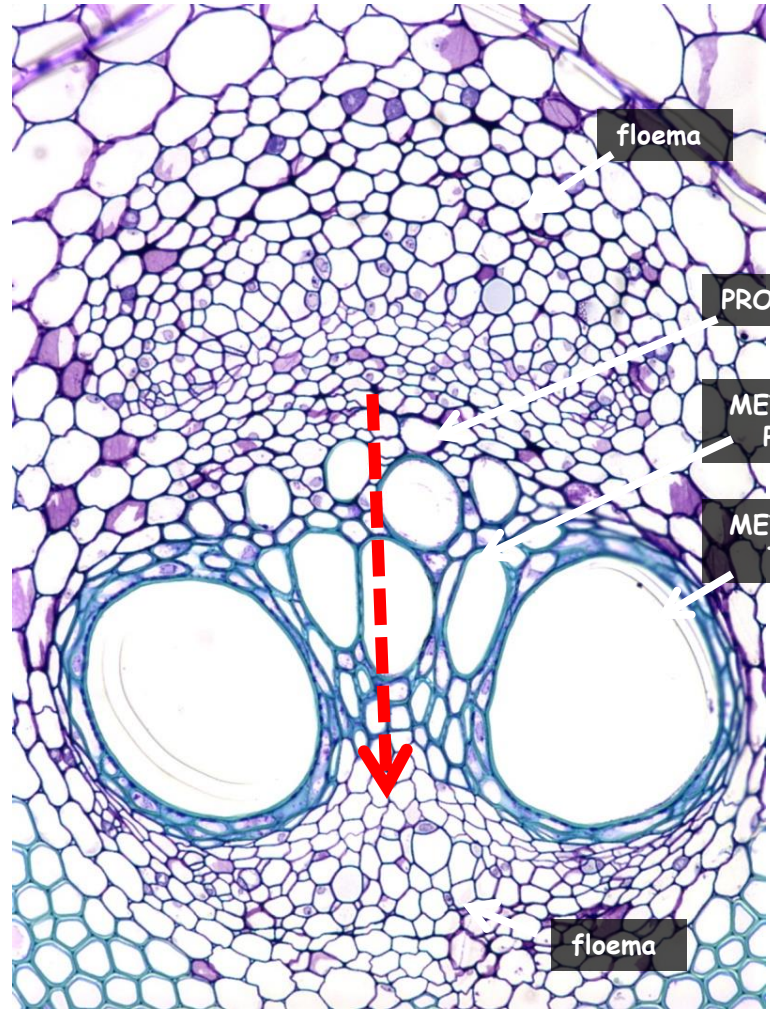
ESTELO: maturação centrífuga do xilema

região INTERNA do caule

Luffa sp. (Cucurbitaceae)



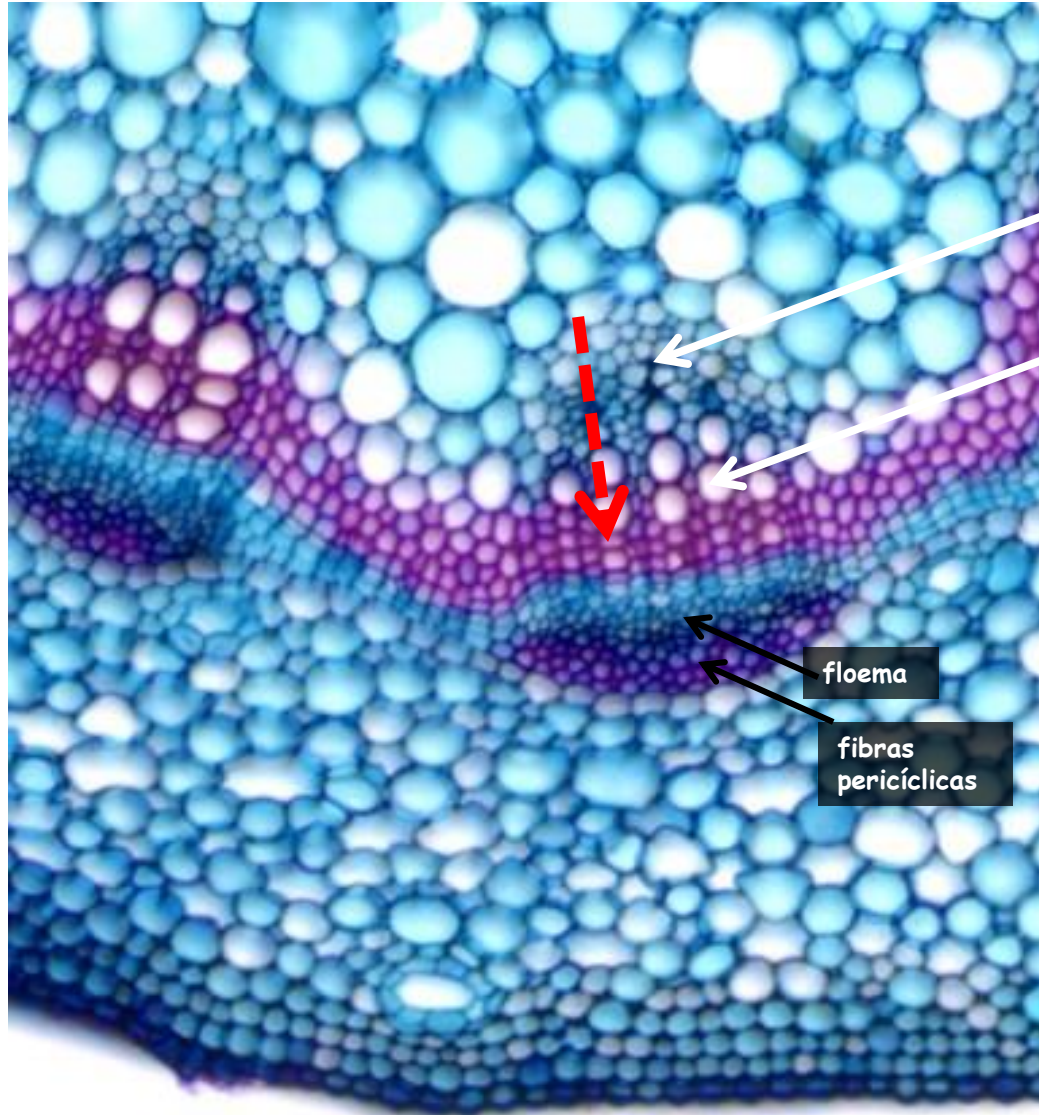
feixe jovem



feixe maduro

região EXTERNA do caule

ESTELO: maturação centrífuga do xilema



PROTOXILEMA

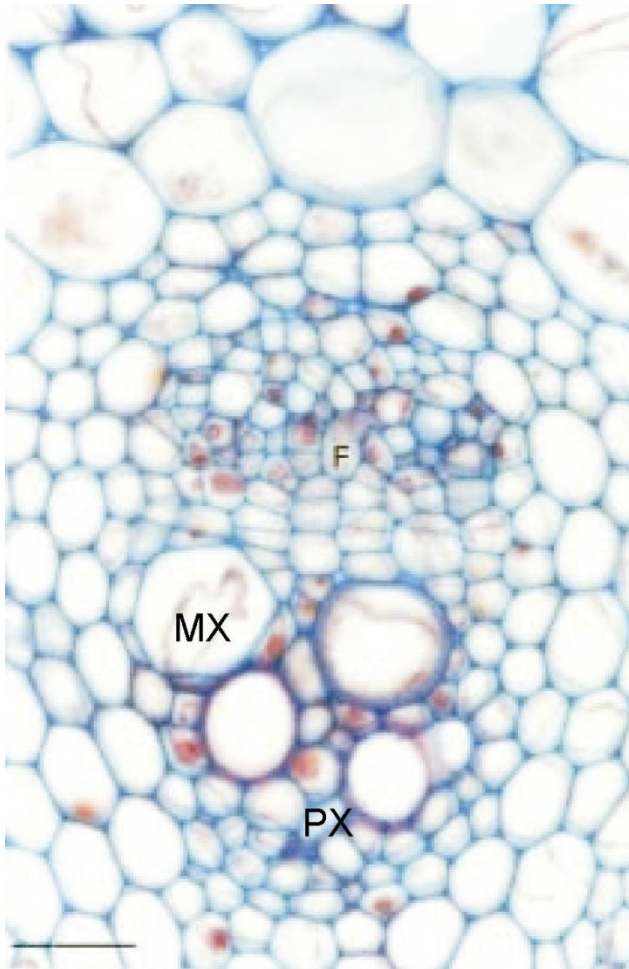
METAXILEMA

floema

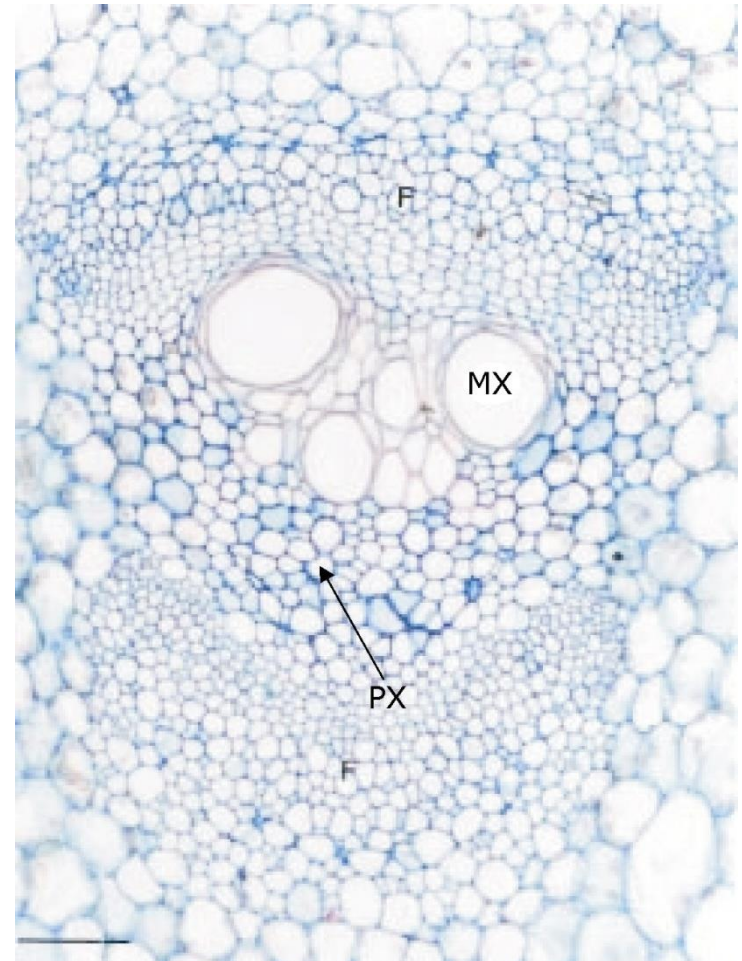
fibras
pericíclicas

Os **feixes vasculares** são formados por xilema e floema e podem ser classificados como:

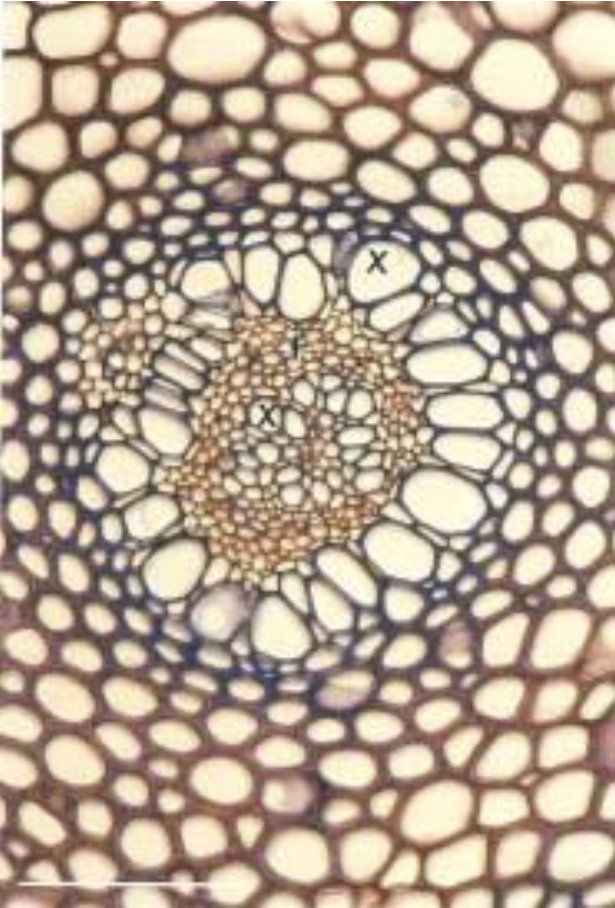
Colateral



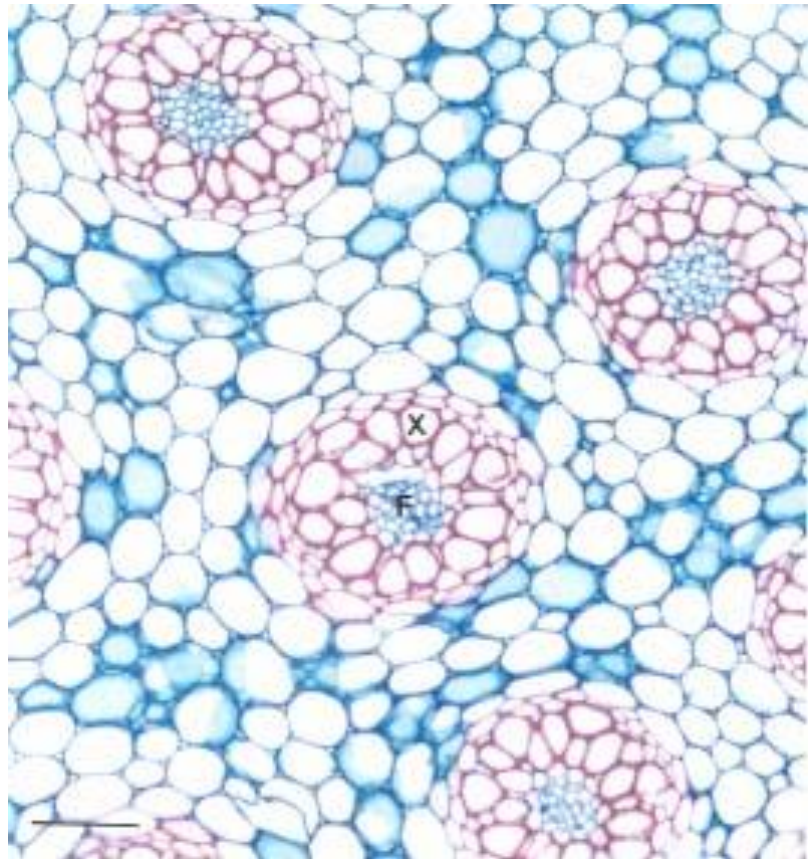
Bicolateral



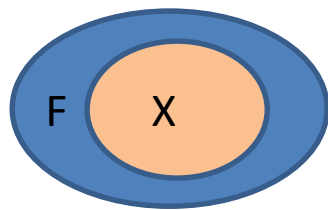
Biconcêntrico



Concêntrico Anfivascular



Concêntrico Anficrival



ESTELOS

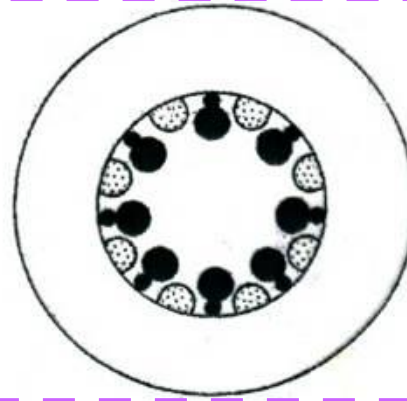
Gimnospermas e
Angiospermas
Eudicotiledôneas

Monocotiledôneas

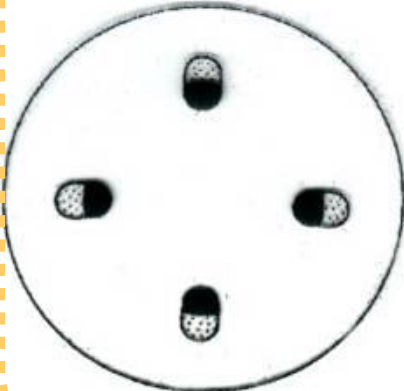
raiz



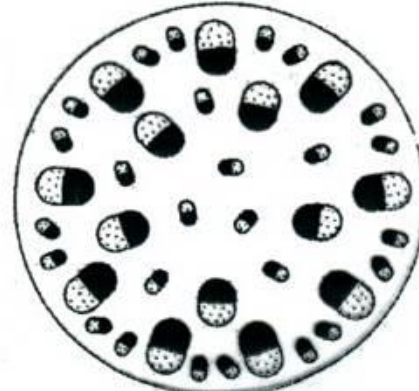
raiz



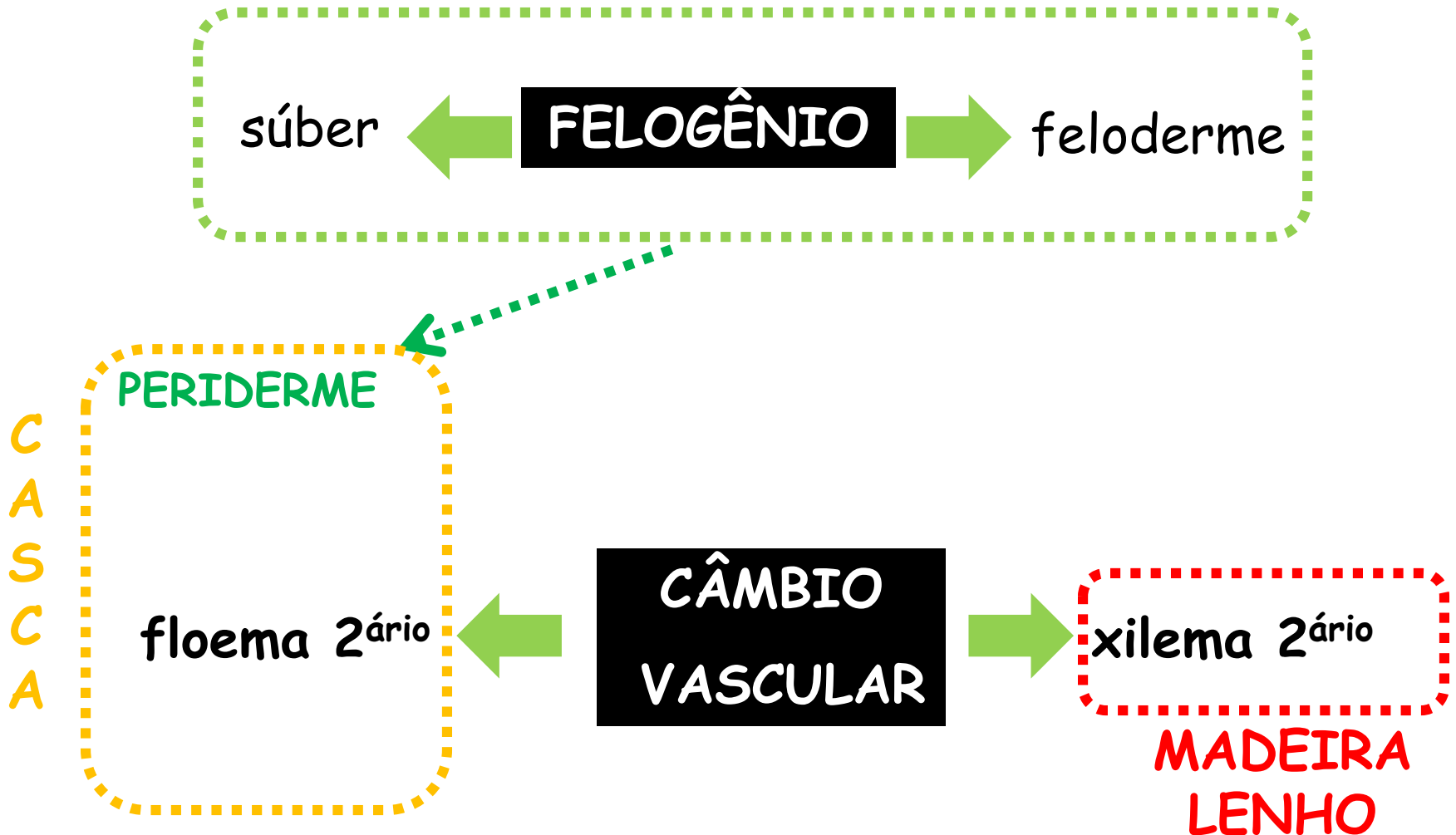
caule



caule



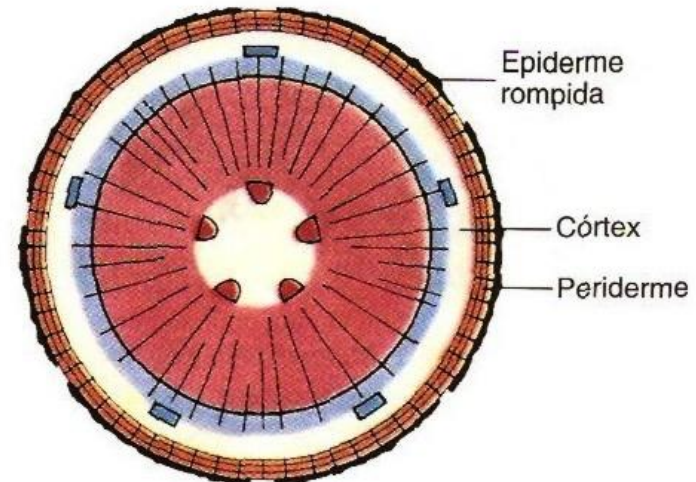
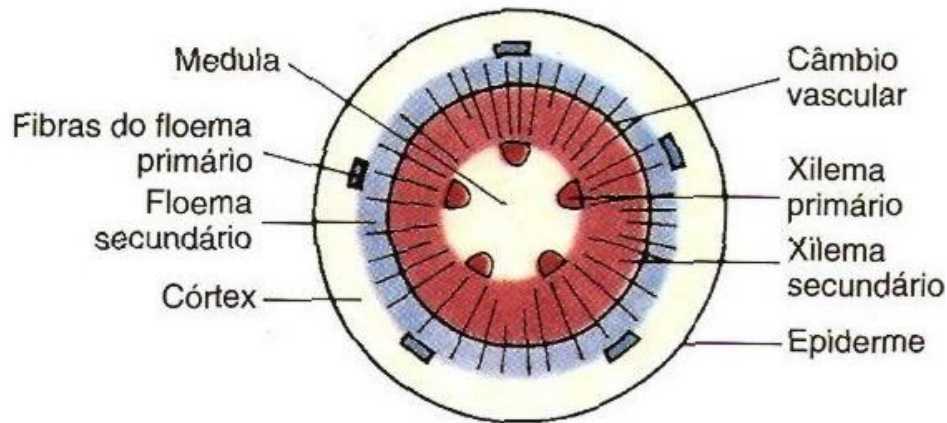
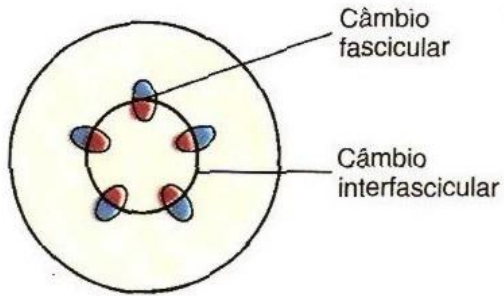
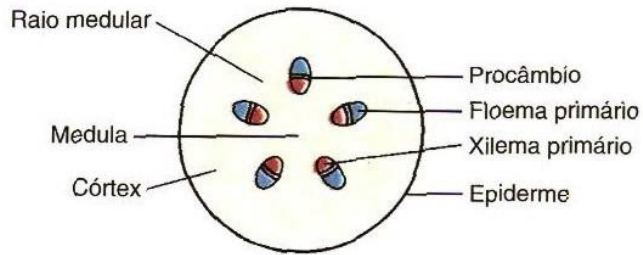
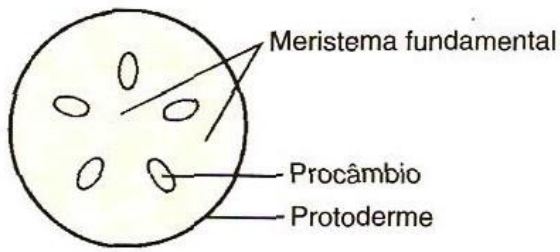
MERISTEMAS SECUNDÁRIOS



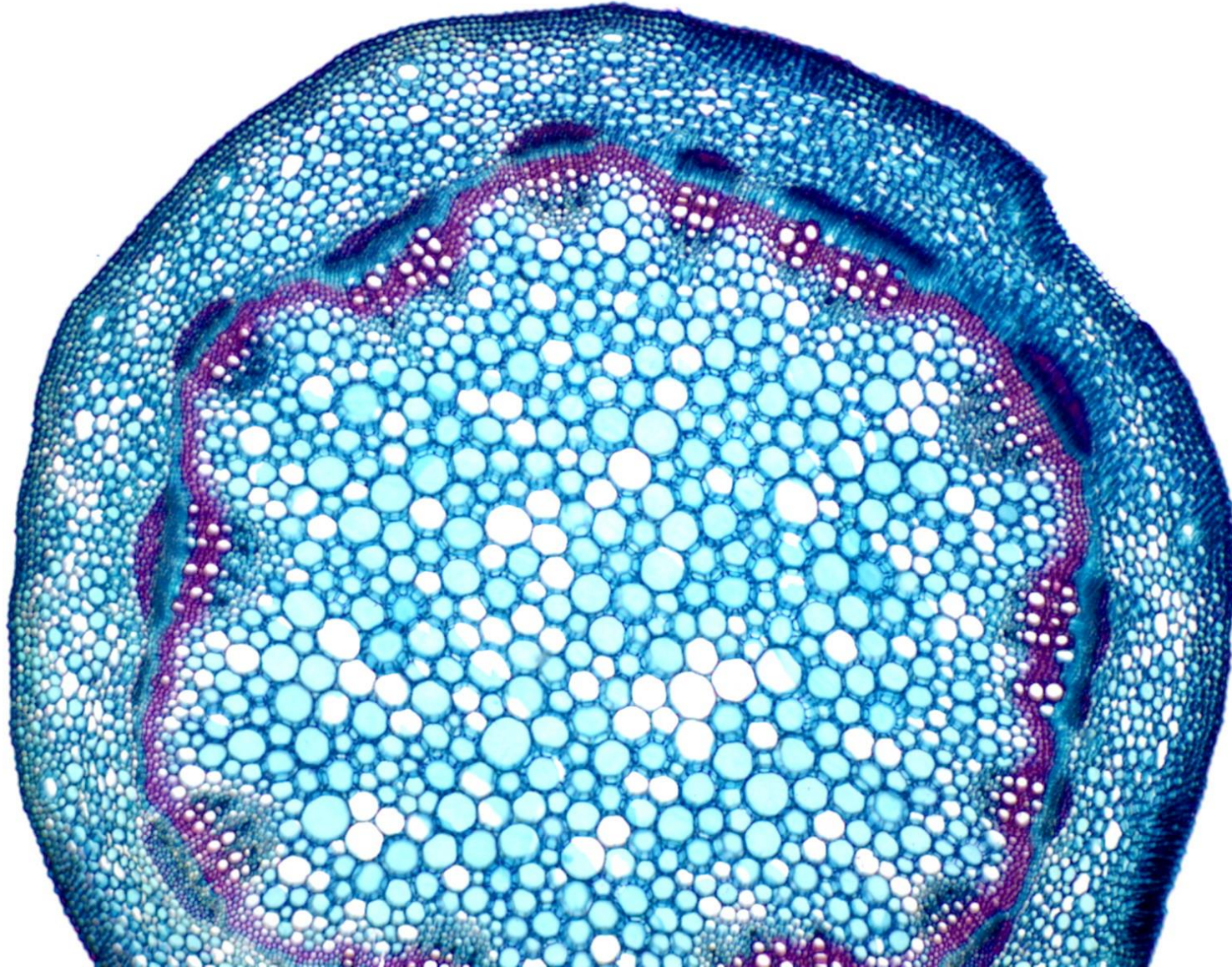
CAULE crescimento secundário



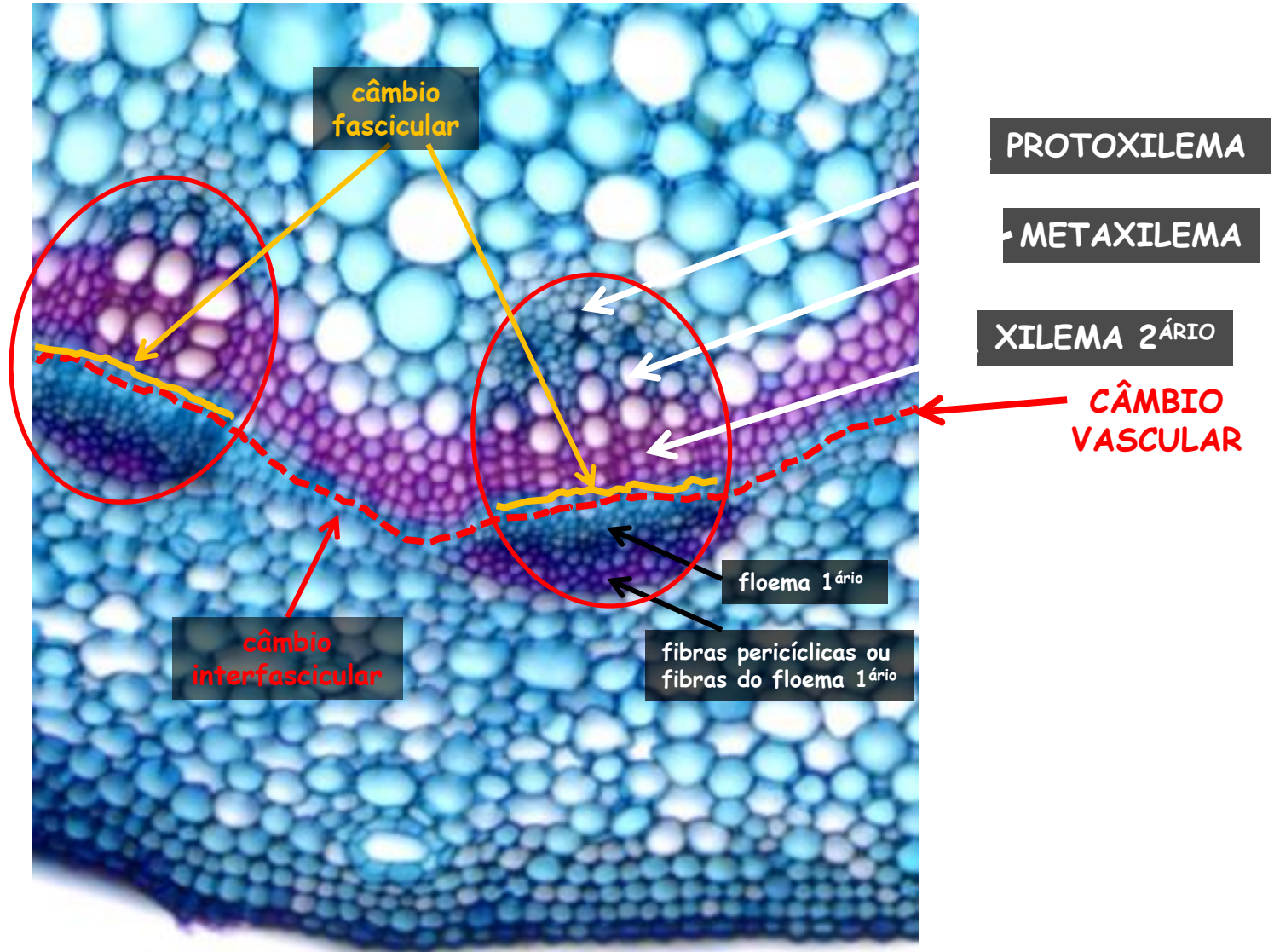
CAULE



MERISTEMAS SECUNDÁRIOS



MERISTEMAS SECUNDÁRIOS



MERISTEMAS SECUNDÁRIOS

Atividade do câmbio apresenta três variações:

a) Câmbio fascicular e interfascicular com atividade idêntica:

Células axiais e radiais do X^{2o} e F^{2o} – formando cilindro contínuo

b) Câmbio fascicular e interfascicular com atividade diferenciada:

Câmbio fascicular produz X^{2o} composto por fibras e elementos de vaso

Câmbio interfascicular produz X^{2o} composto somente por fibras

MERISTEMAS SECUNDÁRIOS

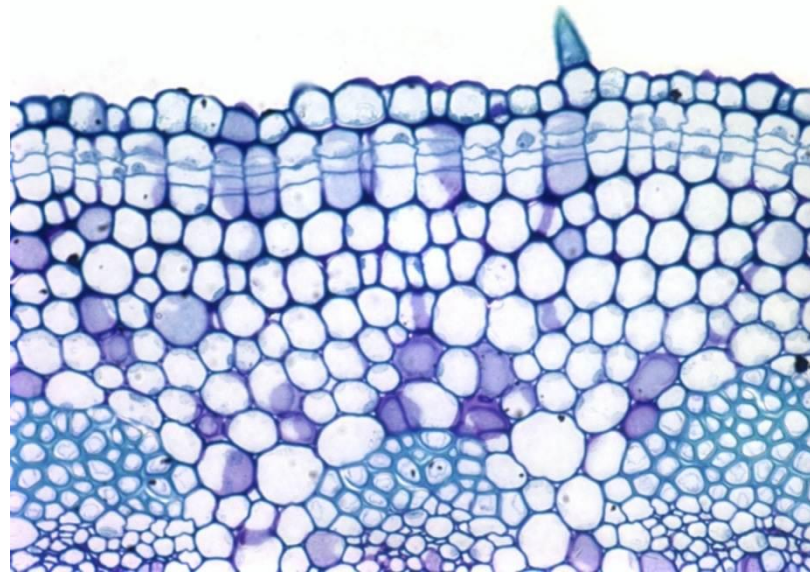
Atividade do câmbio apresenta três variações:

c) Câmbio fascicular e interfascicular com atividade diferenciada:

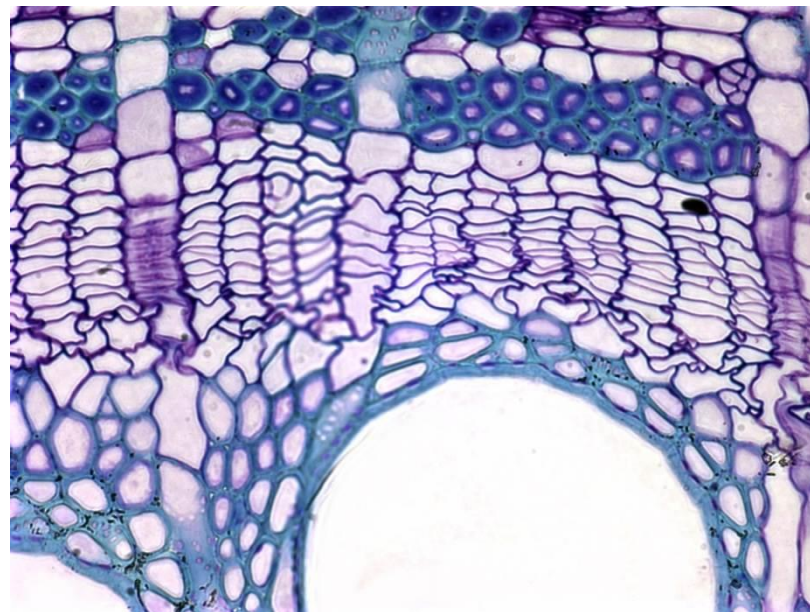
Câmbio fascicular produz no X^{2o} elementos de vaso, fibras, células de parênquima axial; produz no F^{2o} elementos de tubo crivado, células companheiras, fibras e células do parênquima axial.

Câmbio interfascicular produz apenas raios parênquimáticos do X^{2o} e F^{2o}

MERISTEMAS SECUNDÁRIOS

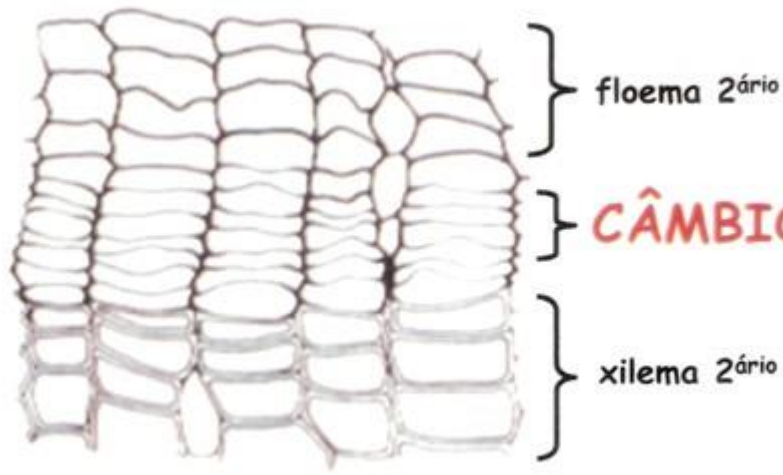


← FELOGÊNIO

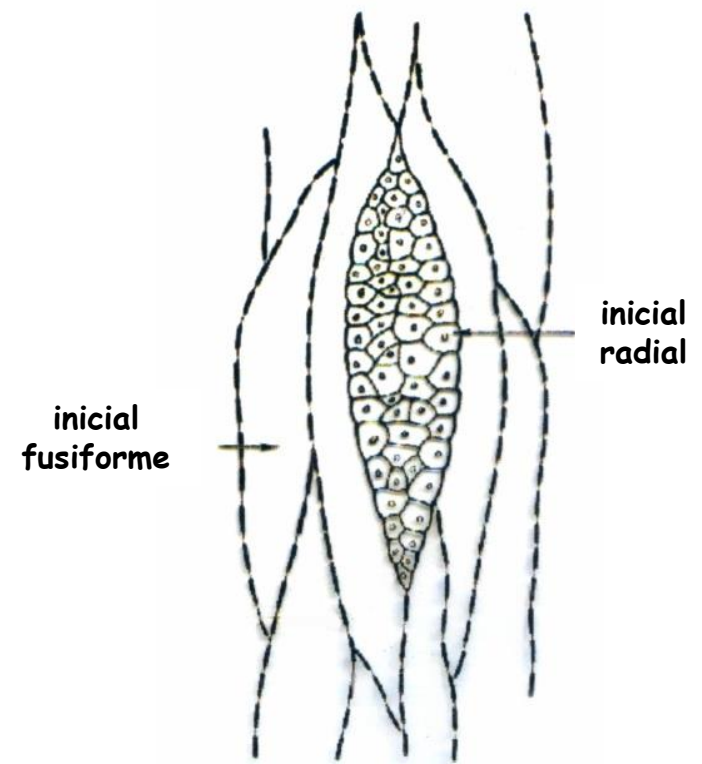


} CÂMBIO
VASCULAR

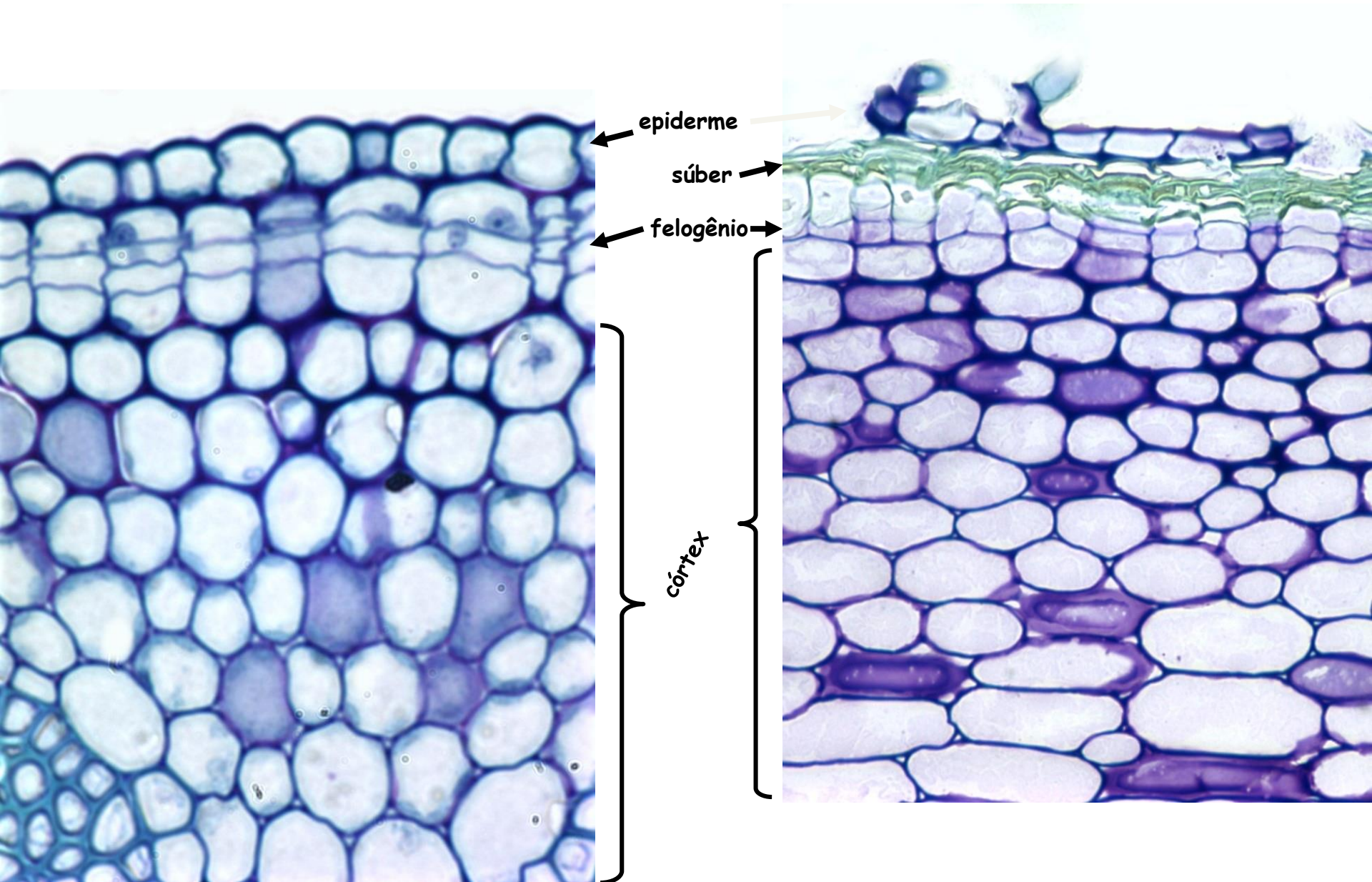
seção
transversal

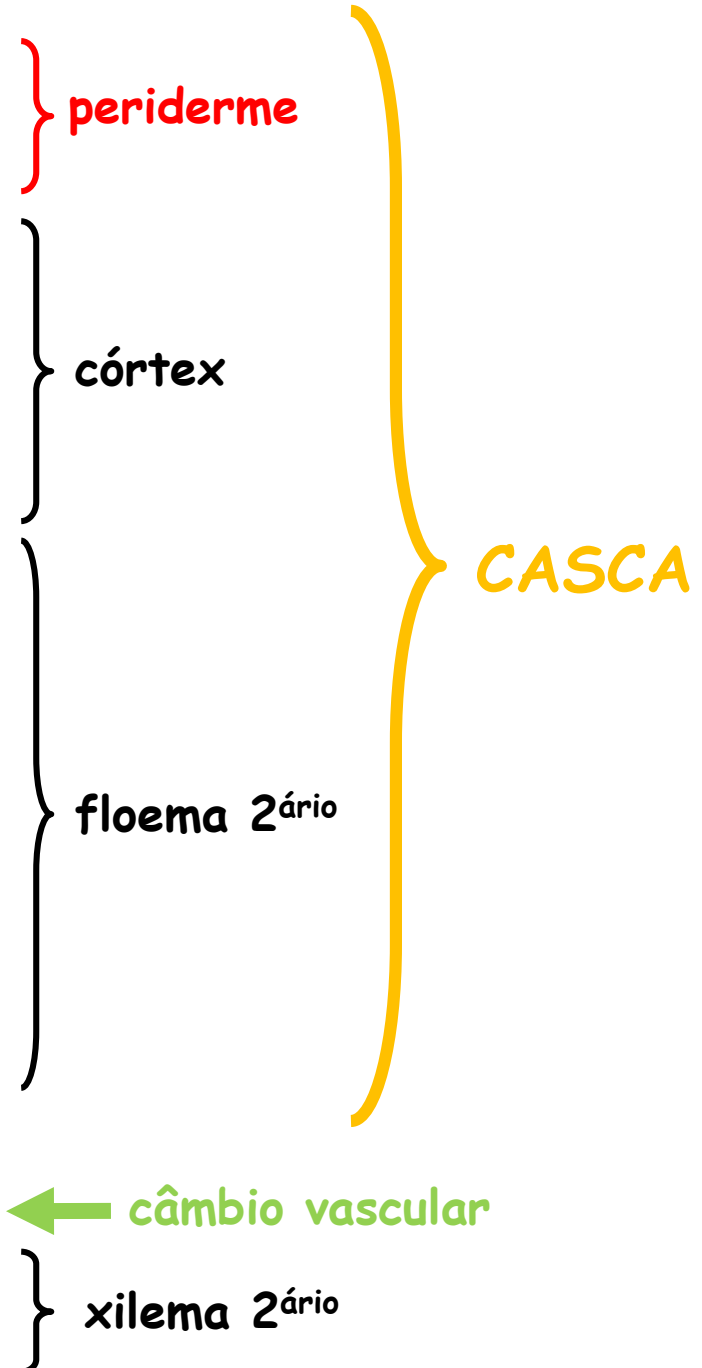


CÂMBIO VASCULAR



PERIDERME

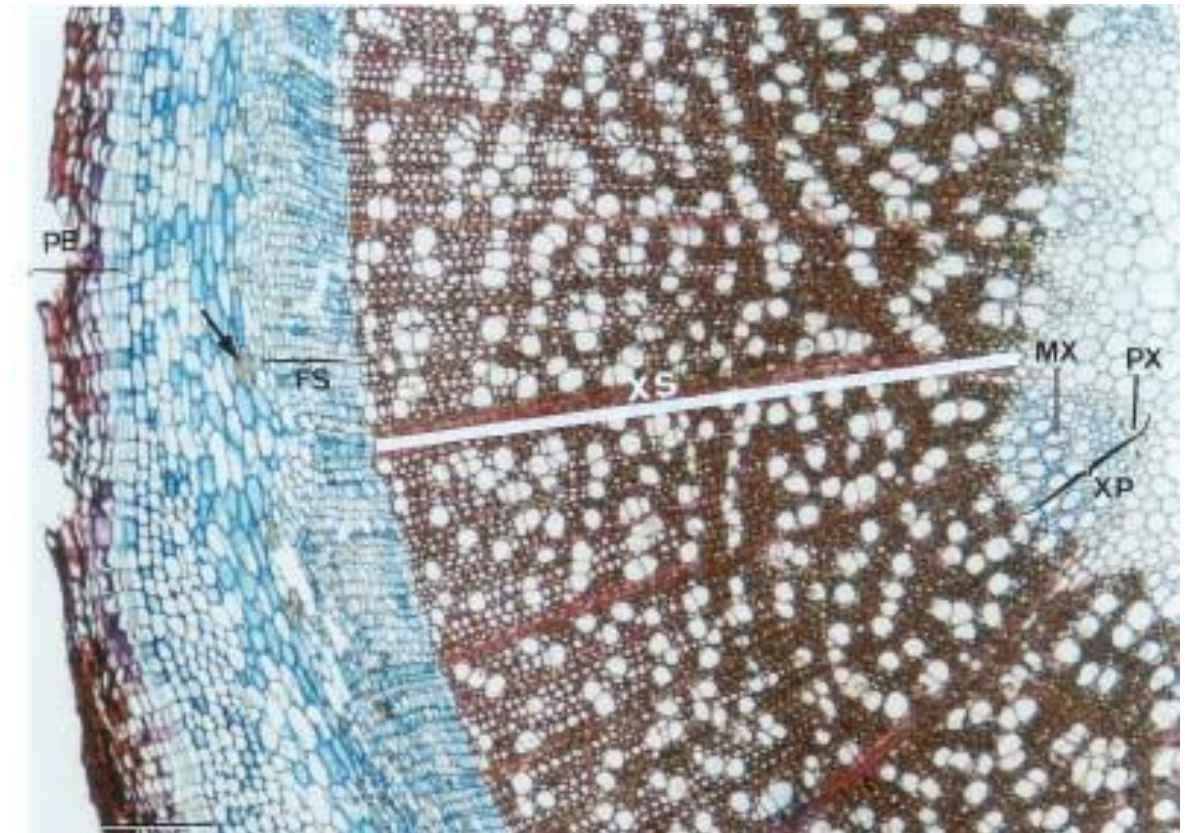
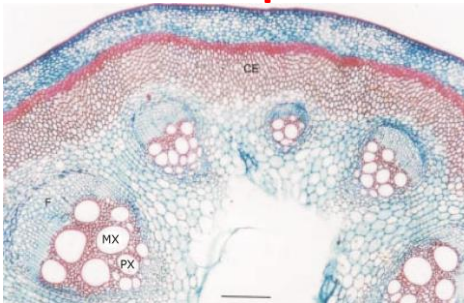




Crescimento secundário do caule: (estrutura secundária)

- Atividade do câmbio
- Felogênio

Crescimento primário



ESTRUTURA PRIMÁRIA

Raiz	Caule
Epiderme	Epiderme
Córtex <ul style="list-style-type: none">exoderme (se presente)parênquima corticalendoderme	Córtex <ul style="list-style-type: none">parênquima corticalEndoderme (distinta ou não)
Cilindro Vascular <ul style="list-style-type: none">pericicloF e X alternadosXilema exarco	Cilindro Vascular <ul style="list-style-type: none">Periciclo (distinto ou não)F e X em feixesXilema endarco

Questões:

- 1- Quais as funções do caule?
- 2- Caracterize anatomicamente o sistema vascular do caule.
- 3- Diferencie anatomicamente o caule de eudicotiledônea e de monocotiledônea.
- 4- Quais meristemas promovem o crescimento secundário do caule e que tecidos eles formam?