

Tecidos vasculares

Prof. Dr. Diego Demarco

Assistam esta aula online em

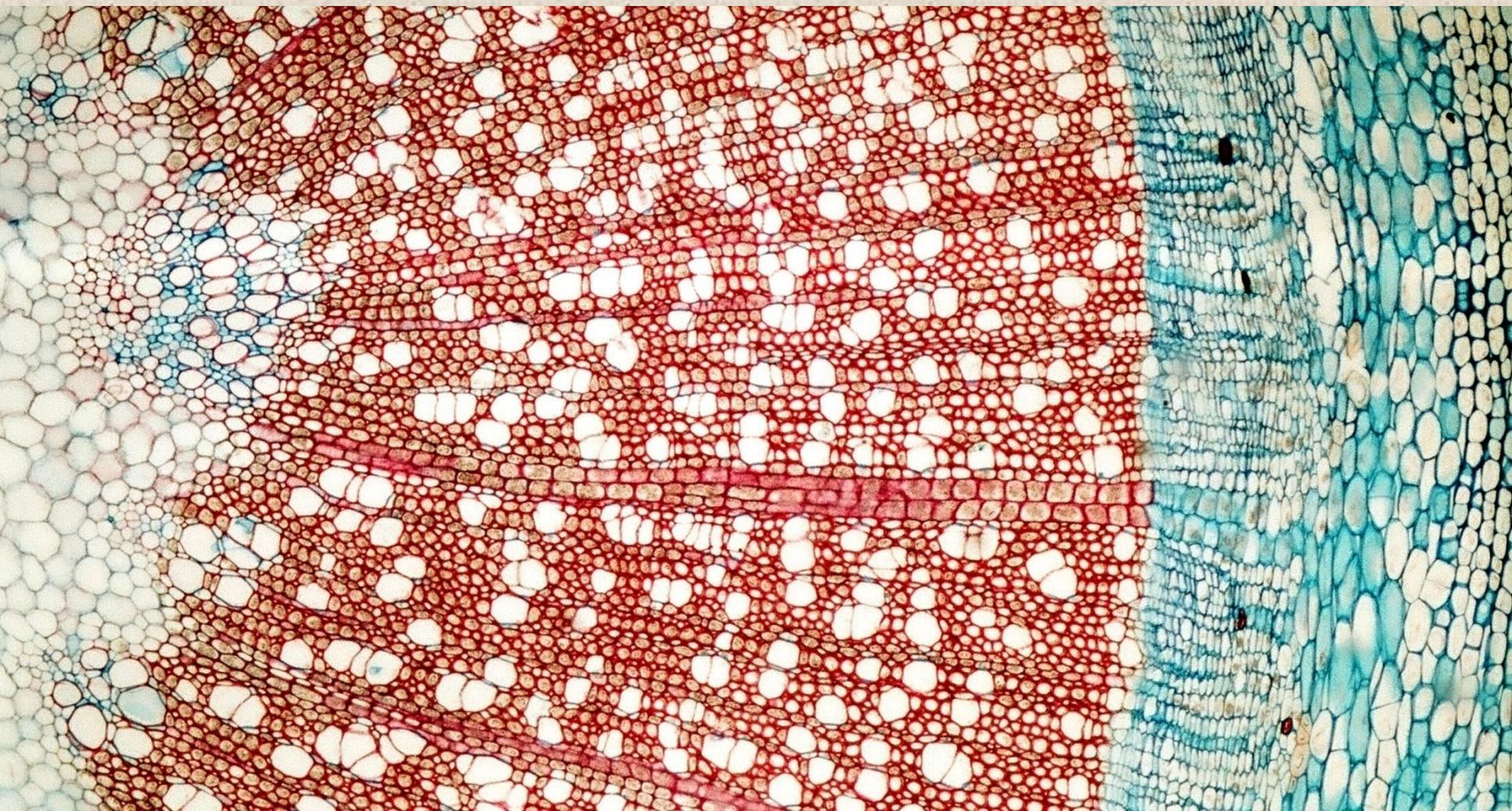
<http://eaulas.usp.br/portal/video.action?idItem=20893>

Organização dos tecidos nas plantas

- **Sistema revestimento – isolamento**
- **Sistema fundamental** (fotossíntese, armazenamento, sustentação etc.)
- **Sistema vascular – condução e sustentação**

Xilema

Floema

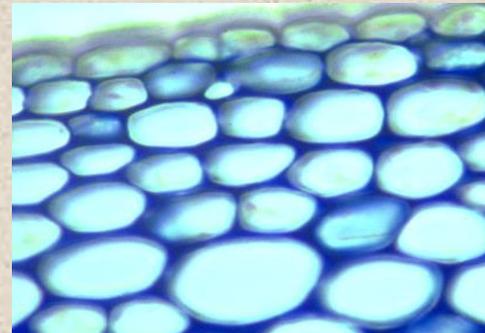


TECIDOS SIMPLES

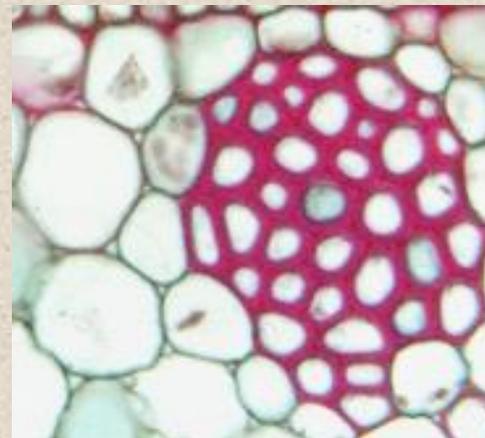
Parênquima



Colênquima



Esclerênquima



TECIDOS COMPLEXOS

- **XILEMA**

- Tipos celulares:

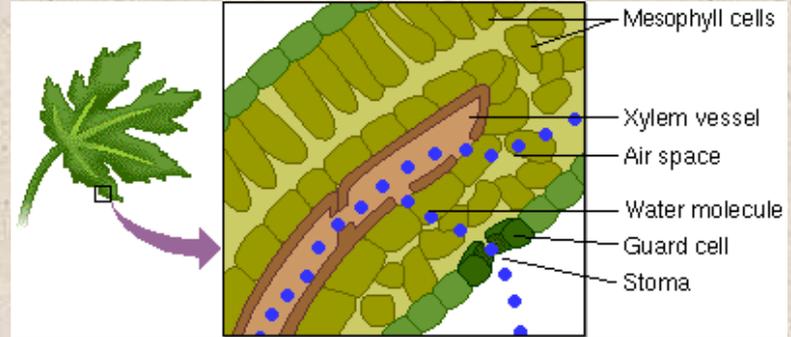
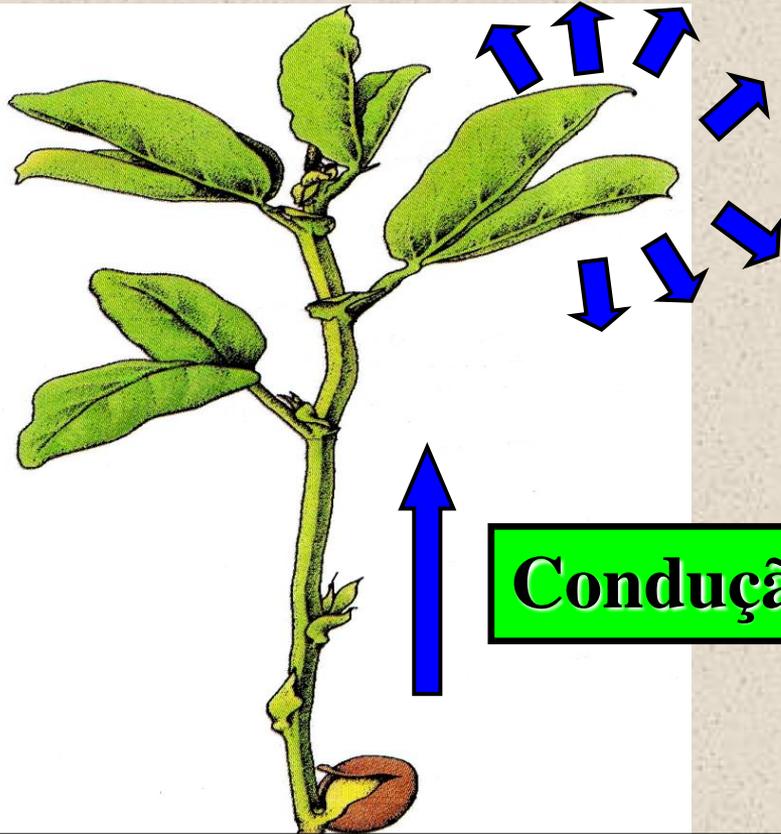
- Elementos traqueais (traqueídes ou elementos de vaso)
 - Fibras
 - Células parenquimáticas

- **FLOEMA**

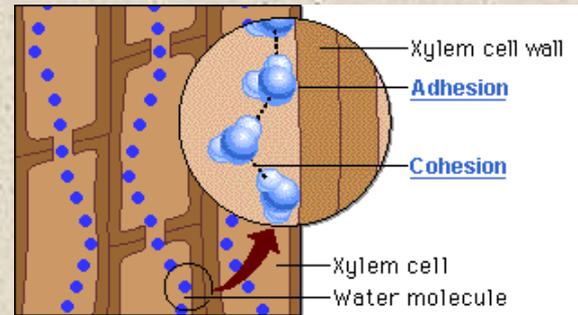
- Tipos celulares:

- Elementos crivados (células crivadas ou elementos de tubo crivado)
 - Fibras ou esclereídes
 - Células parenquimáticas (Strasburger ou companheiras)

Xilema

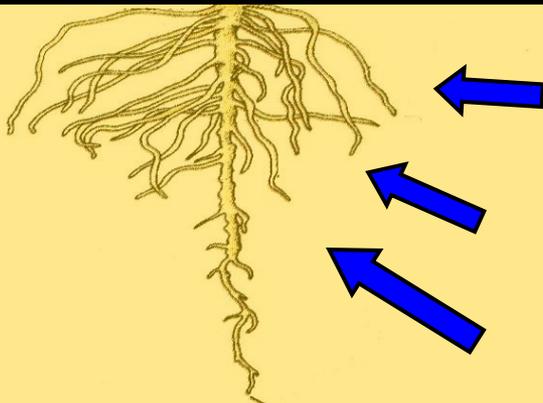


Condução

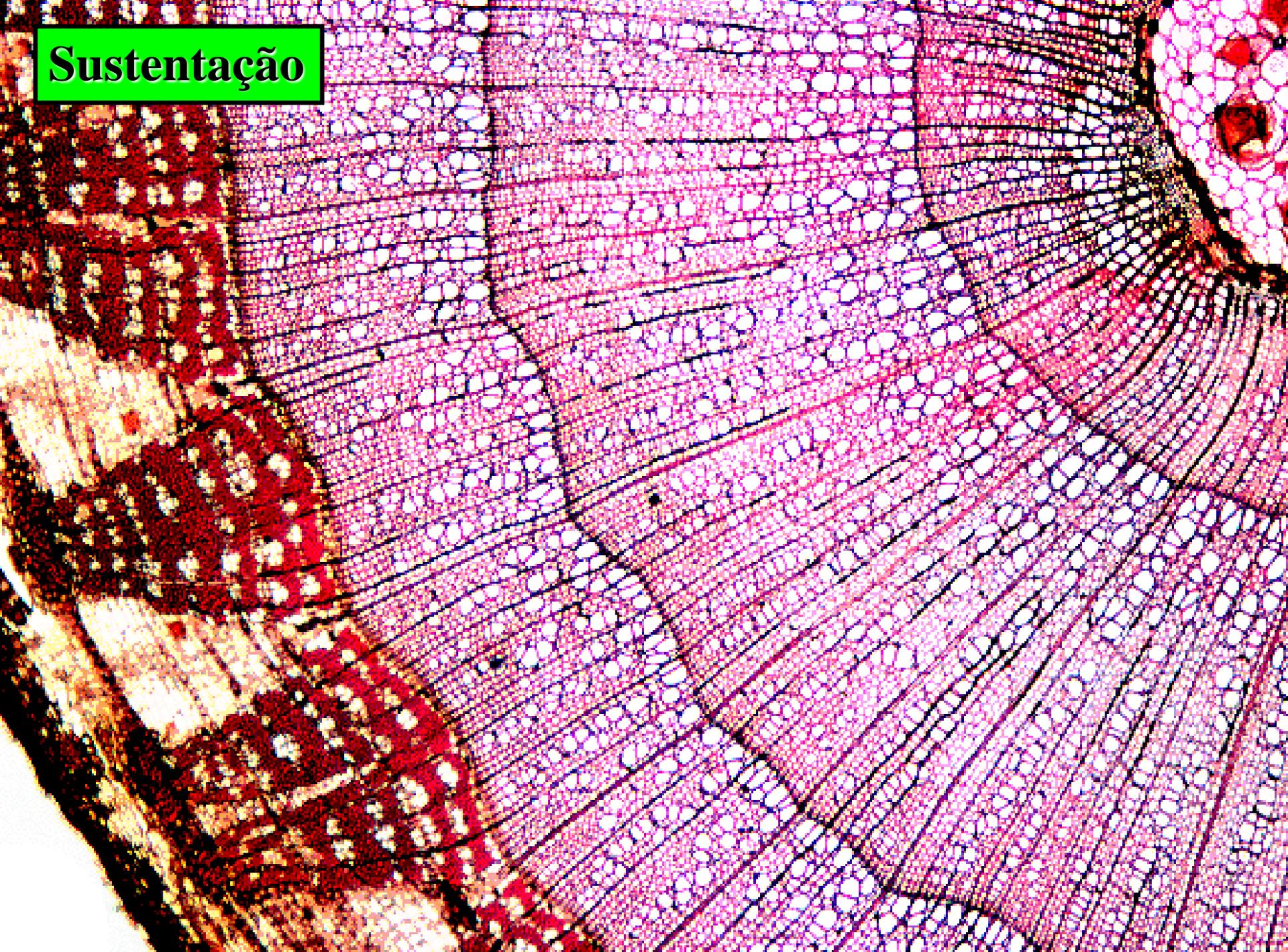


Absorção

H₂O
Sais Minerais



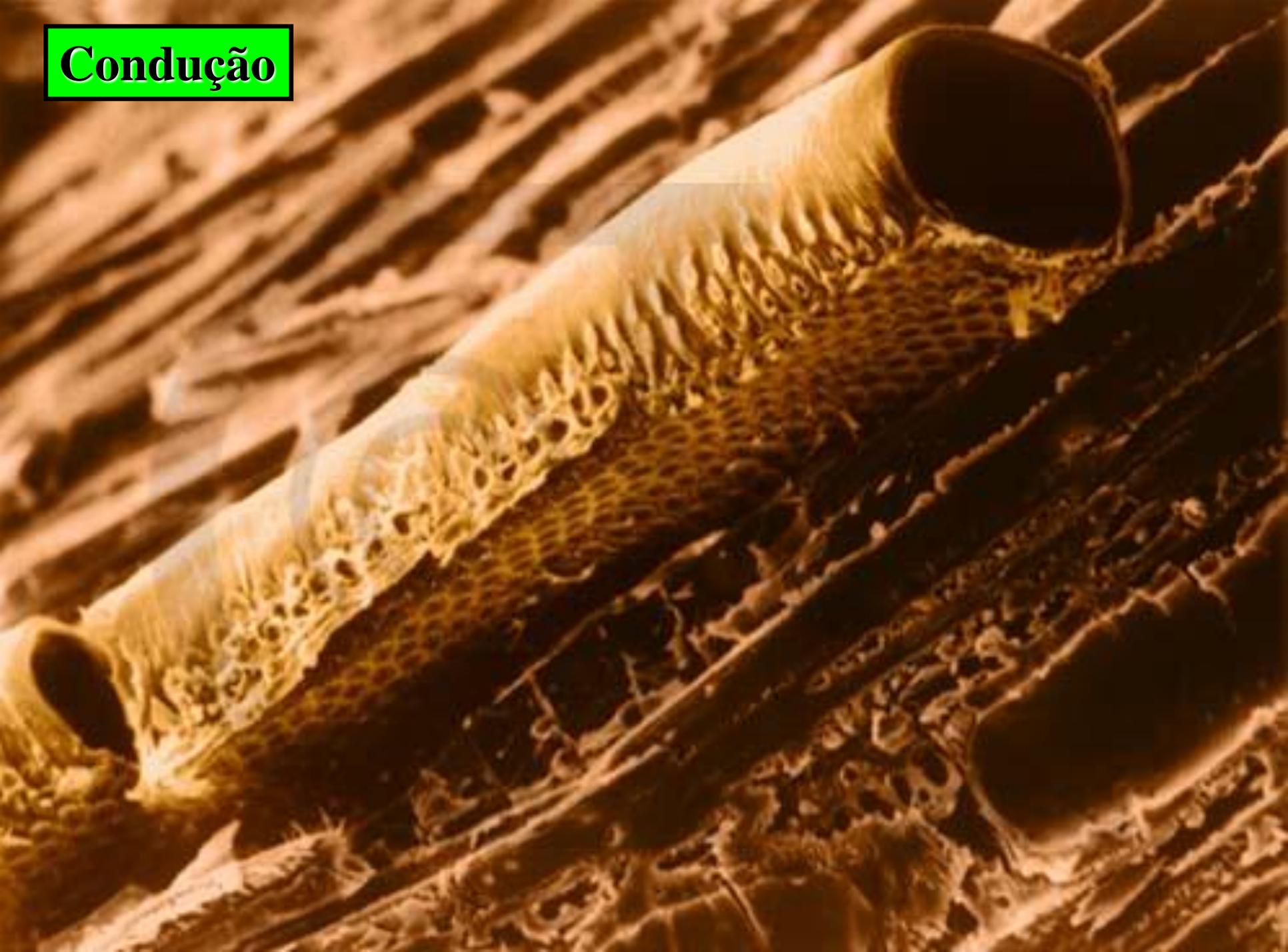
Sustentação



Reserva - amido



Condução

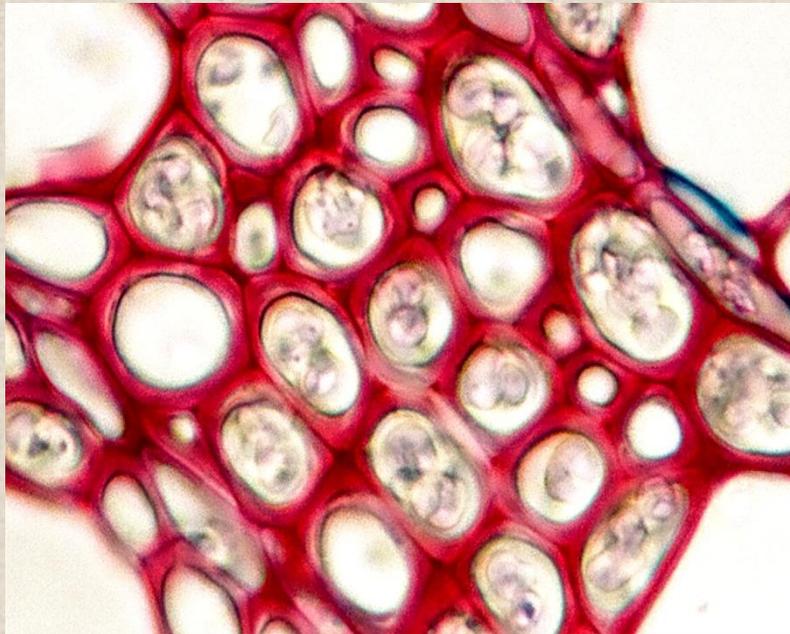


- ***Fibras***

- Células alongadas com extremidades afiladas
- Vivas ou mortas na maturidade
- Parede secundária lignificada e muito espessas
- Função: sustentação mecânica

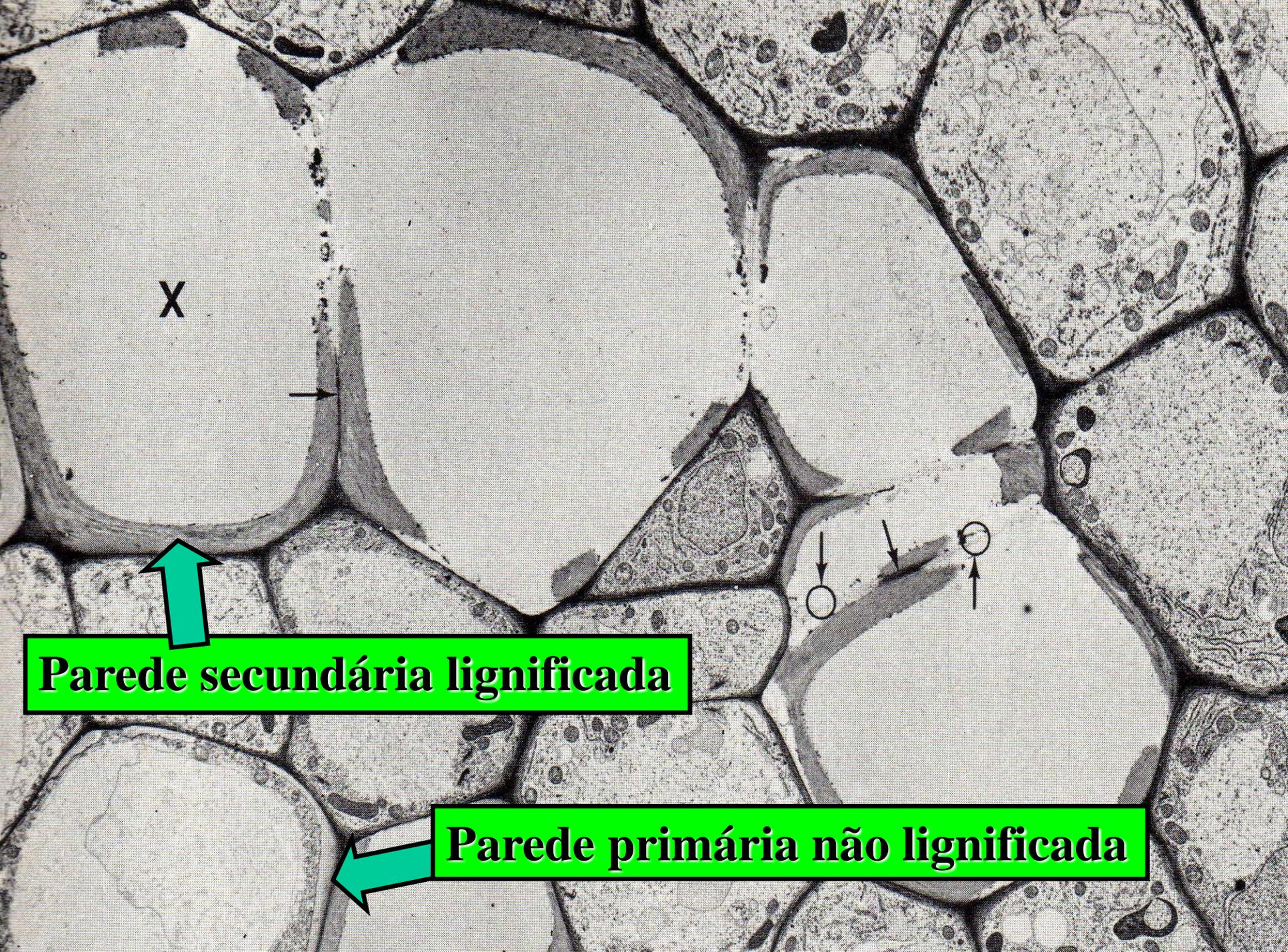


- *Células parenquimáticas*
- Células vivas
- Função: armazenamento



Elemento traqueal – condução





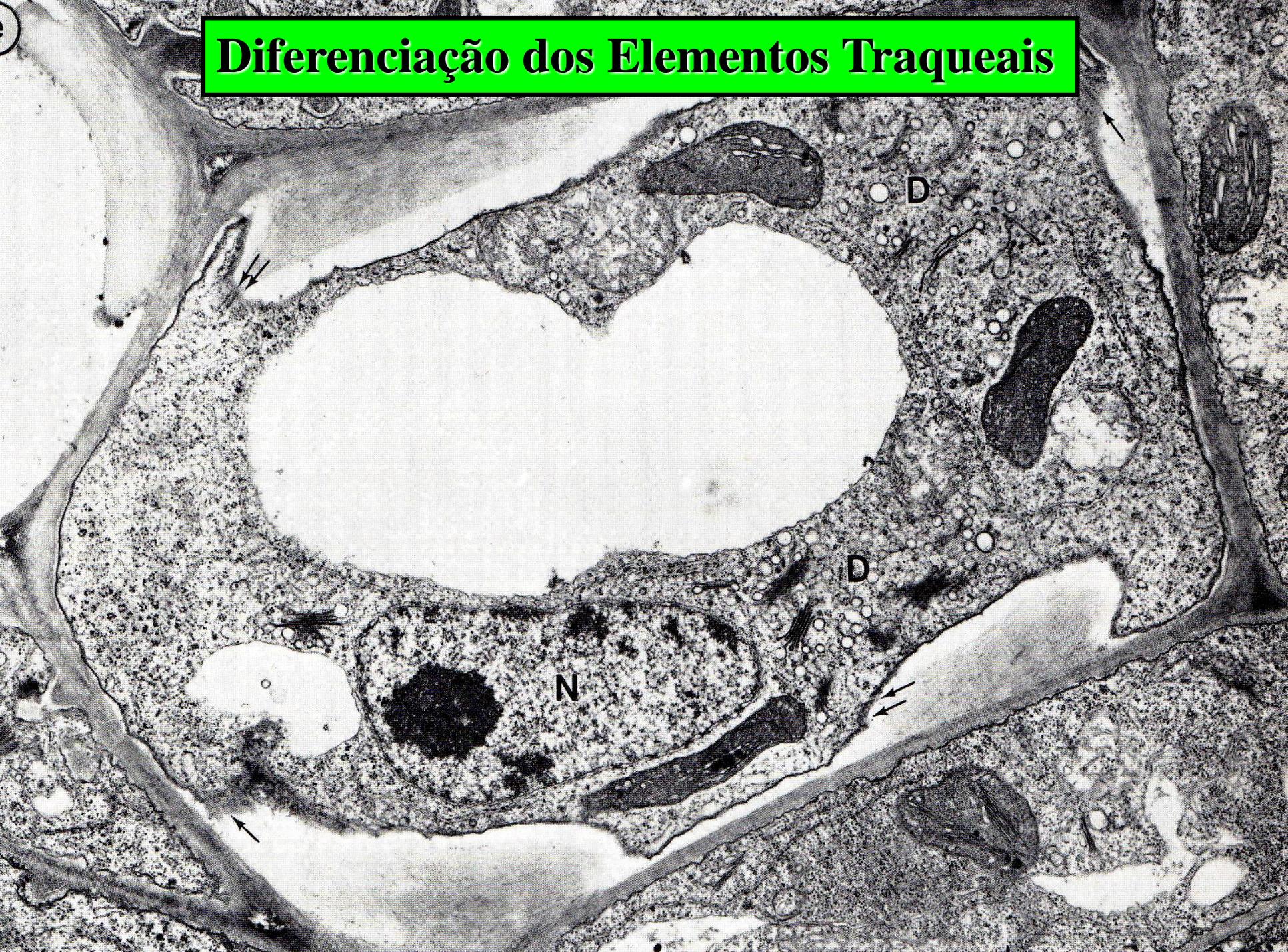
X



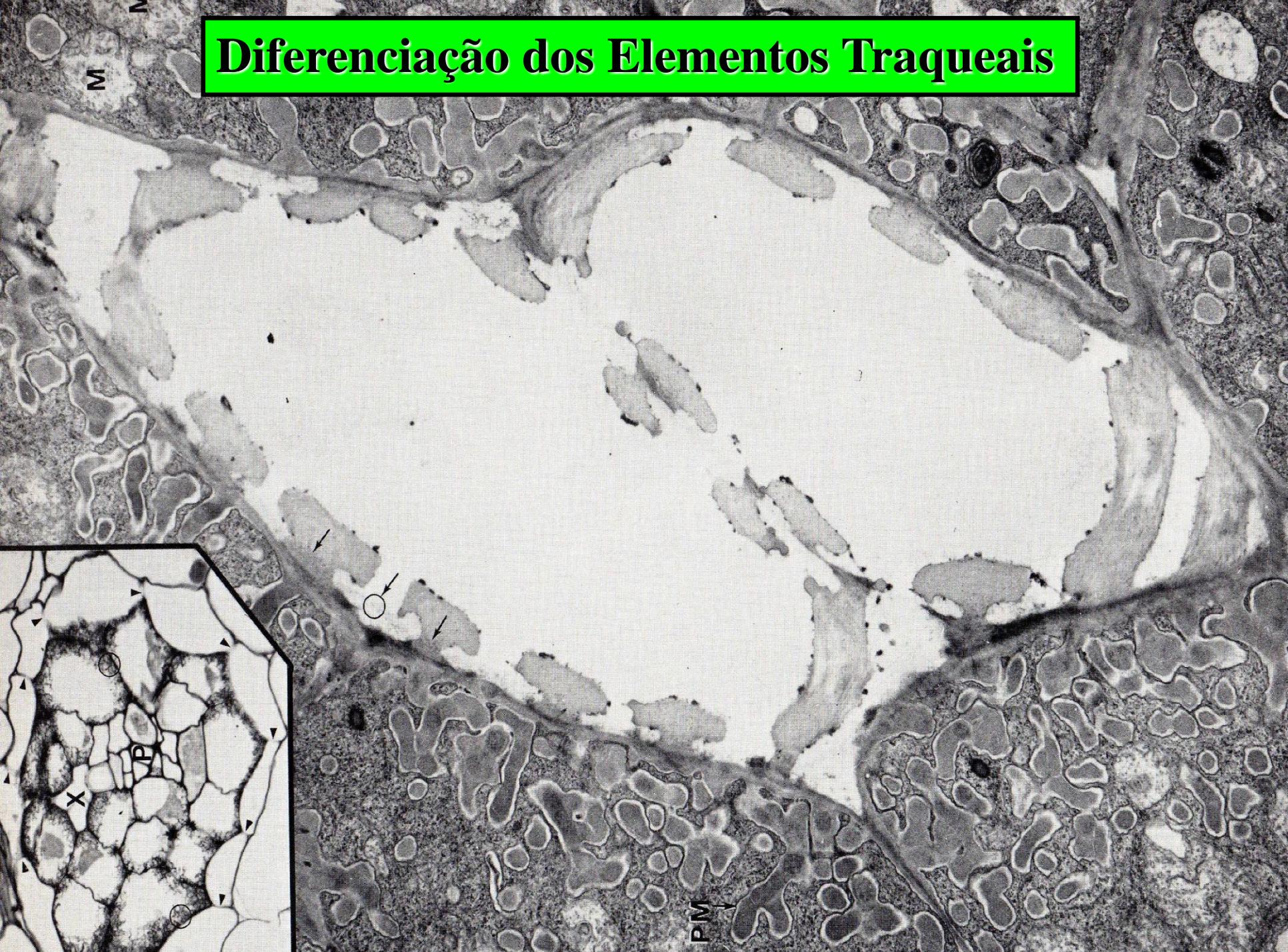
Parede secundária lignificada

Parede primária não lignificada

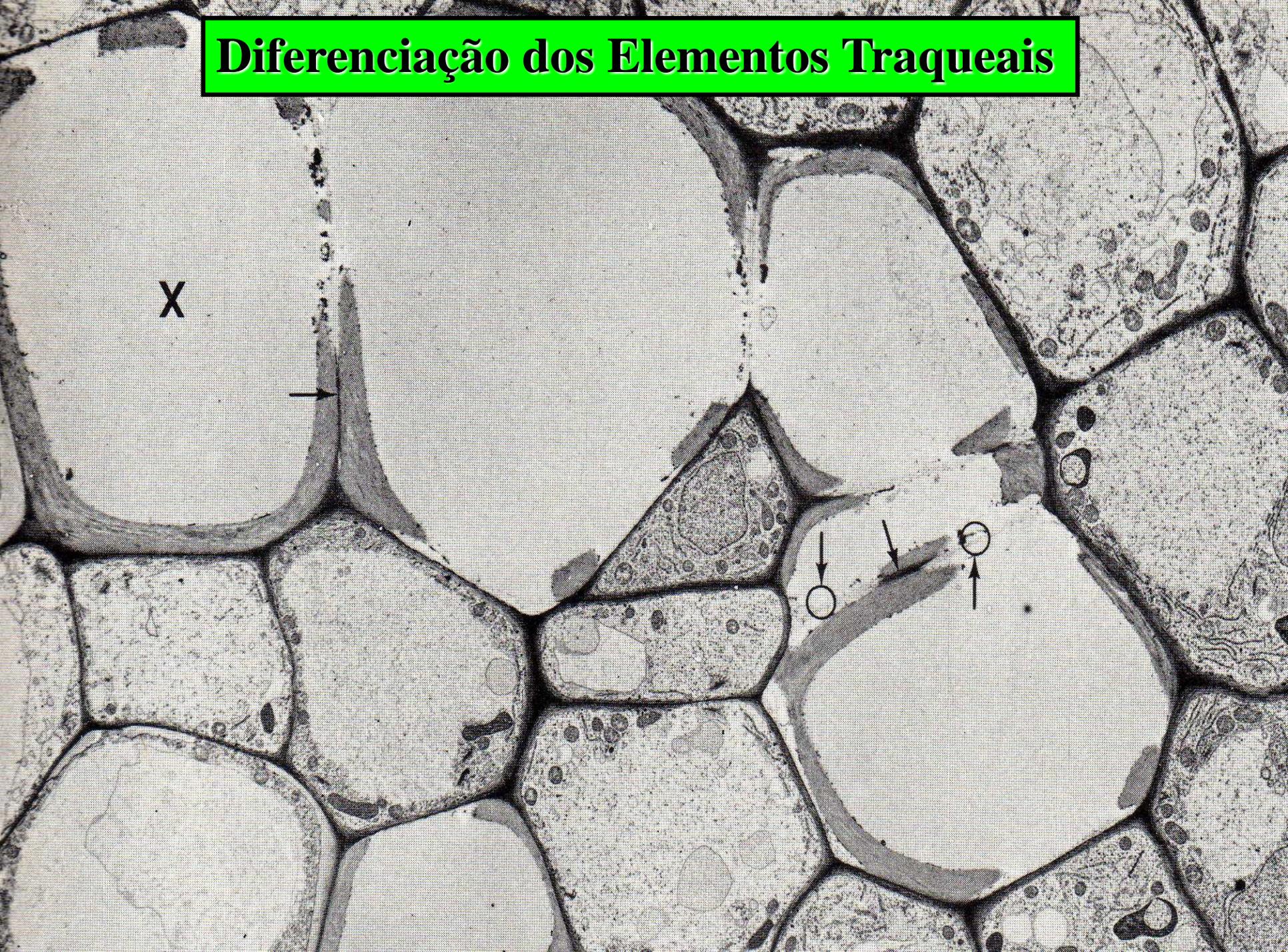
Diferenciação dos Elementos Traqueais



Diferenciação dos Elementos Traqueais



Diferenciação dos Elementos Traqueais



Elementos traqueais

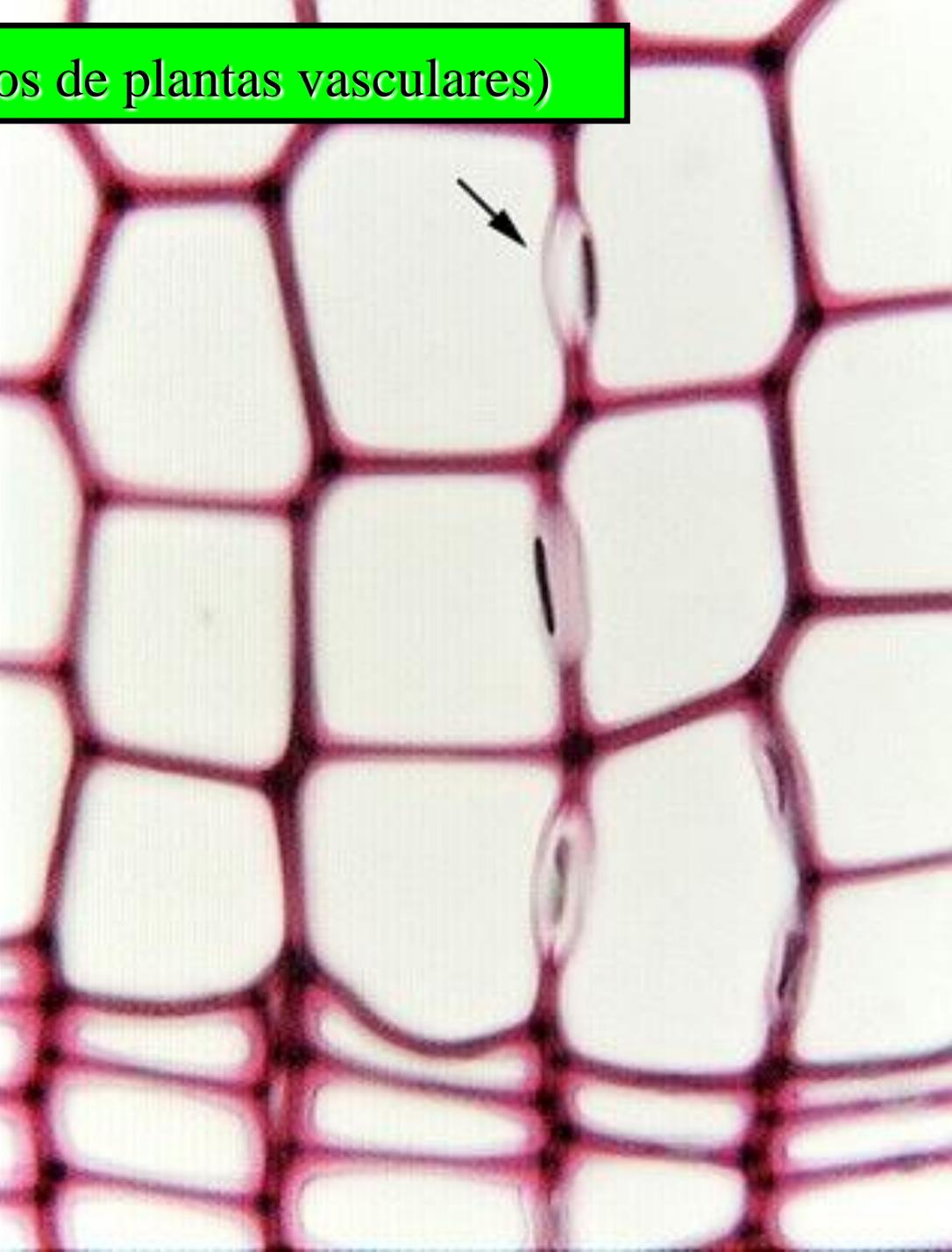
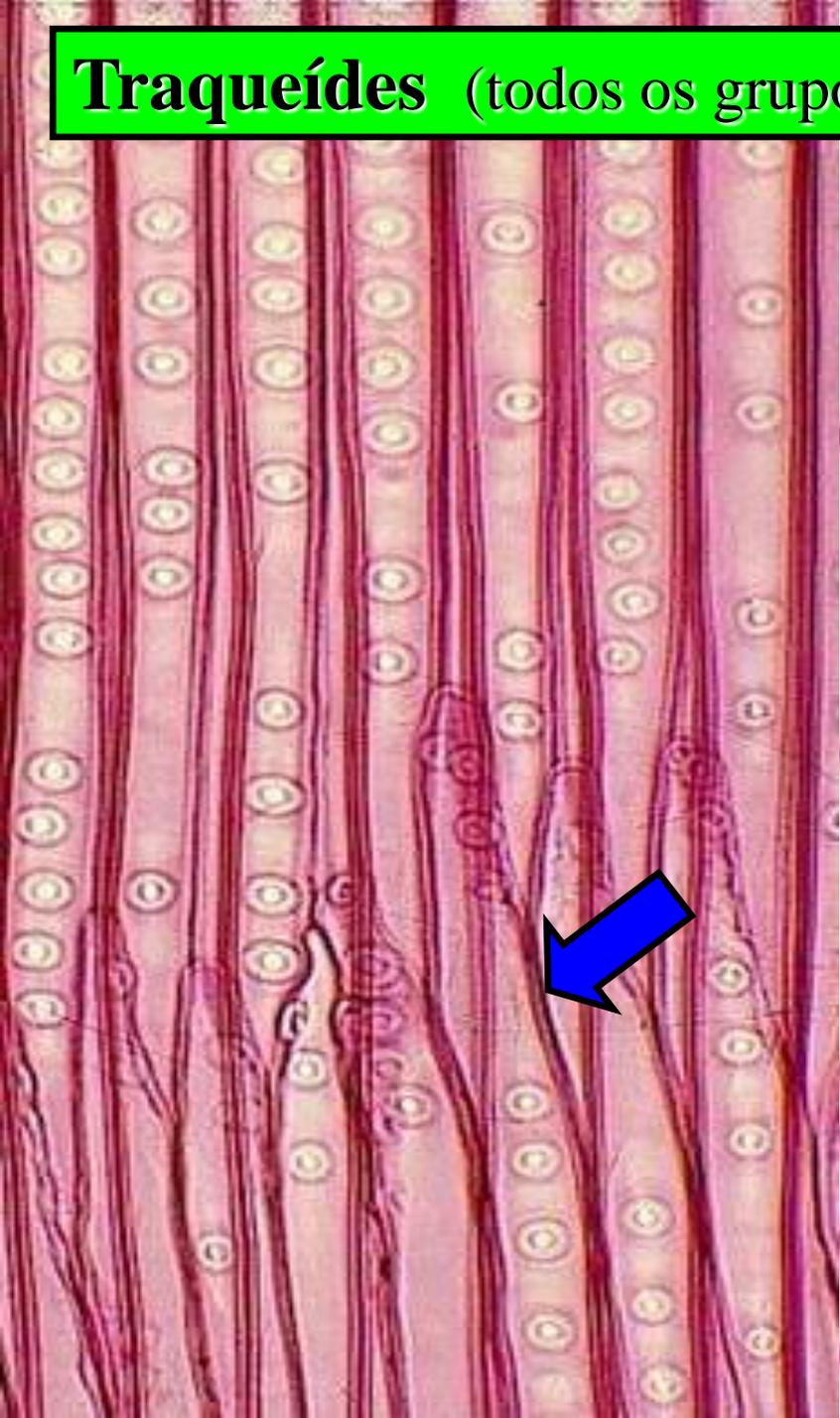
➡ **Função:**

- condução de água e sais minerais
- sustentação

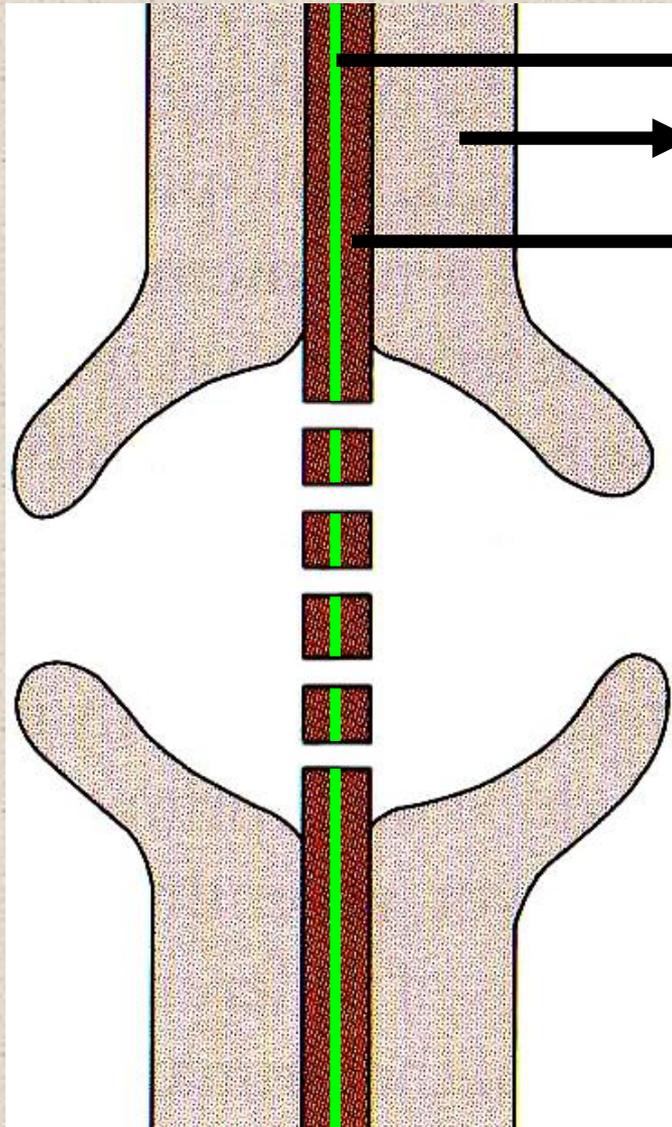
➡ **Dois tipos celulares** (distintos pela estrutura da parede terminal):

- **Traqueídes** (pontoações)
- **Elementos de vaso** (pontoações e placas de perfuração)

Traqueídes (todos os grupos de plantas vasculares)



Pontoação Areolada

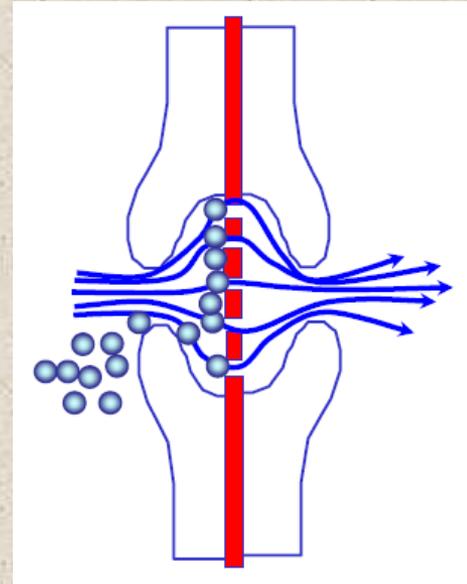


Lamela Média

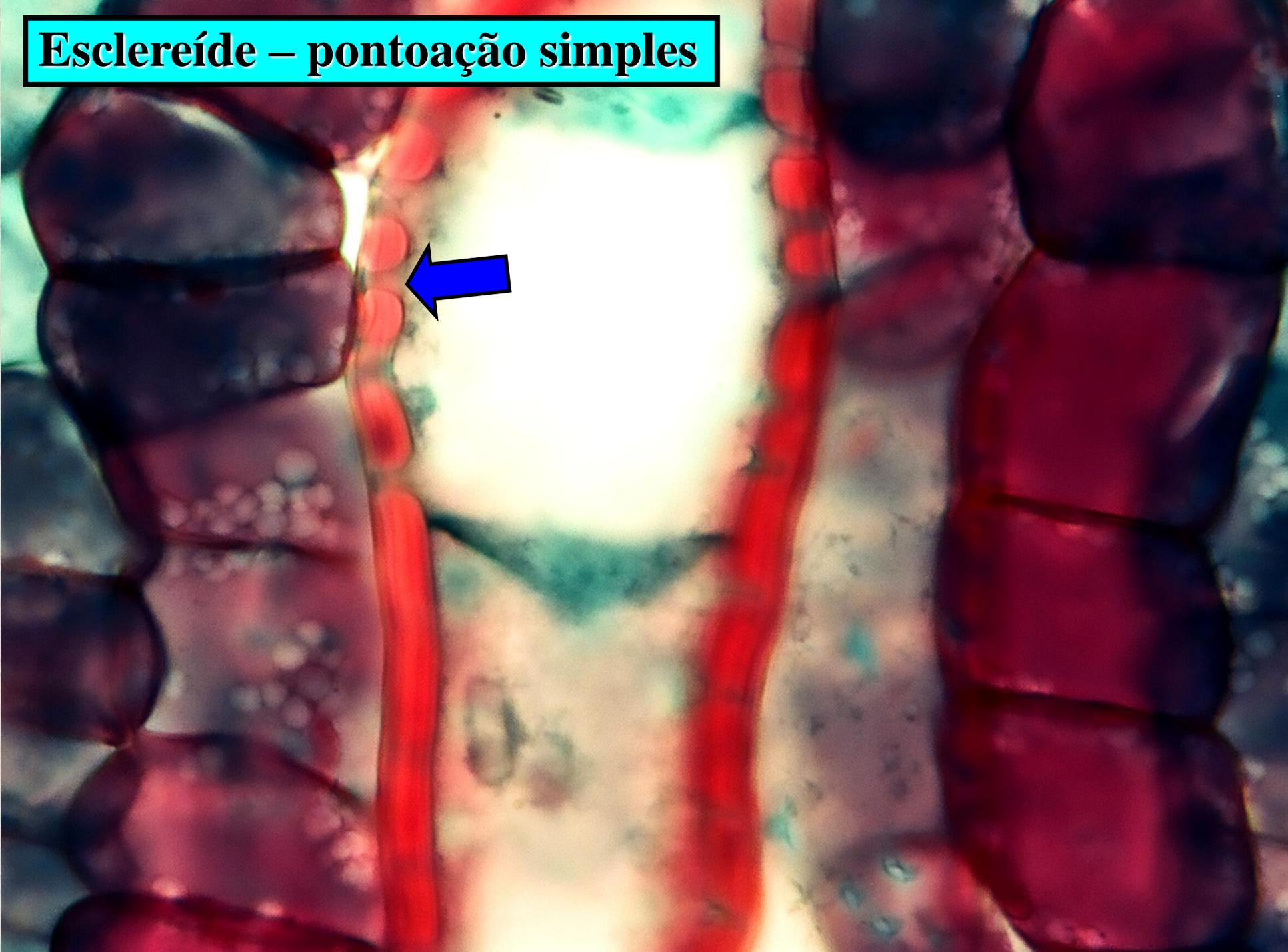
Parede Secundária

Parede Primária

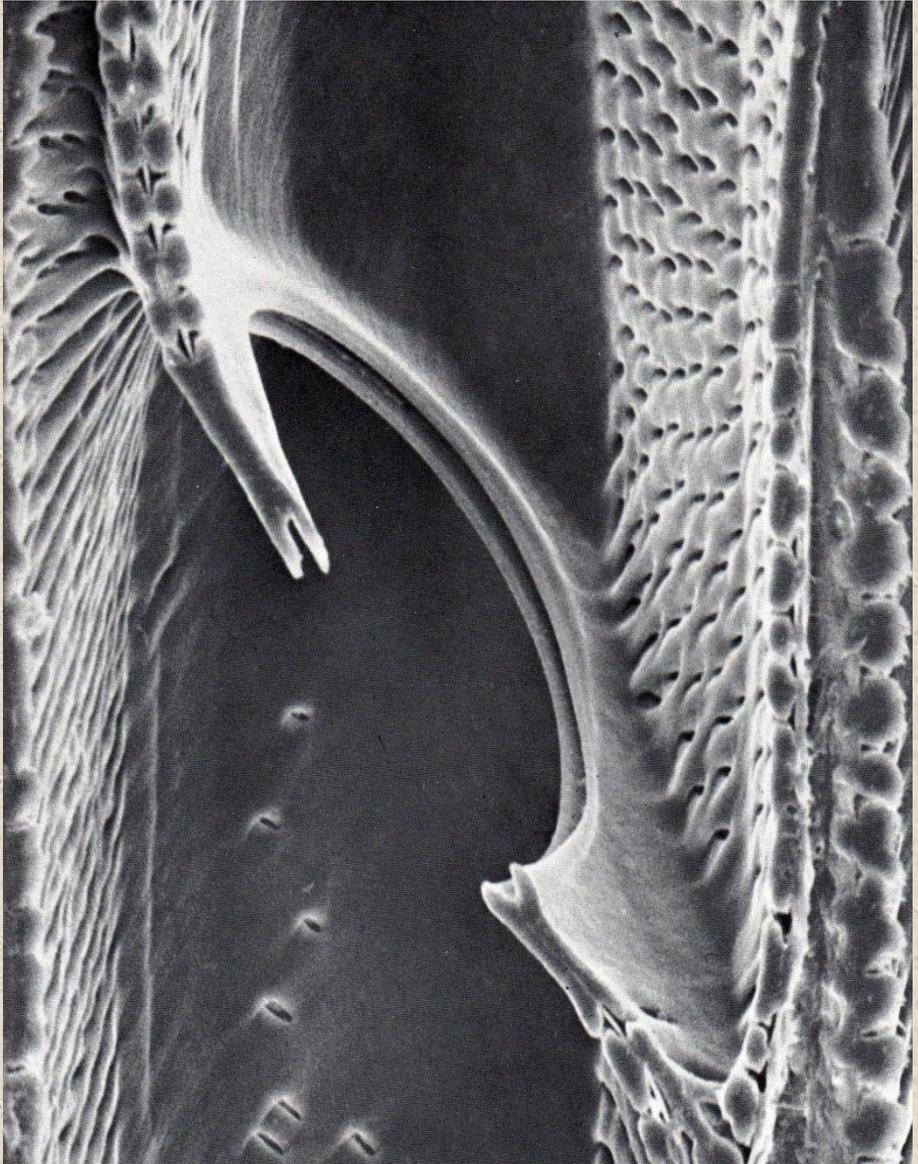
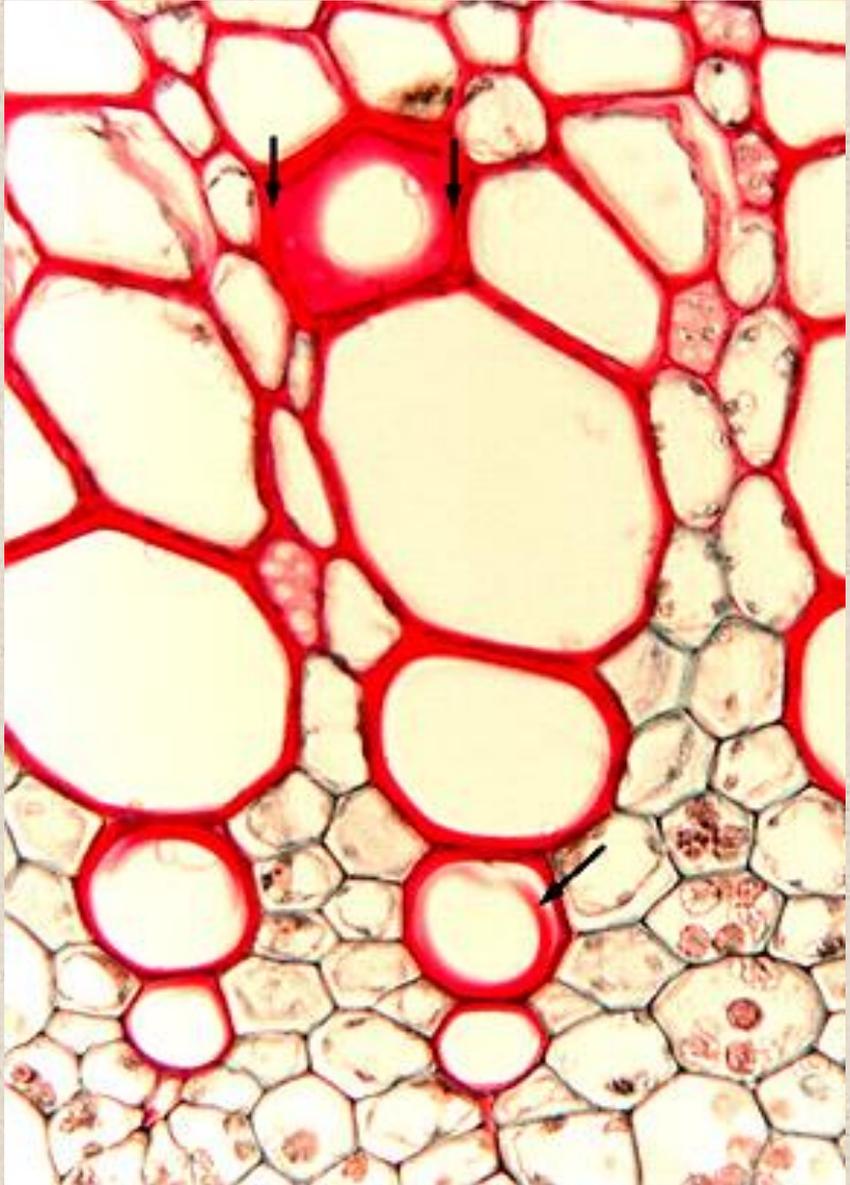
Pontoação Areolada



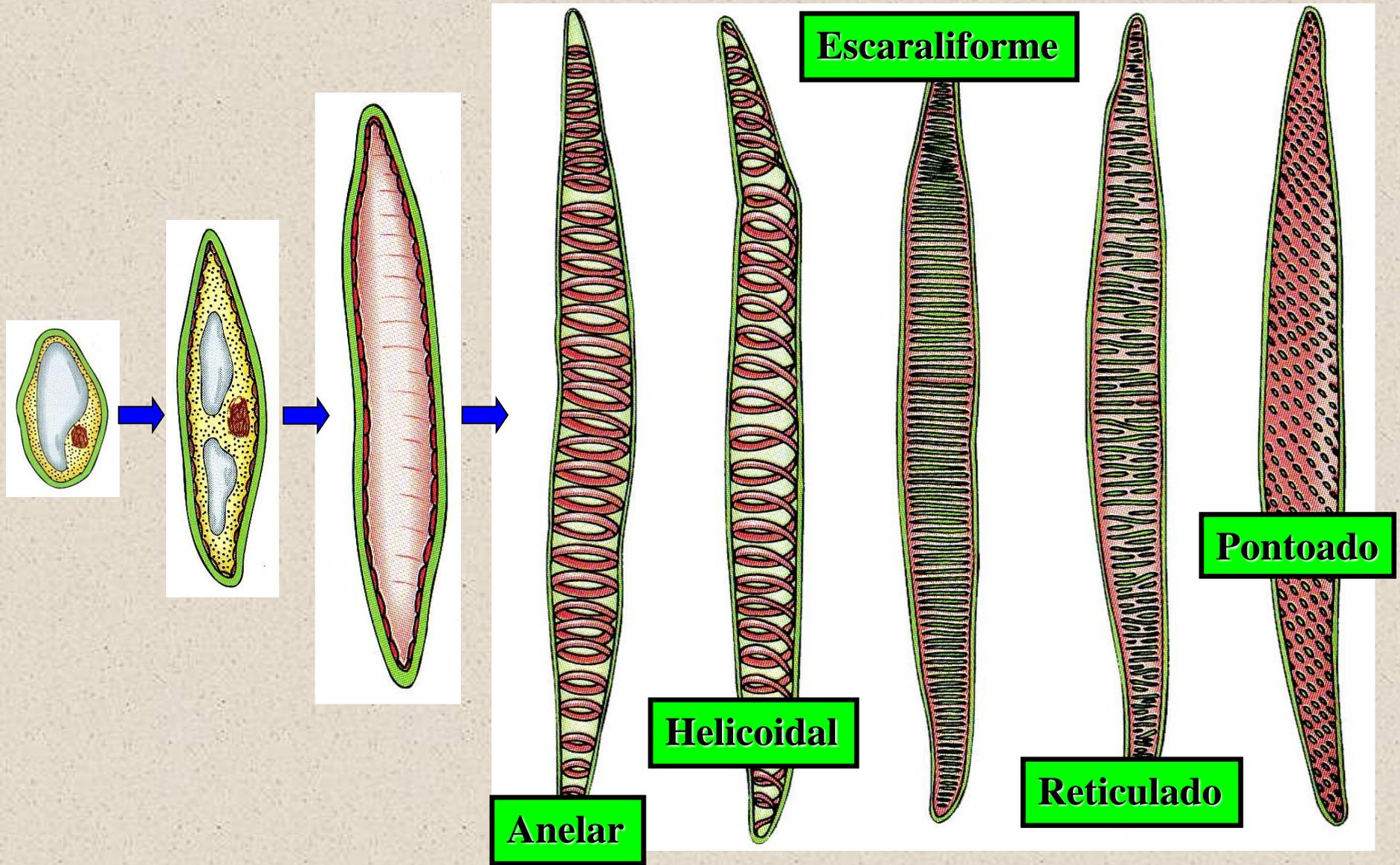
Esclereíde – pontoação simples



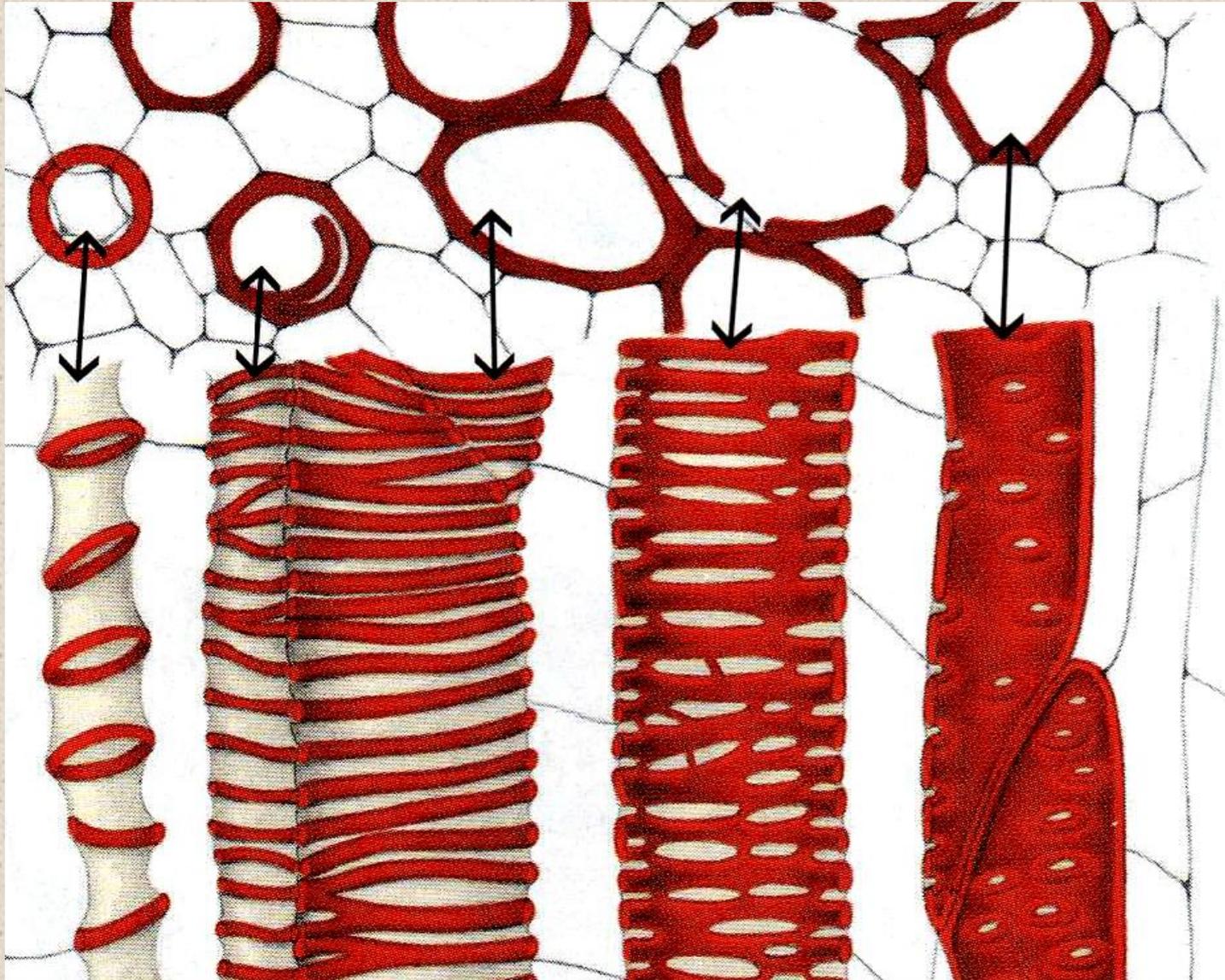
Elemento de vaso - placa de perfuração

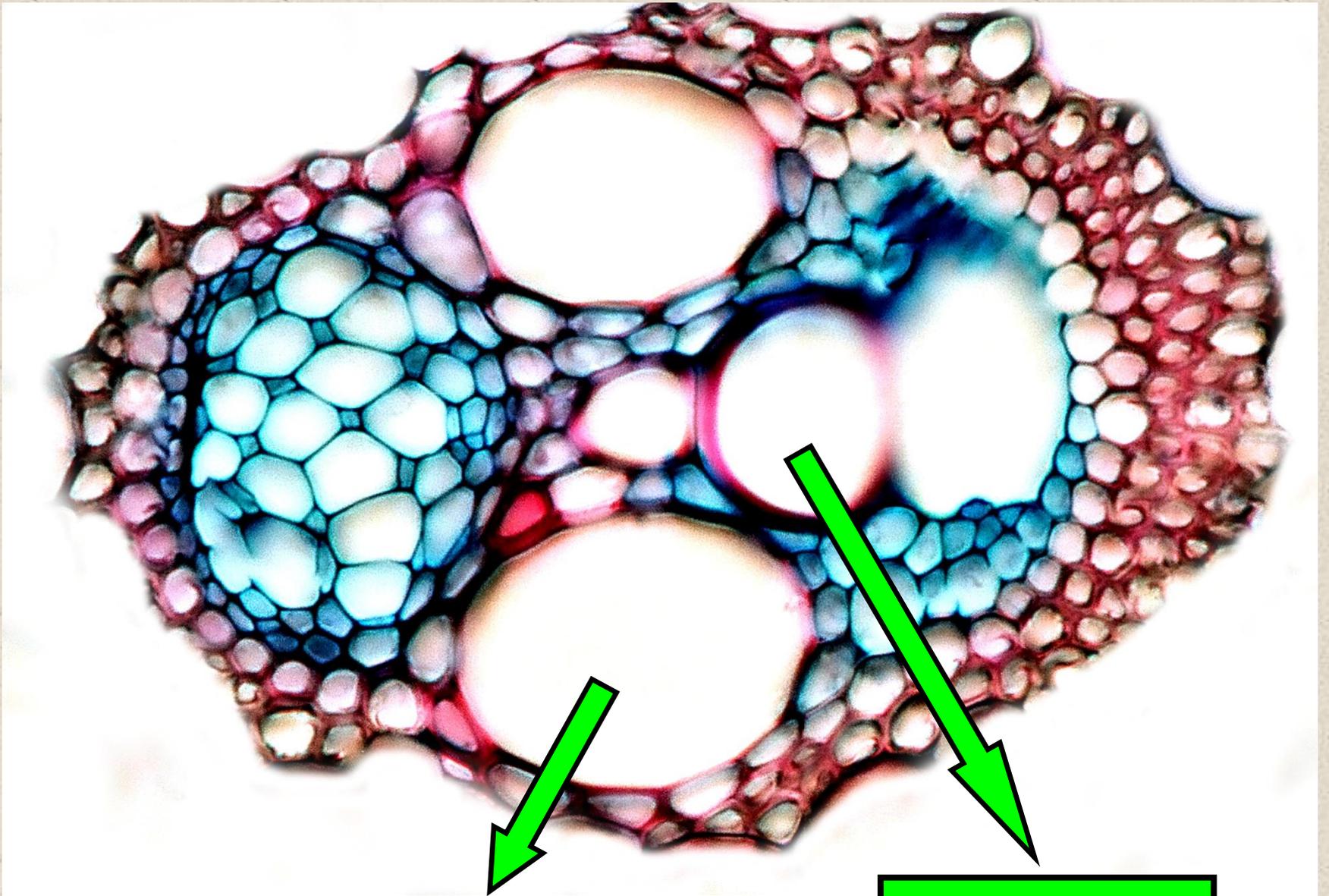


Diferenciação dos Elementos Traqueais



Tipos de Espessamento dos Elementos Traqueais

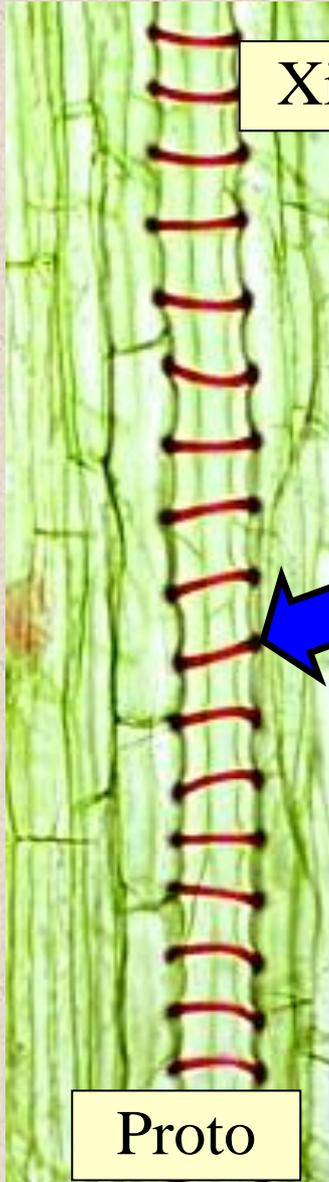




Metaxilema

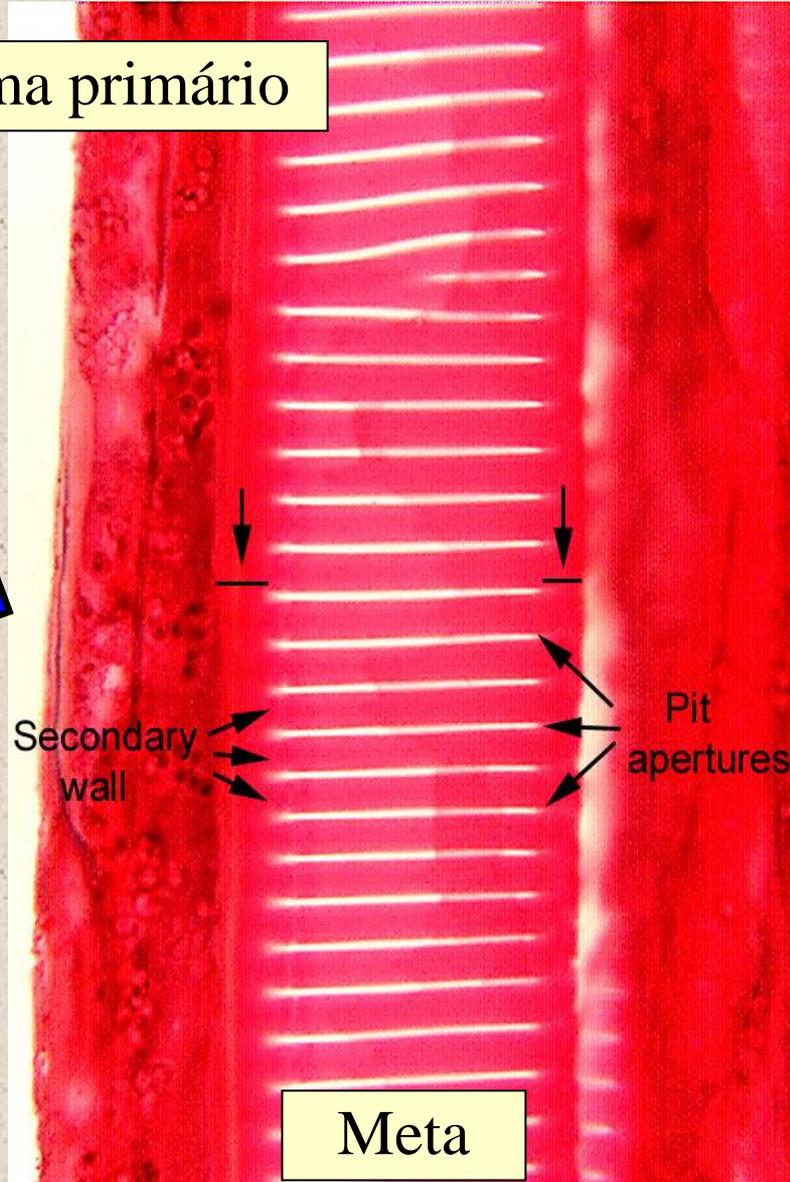
Protoxilema

Tipos de Espessamento dos Elementos Traqueais

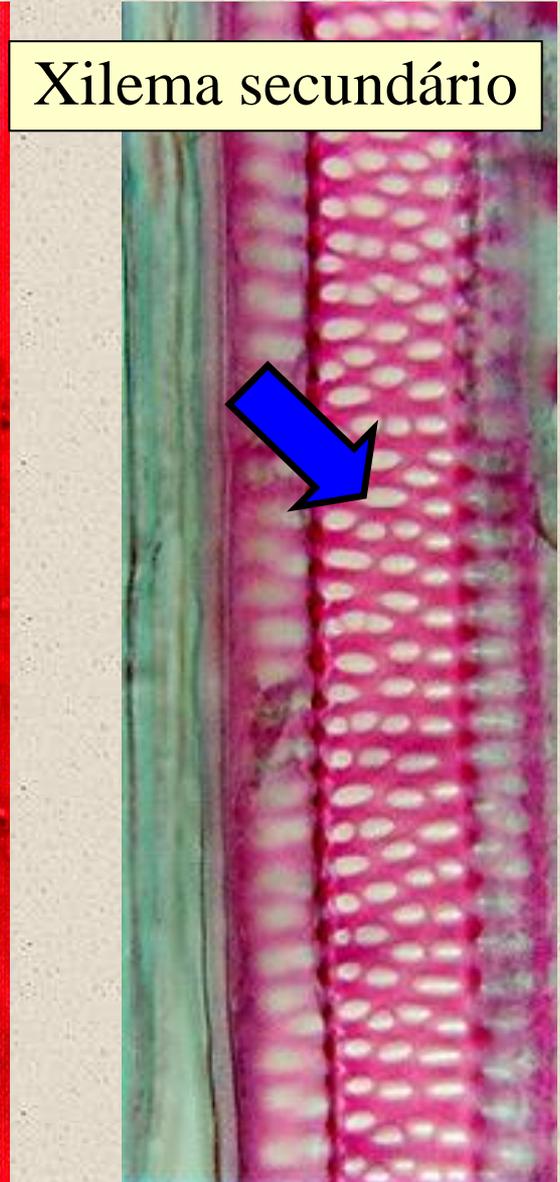


Xilema primário

Proto

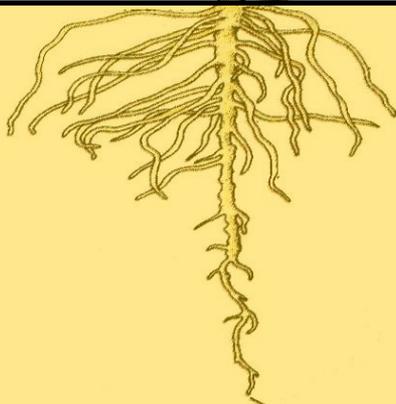
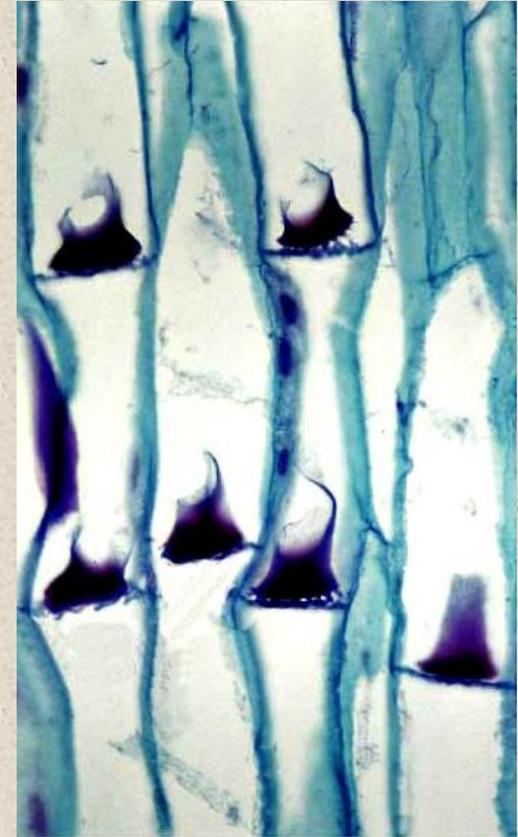
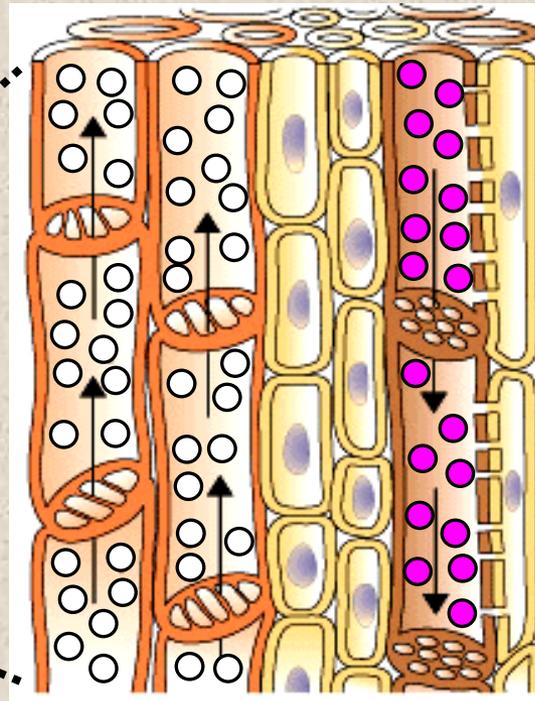
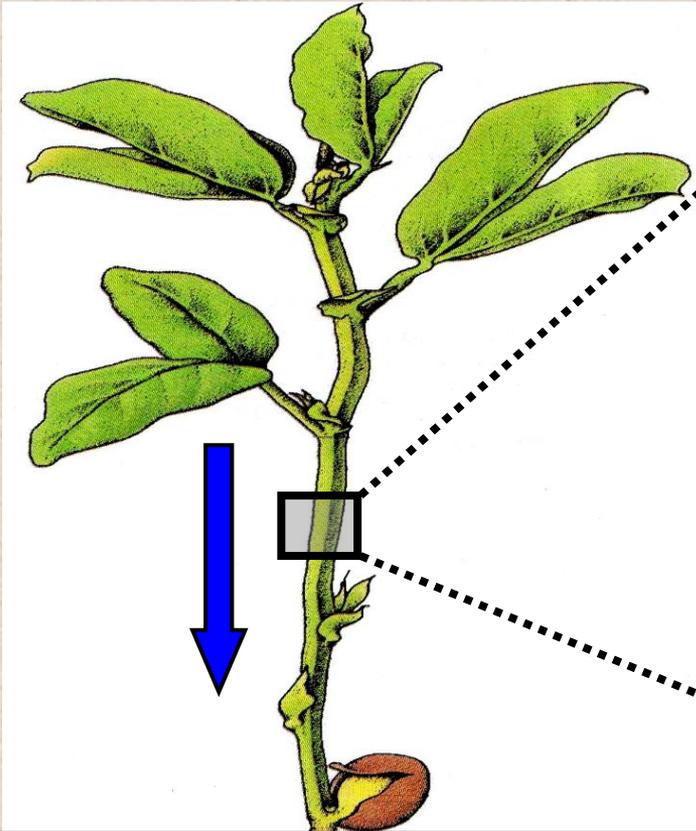


Meta



Xilema secundário

Floema



- Elementos crivados (célula crivada ou elemento de tubo crivado)
- Célula parenquimática (Strasburger ou companheira)
- Fibras ou esclereídes*

Elementos crivados

➡ **Função:**

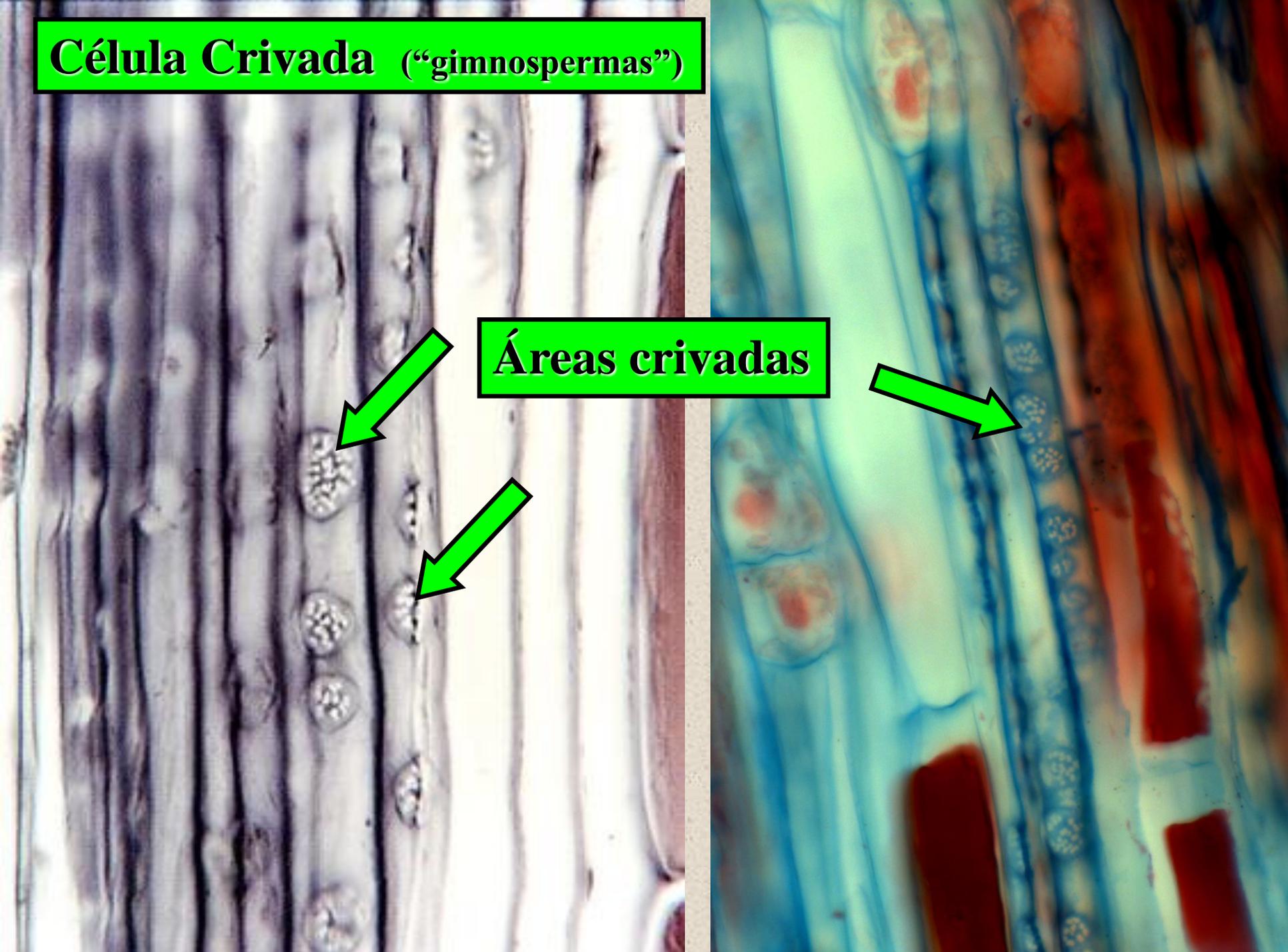
- condução da seiva

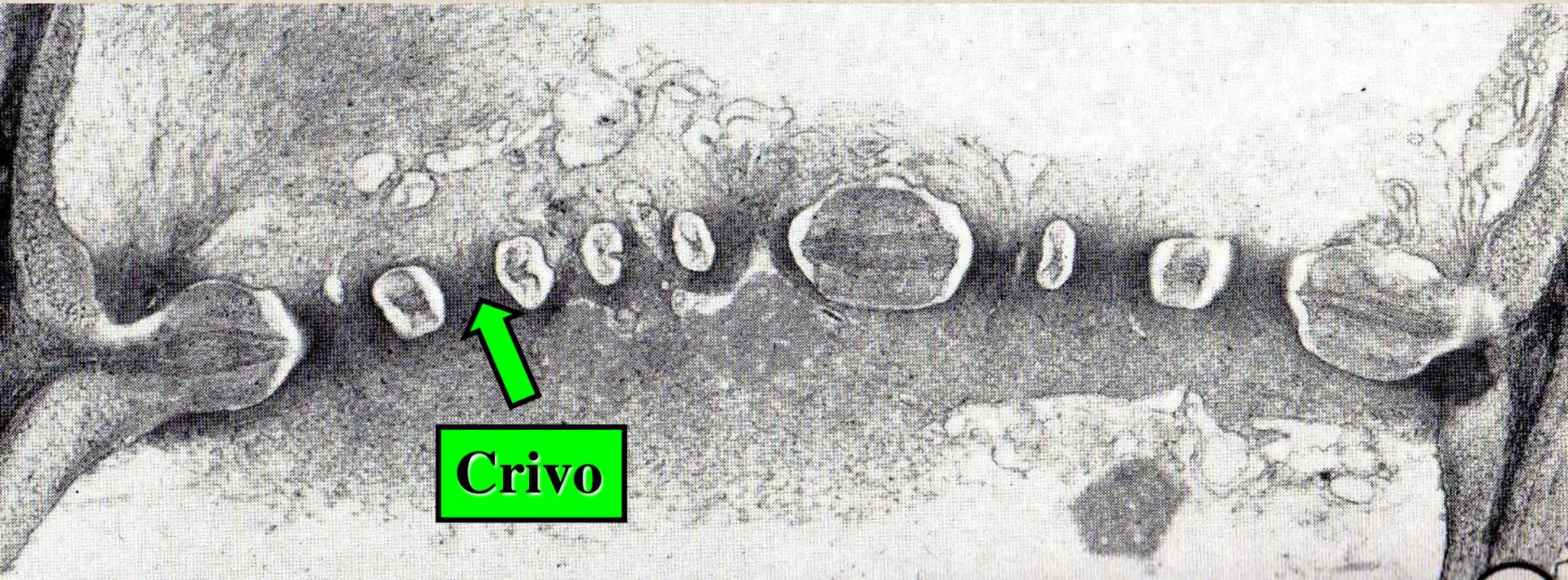
➡ **Dois tipos celulares** (distintos pela estrutura da parede terminal):

- **Células crivadas** (áreas crivadas)
- **Elementos de tubo crivado** (áreas crivadas e placas crivadas)

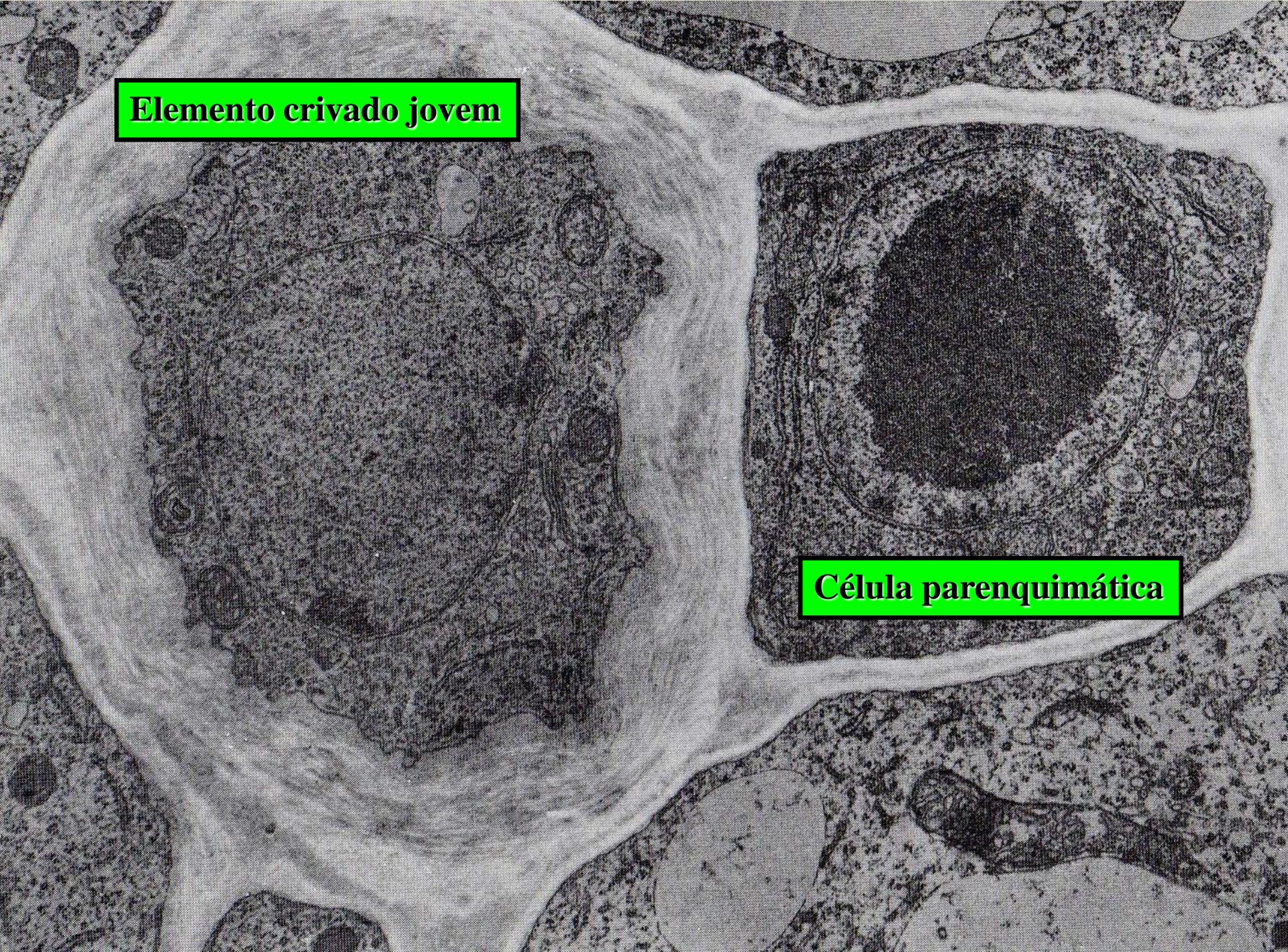
Célula Crivada (“gimnospermas”)

Áreas crivadas





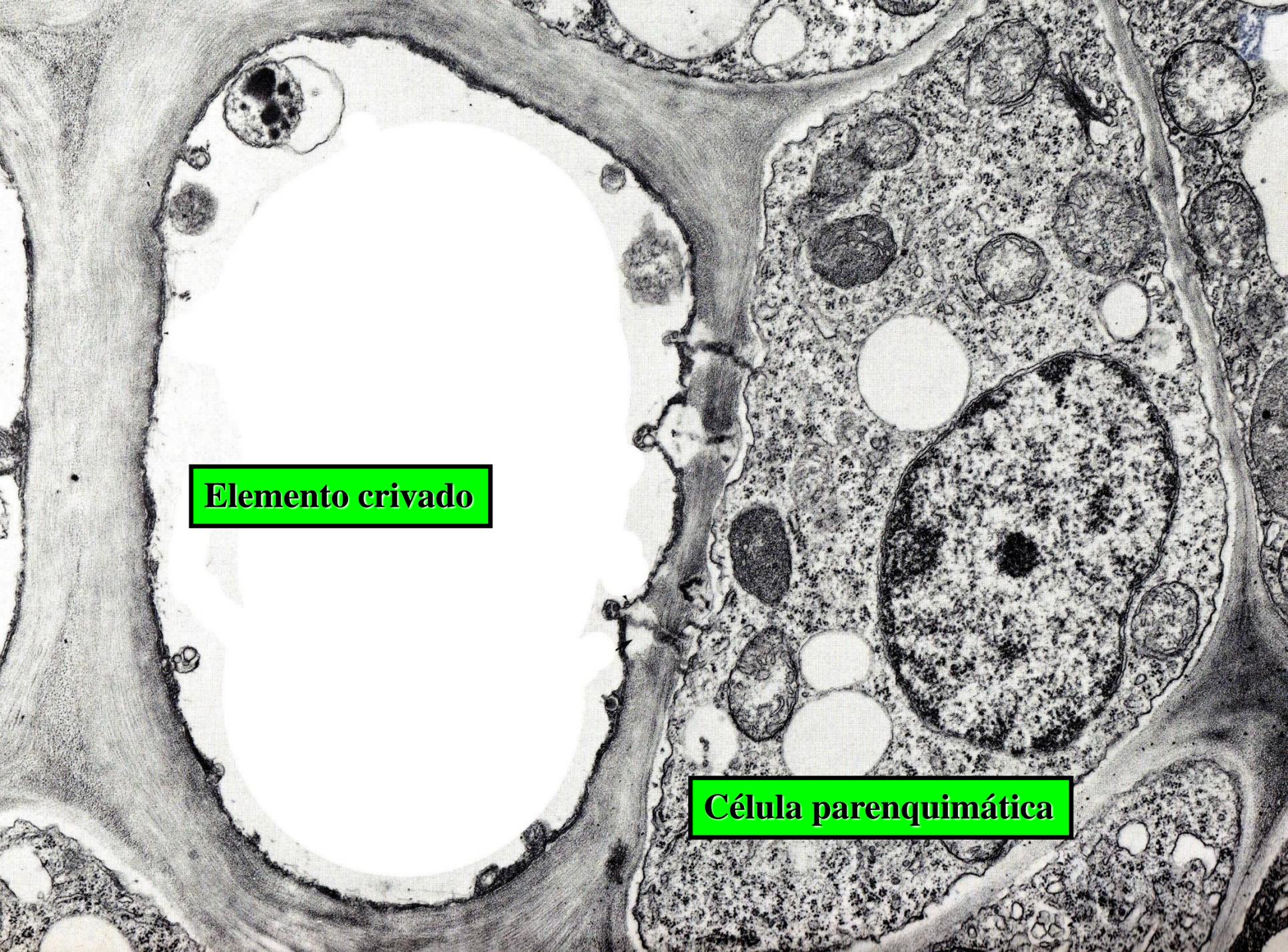
Crivo



Elemento crivado jovem

This electron micrograph shows two distinct plant cells. On the left is a young sieve element, characterized by its large, irregular shape and the presence of sieve plates (pores) on its cell wall. The cytoplasm is sparse and contains some organelles. On the right is a parenchyma cell, which is more rectangular and has a dense cytoplasm with a prominent, dark nucleus. The cell walls of both cells are clearly visible, showing the thickened structure of the sieve element.

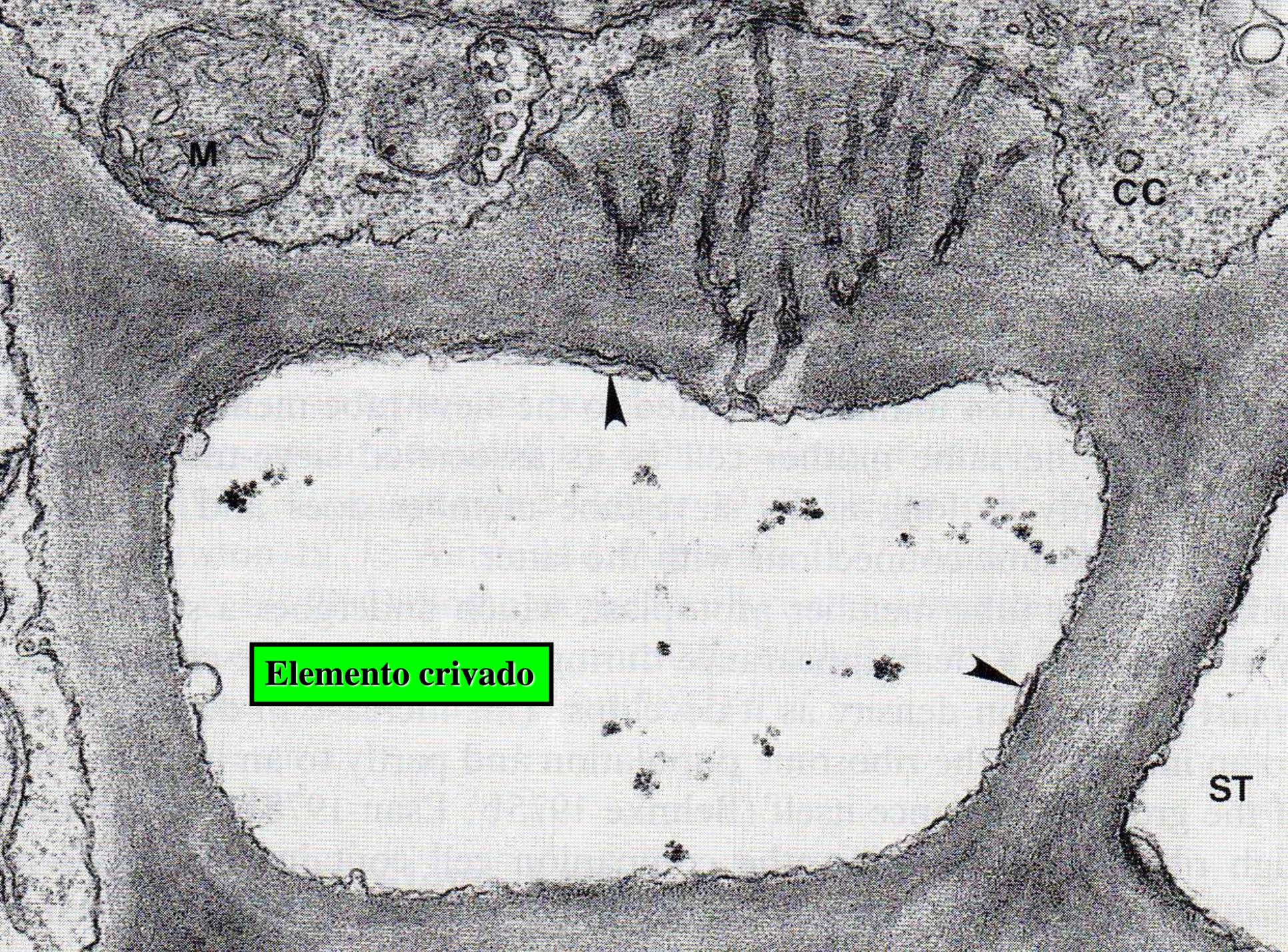
Célula parenquimática



Elemento crivado

This electron micrograph shows a cross-section of a biological structure. A large, clear, circular cavity is visible on the left side. The surrounding area is filled with various cellular components, including a large, dark, electron-dense nucleus with a prominent nucleolus on the right. Numerous small, circular vesicles and organelles are scattered throughout the cytoplasm. The overall structure appears to be a complex, multi-layered biological entity.

Célula parenquimática



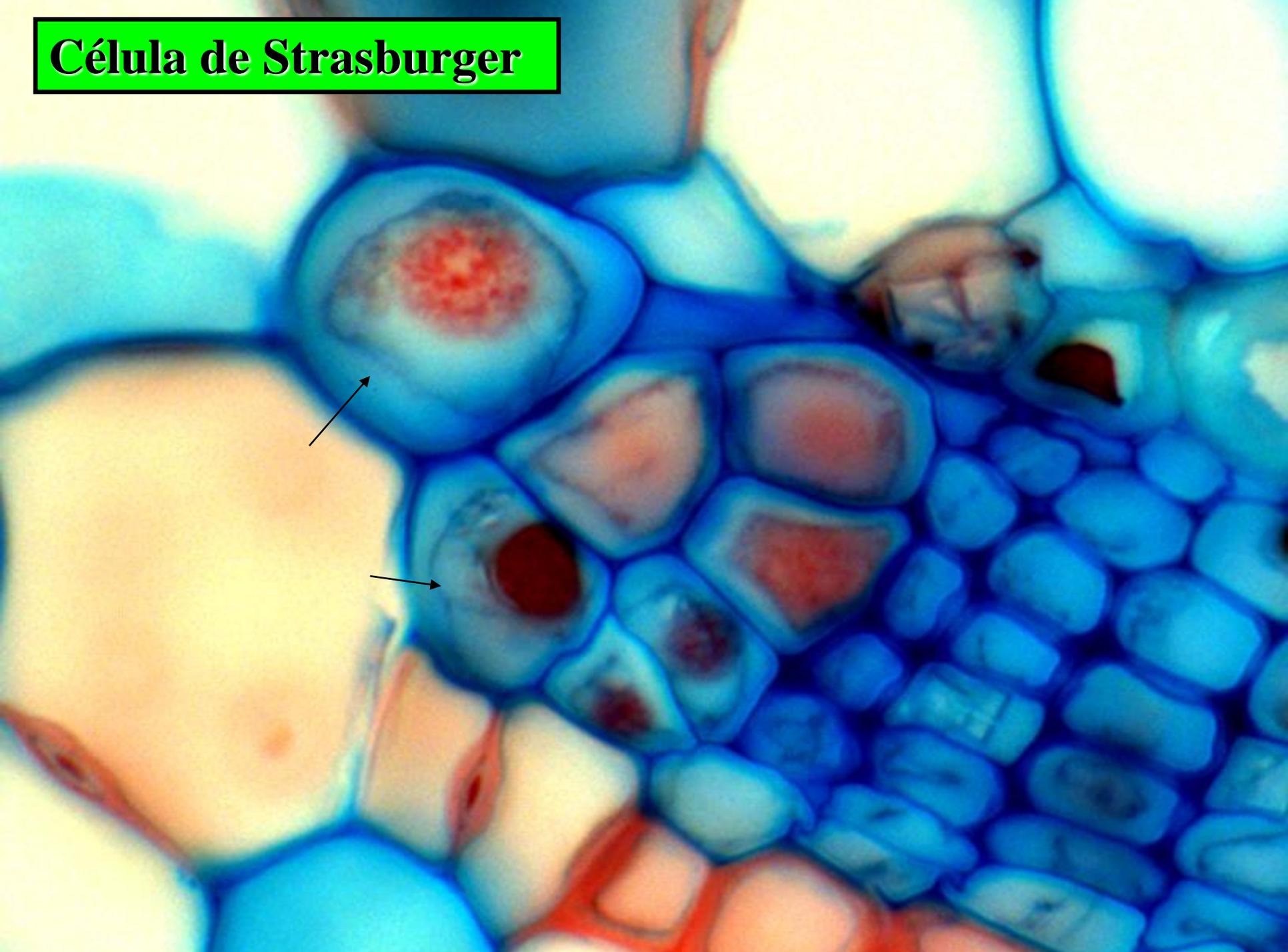
M

CC

Elemento crivado

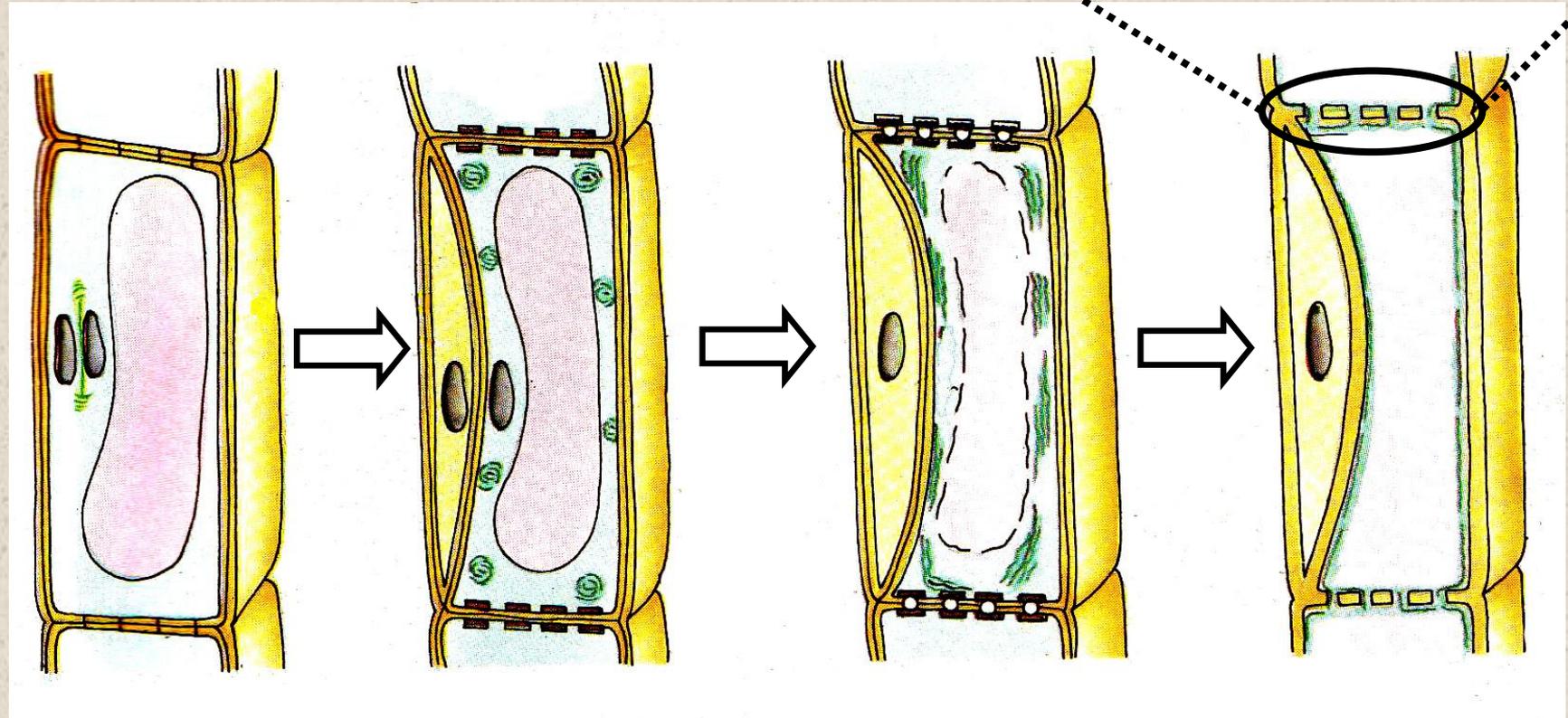
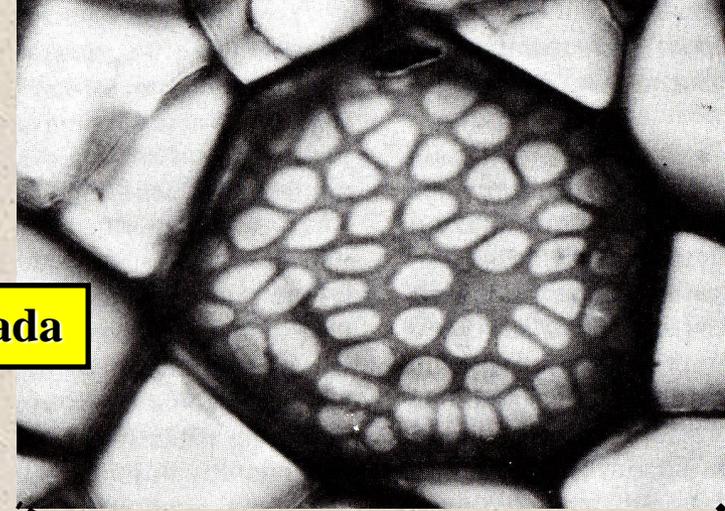
ST

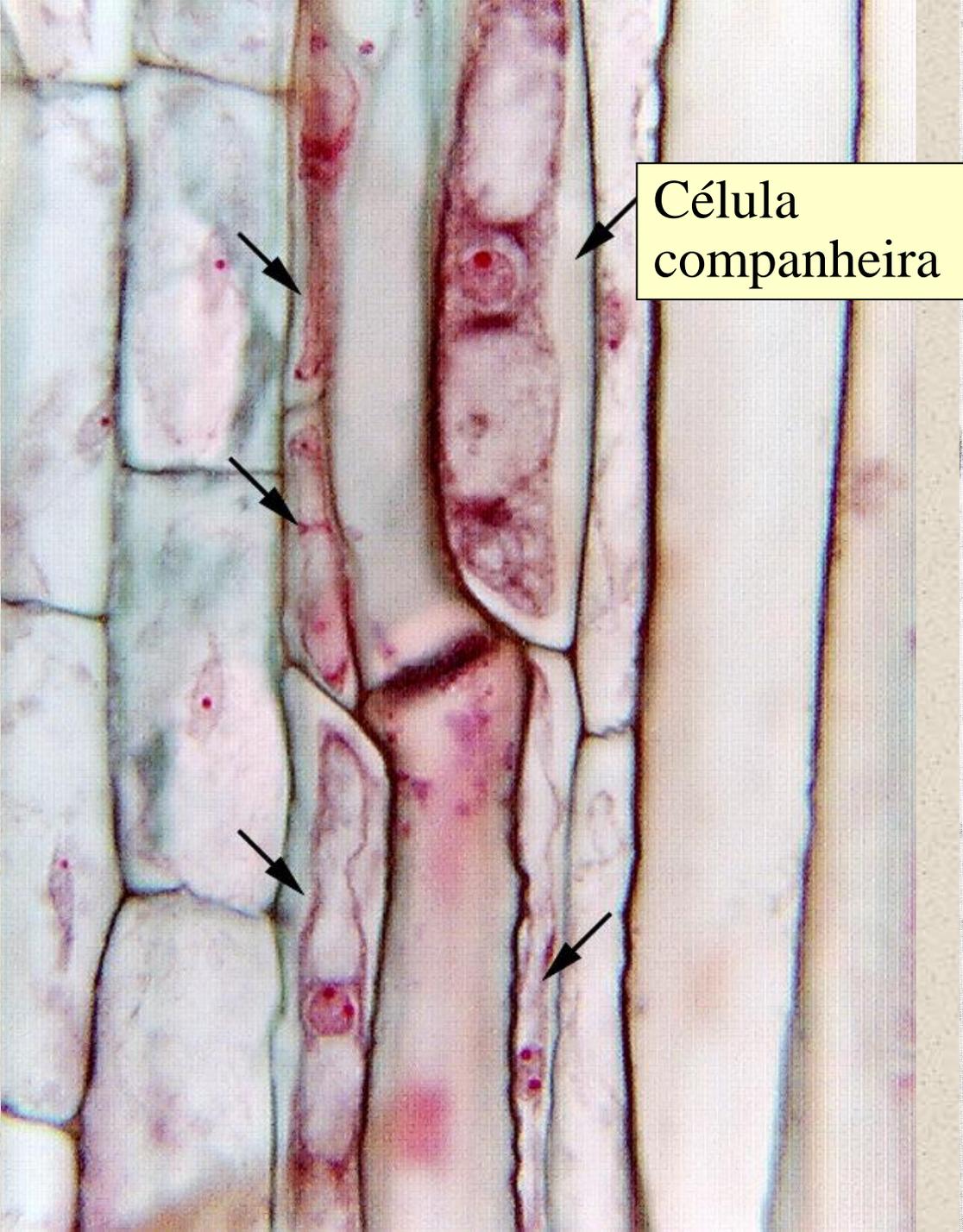
Célula de Strasburger



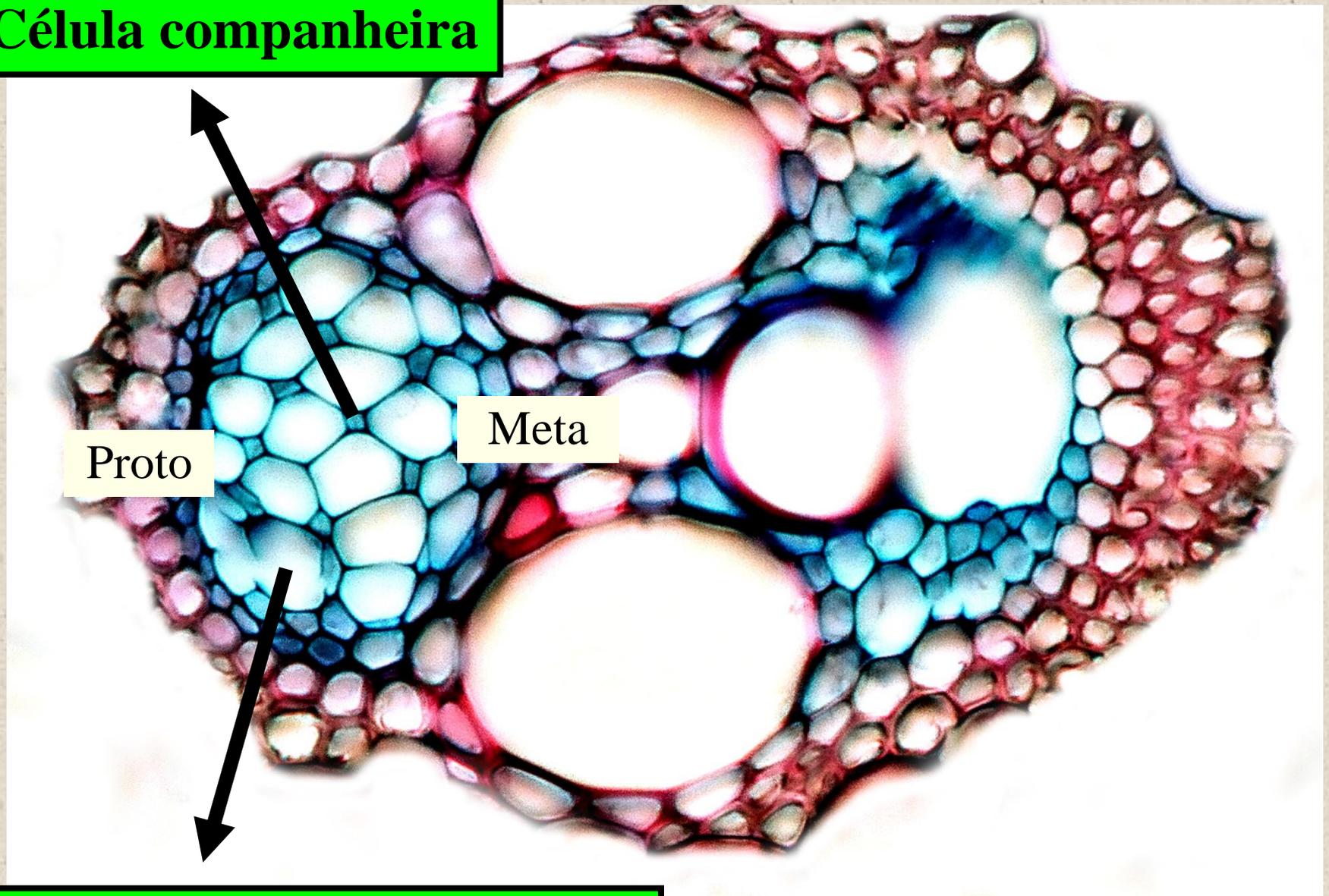
Elemento de Tubo Crivado (angiospermas)

Placa crivada





Célula companheira



Proto

Meta

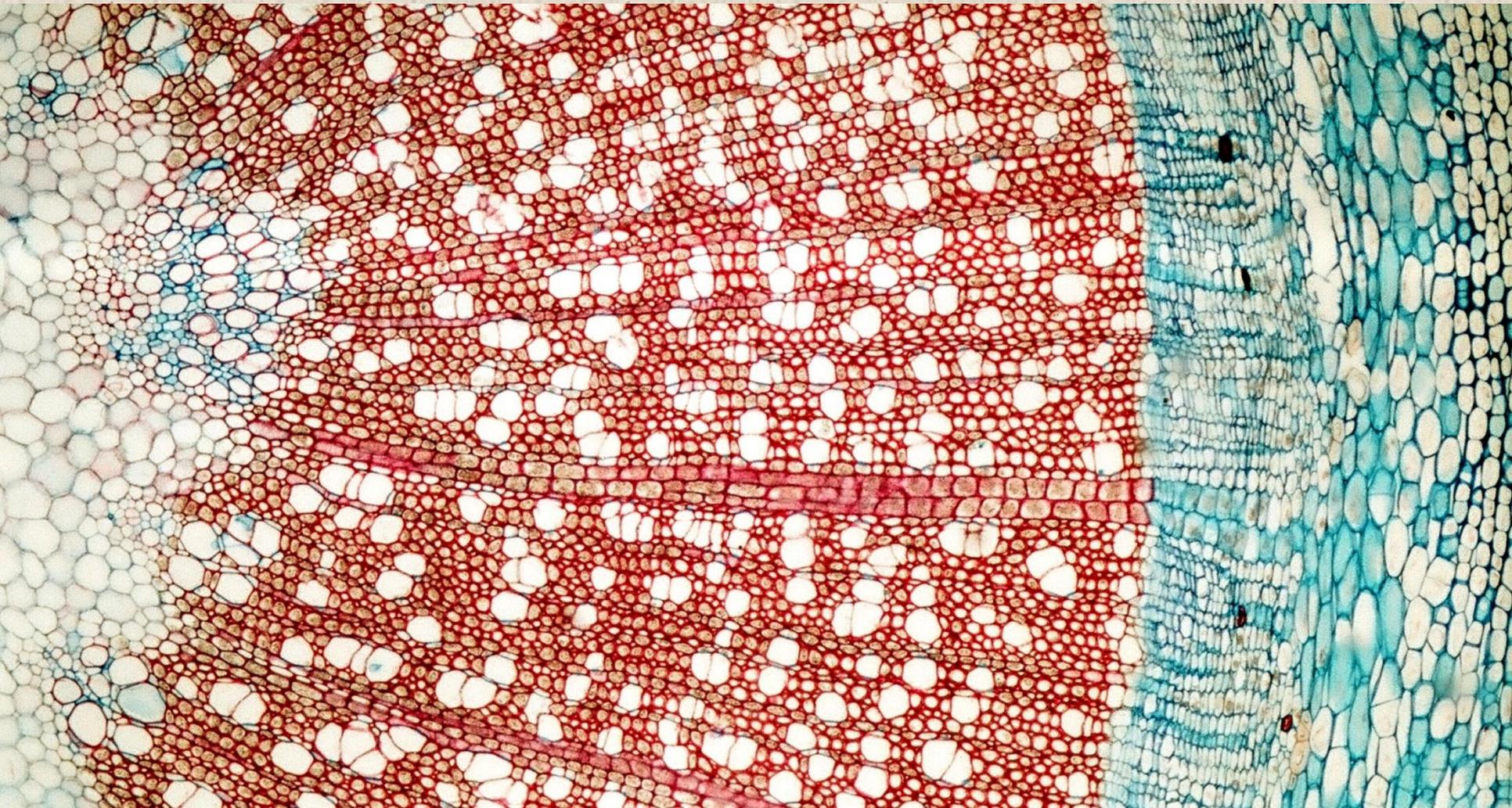
Elemento de tubo Crivado



O câmbio

Xilema secundário

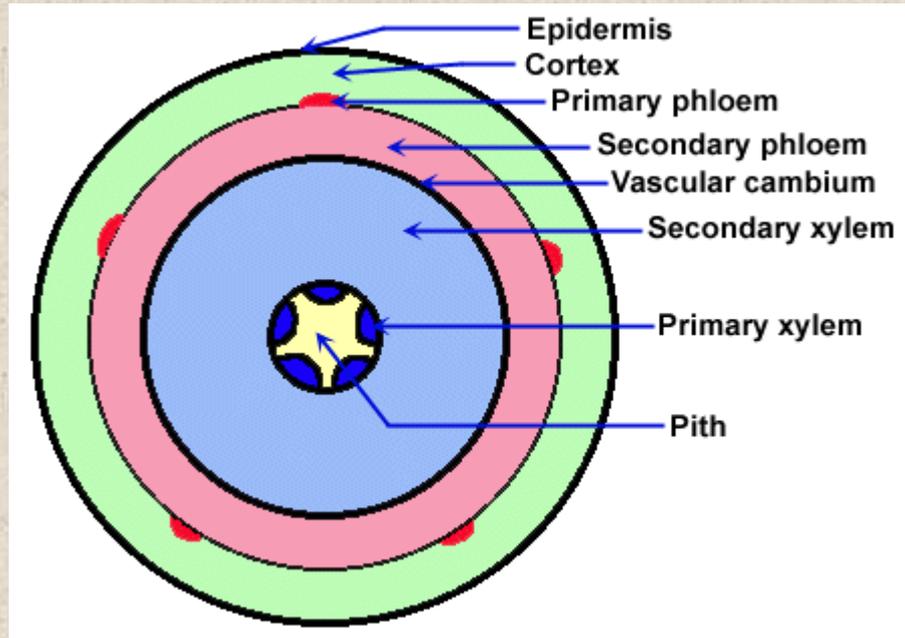
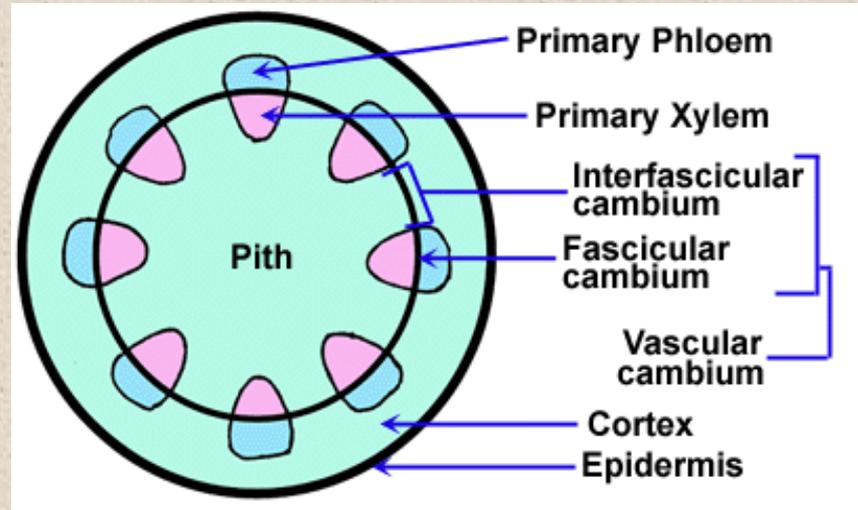
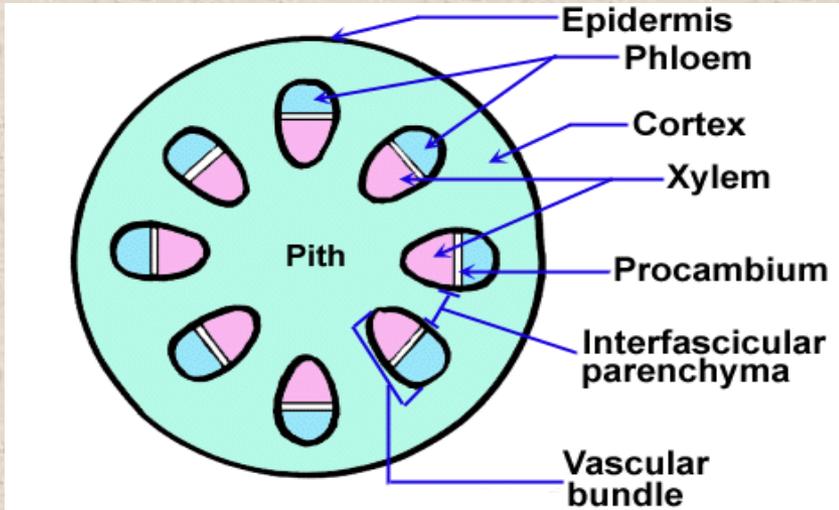
Floema secundário



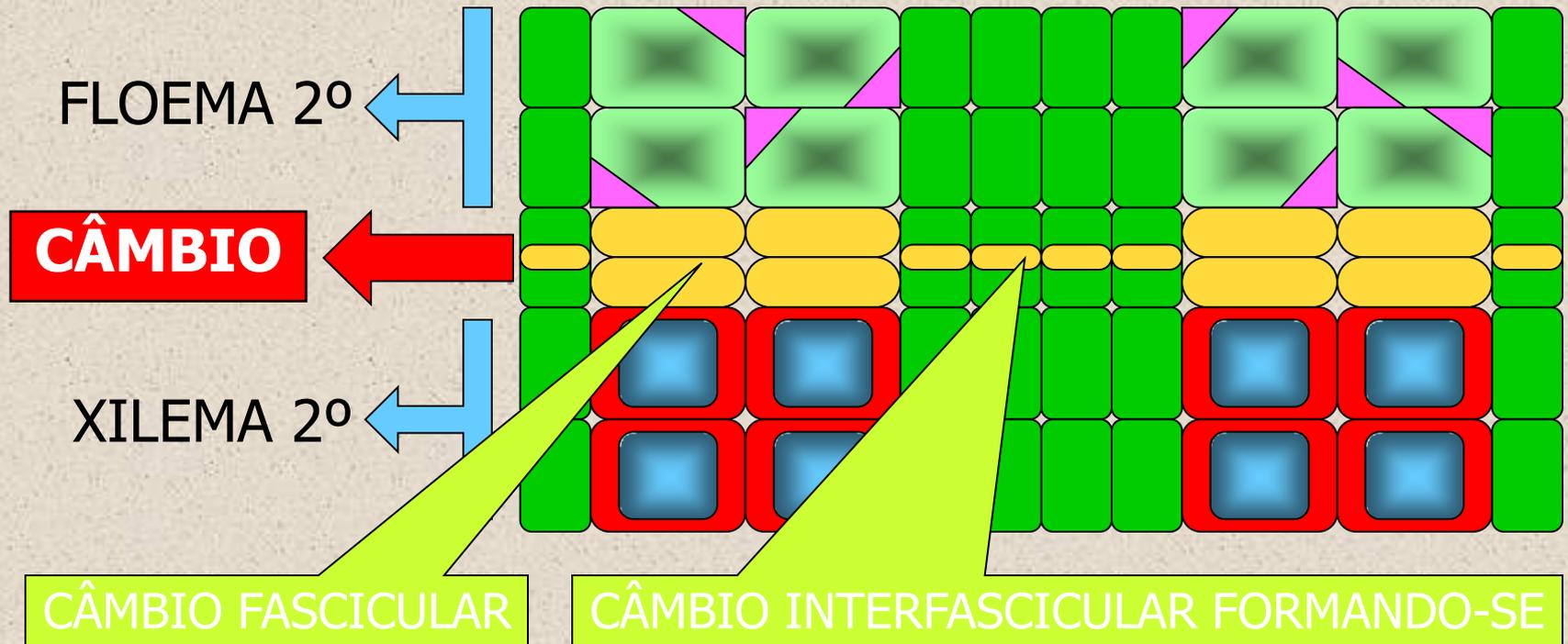
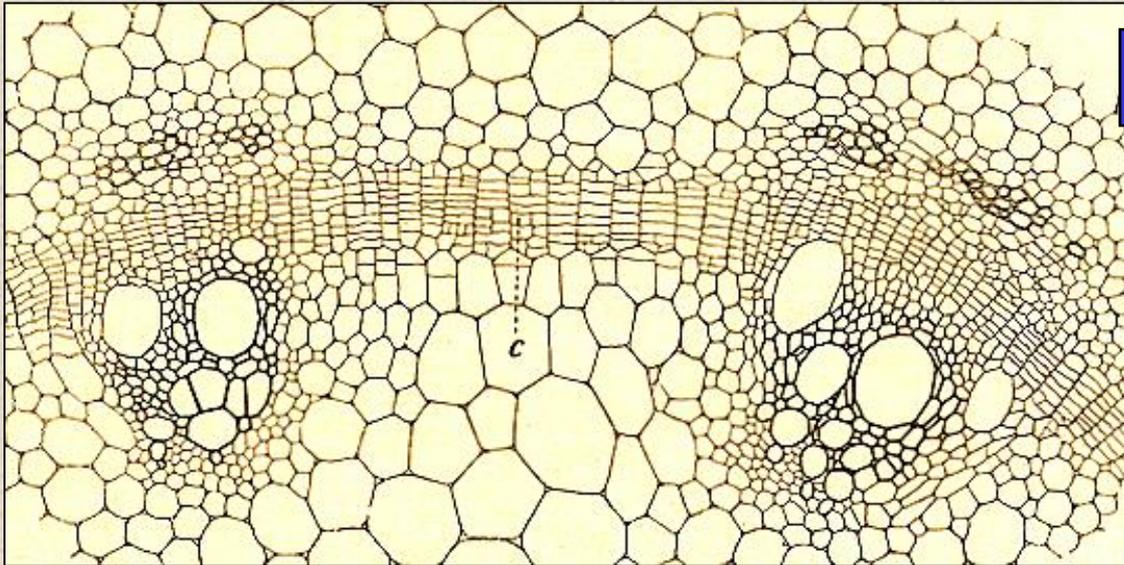
Mamona
Ricinus communis
Euphorbiaceae



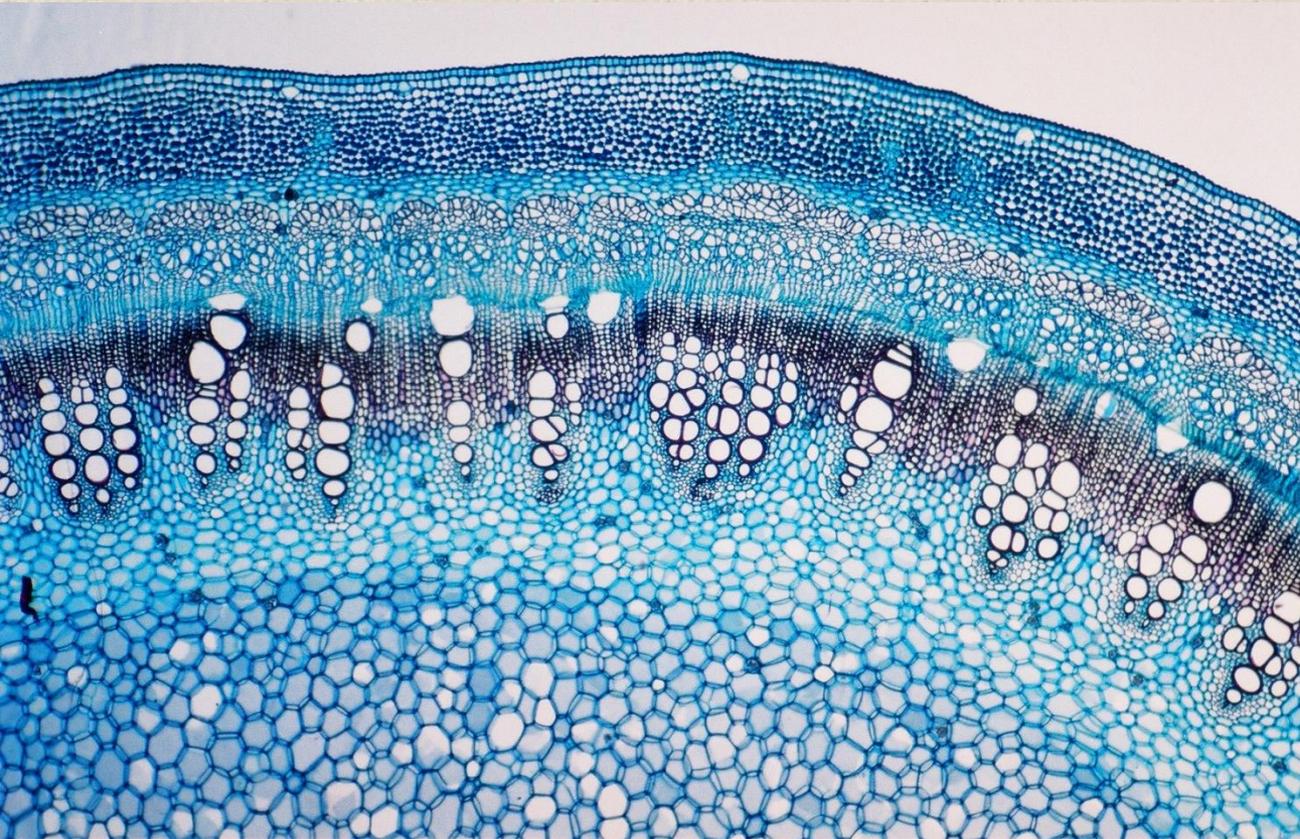
Câmbio fascicular



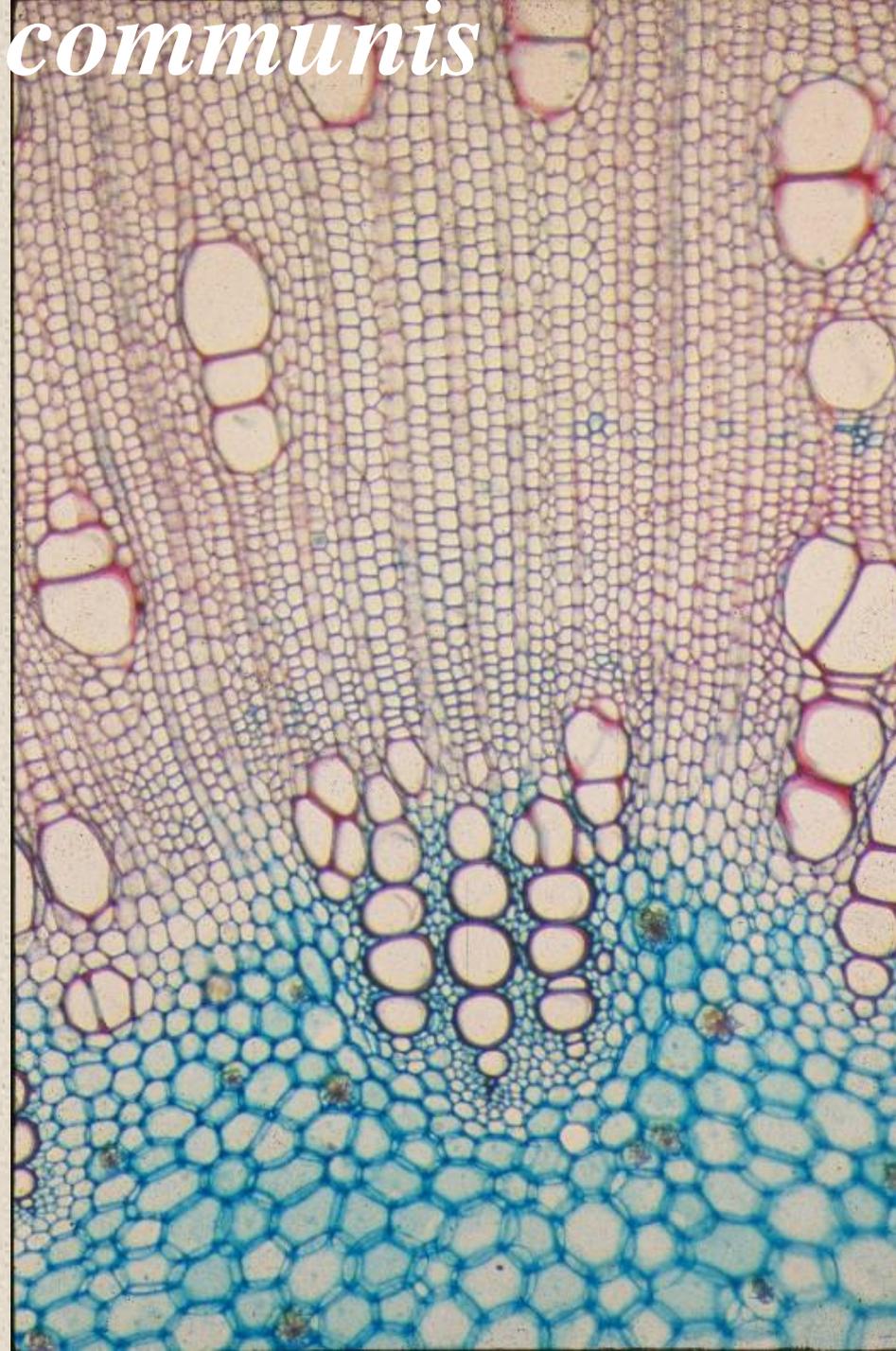
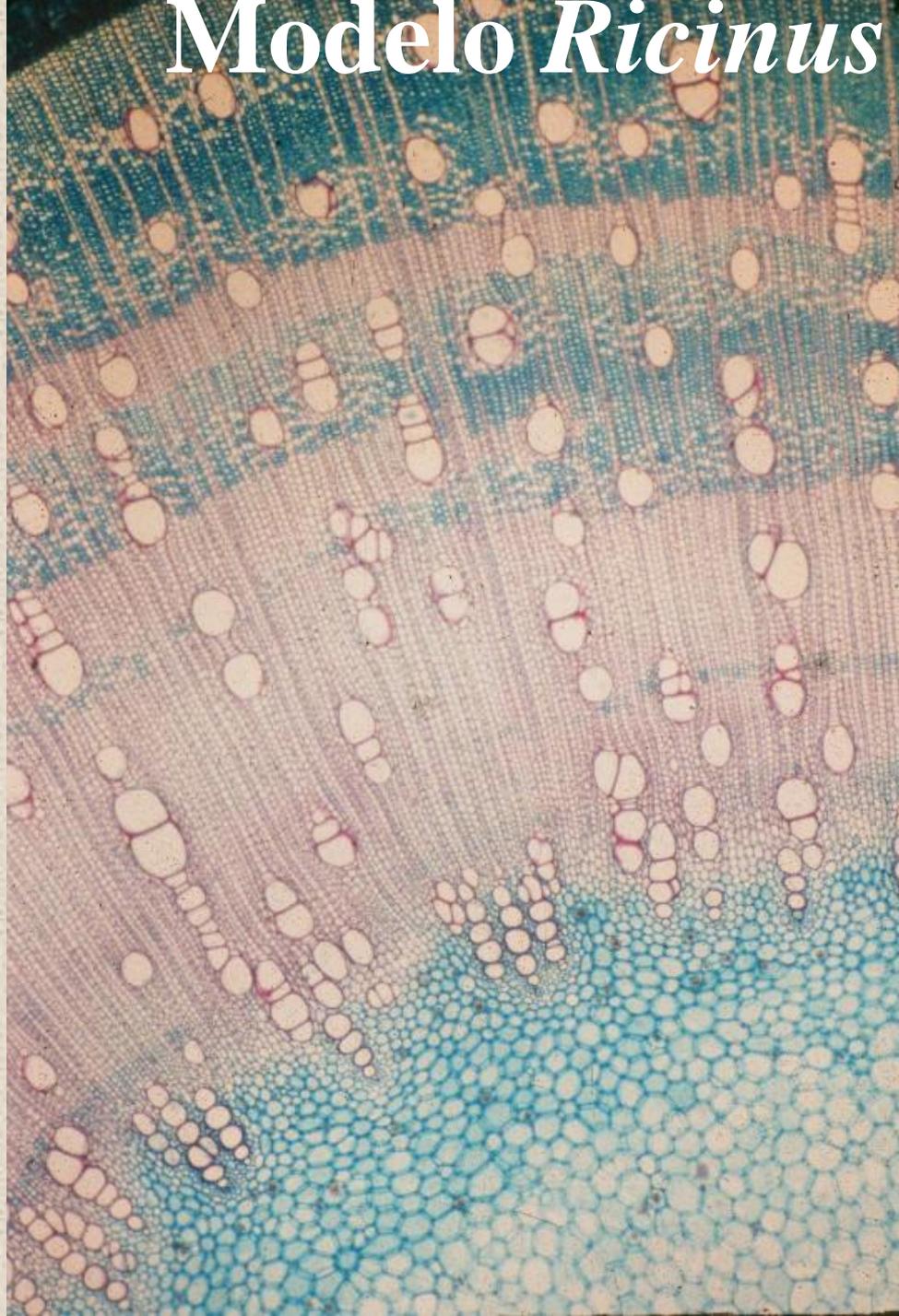
Origem do câmbio



Modelo *Ricinus communis*



Modelo *Ricinus communis*



Dúvidas?

diegodemarco@usp.br