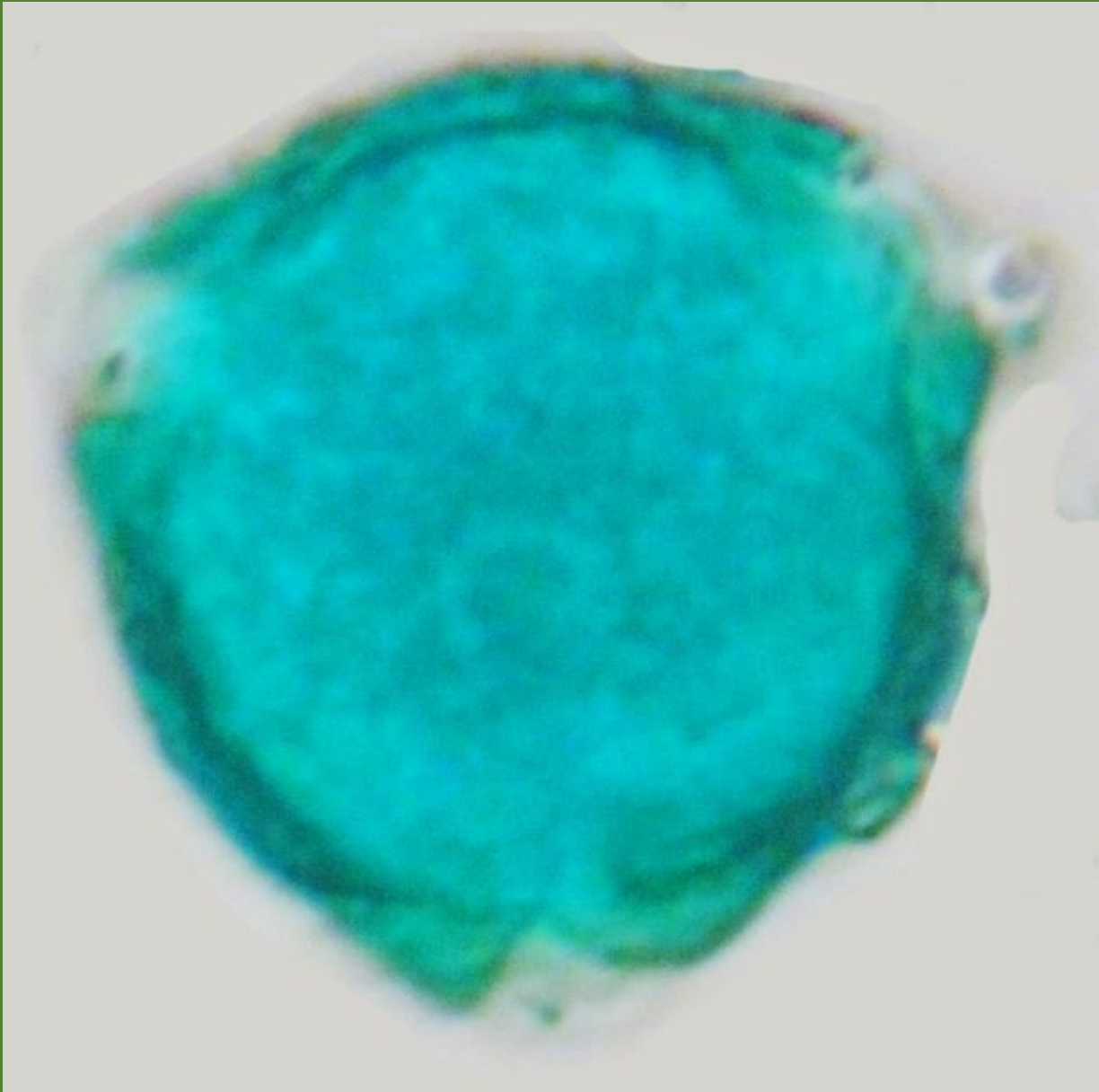


*Quercus virginianus*  
The Live oak



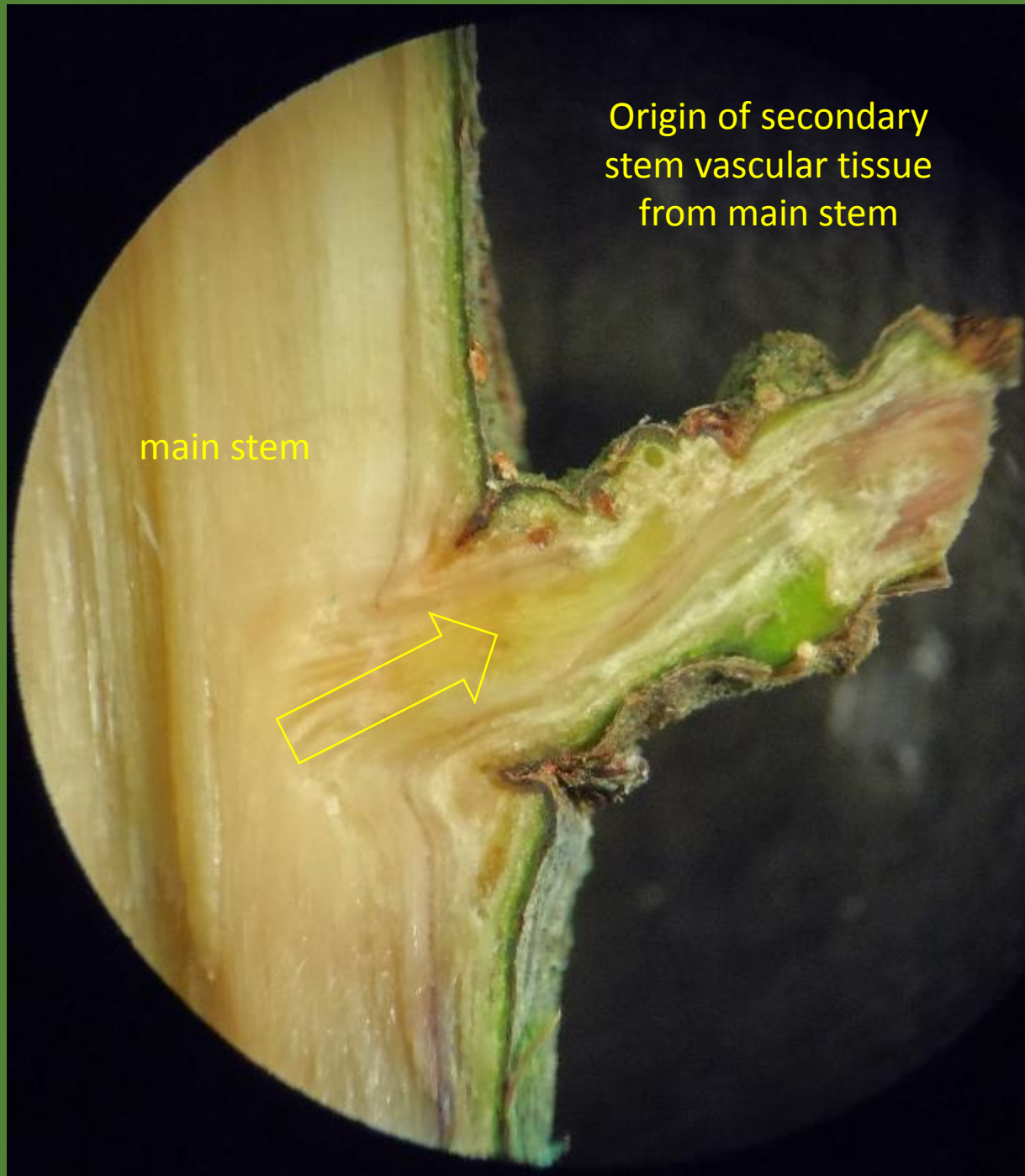
DBH: diameter  
breast high: 22.6  
inches  
Circumference =  
71 in.; ~40 feet,  
~16 years old



Tricolporate; 38  $\mu$ m



Pollen: live oak pollen is a major late winter allergen in the south





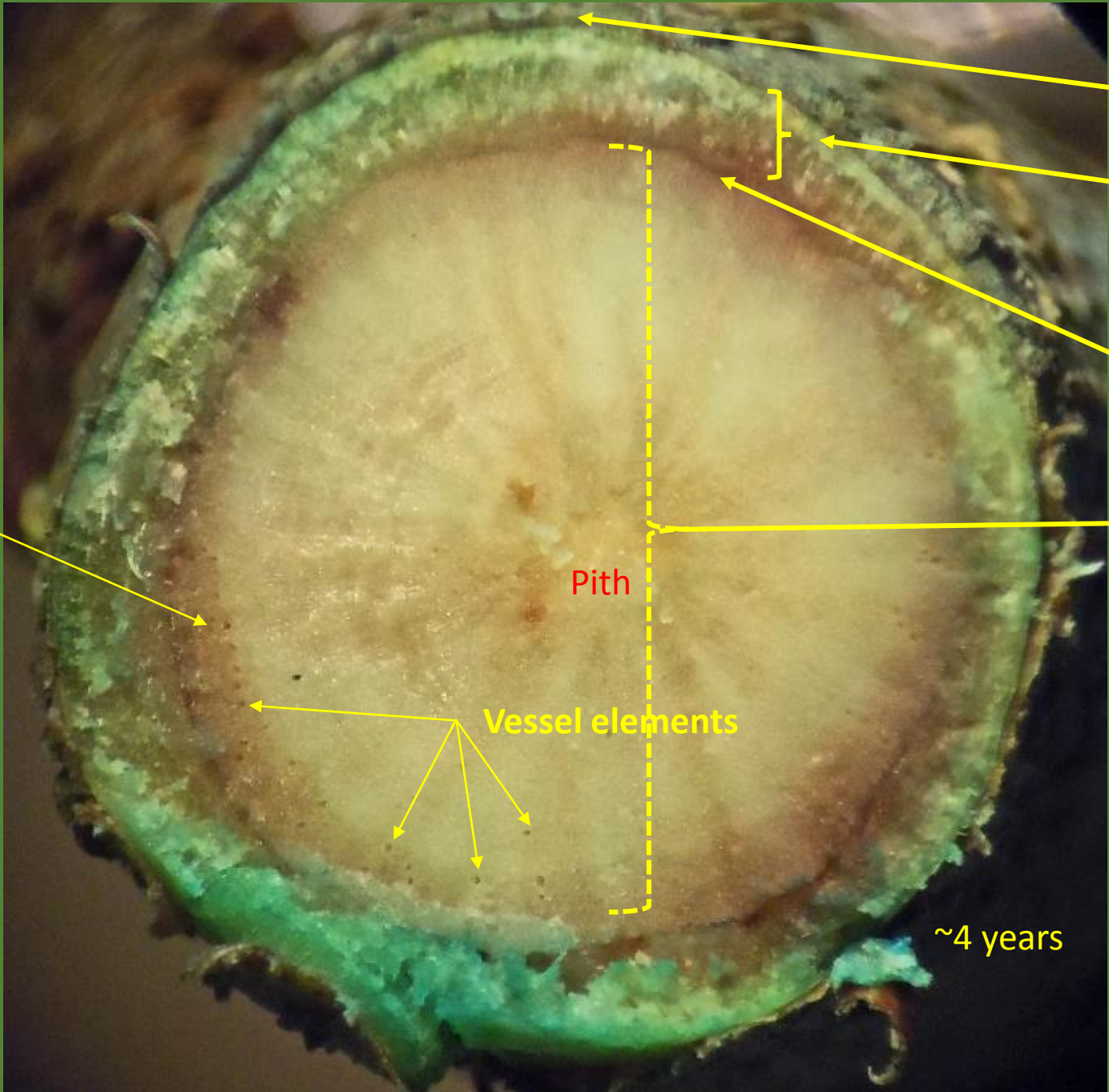
Leathery curved leaves;  
smooth gray bark

Terminal bud  
with 2 tiny leaf  
buds

One year  
growth

Axillary bud  
between petiole &  
stem

Terminal bud scale scars



Periderm (& its phellogen)

Cortex (Phloem & sclerenchyma or phloem fibers)

Vascular Cambium

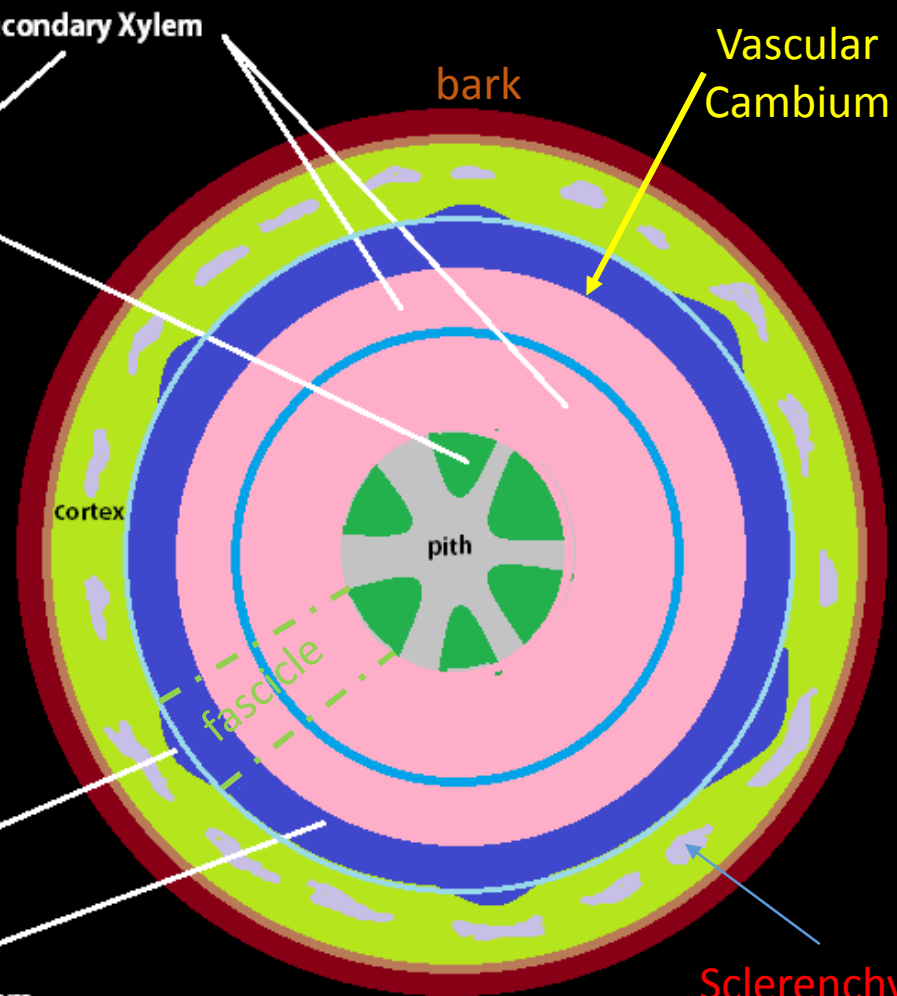
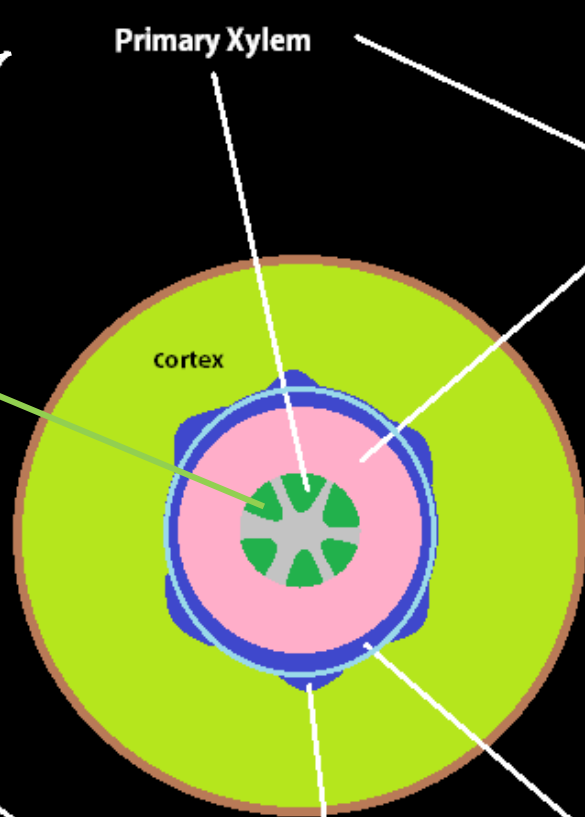
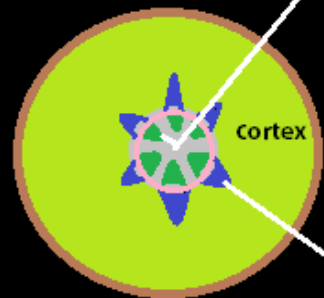
Wood (Xylem)

This year's early wood

Pith

Vessel elements

~4 years



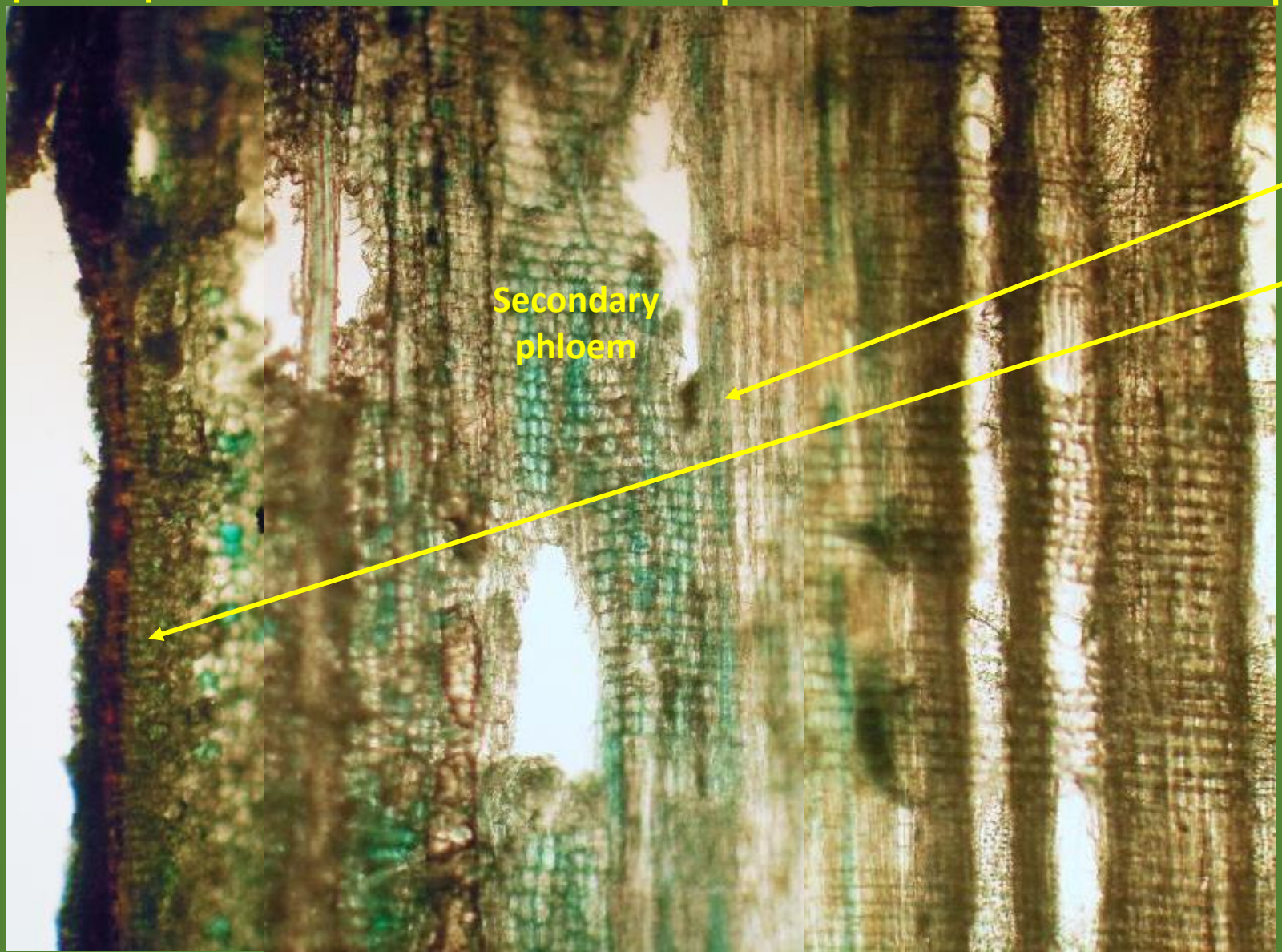
Origin of secondary Xylem & Phloem in Dicots (after Bowes, 1996)

Periderm

Cortex

Wood

Radial section



Secondary phloem

Vascular Cambium

Phellogen or Cork Cambium

Ray

Ray

Sclerenchyma fibers in cortex



Vascular  
Cambium



Rays

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Rays

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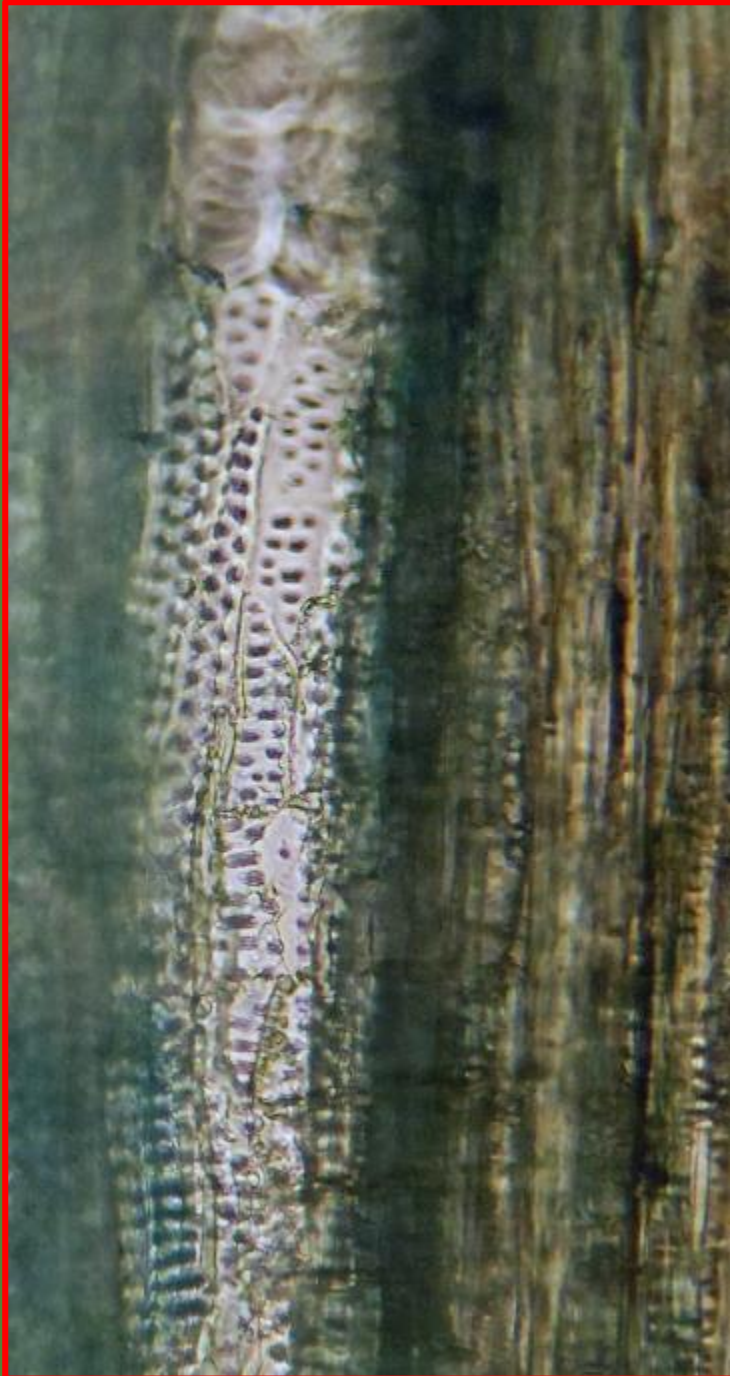
V  
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s



Vertical / Longitudinal sections of Vessel Elements & their PORES

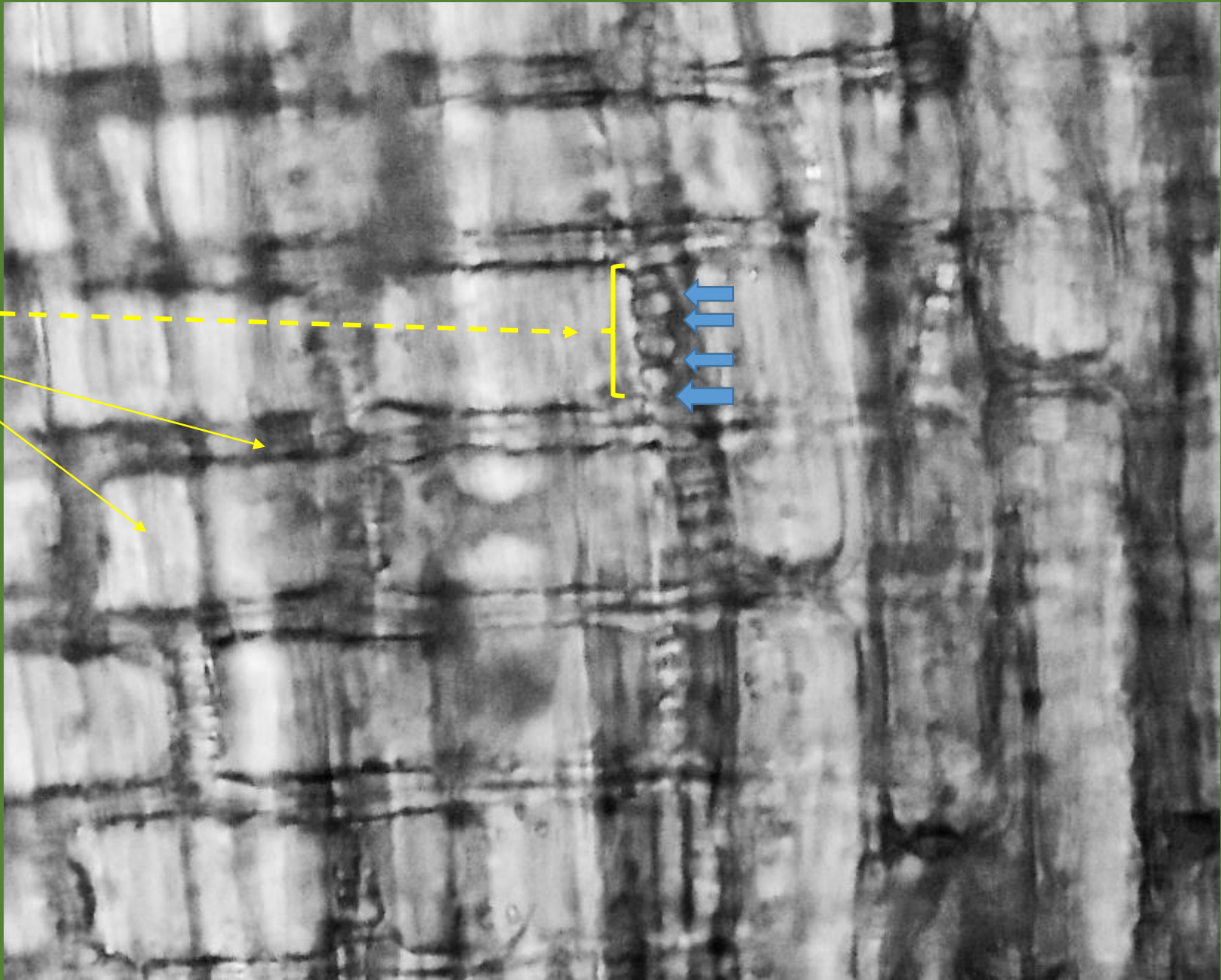
Horizontal walls



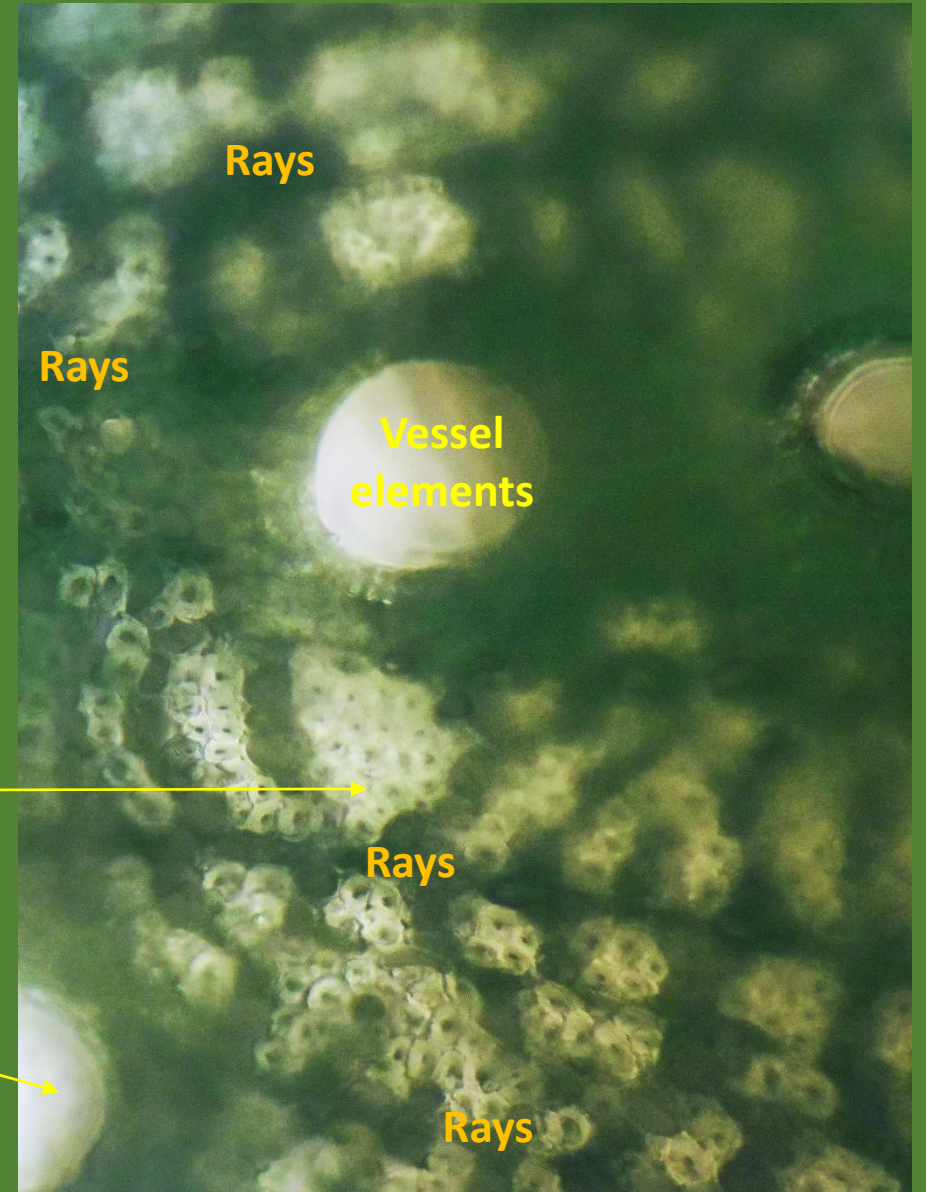
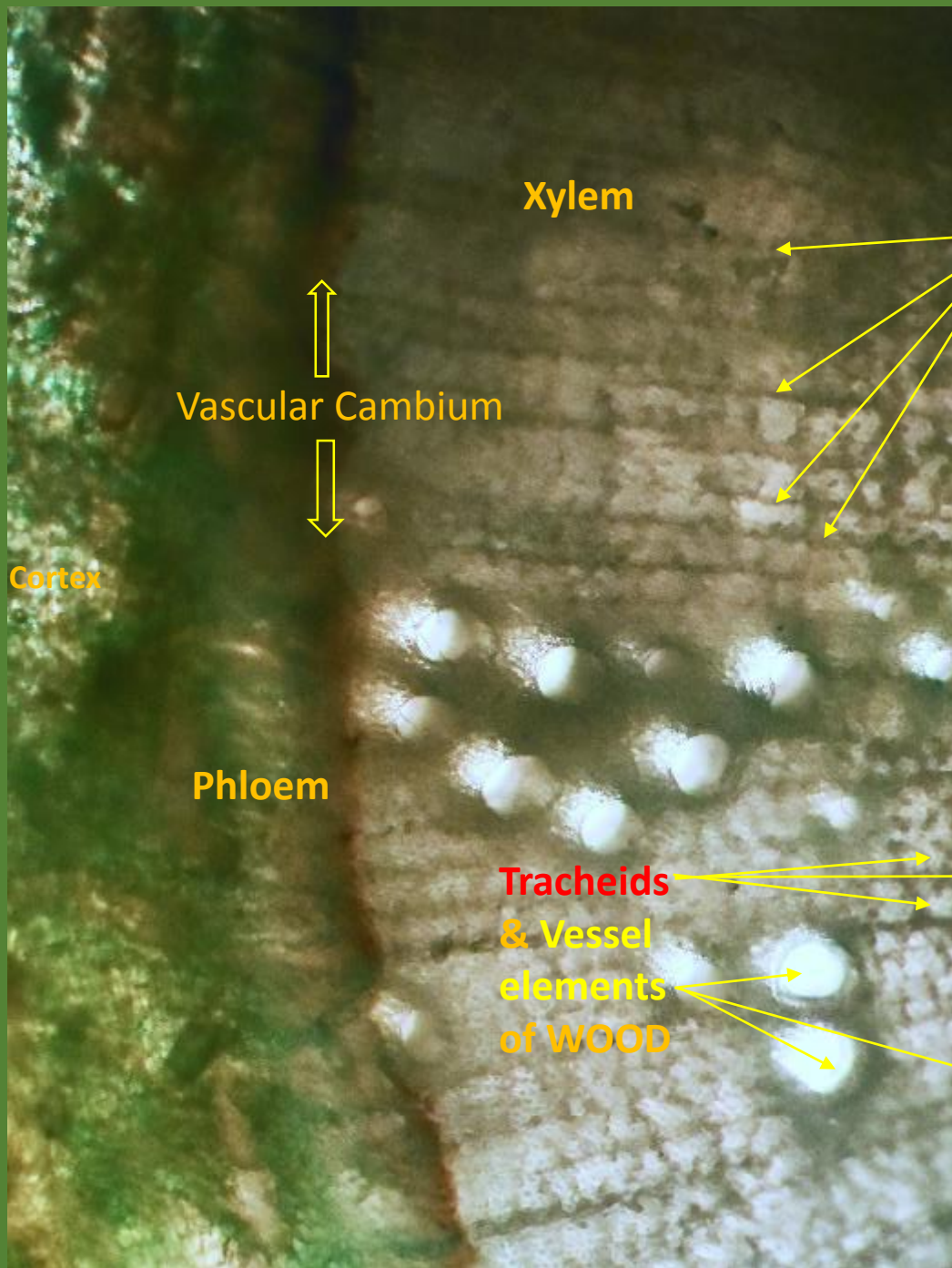


Radial section

Pits and pores between Rays & Tracheids



Cross section



Xylem

Vascular Cambium

Cortex

Phloem

Tracheids  
& Vessel  
elements  
of WOOD

Rays

Rays

Rays

Vessel  
elements

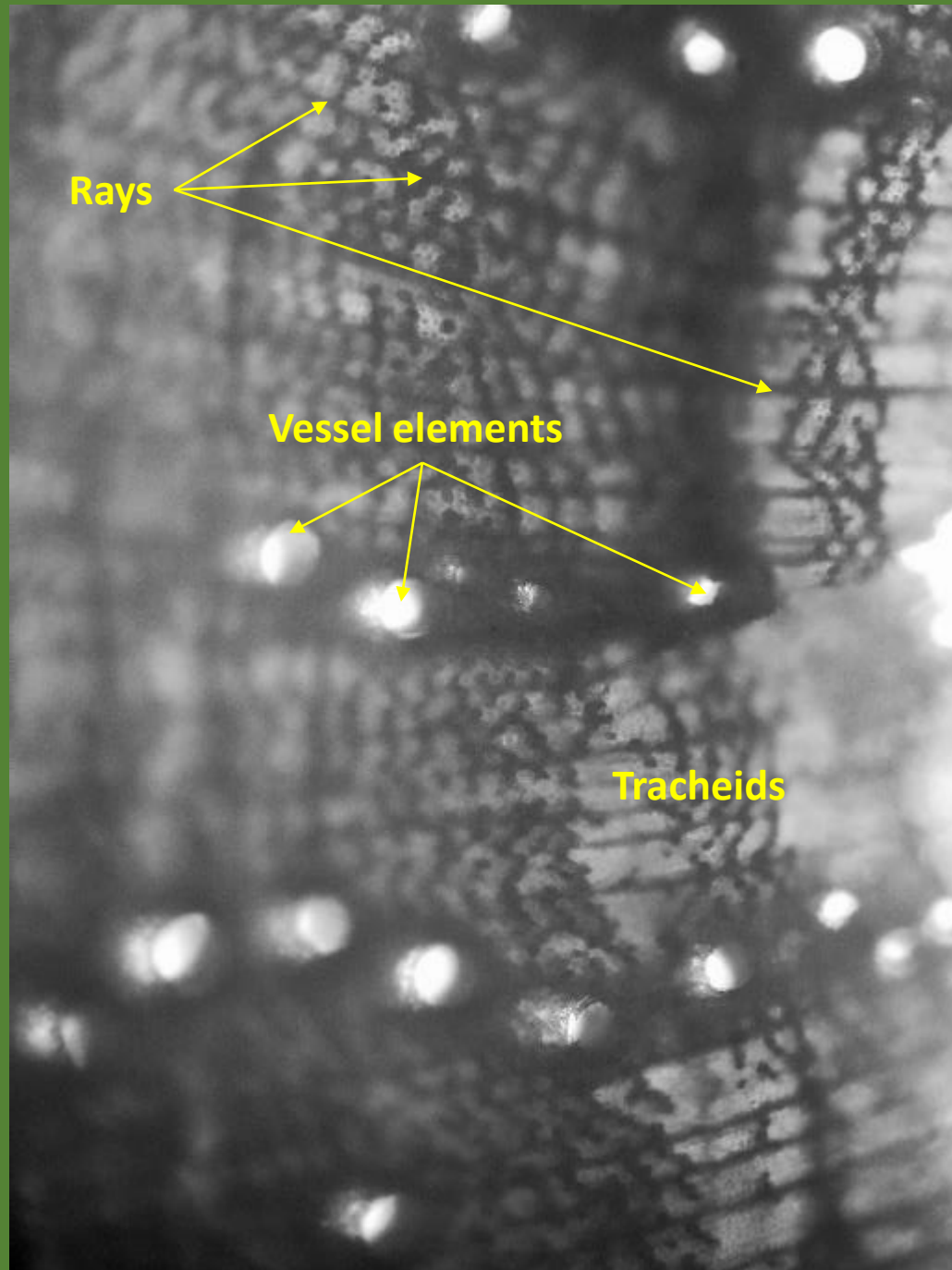
Rays

Rays

Cross  
section



Vessel elements

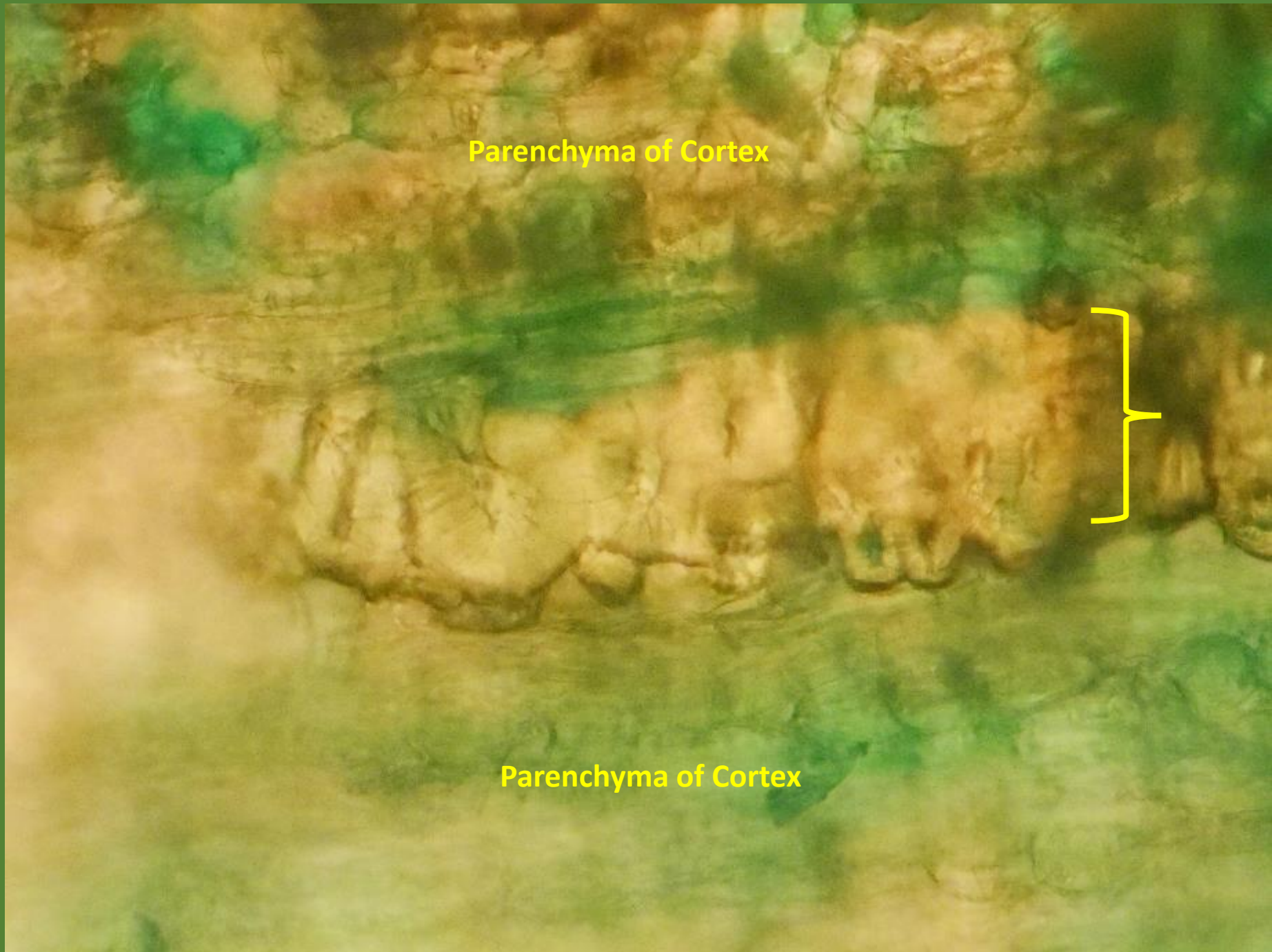


Cross  
Section

Rays

Vessel elements

Tracheids

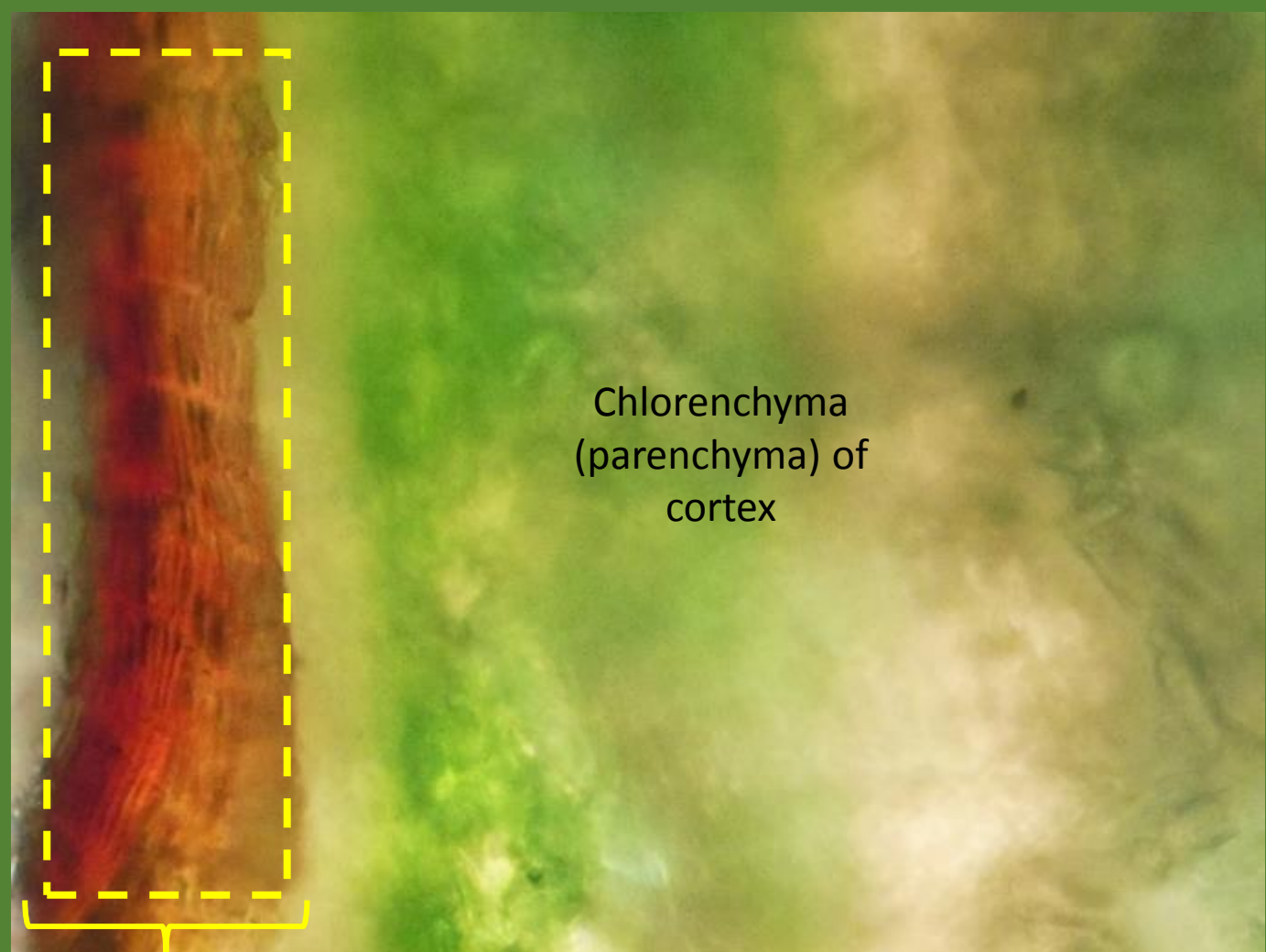


Parenchyma of Cortex



Sclerenchyma –  
phloem fibers in  
cortex

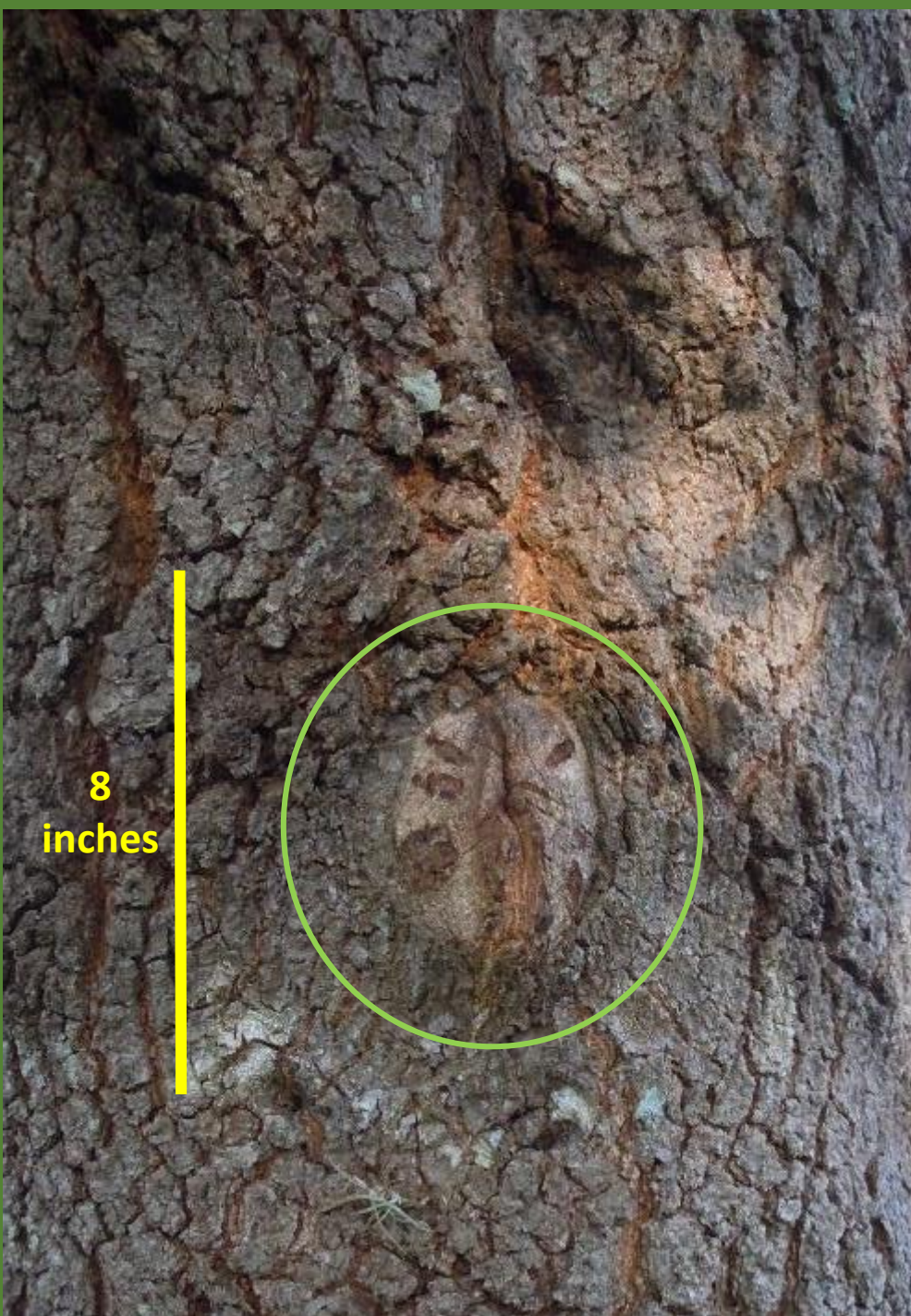
Parenchyma of Cortex



Chlorenchyma  
(parenchyma) of  
cortex

**Squashed layers  
of Phellem  
( Tannin-rich) in  
PERIDERM  
(‘bark’)**





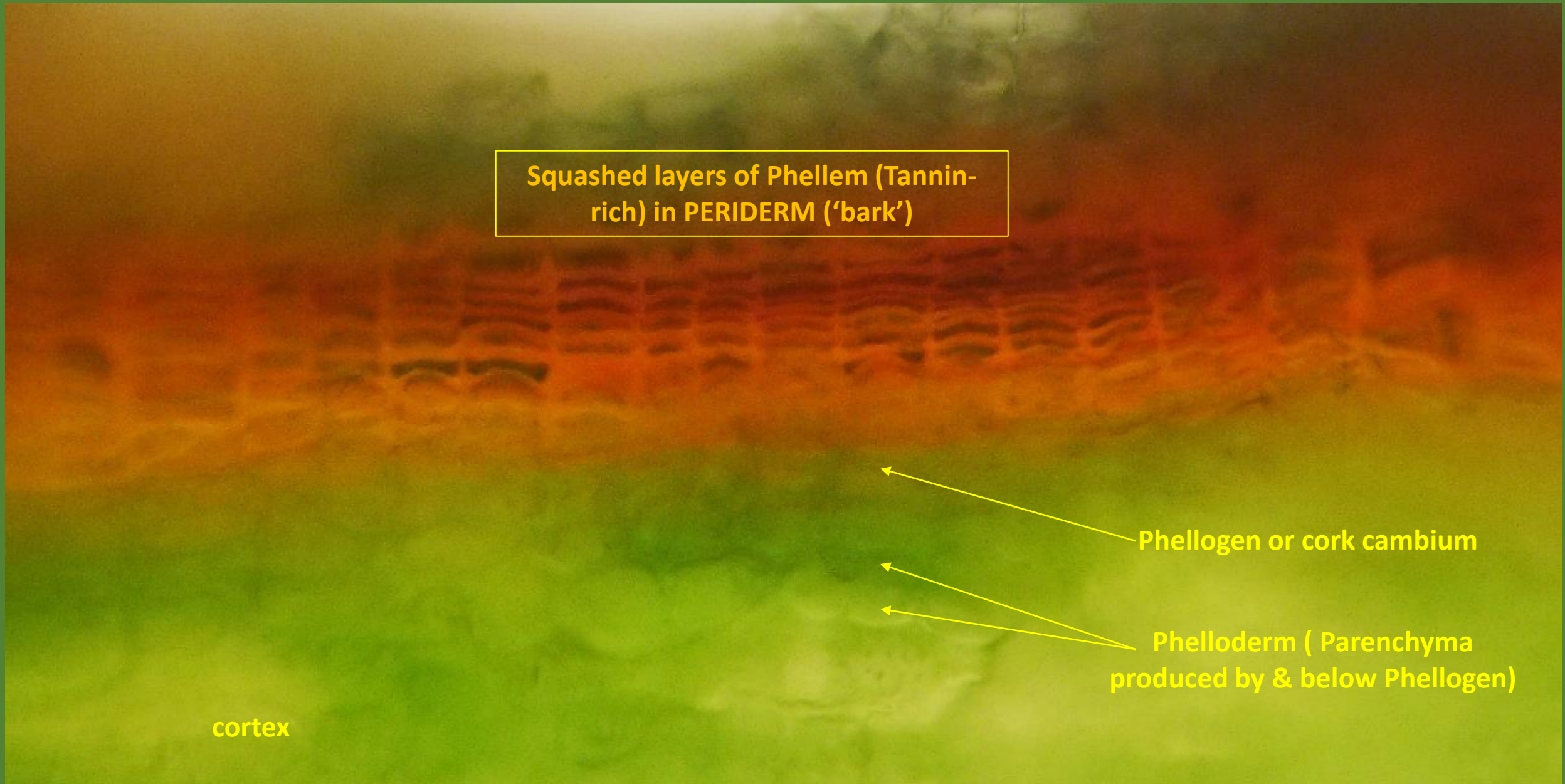
Wound Healing – bark  
overgrowth; over lost  
branch.

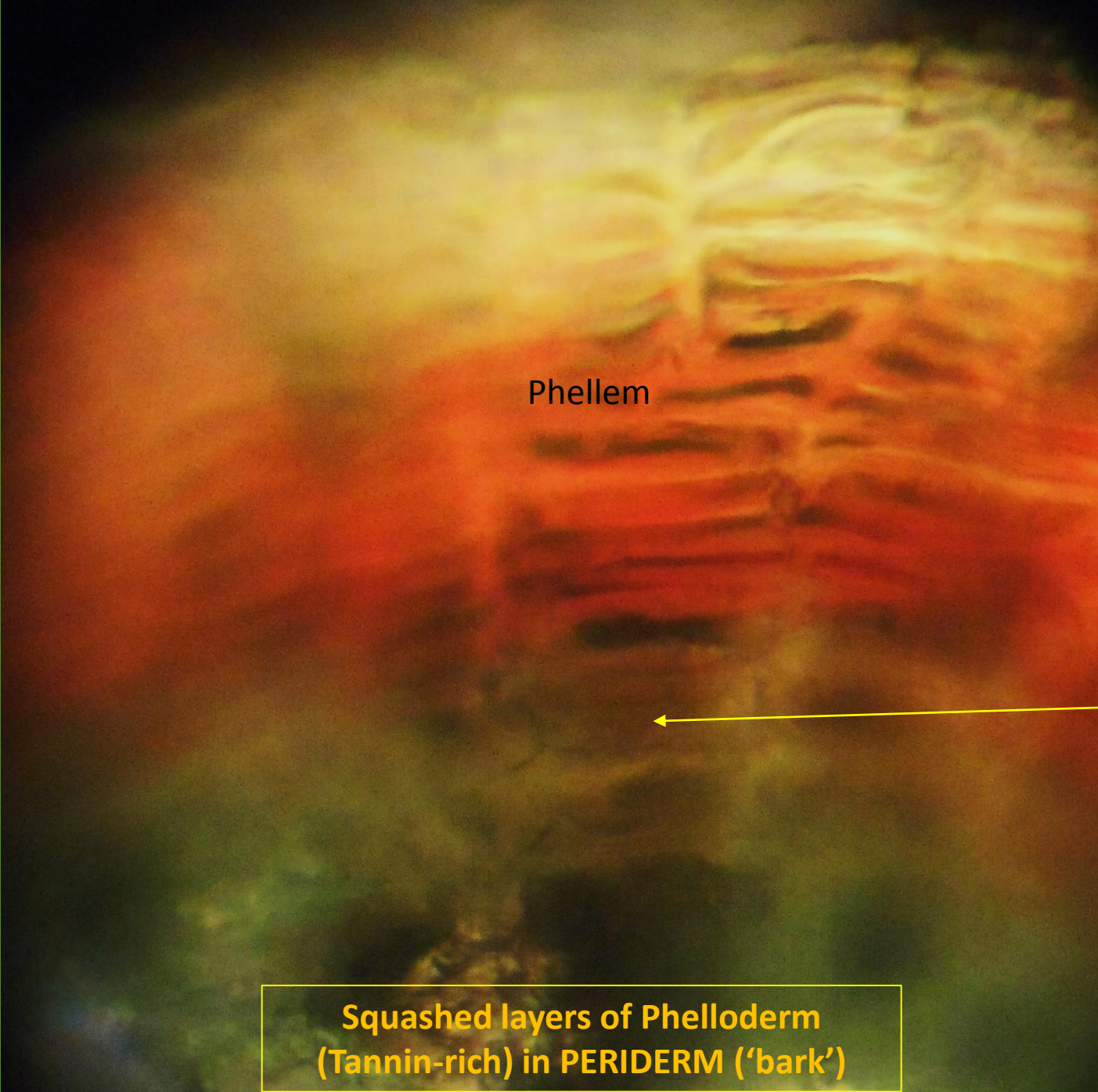
Squashed layers of Phellem (Tannin-rich) in PERIDERM ('bark')

Phellogen or cork cambium

Phelloderm ( Parenchyma produced by & below Phellogen)

cortex





Phellem

Phellogen or cork cambium

Squashed layers of Phelloderm  
(Tannin-rich) in PERIDERM ('bark')



Love live oaks