

COLLENCHYMA TISSUE TYPES

**LAMELLAR COLLENCHYMA
ANGULAR COLLENCHYMA**

**COLLENCHYMA TISSUE
TYPES**

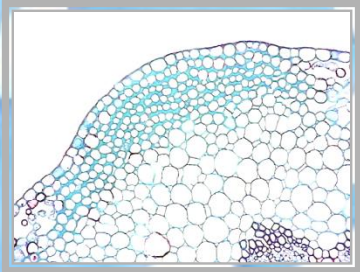
COLLENCHYMA TISSUE TYPES



LAMELLAR COLLENCHYMA
ANGULAR COLLENCHYMA
LACUNAR COLLENCHYMA

COLLENCHYMA TISSUE TYPES

L

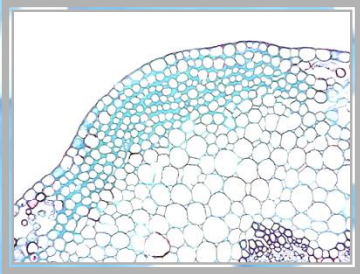


STEM

C.S.

?

L



STEM

C.S.

LAMELLAR COLLENCHYMA

**LAMELLAR
COLLENCHYMA**

**LAMELLAR
COLLENCHYMA TISSUE**

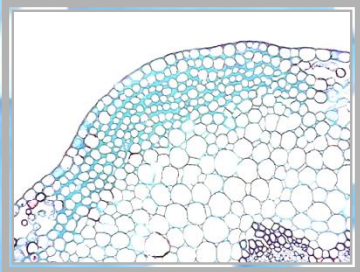


S

+

**PLATED
WALL THICKENINGS**

**LAMELLAR
COLLENCHYMA TISSUE**



STEM

C.S.

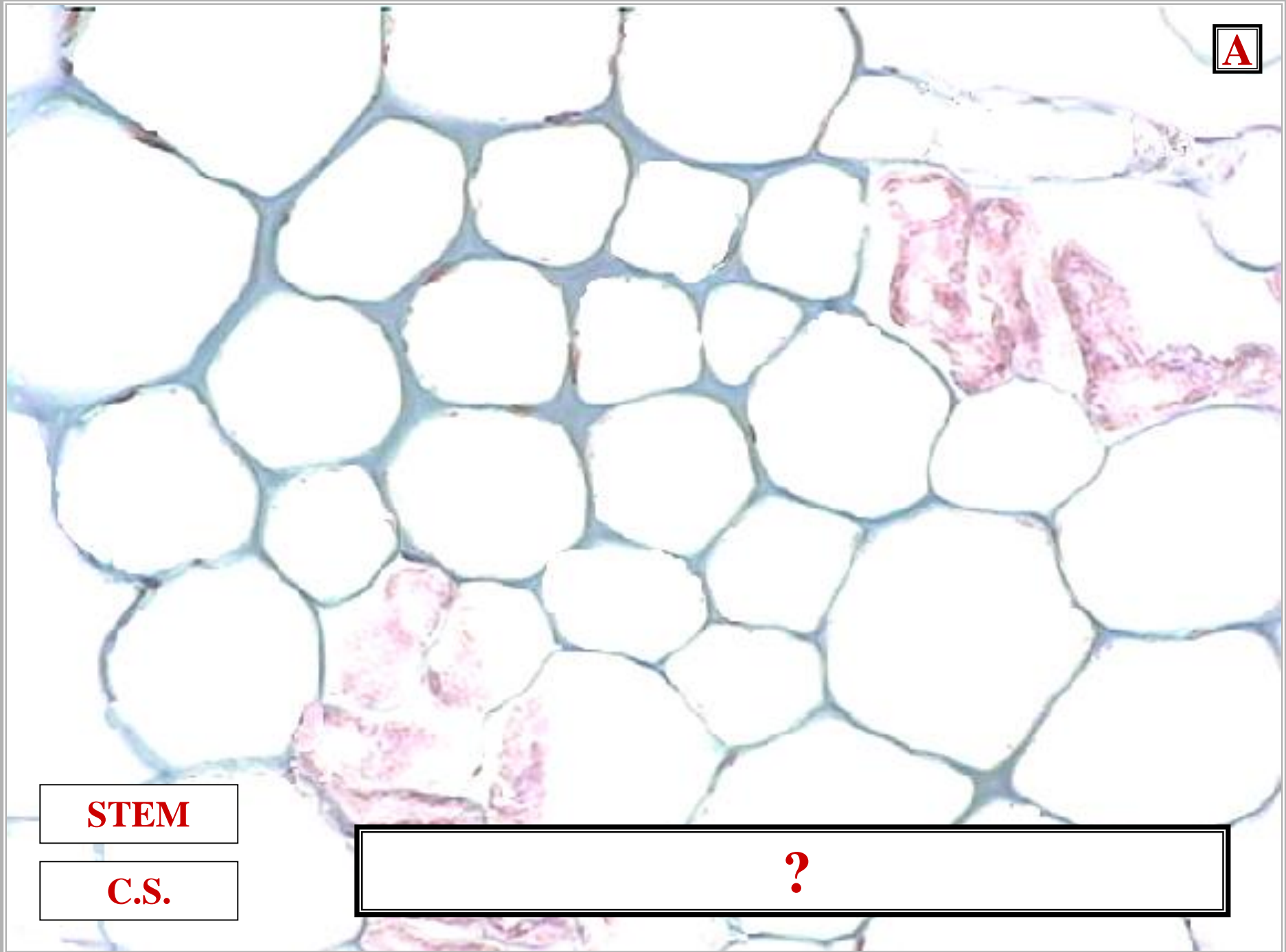
LAMELLAR COLLENCHYMA

A

STEM

C.S.

?

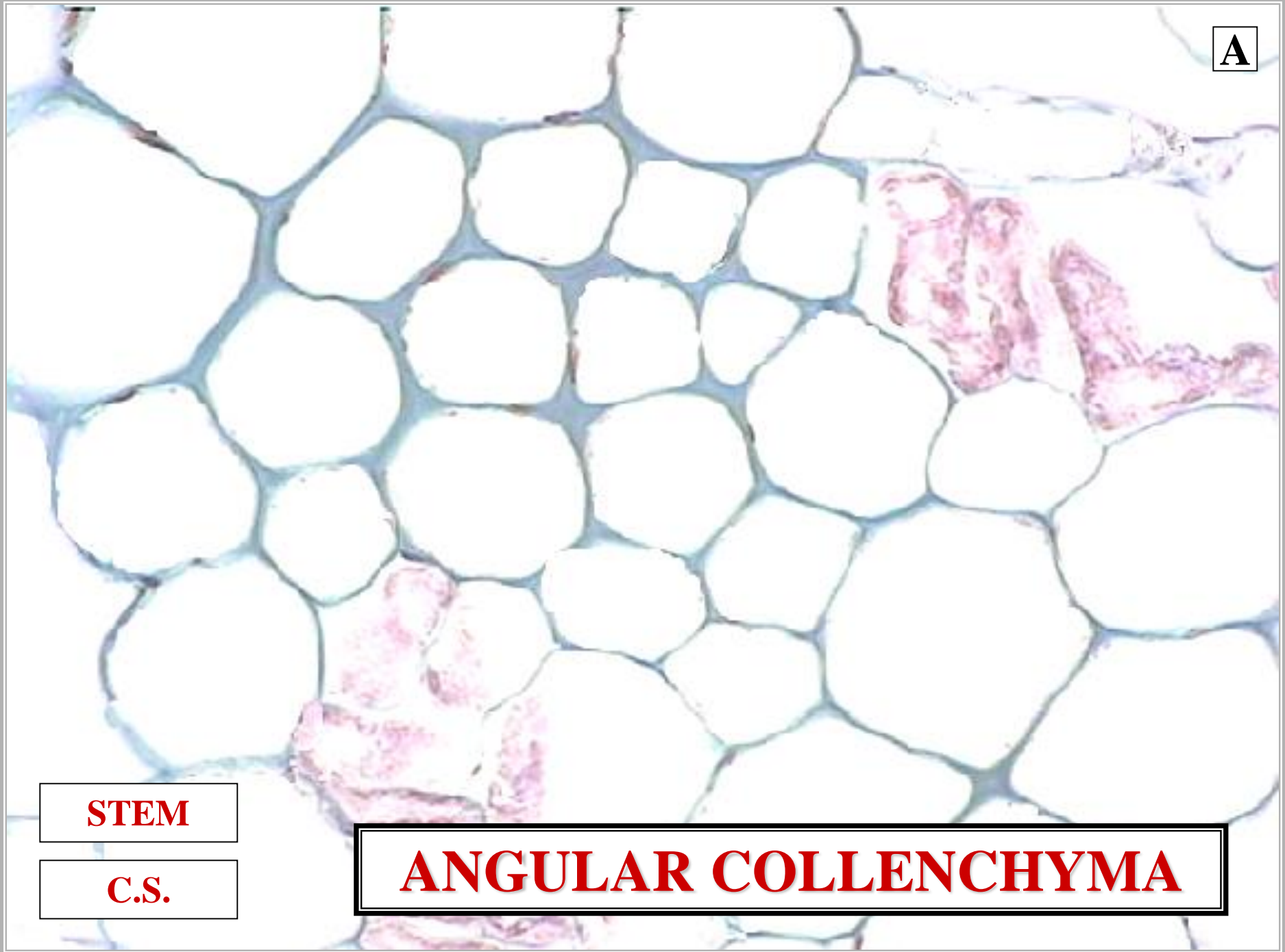


A

STEM

C.S.

ANGULAR COLLENCHYMA



**ANGULAR
COLLENCHYMA**

ANGULAR COLLENCHYMA TISSUE



S

+

ACUTE ANGULAR
WALL THICKENINGS
WITHOUT LACUNAE

ANGULAR COLLENCHYMA TISSUE

?



STEM

C.S.

ANGULAR COLLENCHYMA

L

STEM

C.S.

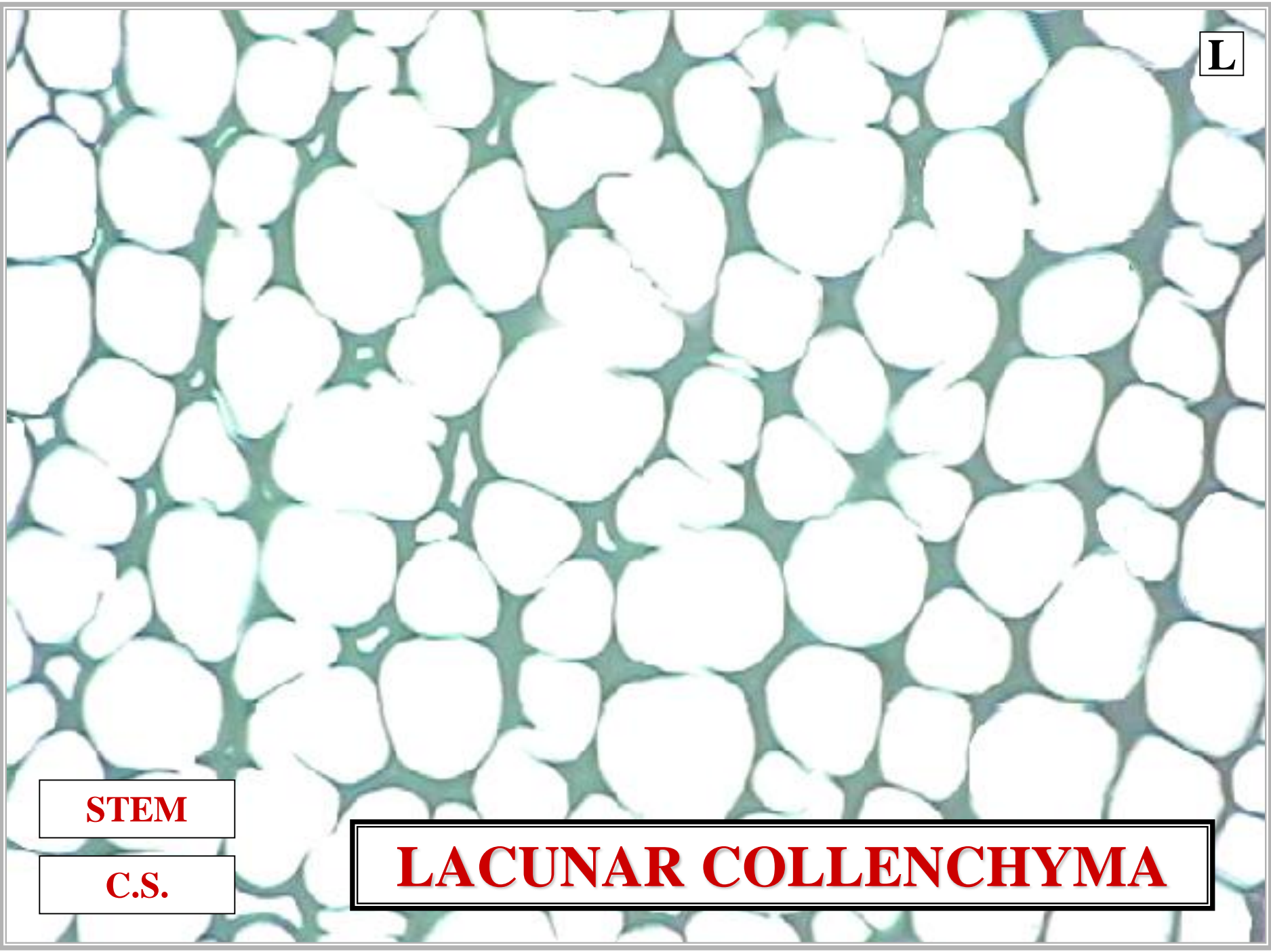
?

L

STEM

C.S.

LACUNAR COLLENCHYMA



LACUNAR

COLLENCHYMA

**LACUNAR
COLLENCHYMA TISSUE**

**ACUTE ANGULAR
WALL THICKENINGS
WITH LACUNAE**

**LACUNAR
COLLENCHYMA TISSUE**

LACUNAE



LACUNAE

**INTERCELLULAR
AIR SPACES**

LACUNAE

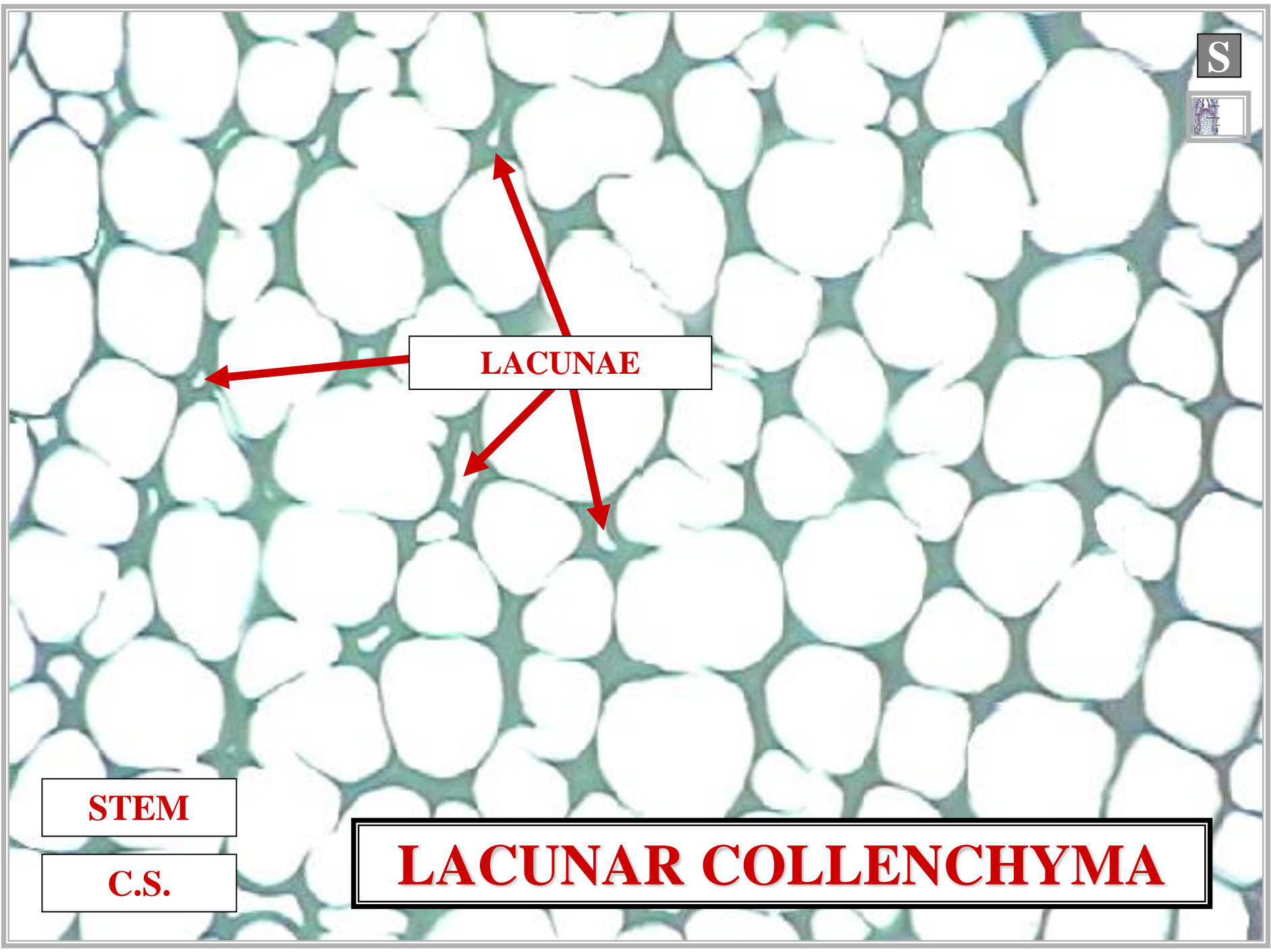


LACUNAE

STEM

C.S.

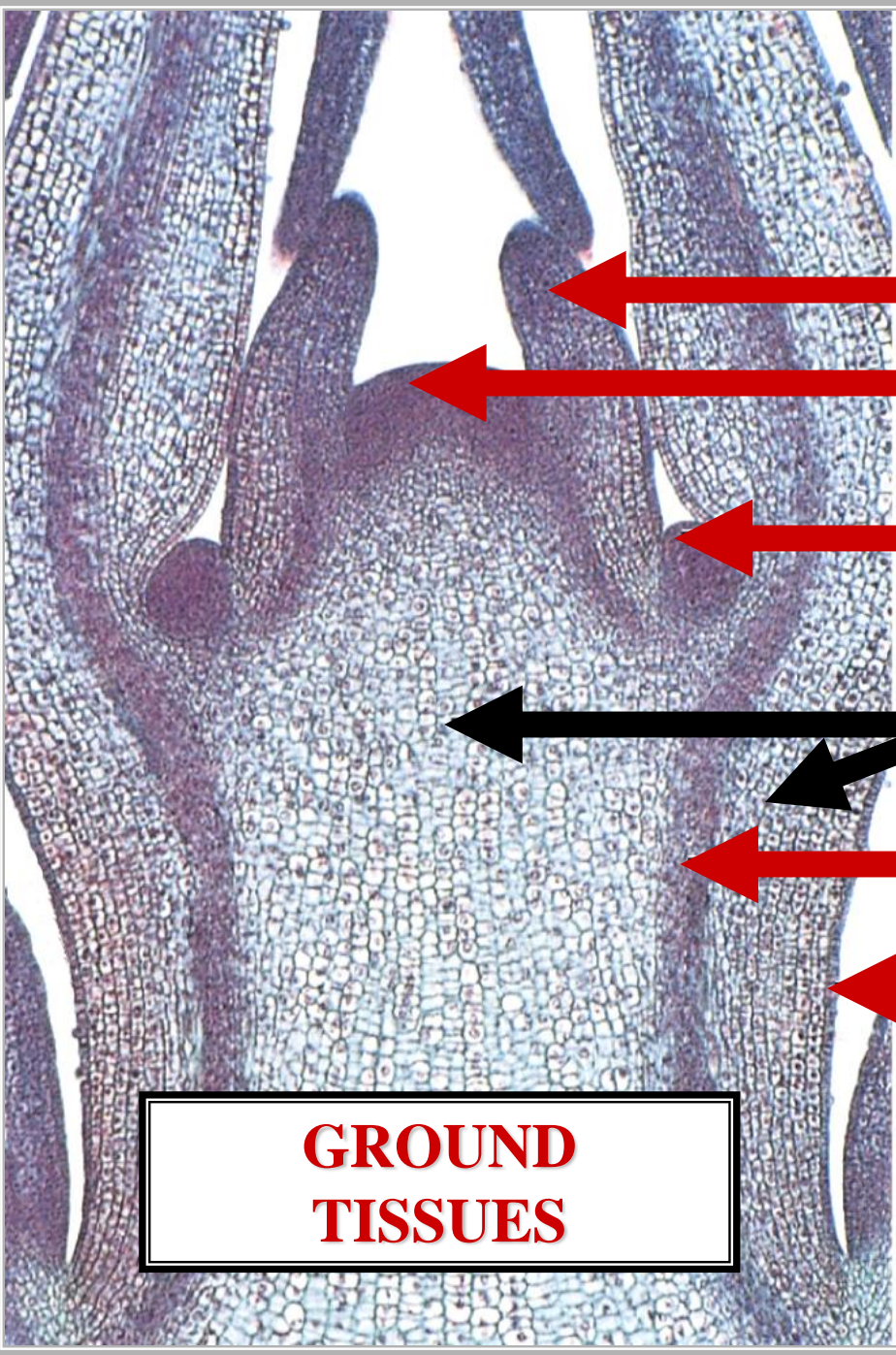
LACUNAR COLLENCHYMA



TRACHEOPHYTE GROUND TISSUES

+

P



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**APICAL
MERISTEM**

[]

GROUND TISSUE

[]

[]

**GROUND
TISSUES**

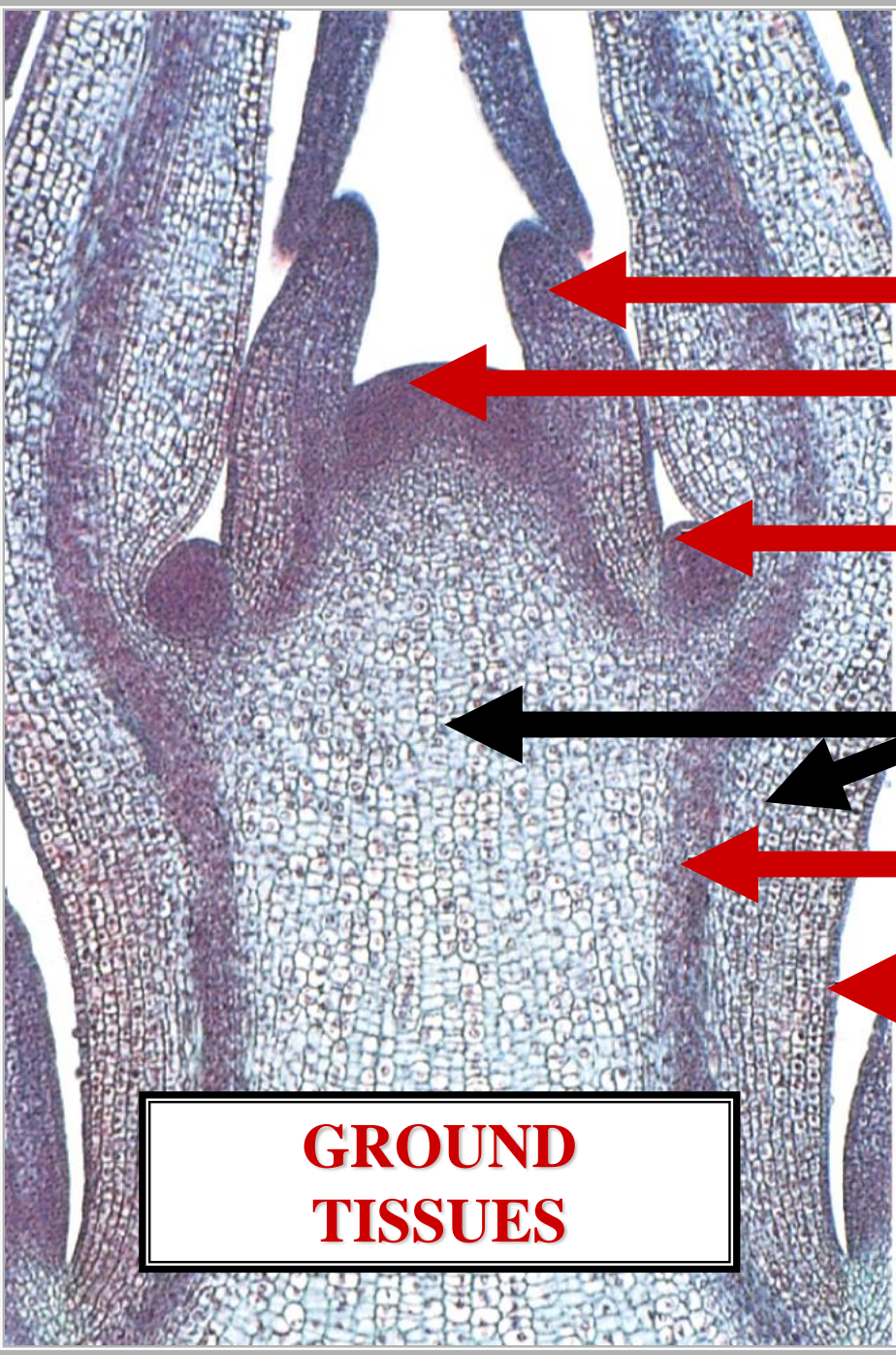
STEM

L.S.

TRACHEOPHYTE GROUND TISSUES

+

C



[]

**APICAL
MERISTEM**

[]

PARENCHYMA TISSUE

[]

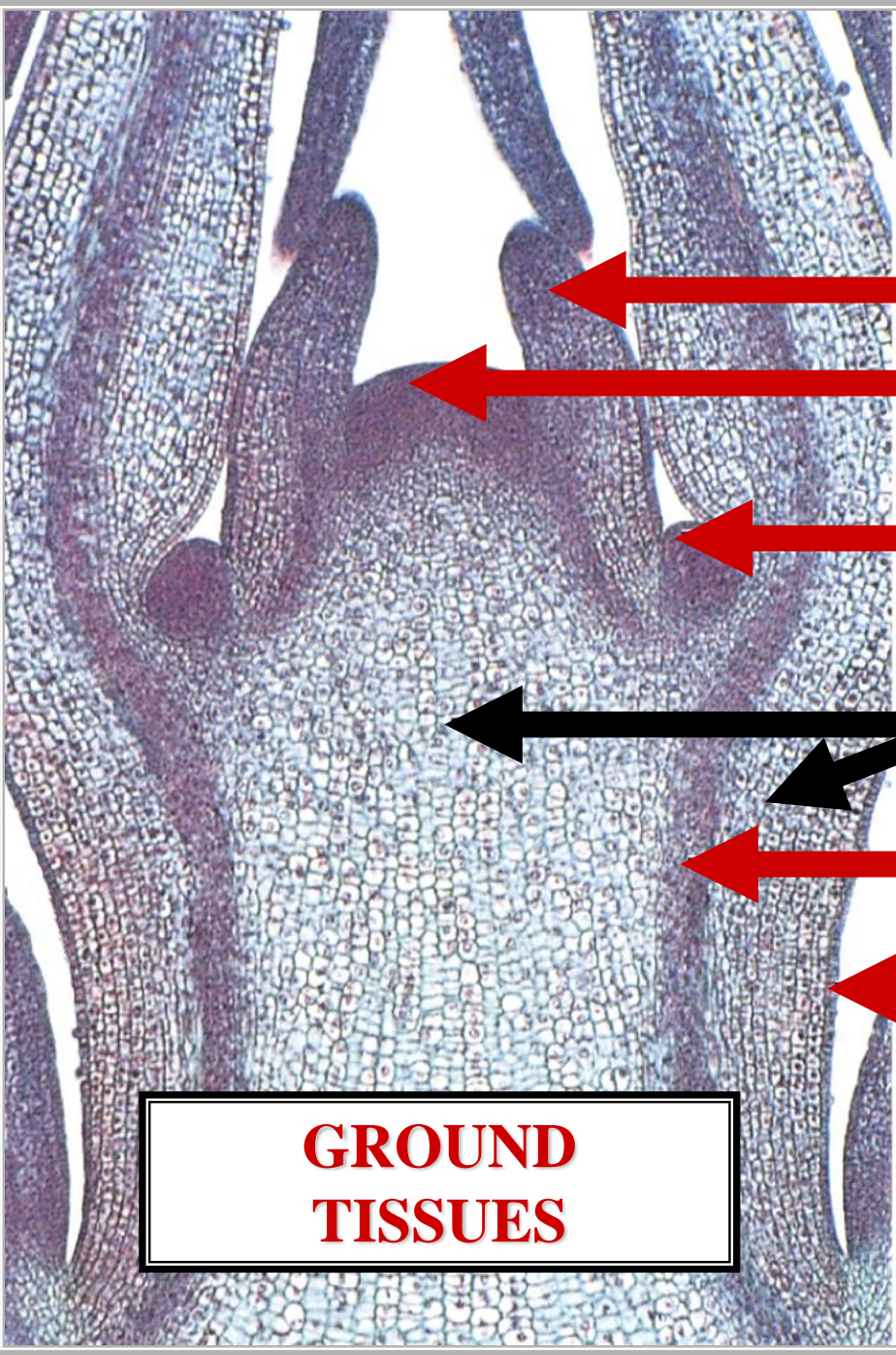
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**GROUND
TISSUES**

STEM

L.S.

TRACHEOPHYTE GROUND TISSUES



[Empty box]

**APICAL
MERISTEM**

[Empty box]

COLLENCHYMA TISSUE

[Empty box]

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**GROUND
TISSUES**

STEM

L.S.



SCLERENCHYMA TISSUE

SCLERENCHYMA CELLS

SCLERENCHYMA CELL

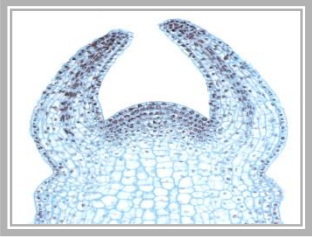
SCLERENCHYMA CELL



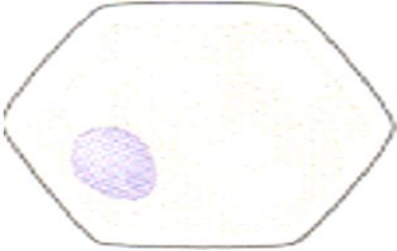
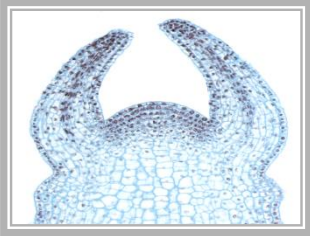
**PARENCHYMA
DERIVED**

**SCLERENCHYMA
CELL**

STEM MERISTEM



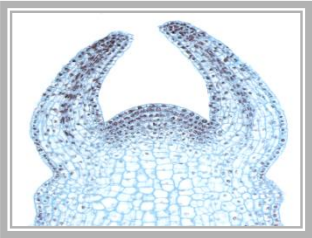
**STEM
MERISTEM**



CELL INITIAL

**PARENCHYMA
BASIC
PLANT CELL**

**STEM
MERISTEM**

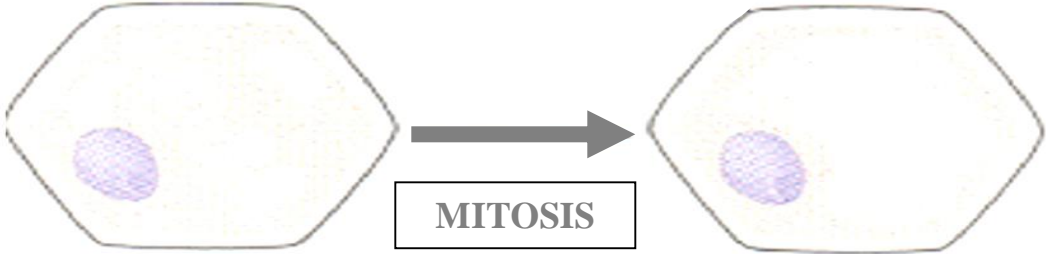
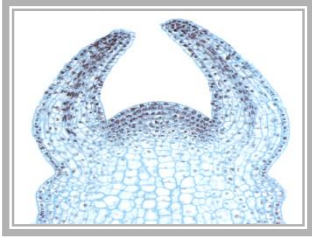


CELL INITIAL

PARENCHYMA CELL

**PARENCHYMA
BASIC
PLANT CELL**

**STEM
MERISTEM**



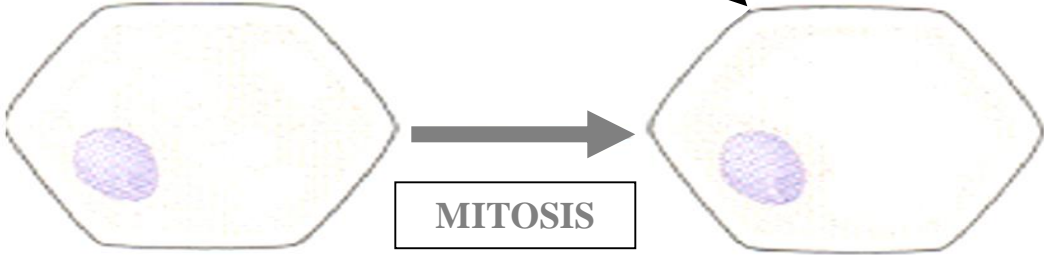
CELL INITIAL

PARENCHYMA CELL

**PARENCHYMA
BASIC
PLANT CELL**

**STEM
MERISTEM**

DERIVATIVE CELL



CELL INITIAL

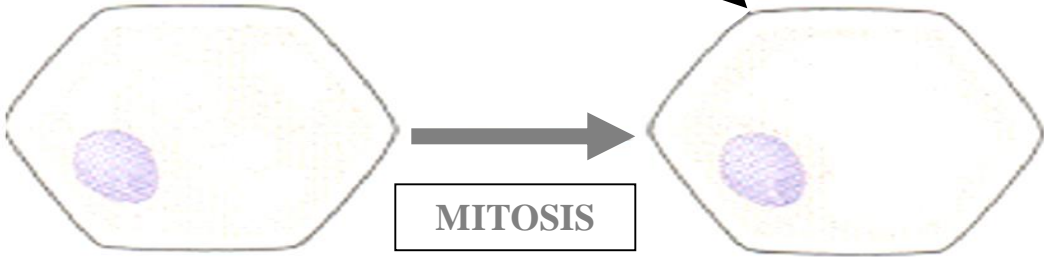
PARENCHYMA CELL

**PARENCHYMA
BASIC
PLANT CELL**

**STEM
MERISTEM**

DERIVATIVE CELL

PARENCHYMA CELL



CELL INITIAL

PARENCHYMA CELL

**PARENCHYMA
BASIC
PLANT CELL**

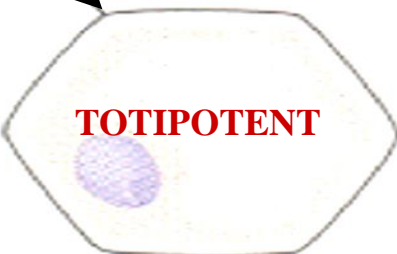
**STEM
MERISTEM**

DERIVATIVE CELL

PARENCHYMA CELL



MITOSIS



**MERISTEM DERIVATIVE
CAN POTENTIALLY
DIFFERENTIATE
INTO ANY PLANT CELL TYPE**

CELL INITIAL

PARENCHYMA CELL

**PARENCHYMA
BASIC
PLANT CELL**

**STEM
MERISTEM**

DERIVATIVE CELL

PARENCHYMA CELL



MITOSIS



CELL INITIAL

PARENCHYMA CELL

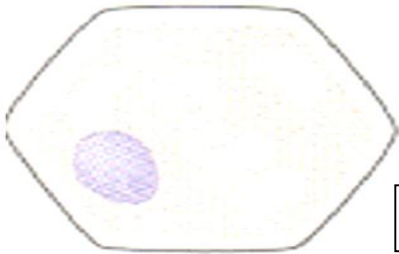
**PARENCHYMA
BASIC
PLANT CELL**

**MERISTEM DERIVATIVE
CAN POTENTIALLY
DIFFERENTIATE
INTO ANY PLANT CELL TYPE**

**STEM
MERISTEM**

DERIVATIVE CELL

PARENCHYMA CELL



MITOSIS



**MERISTEM DERIVATIVE
CAN POTENTIALLY
DIFFERENTIATE
INTO ANY PLANT CELL TYPE**

CELL INITIAL

PARENCHYMA CELL

**PARENCHYMA
BASIC
PLANT CELL**

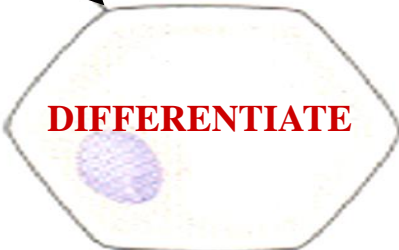
**STEM
MERISTEM**

DERIVATIVE CELL

PARENCHYMA CELL



MITOSIS



DIFFERENTIATE

**MERISTEM DERIVATIVE
CAN POTENTIALLY
DIFFERENTIATE
INTO ANY PLANT CELL TYPE**

CELL INITIAL

PARENCHYMA CELL

**PARENCHYMA
BASIC
PLANT CELL**



**STEM
MERISTEM**

DERIVATIVE CELL

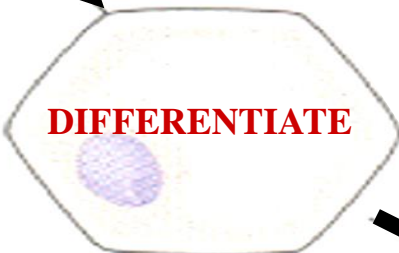
PARENCHYMA CELL

SCLERENCHYMA CELLS

SCLEREID



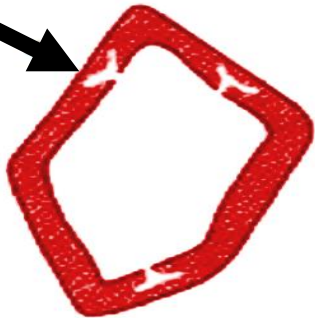
MITOSIS



DIFFERENTIATE



FIBER



CELL INITIAL

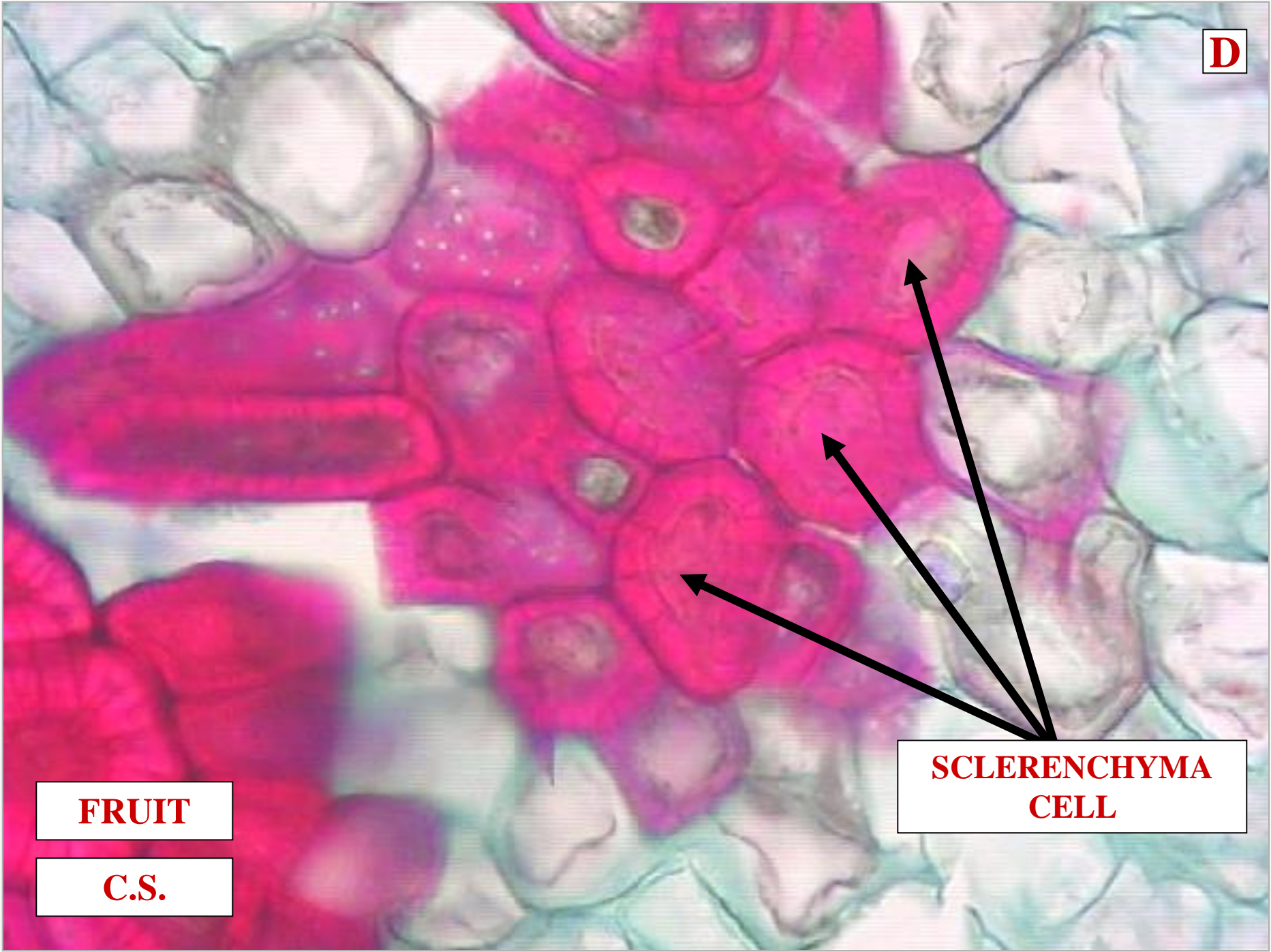
PARENCHYMA CELL

**PARENCHYMA
BASIC
PLANT CELL**



SCLERENCHYMA CELL CHARACTERS

D



FRUIT

C.S.

**SCLERENCHYMA
CELL**

1&2

FRUIT

C.S.

**SCLERENCHYMA
CELL
DEAD FUNCTIONAL
CELL**



+

1

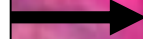


FRUIT

C.S.

**SCLERENCHYMA
CELL
~1 & ~2 CELL WALL**

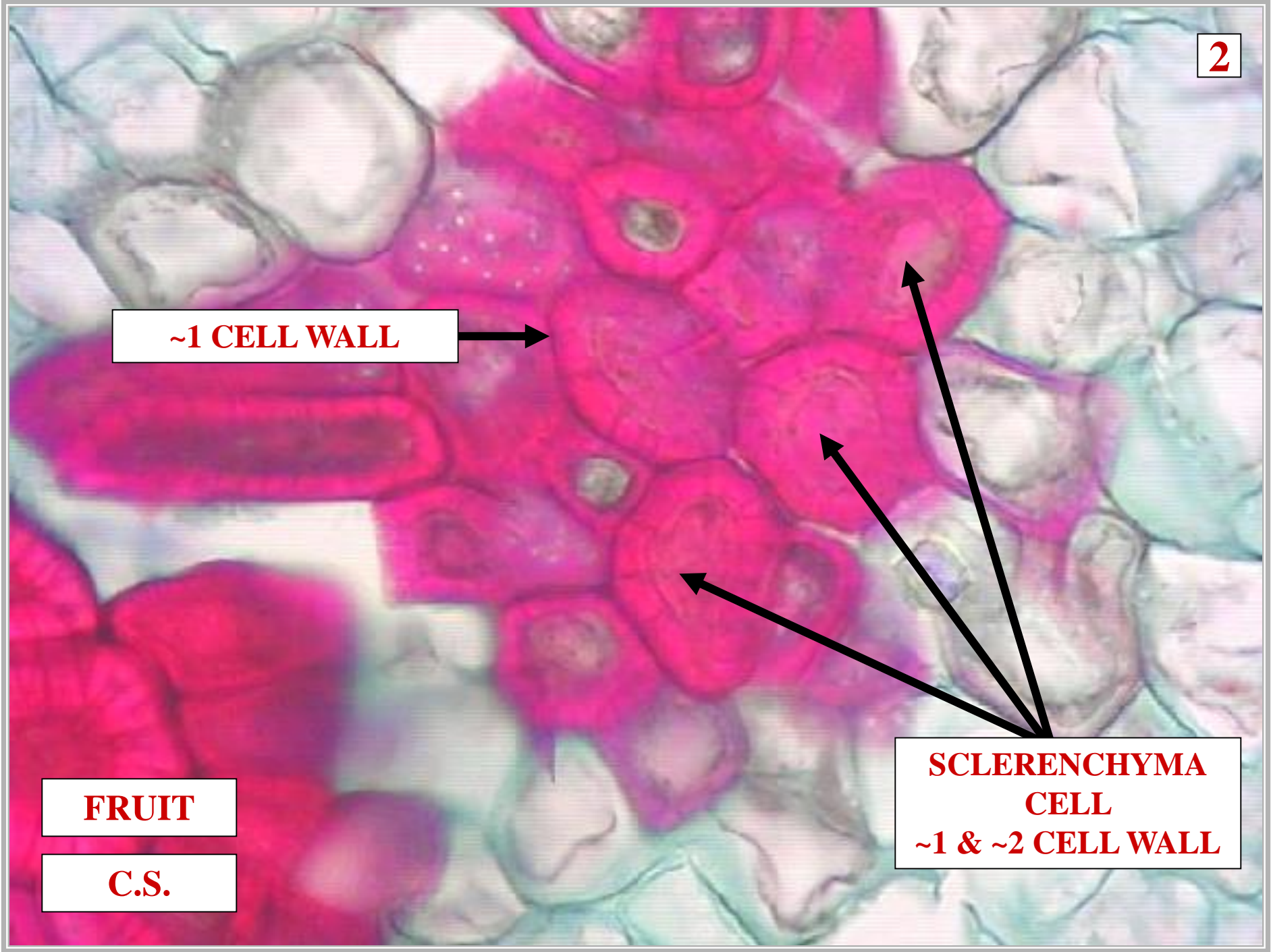
~1 CELL WALL



FRUIT

C.S.

**SCLERENCHYMA
CELL
~1 & ~2 CELL WALL**



T

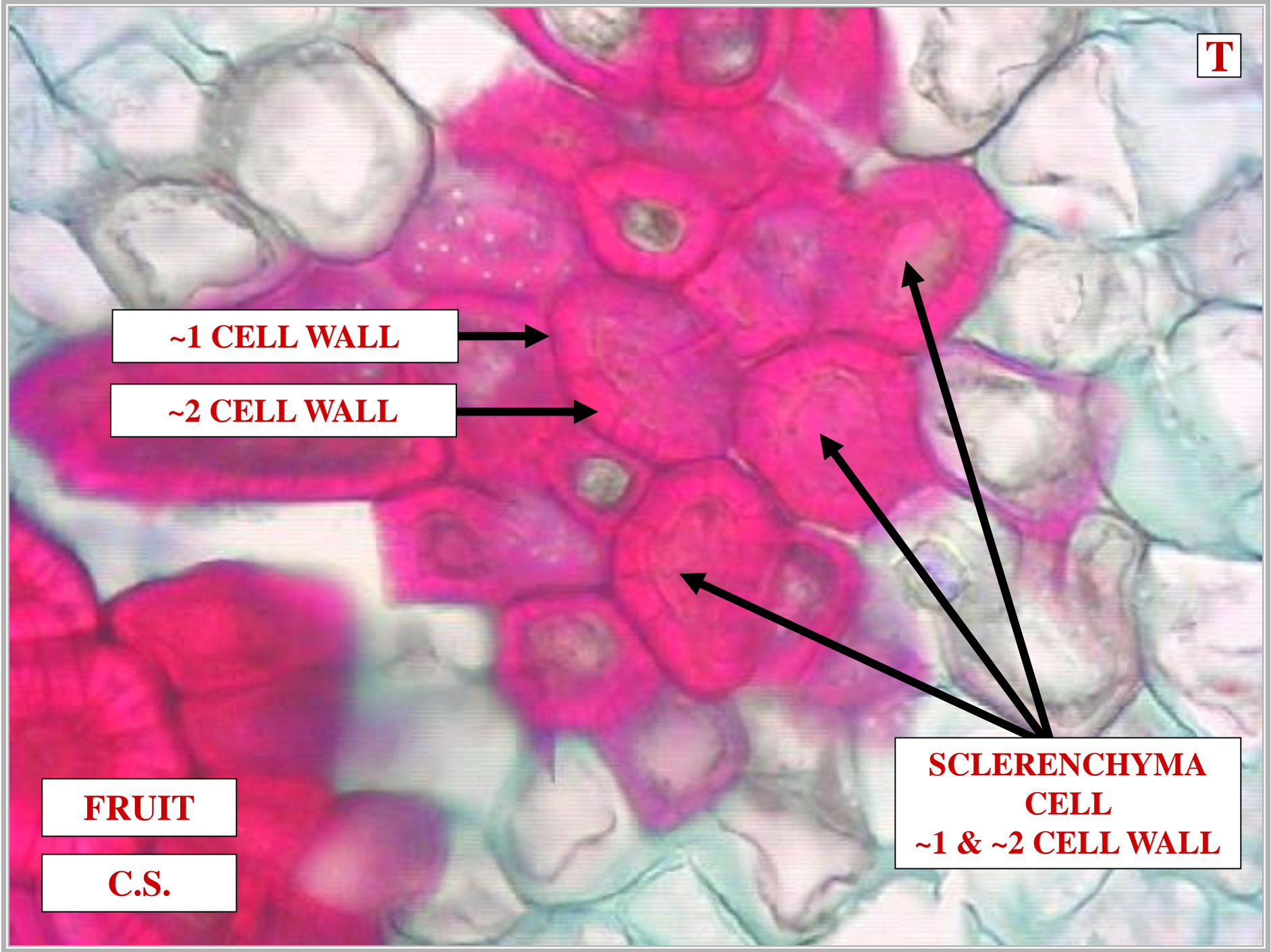
~1 CELL WALL

~2 CELL WALL

FRUIT

C.S.

**SCLERENCHYMA
CELL
~1 & ~2 CELL WALL**



HL

FRUIT

C.S.

**SCLERENCHYMA
CELL
~2 CELL WALL
THICK**





FRUIT

C.S.

**SCLERENCHYMA
CELL
~2 CELL WALL
HIGH LIGNIN
CONTENT**

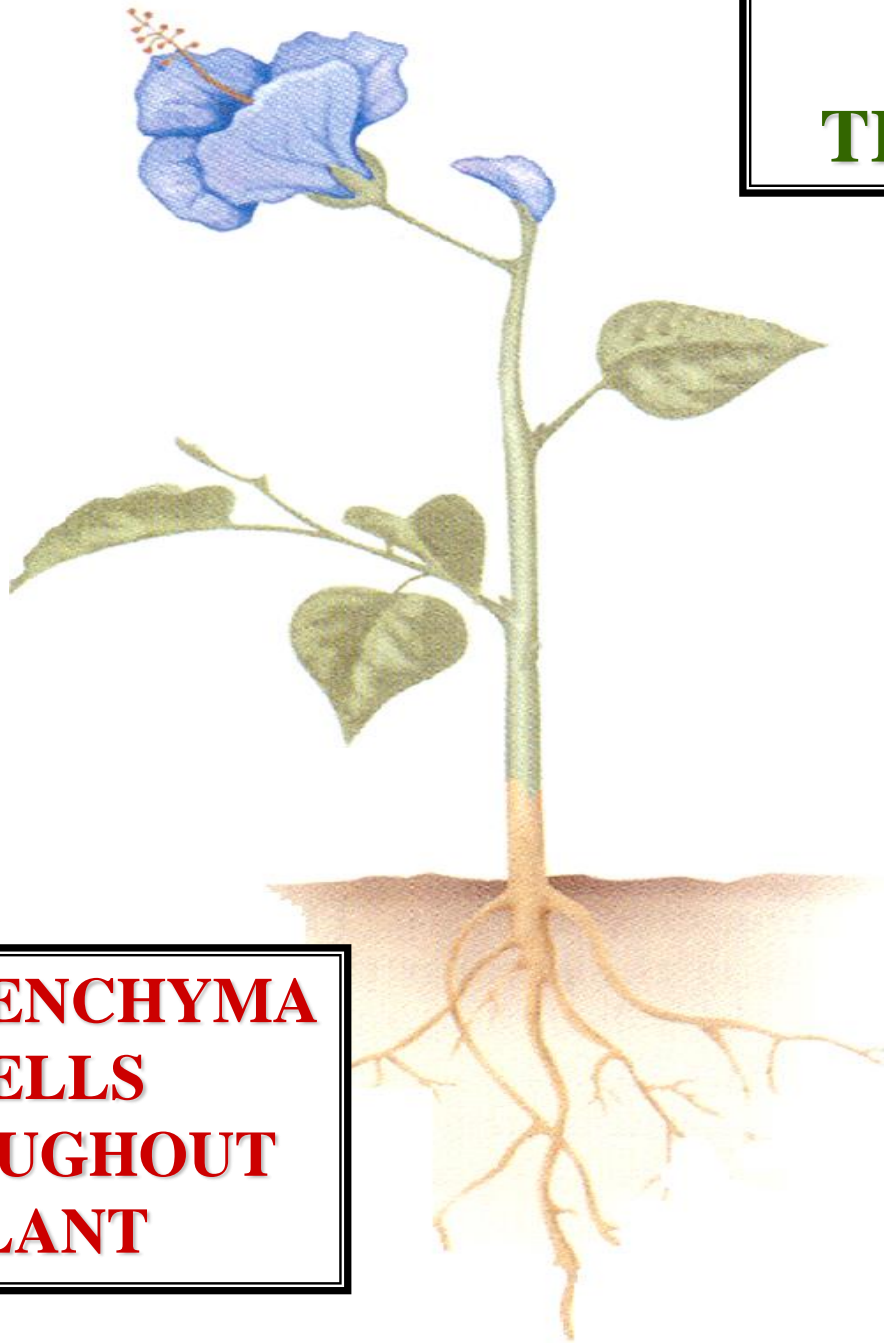


SCLERENCHYMA CELL DISTRIBUTION

TYPICAL TRACHEOPHYTE

L

**SCLERENCHYMA
CELLS
THROUGHOUT
PLANT**



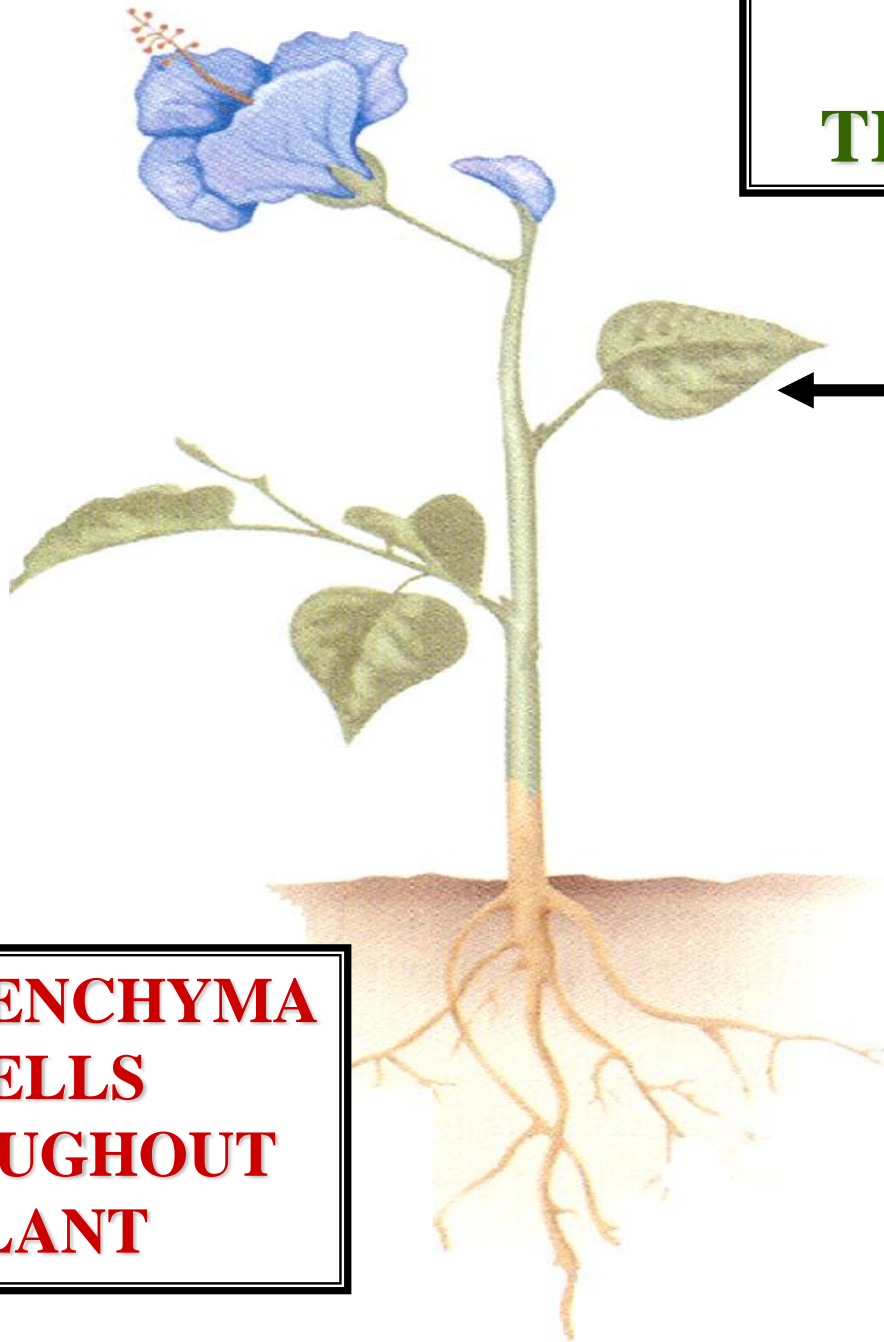
**TYPICAL
TRACHEOPHYTE**

S

LEAF



**SCLERENCHYMA
CELLS
THROUGHOUT
PLANT**



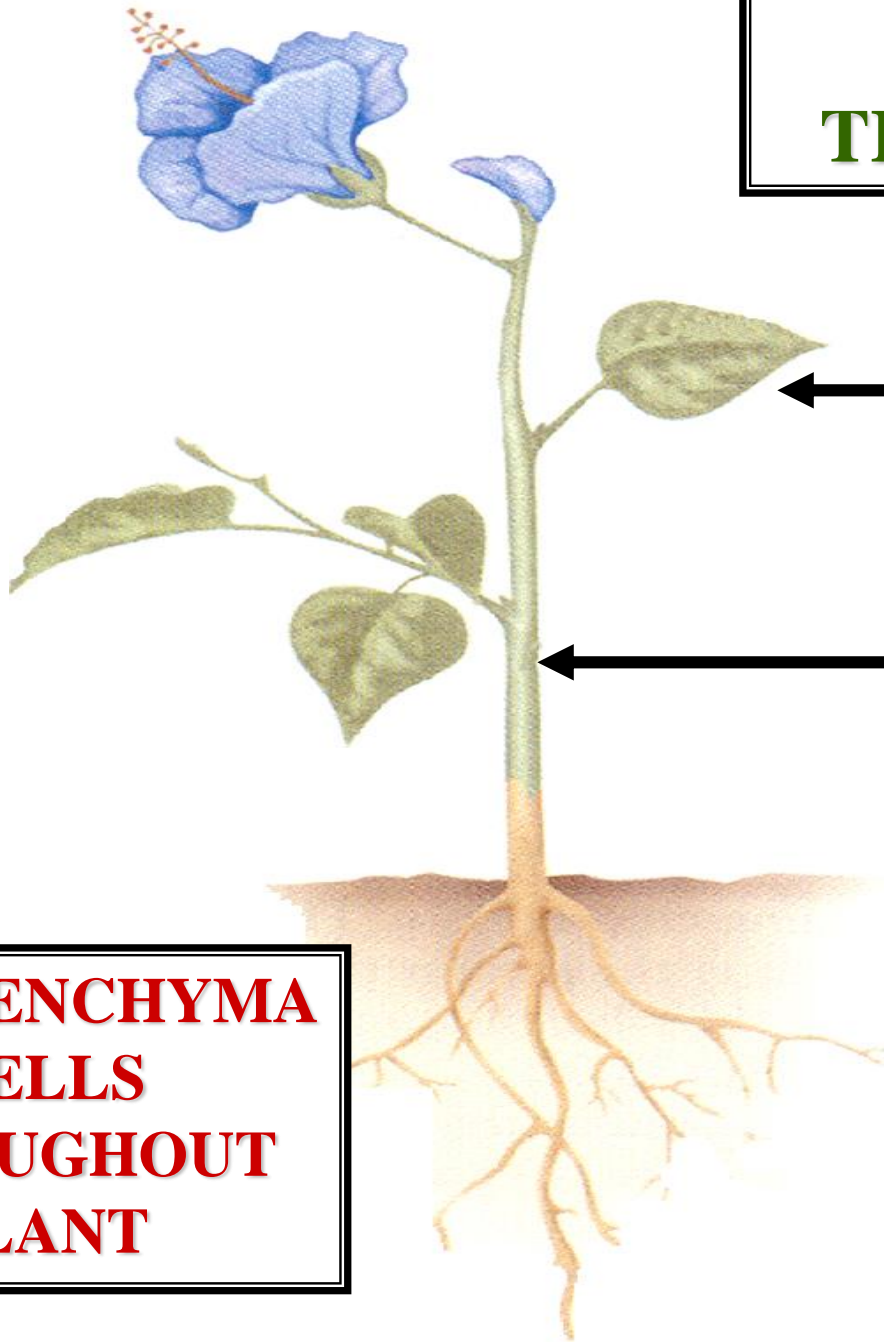
**TYPICAL
TRACHEOPHYTE**

R

LEAF

STEM

**SCLERENCHYMA
CELLS
THROUGHOUT
PLANT**



TYPICAL TRACHEOPHYTE

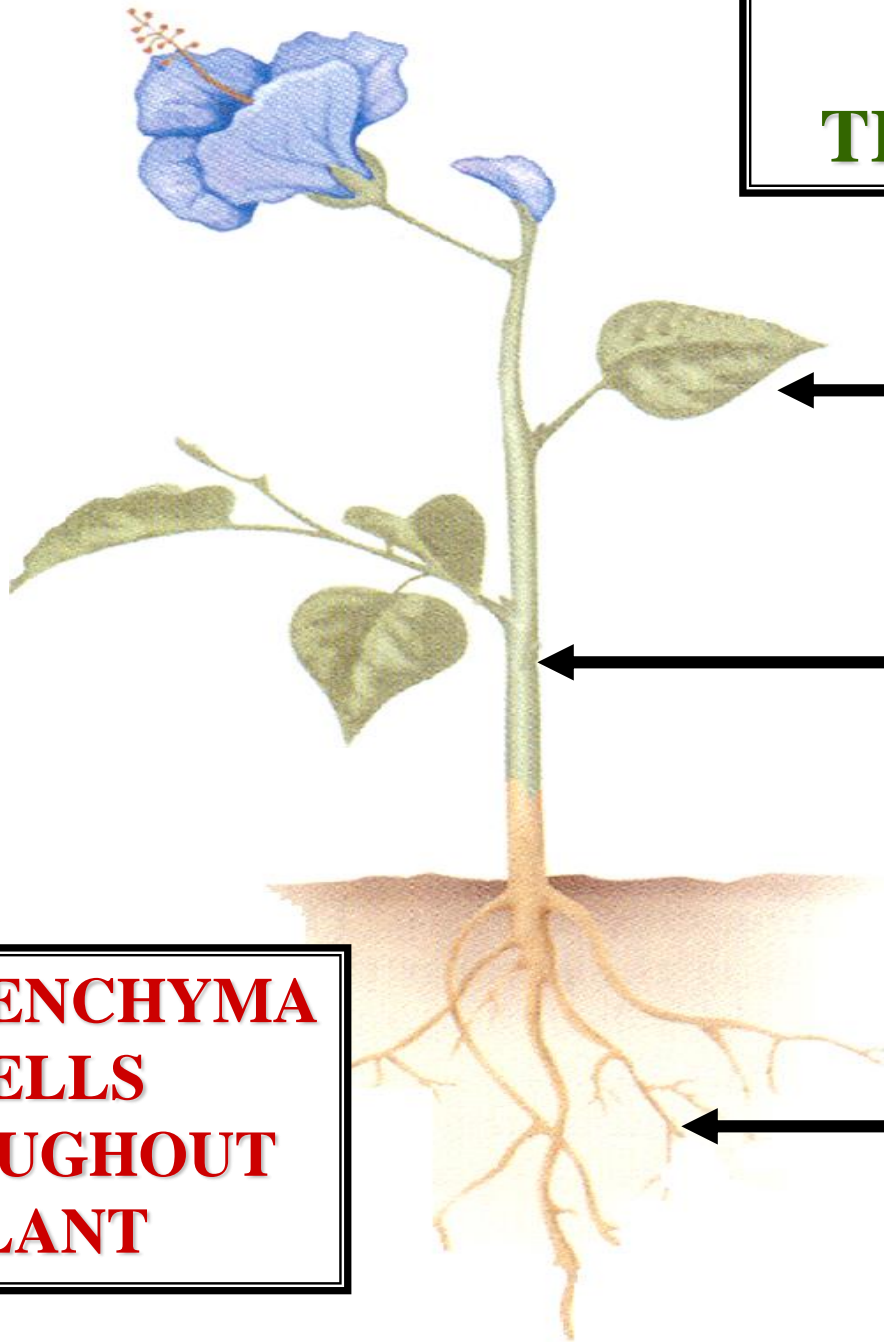


LEAF

STEM

ROOT

**SCLERENCHYMA
CELLS
THROUGHOUT
PLANT**





SCLERENCHYMA CELL FUNCTION

TYPICAL TRACHEOPHYTE



LEAF

SCLERENCHYMA FUNCTION VARIOUS

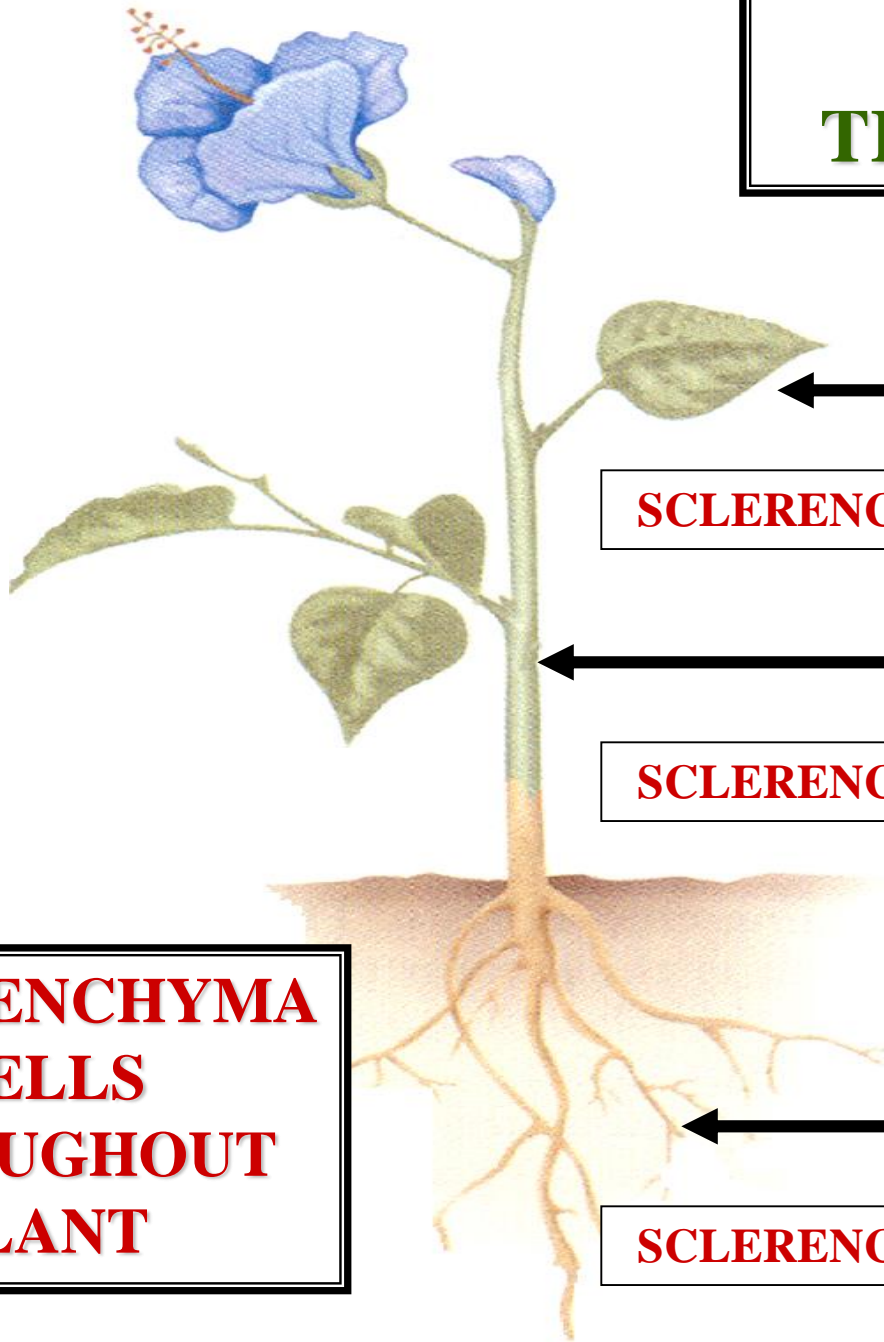
STEM

SCLERENCHYMA FUNCTION VARIOUS

ROOT

SCLERENCHYMA FUNCTION VARIOUS

**SCLERENCHYMA
CELLS
THROUGHOUT
PLANT**



SCLERENCHYMA CELL TYPES

SCLERENCHYMA CELL TYPES

FIBERS

**SCLERENCHYMA CELL
TYPES**

SCLERENCHYMA CELL TYPES



FIBERS

SCLEREIDS

**SCLERENCHYMA CELL
TYPES**



FIBERS



FIBER CELL SHAPE



LONG & SLENDER

L.S.

FIBER CELL TYPES

FIBER CELL TYPES

LIBRIFORM FIBER

FIBER CELL TYPES

FIBER CELL TYPES

LIBRIFORM FIBER
TRACHEID FIBER

FIBER CELL
TYPES

LIBRIFORM FIBER



LIBRIFORM FIBER

VERY LONG & SLENDER

LIBRIFORM FIBER



LIBRIFORM FIBER

VERY LONG & SLENDER

FEW PITS

LIBRIFORM FIBER

FIBER CELLS



VERY LONG & SLENDER

LIBRIFORM FIBER

L.S.

FIBER CELLS



FEW PITS

LIBRIFORM FIBER

L.S.

TRACHEID FIBER



TRACHEID FIBER

LESS LONG & SLENDER

TRACHEID FIBER



TRACHEID FIBER

LESS LONG & SLENDER

MANY PITS

TRACHEID FIBER

FIBER CELLS



LESS LONG & SLENDER



VERY LONG & SLENDER

TRACHEID FIBER

LIBRIFORM FIBER

L.S.



FIBER CELLS



MANY PITS

FEW PITS

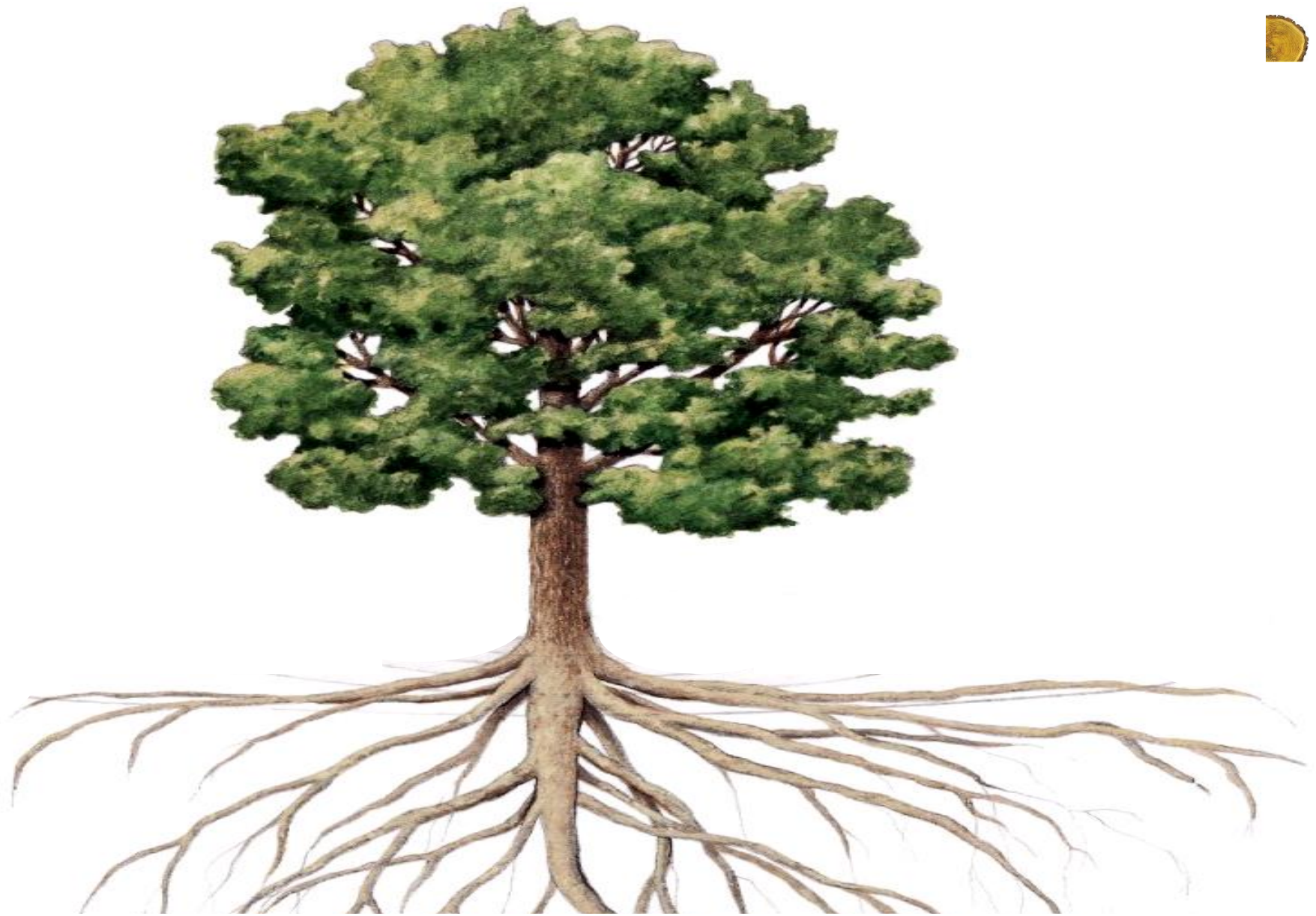
TRACHEID FIBER

LIBRIFORM FIBER

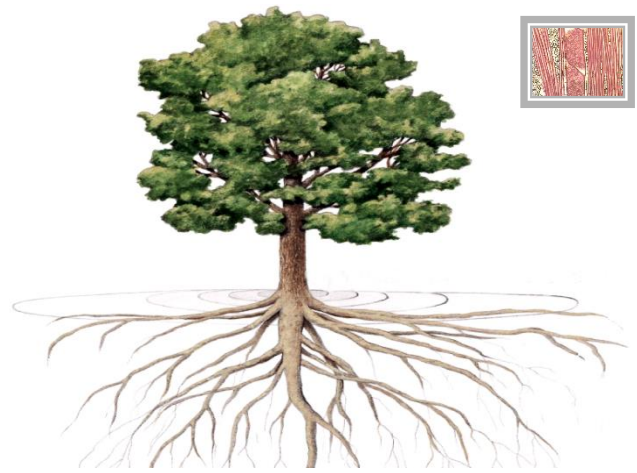
L.S.



FIBER FUNCTION



WOODY PLANT



STEM

C.S.

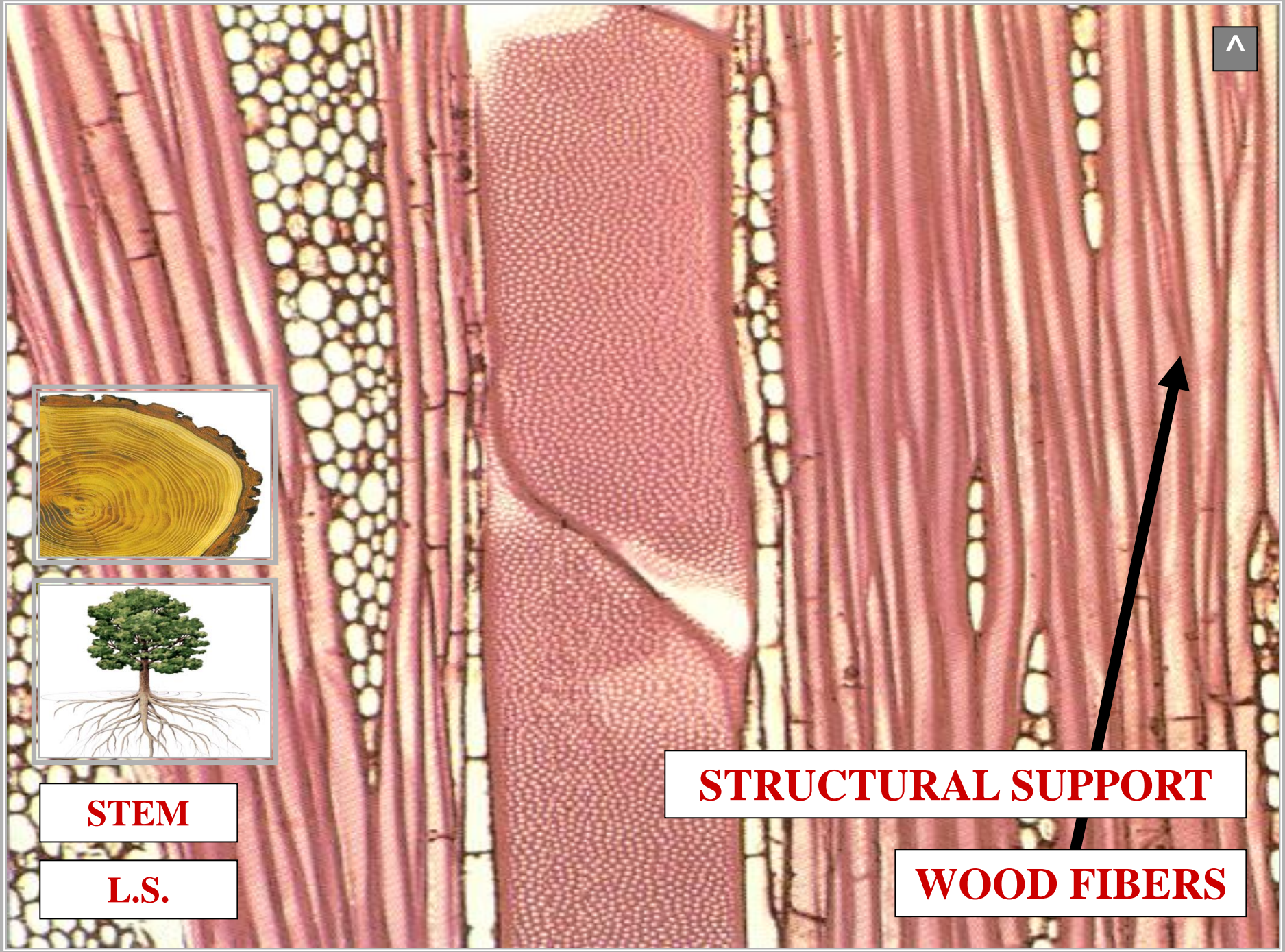


STEM

L.S.

STRUCTURAL SUPPORT

WOOD FIBERS





SCLEREIDS

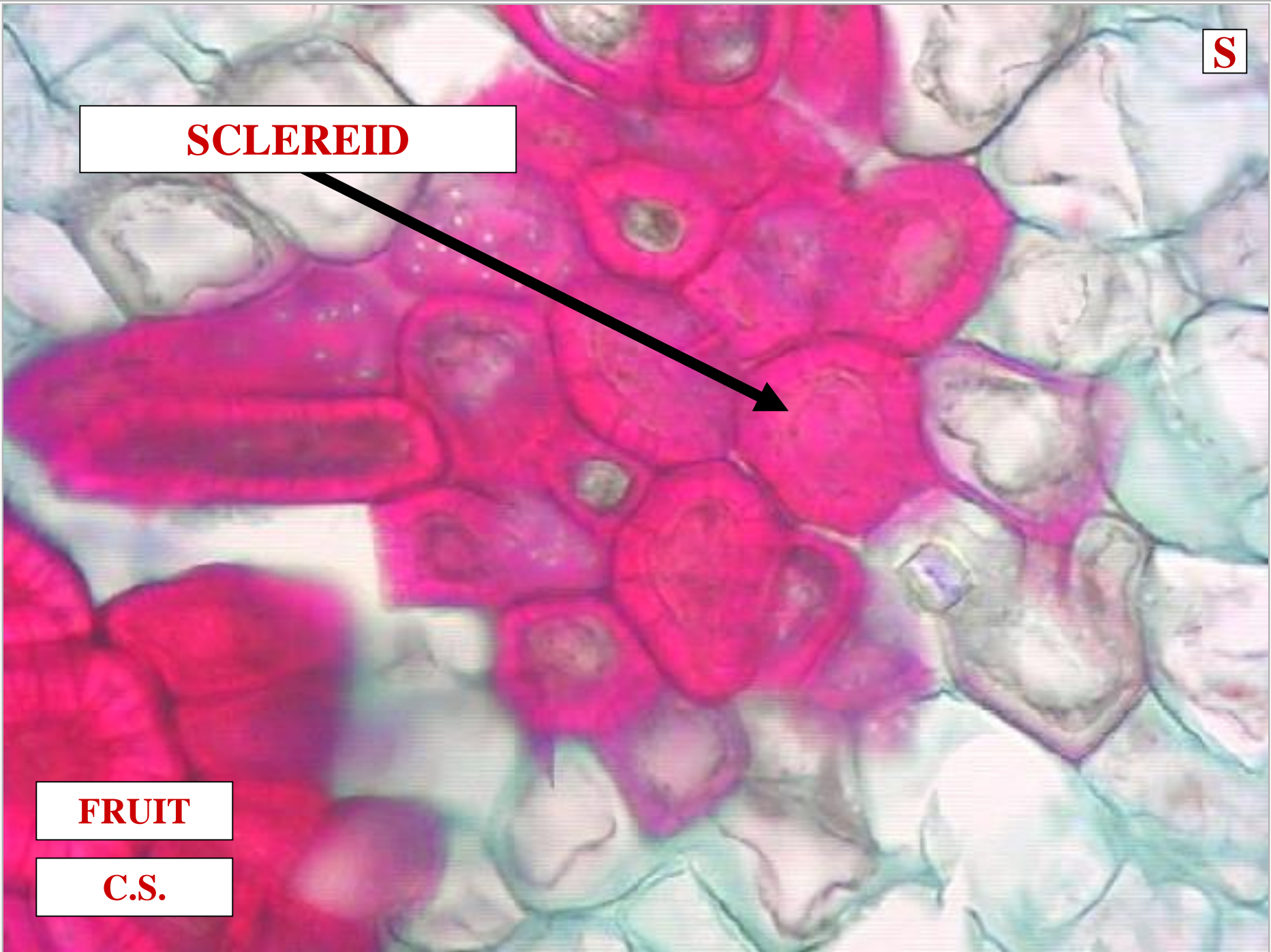
S

SCLEREID



FRUIT

C.S.



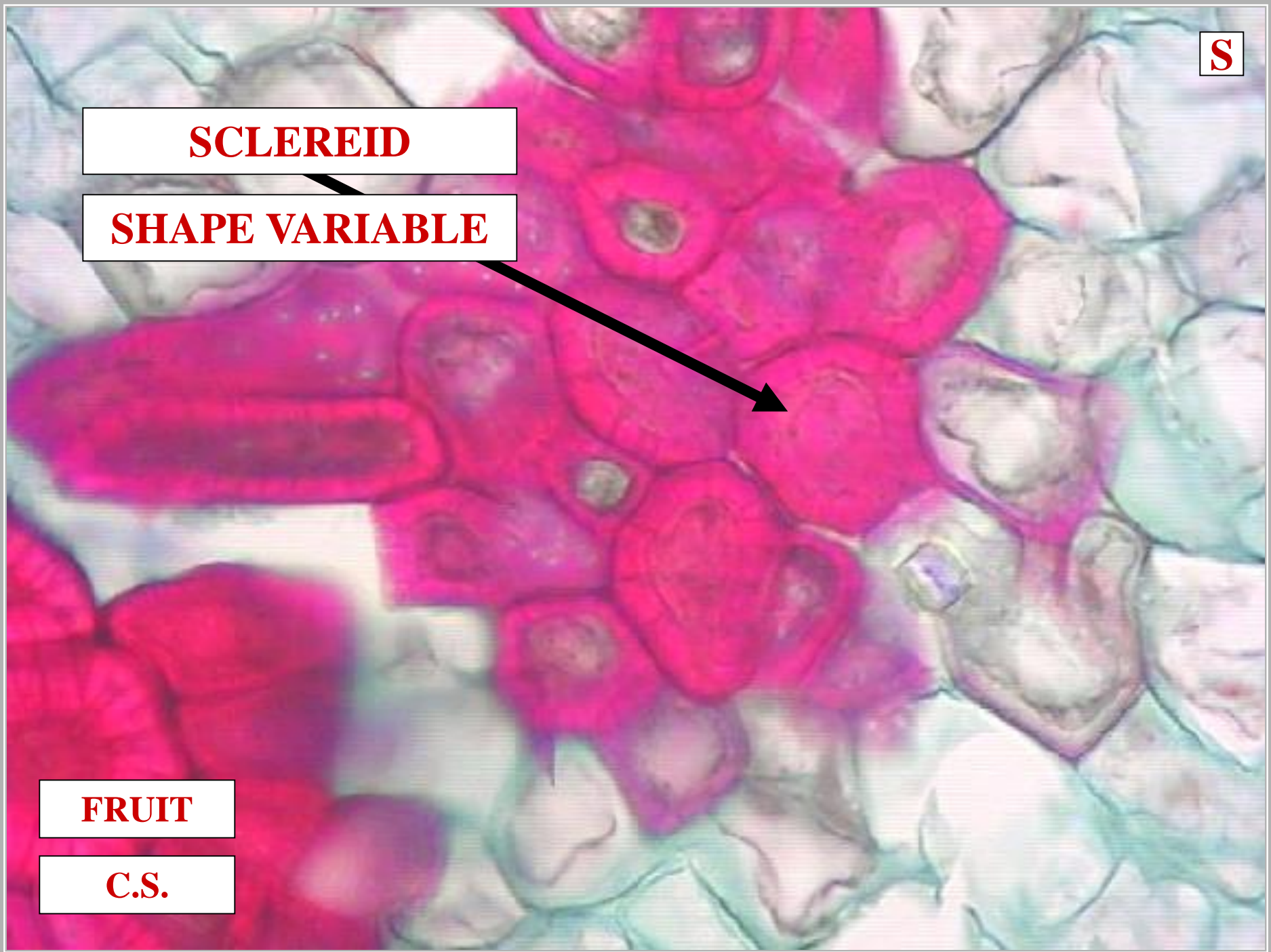
S

SCLEREID

SHAPE VARIABLE

FRUIT

C.S.



A light micrograph of a plant tissue section, likely a fruit, stained with a pinkish-red dye. The image shows various cell types. Some cells are elongated and spindle-shaped, characteristic of fibers. Other cells are shorter and more rounded or rectangular, identified as sclereids. The sclereids have thick, darkly stained cell walls. The overall structure is a complex network of these cells. A small black box with a white upward-pointing arrow is in the top right corner.

SCLEREID

SHAPE VARIABLE

SHORTER THAN FIBERS

FRUIT

C.S.

SCLEREID CELL TYPES

SCLEREID CELL TYPES

BRACHYSCLEREIDS

SCLEREID CELL TYPES

SCLEREID CELL TYPES

BRACHYSCLEREIDS

TRICHOSCLEREIDS

SCLEREID CELL TYPES

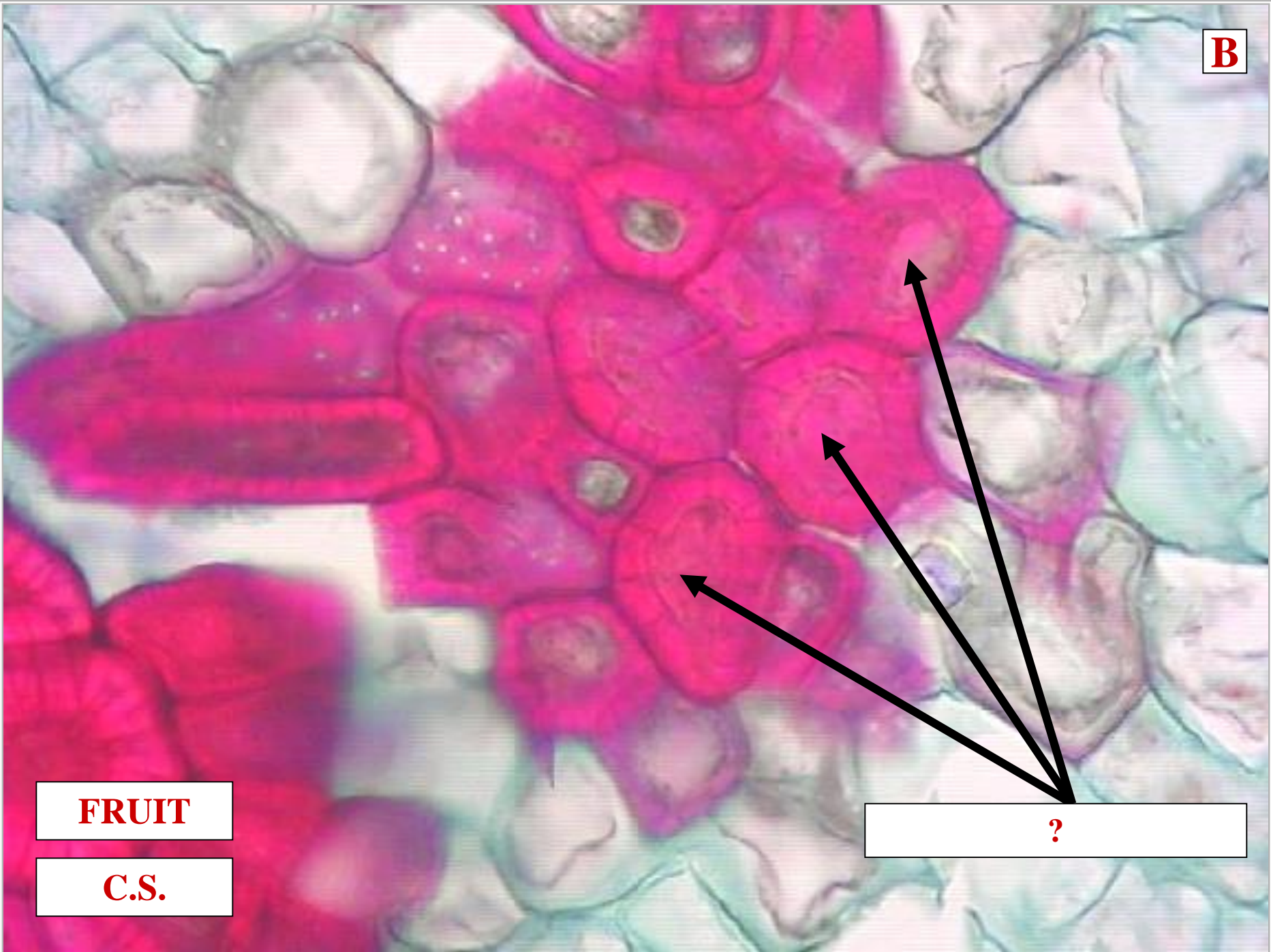
SCLEREID CELL TYPES



BRACHYSCLEREIDS
TRICHOSCLEREIDS
ASTROSCLEREIDS

SCLEREID CELL TYPES

B

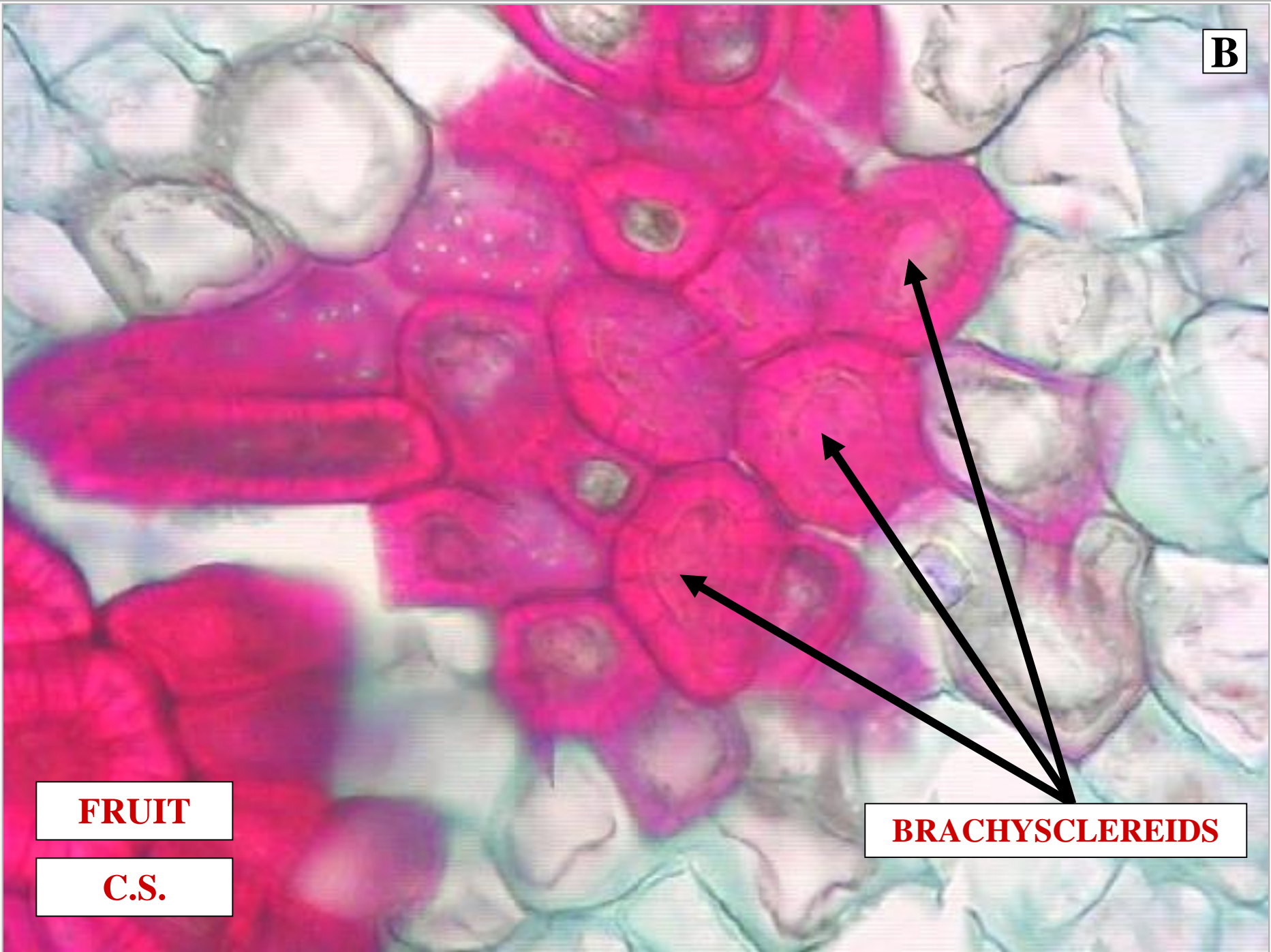


FRUIT

C.S.

?

B



FRUIT

C.S.

BRACHYSCLEREIDS

BRA CHYSCLEREID

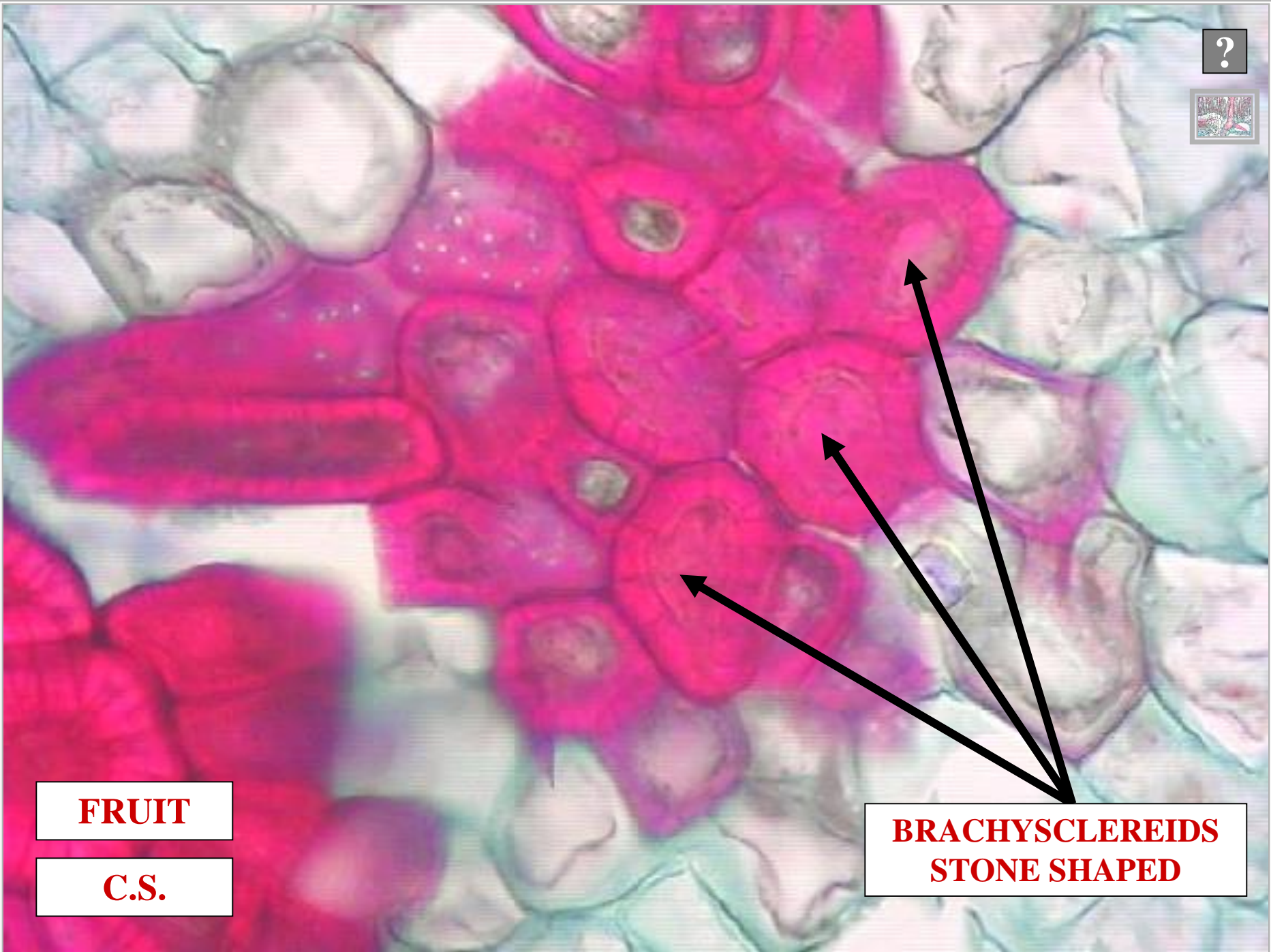


BRACHYSCLEREID

STONE SHAPED

BRACHYSCLEREID

?



FRUIT

C.S.

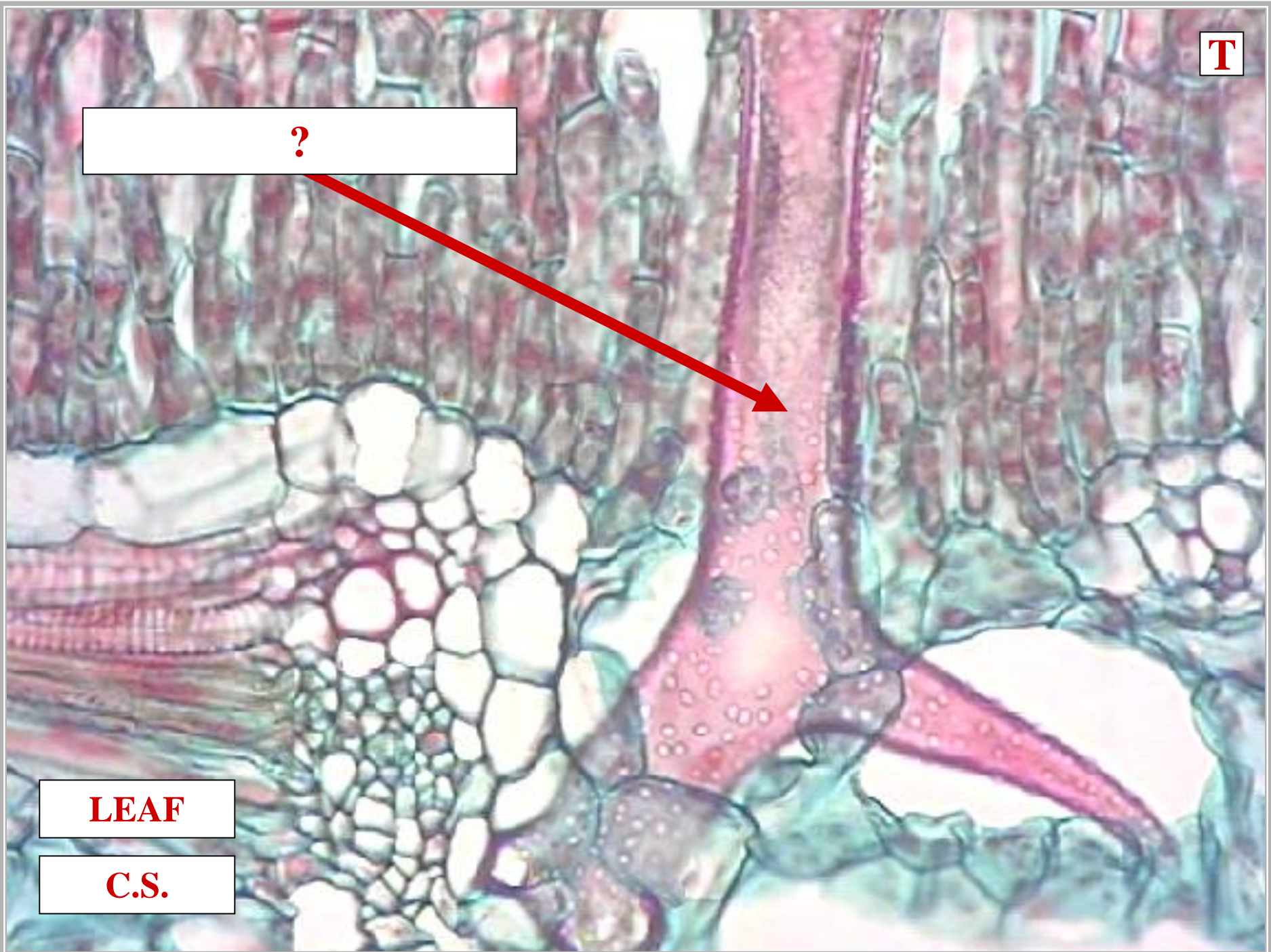
**BRACHYSCLEREIDS
STONE SHAPED**

T

?

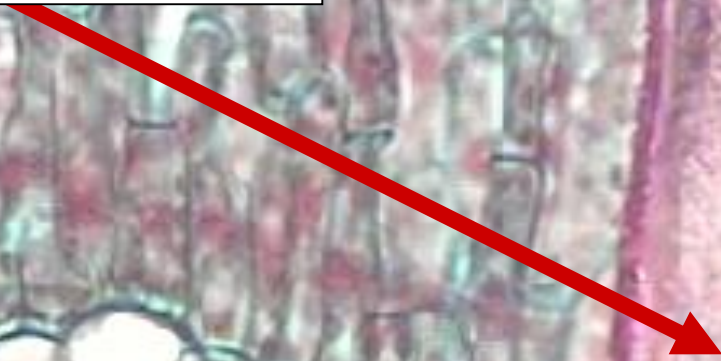
LEAF

C.S.



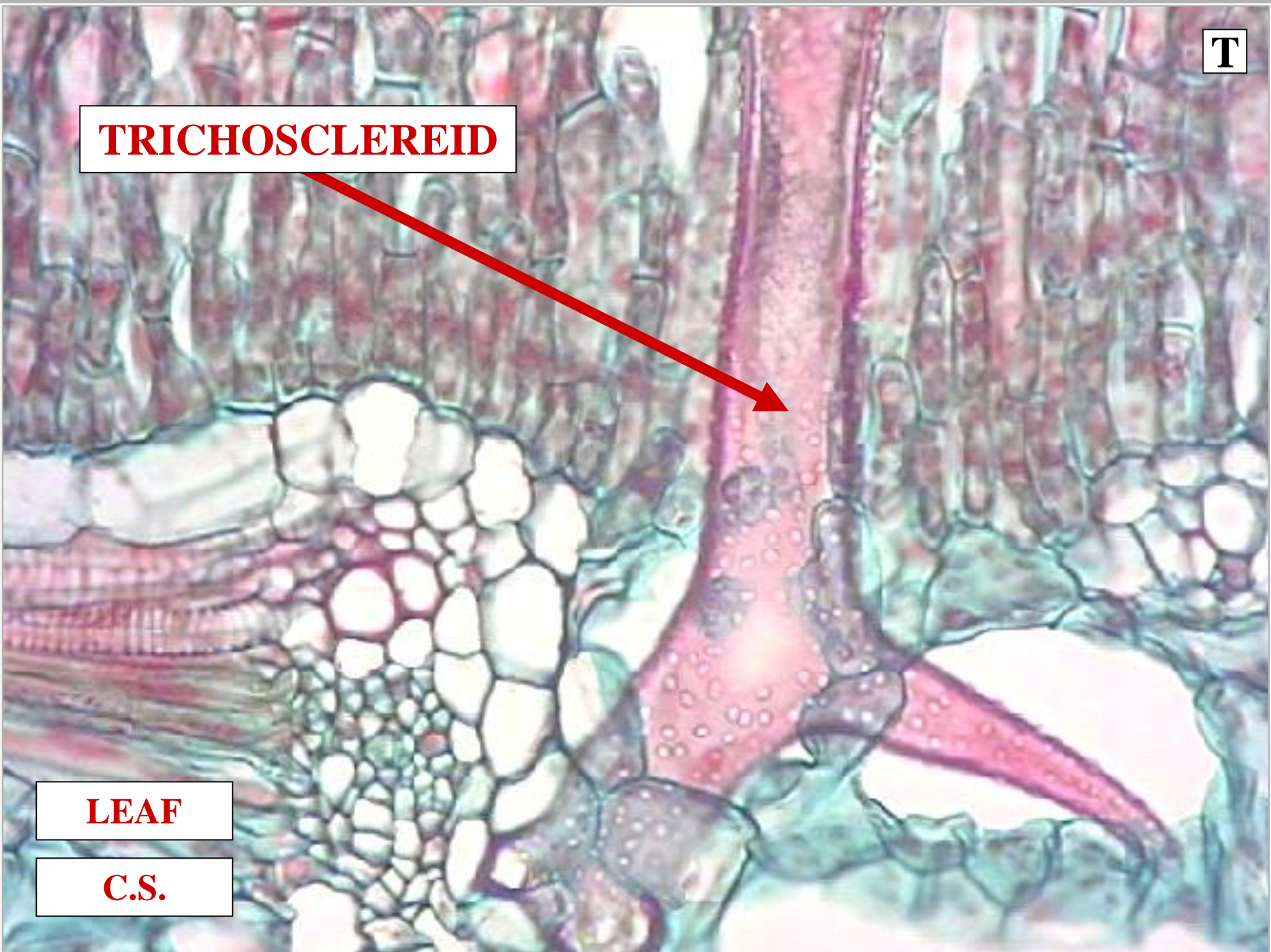
T

TRICHOSCLEREID



LEAF

C.S.



TRICHOSCLEREID

TRICHOSCLEREID



BROAD BRANCHES

TRICHOSCLEREID

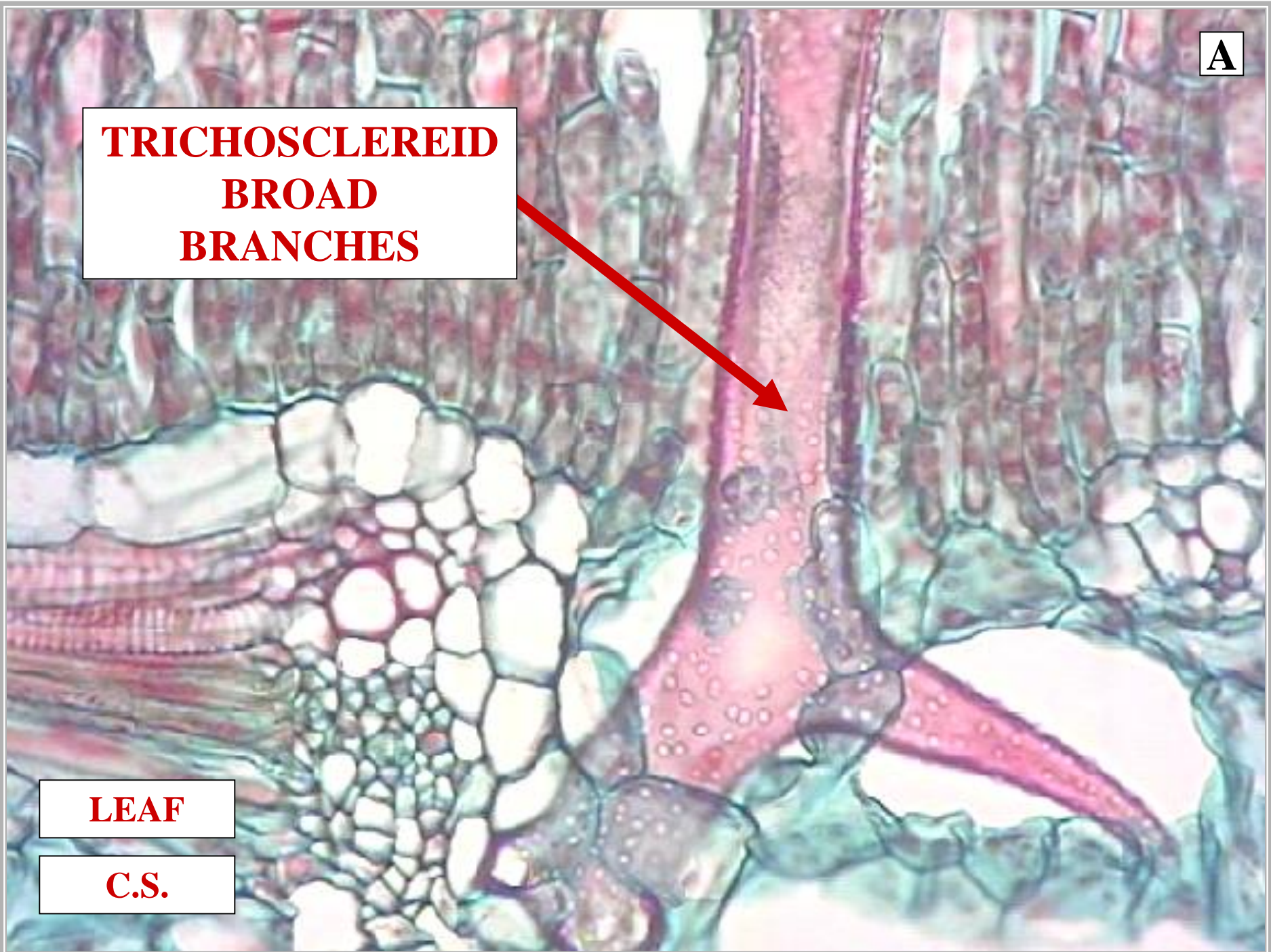
A

**TRICHOSCLEREID
BROAD
BRANCHES**



LEAF

C.S.



ASTROSCLEREID

ASTROSCLEREID



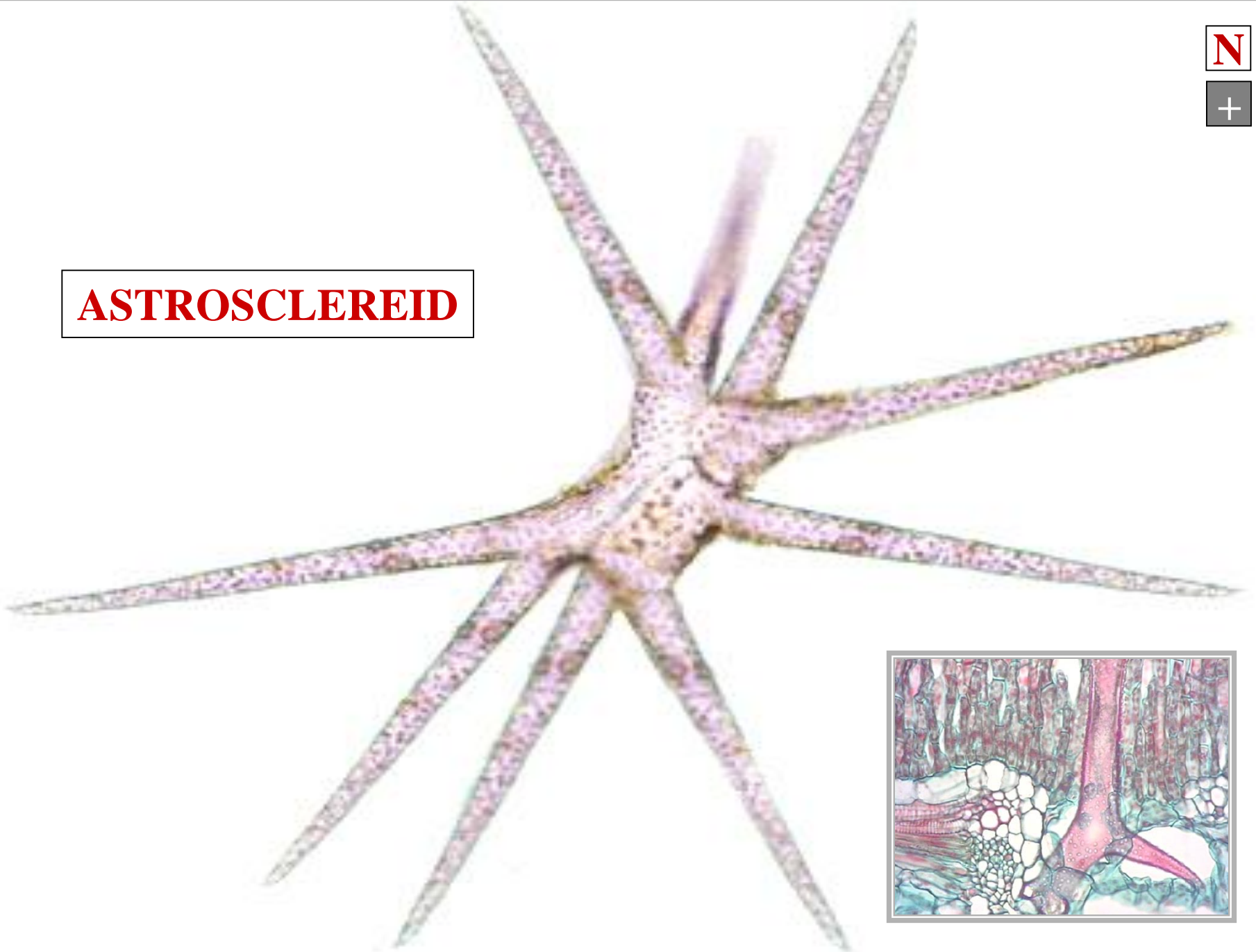
NARROW BRANCHES

ASTROSCLEREID

N

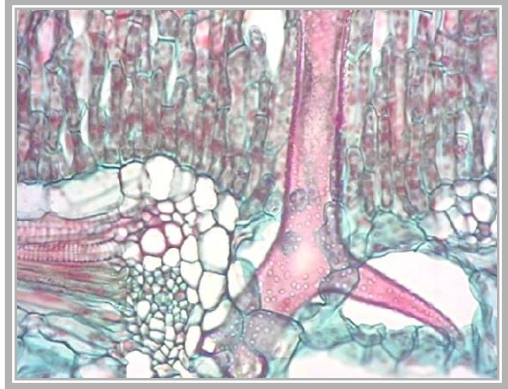
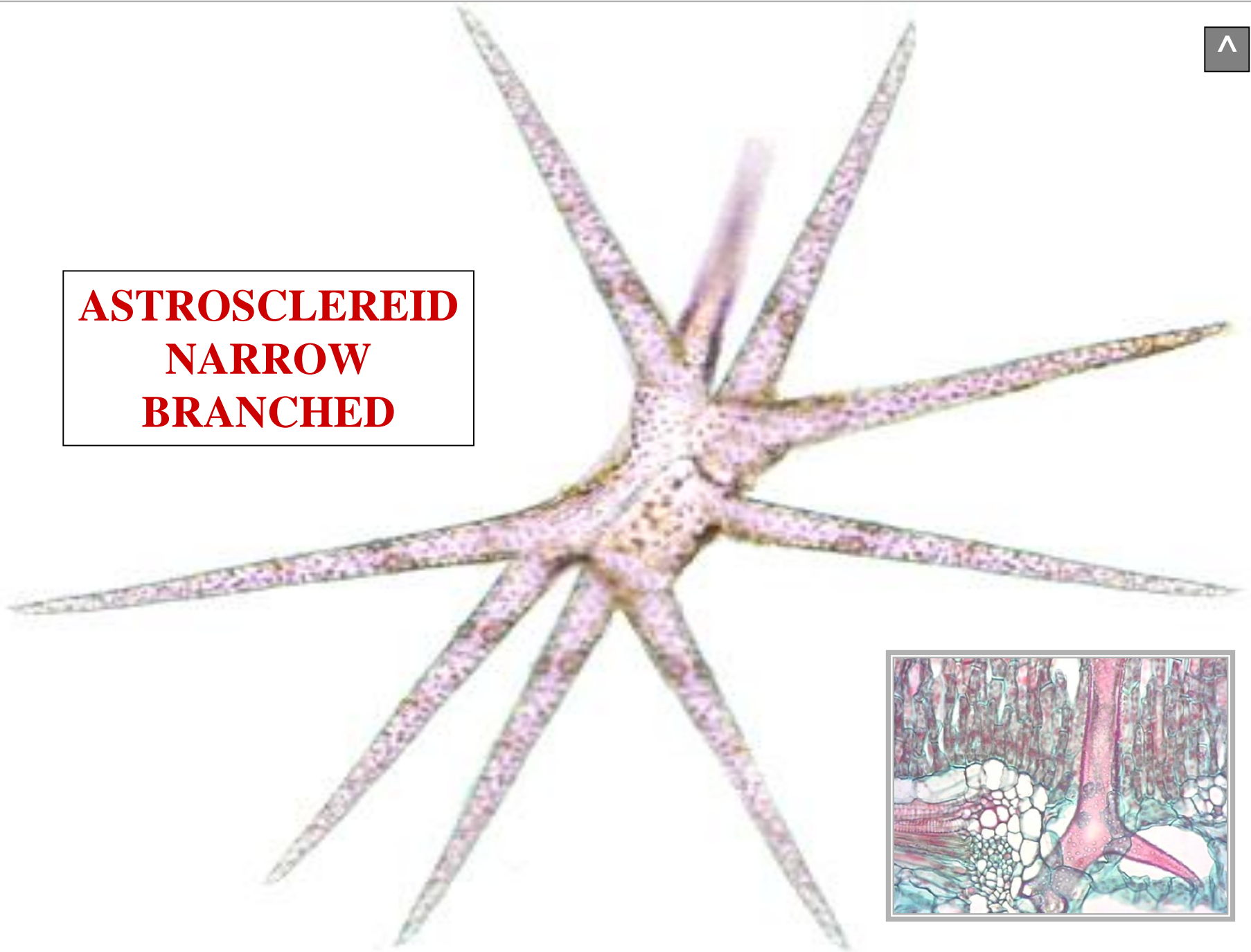
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ASTROSCLEREID



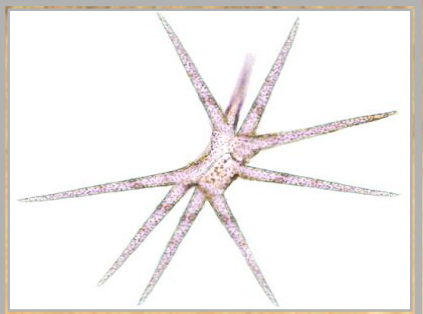


ASTROSCLEREID
NARROW
BRANCHED





SCLEREID FUNCTION

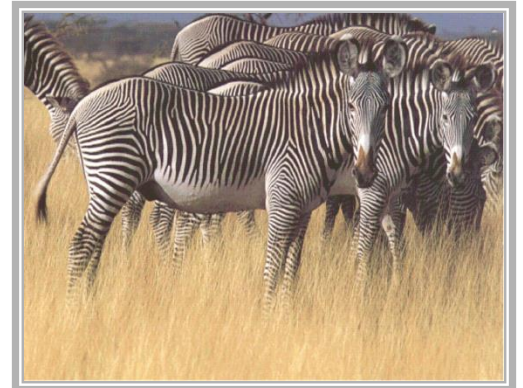
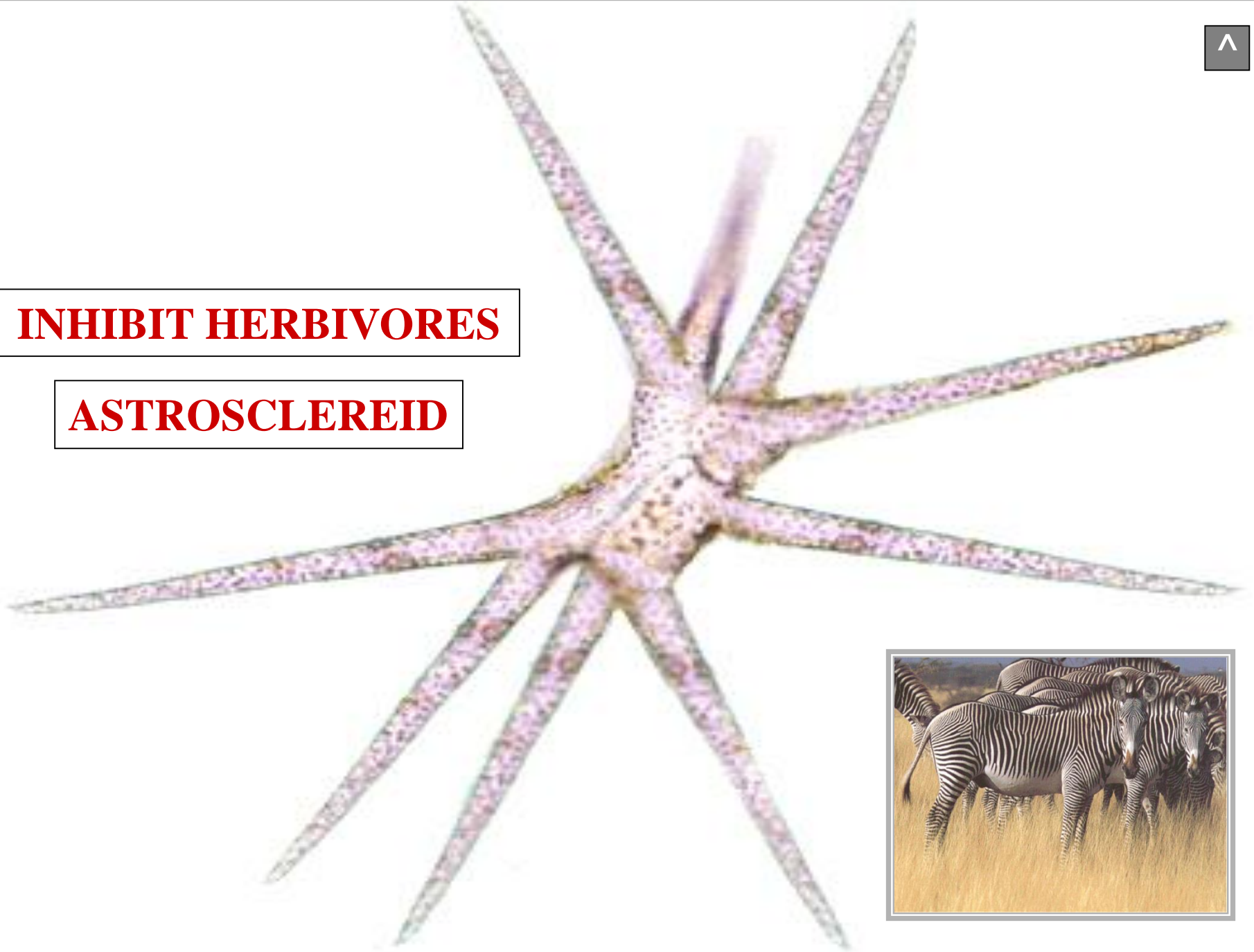


INHIBIT HERBIVORES



INHIBIT HERBIVORES

ASTROSCLEREID



SCLERENCHYMA TISSUE