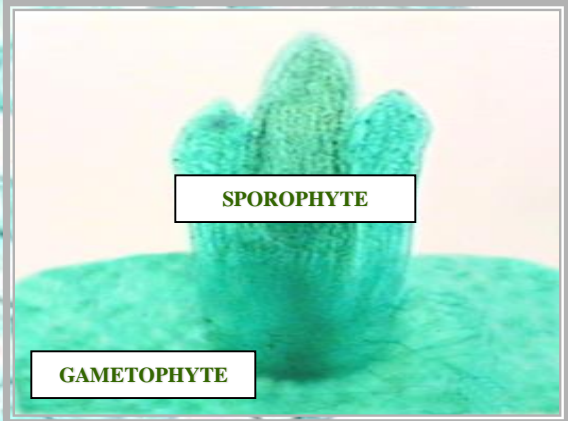


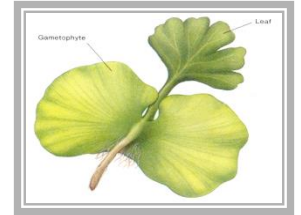
SPOROPHYTE

**PHYSICALLY
ATTACHED**

L.S.

GAMETOPHYTE

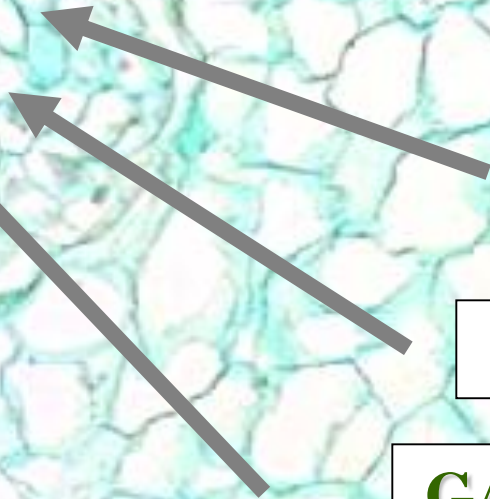




SPOROPHYTE INITIALLY GAMETOPHYTE DEPENDENT



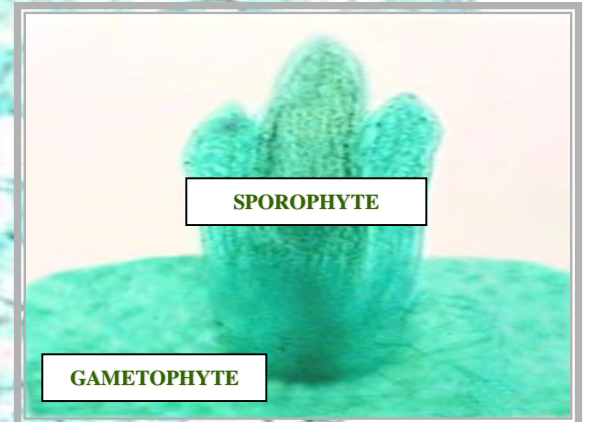
SPOROPHYTE



NUTRIENTS

GAMETOPHYTE

L.S.



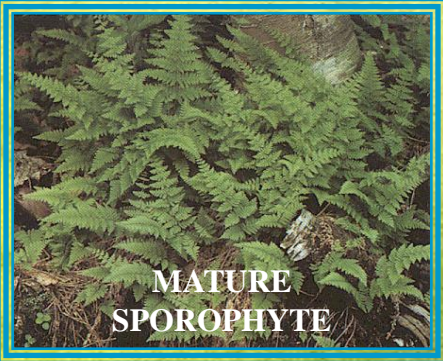
SPOROPHYTE

GAMETOPHYTE

GAMETOPHYTE

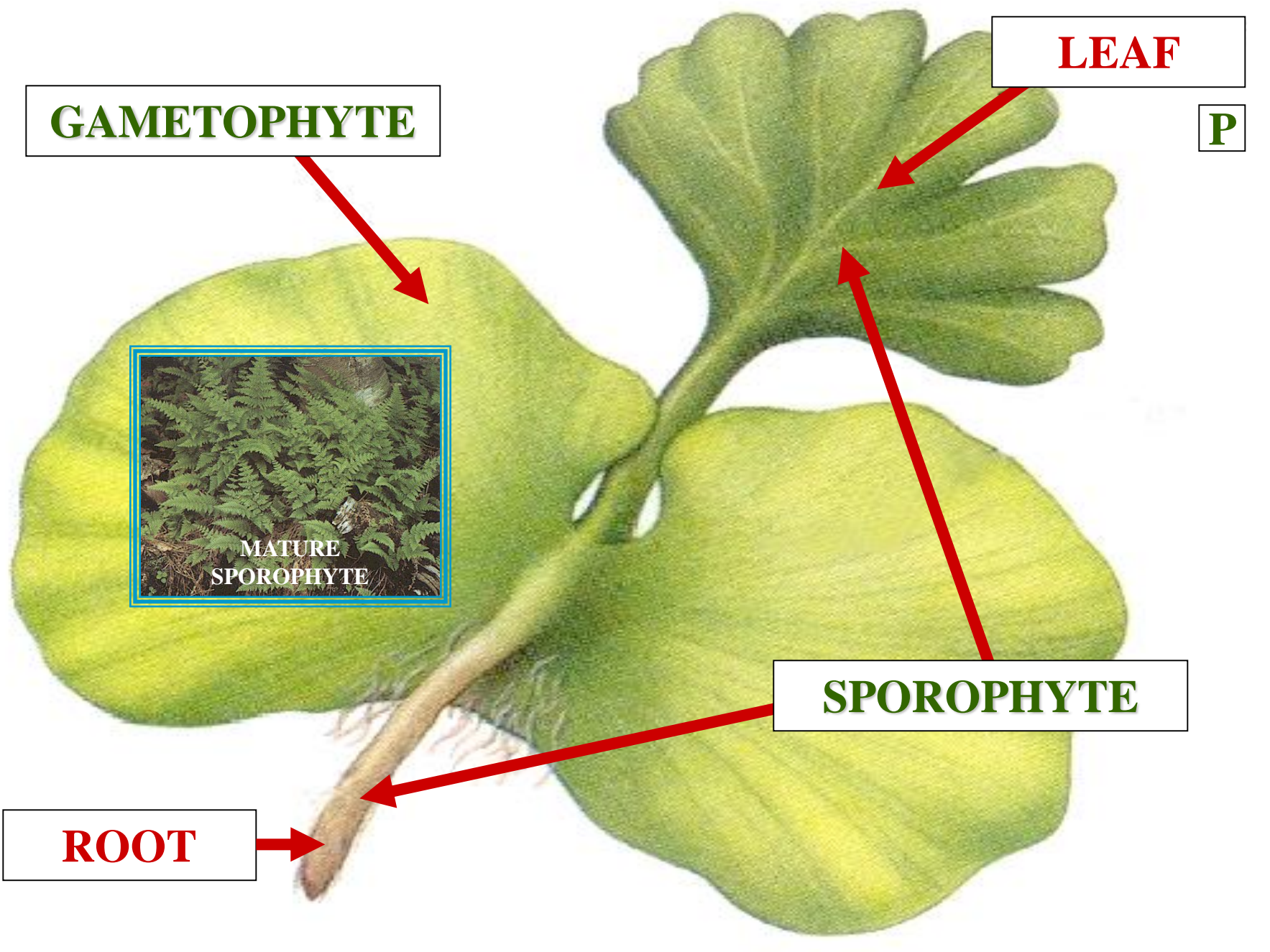
LEAF

P



SPOROPHYTE

ROOT

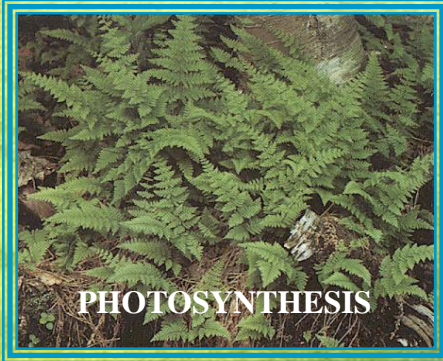


GAMETOPHYTE

LEAF

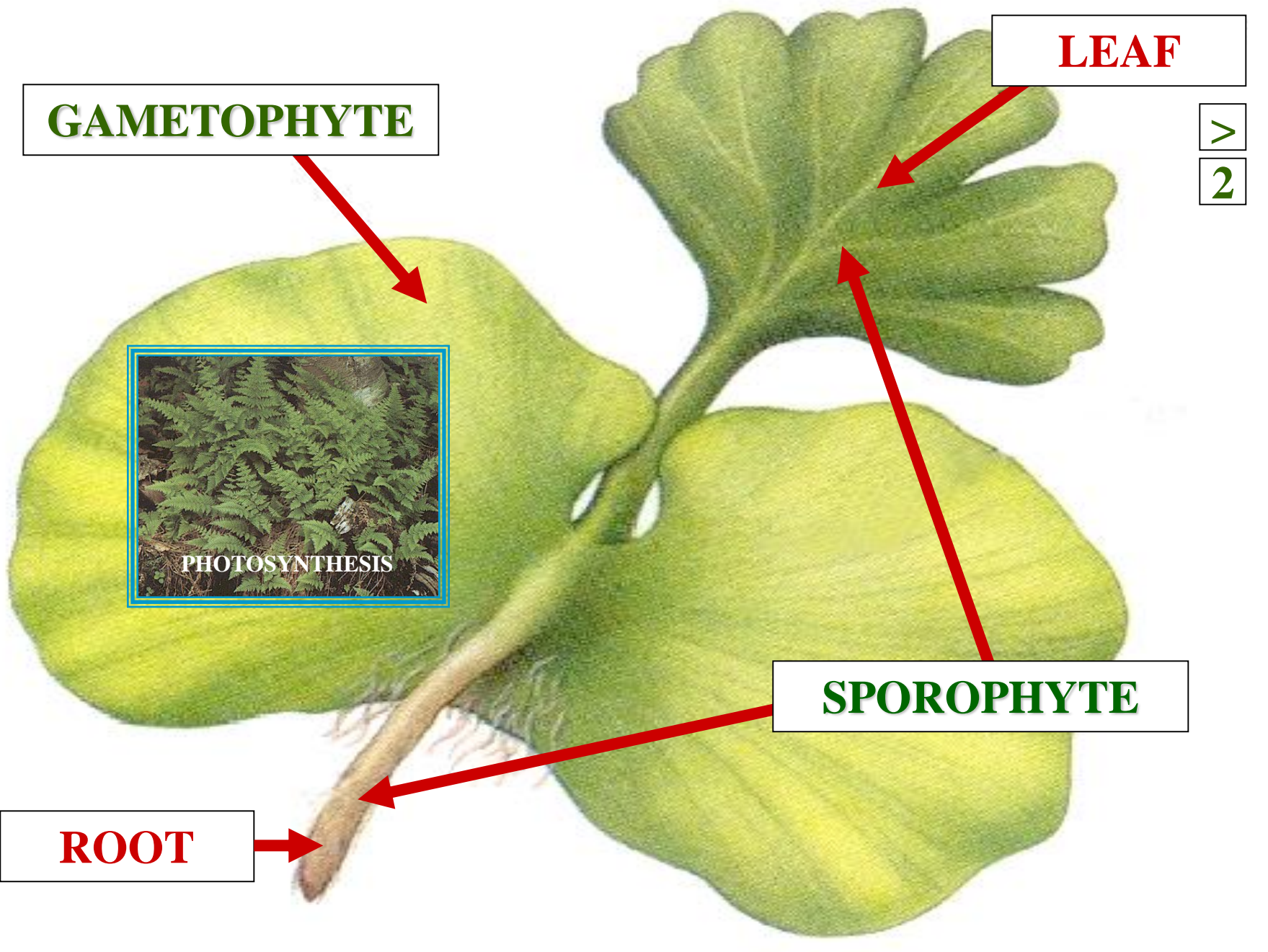
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2



SPOROPHYTE

ROOT





TRACHEOPHYTE

HETEROMORPHIC SPORIC LIFE CYCLE

SPORO PHYTE

INITIALLY

GAMETO PHYTE

DEPENDENT



MITOSIS

SPORO CYTES 2N

ZYGOTE 2N

MEIOSIS

SYNGAMY

GAMETE SPERM 1N

GAMETE EGG 1N

SPORES 1N

MITOSIS

GAMETOCYTES 1N

MITOSIS

SPORO PHYTE
2N PHASE
MULTICELLULAR
SPORE PRODUCING PHASE

GAMETO PHYTE
1N PHASE
MULTICELLULAR
GAMETE PRODUCING PHASE



TRACHEOPHYTE FOSSIL RECORD

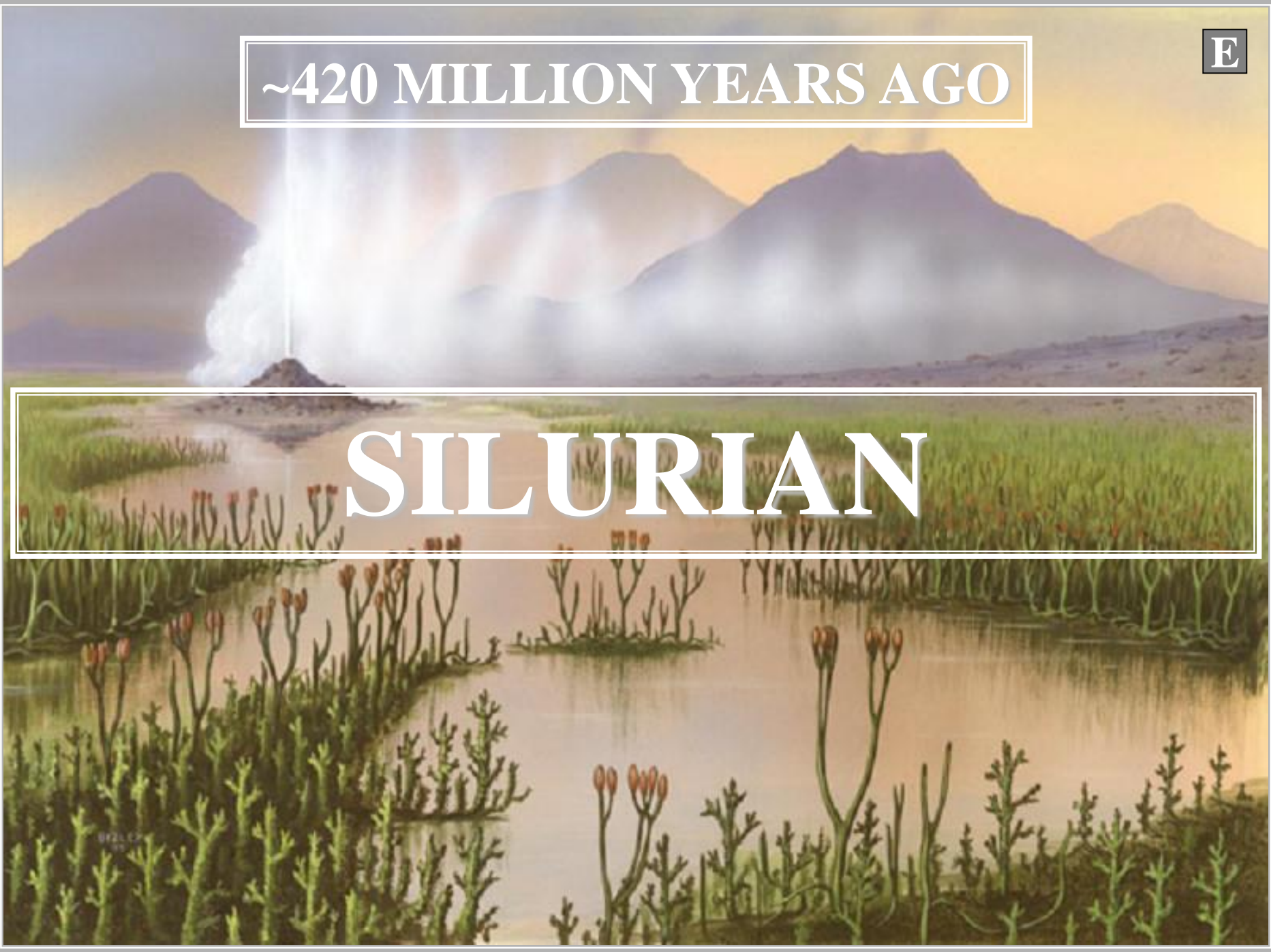


~420

MILLION YEARS

~420 MILLION YEARS AGO

SILURIAN

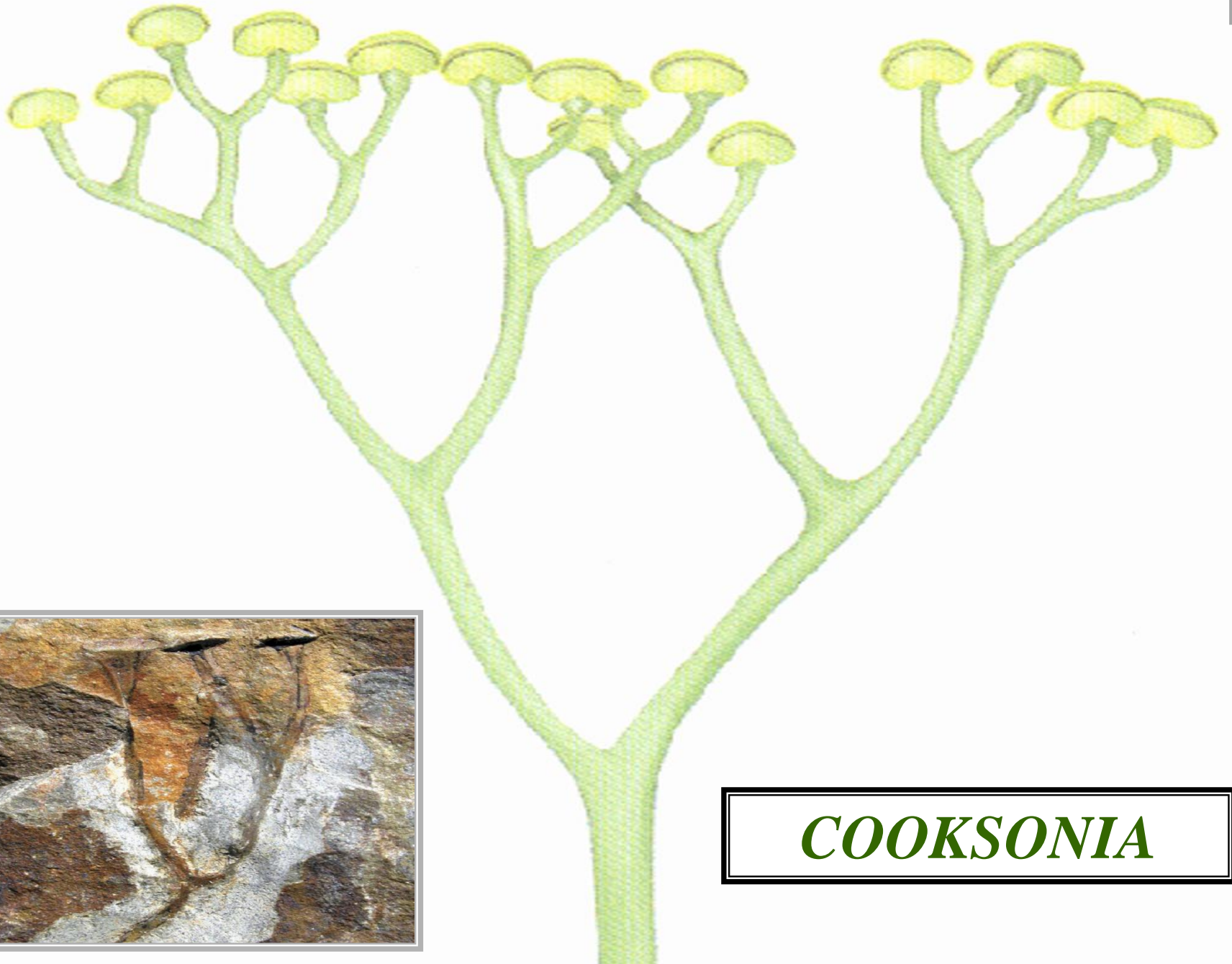


~420 MILLION YEARS AGO

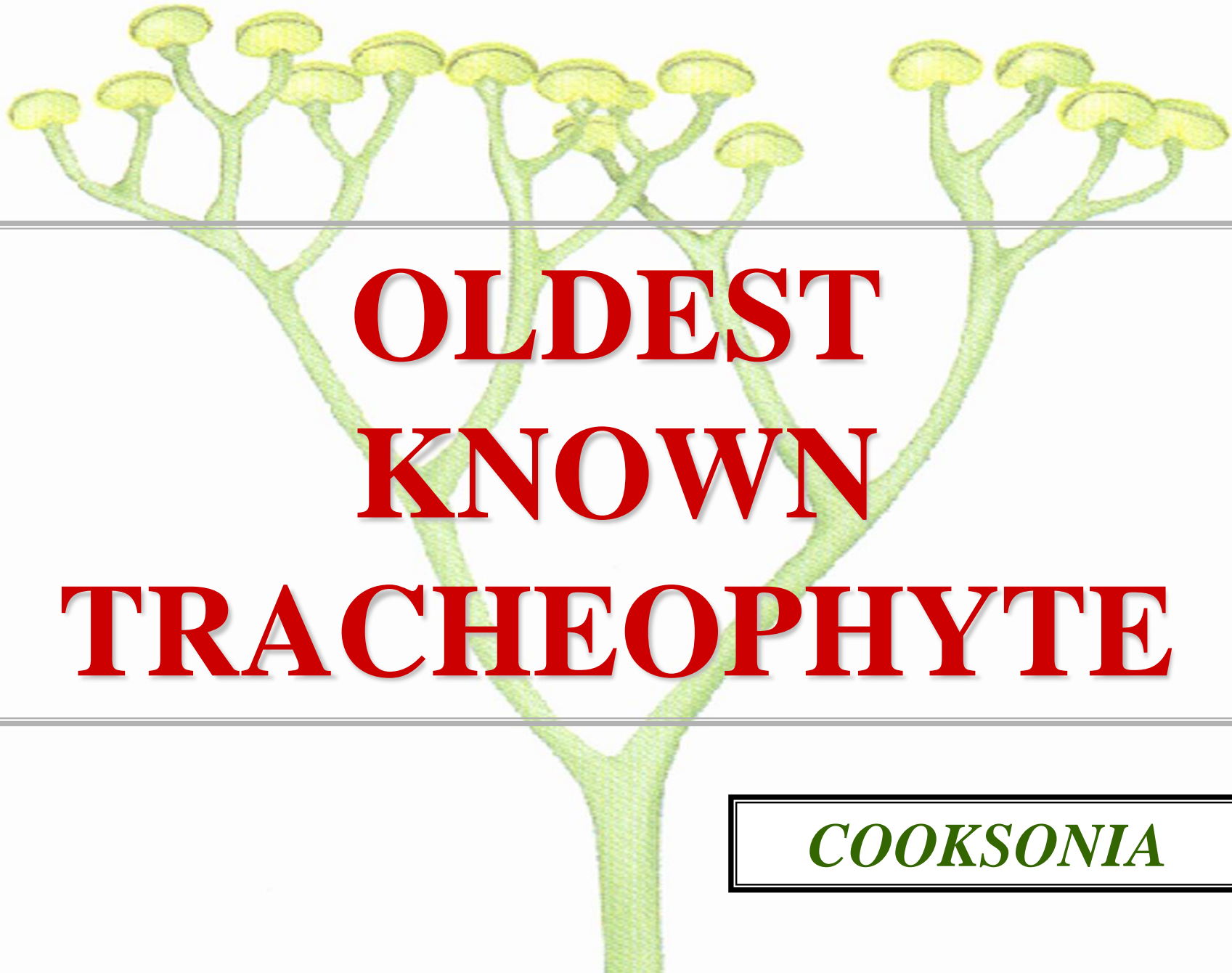


TRACHEOPHYTES EVOLVE





COOKSONIA



**OLDEST
KNOWN
TRACHEOPHYTE**

COOKSONIA



~360

MILLION YEARS

~360 MILLION YEARS AGO

T

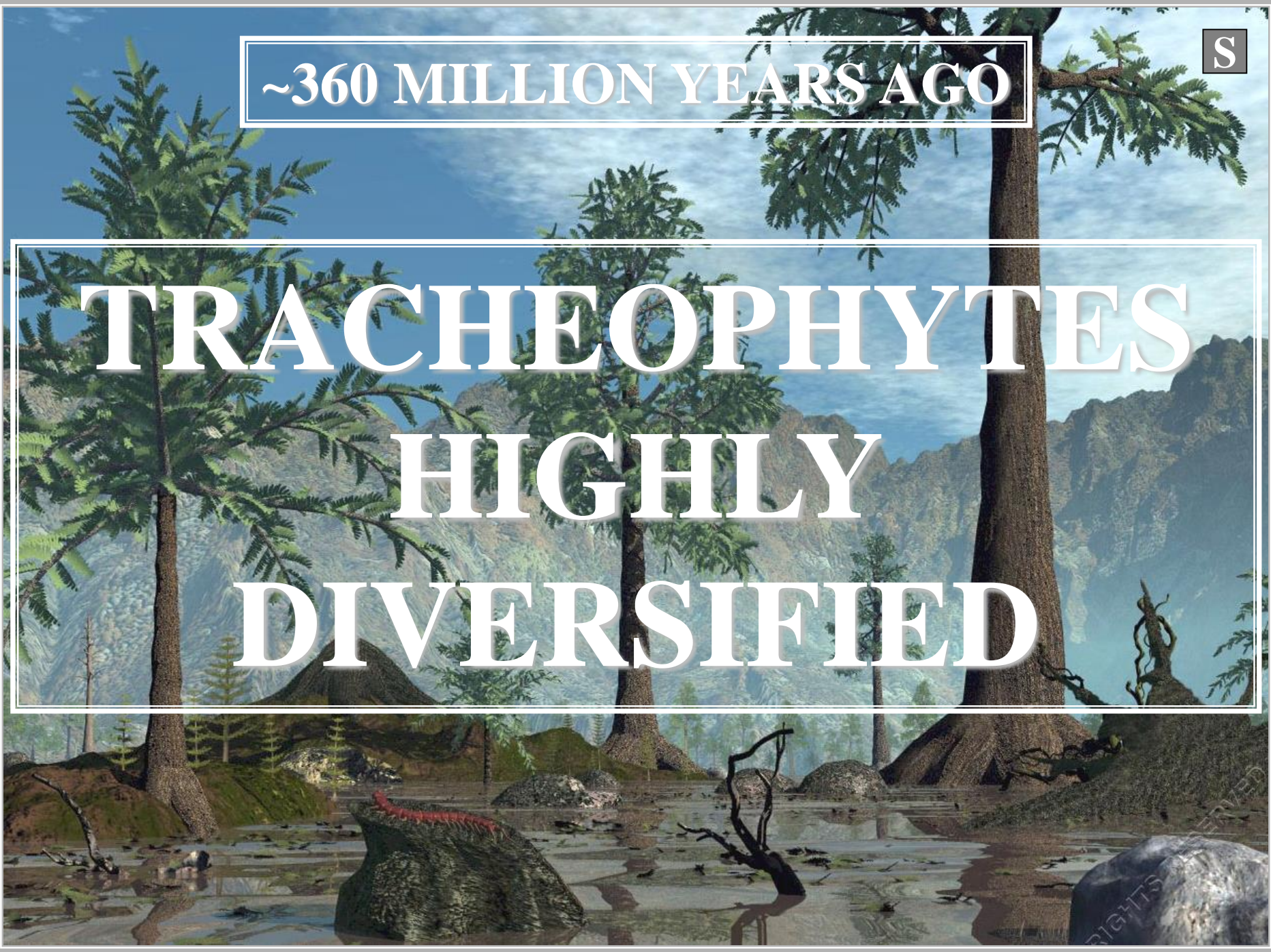
DEVONIAN



~360 MILLION YEARS AGO

S

TRACHEOPHYTES
HIGHLY
DIVERSIFIED

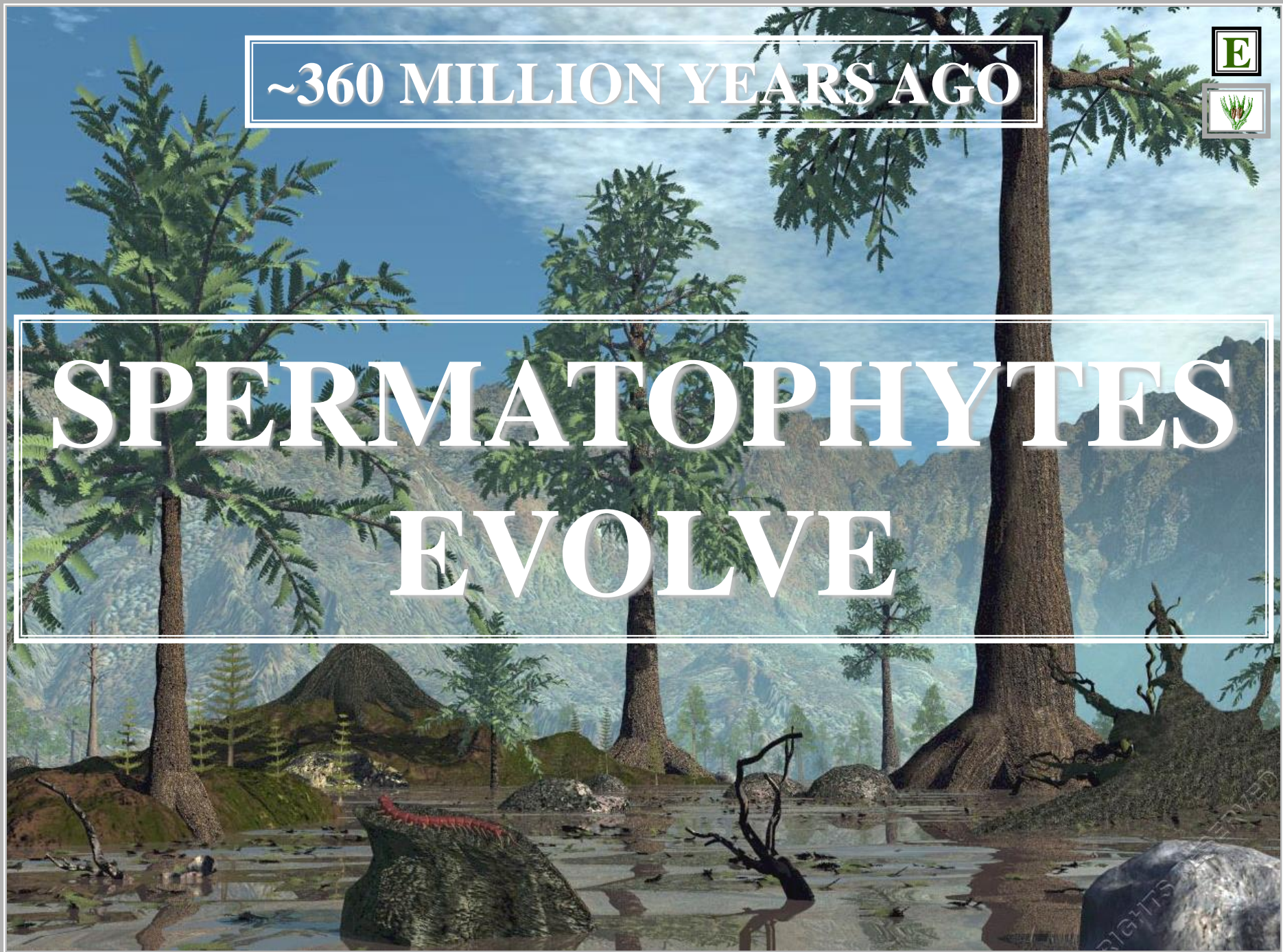


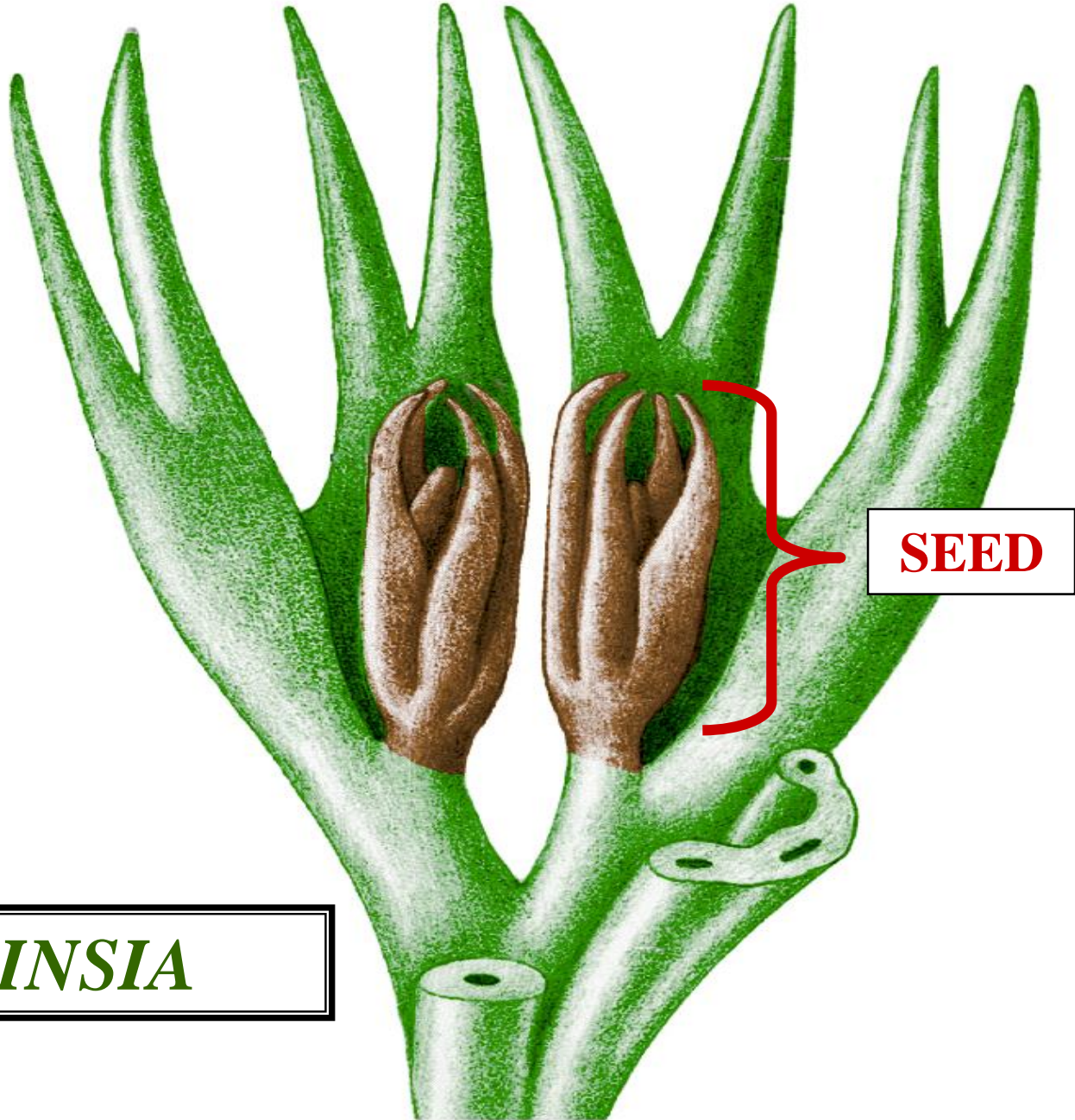
~360 MILLION YEARS AGO

E



SPERMATOPHYTES EVOLVE





ELKINSIA



**OLDEST
KNOWN
SPERMATOPHYTE**

ELKINSIA



~130

MILLION YEARS

~130 MILLION YEARS AGO

A

CRETACEOUS



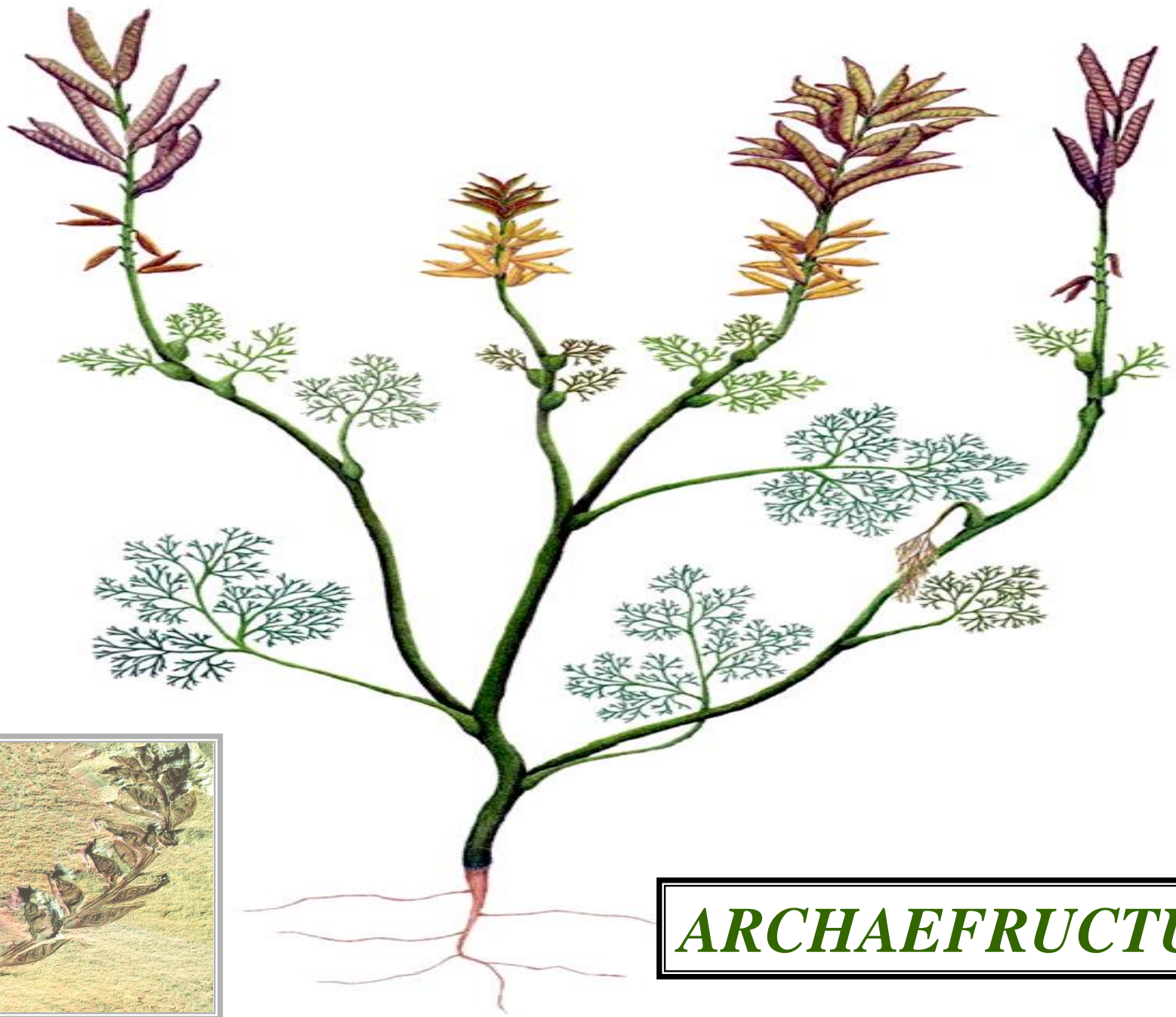
~130 MILLION YEARS AGO

A



ANGIOSPERMS EVOLVE





ARCHAEFRUCTUS



**OLDEST
KNOWN
ANGIOSPERM**

ARCHAEFRUCTUS



CURRENT FLORA



CURRENT FLORA





**ANGIOSPERMS
DOMINANT
EXTANT PHYLIUM**



ATTENTION STUDENTS



GEOLOGIC TIME SCALE

KNOW

GEOLOGIC TIME SCALE

ALL FOR EXAMS



ALABAMA TRACHEOPHYTE DIVERSITY



ALABAMA TRACHEOPHYTES

PTERIDOPHYTES
VS
SPERMATOPHYTES

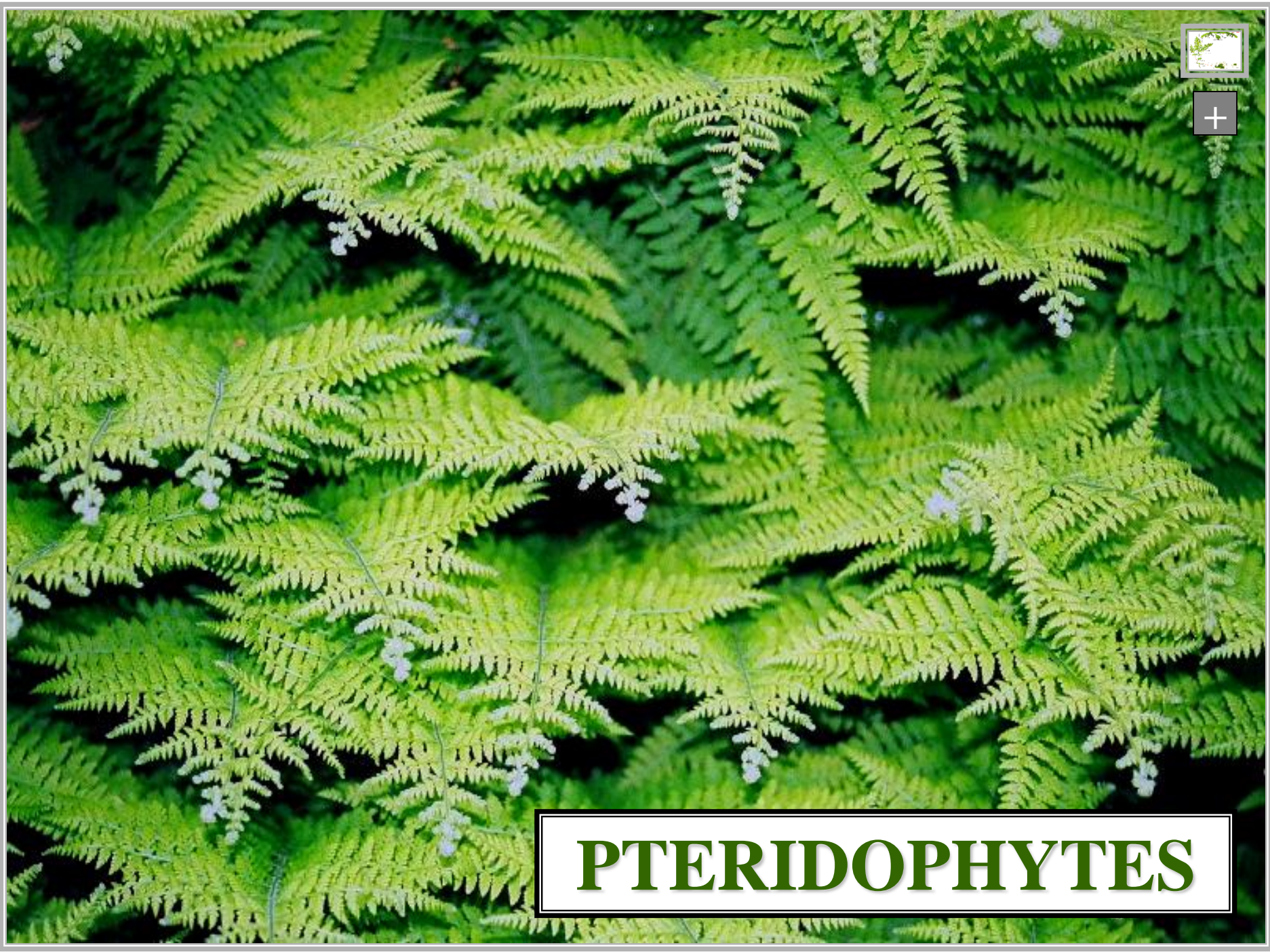
PTERIDOPHYTES

PTERIDOPHYTES



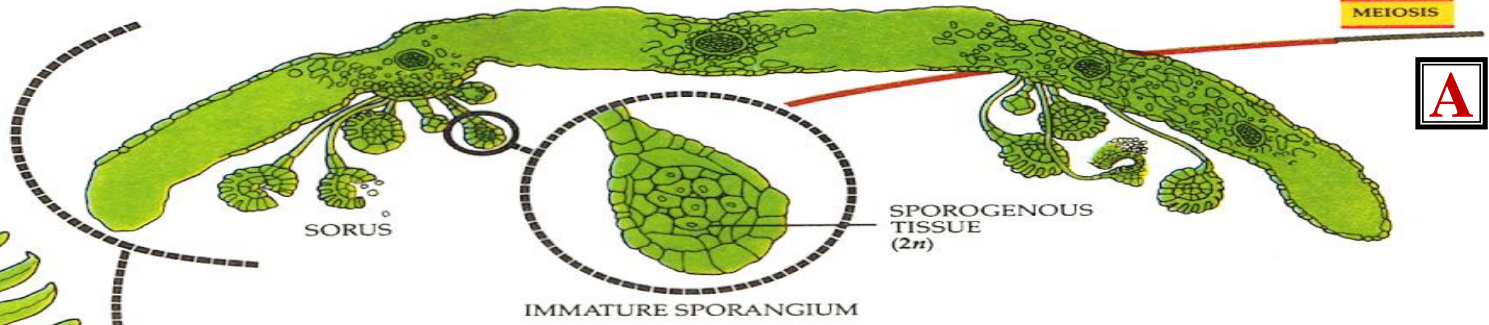
NON-SEED BEARING
TRACHEOPHYTES

PTERIDOPHYTES

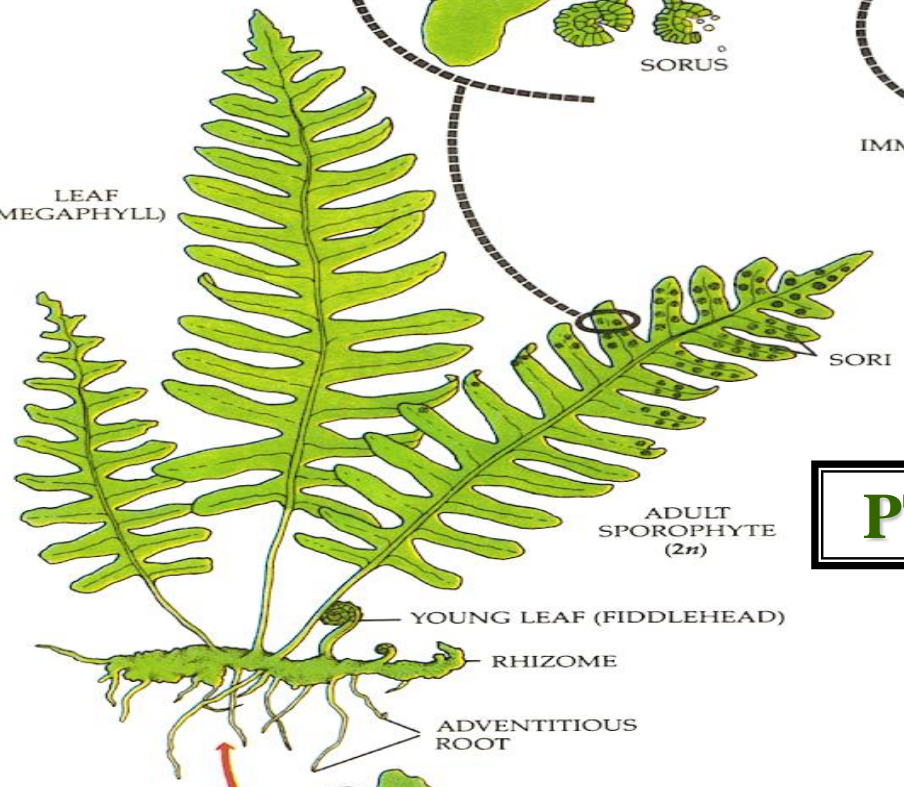


PTERIDOPHYTES

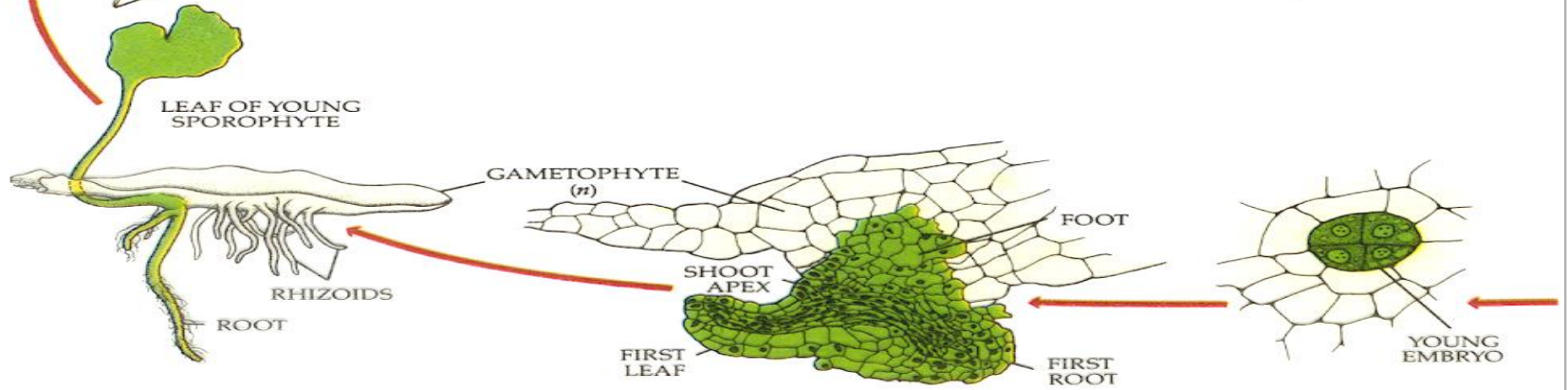
MEIOSIS



LEAF (MEGAPHYLL)

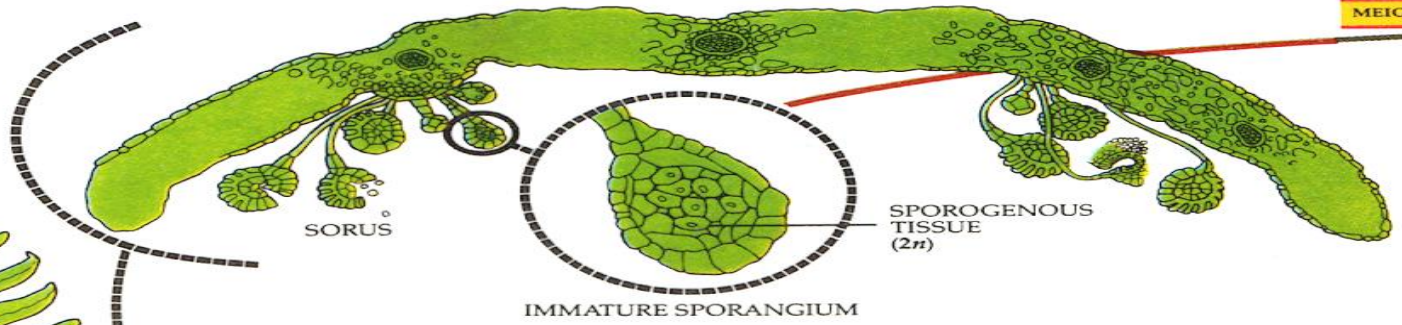


PTERIDOPHYTE LIFE CYCLE

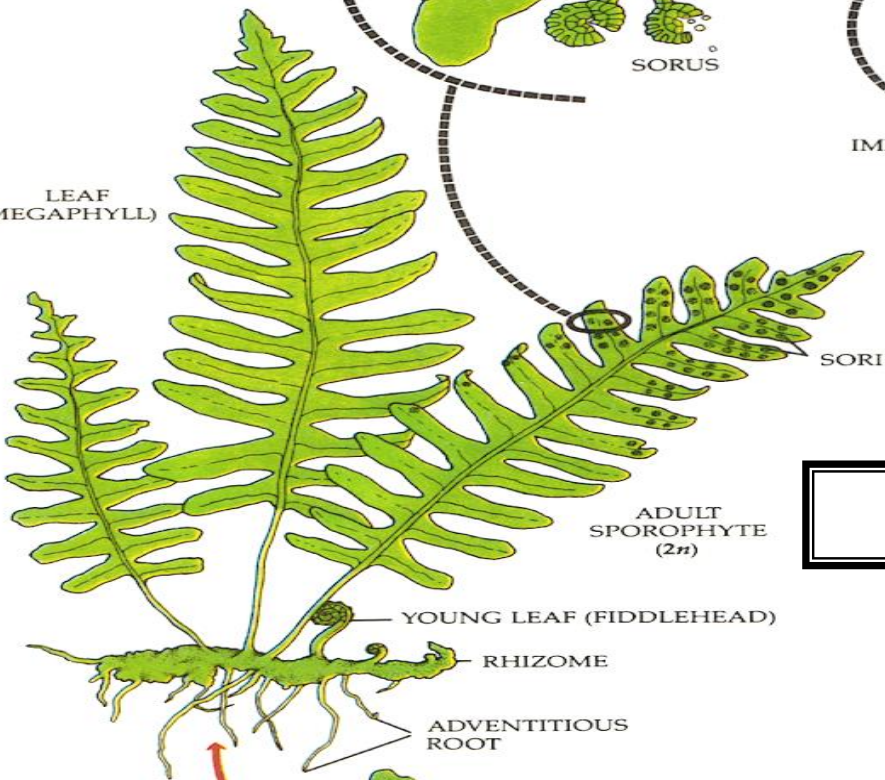


MEIOSIS

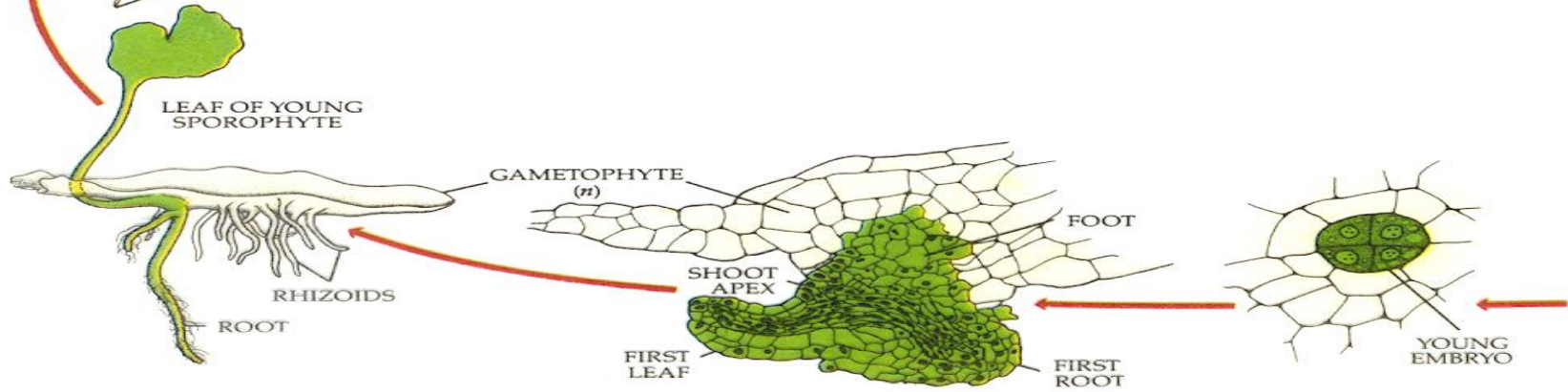
^
S



LEAF (MEGAPHYLL)



SEED: ABSENT



SPERMATOPHYTES

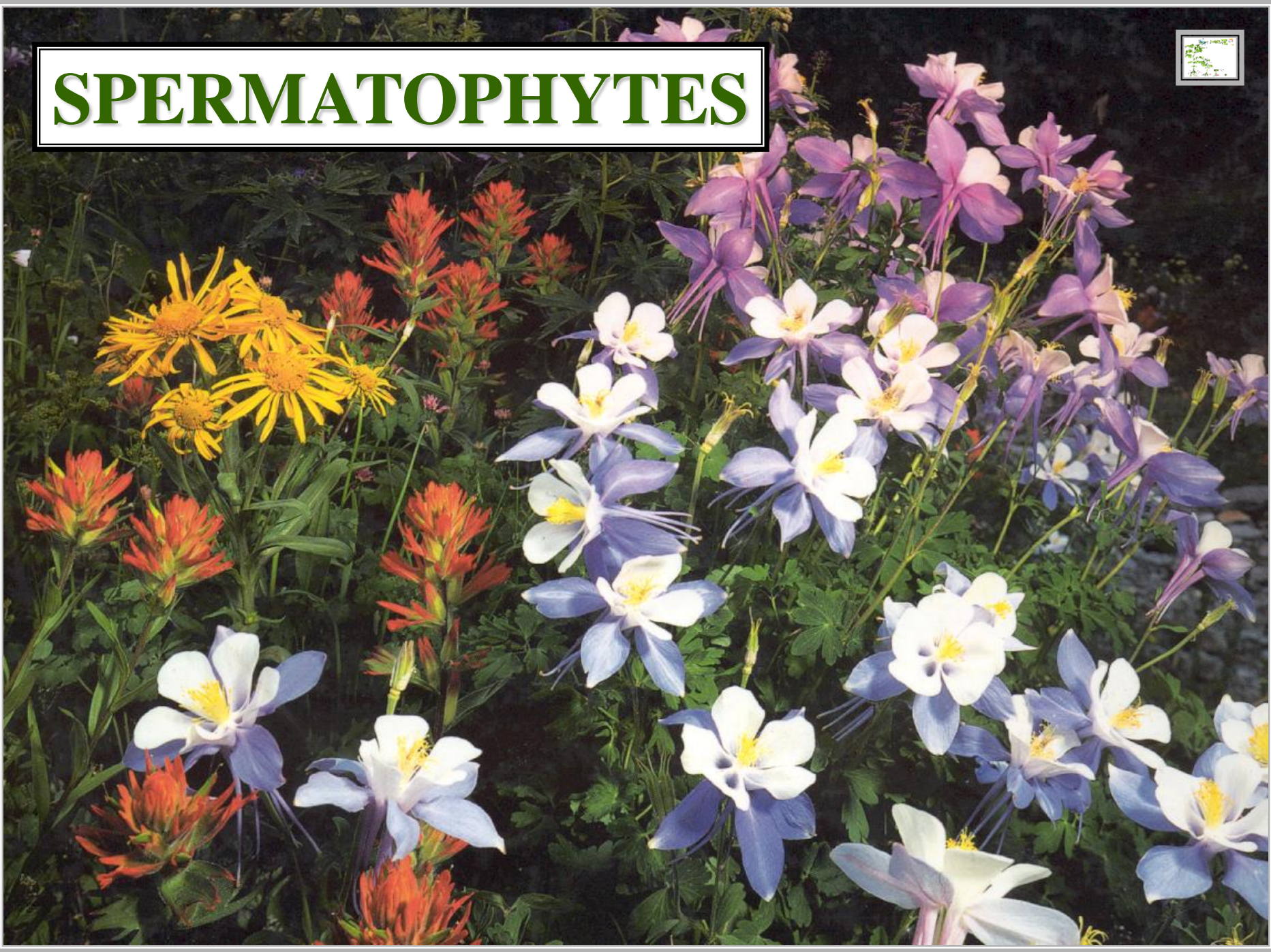
SPERMATOPHYTES

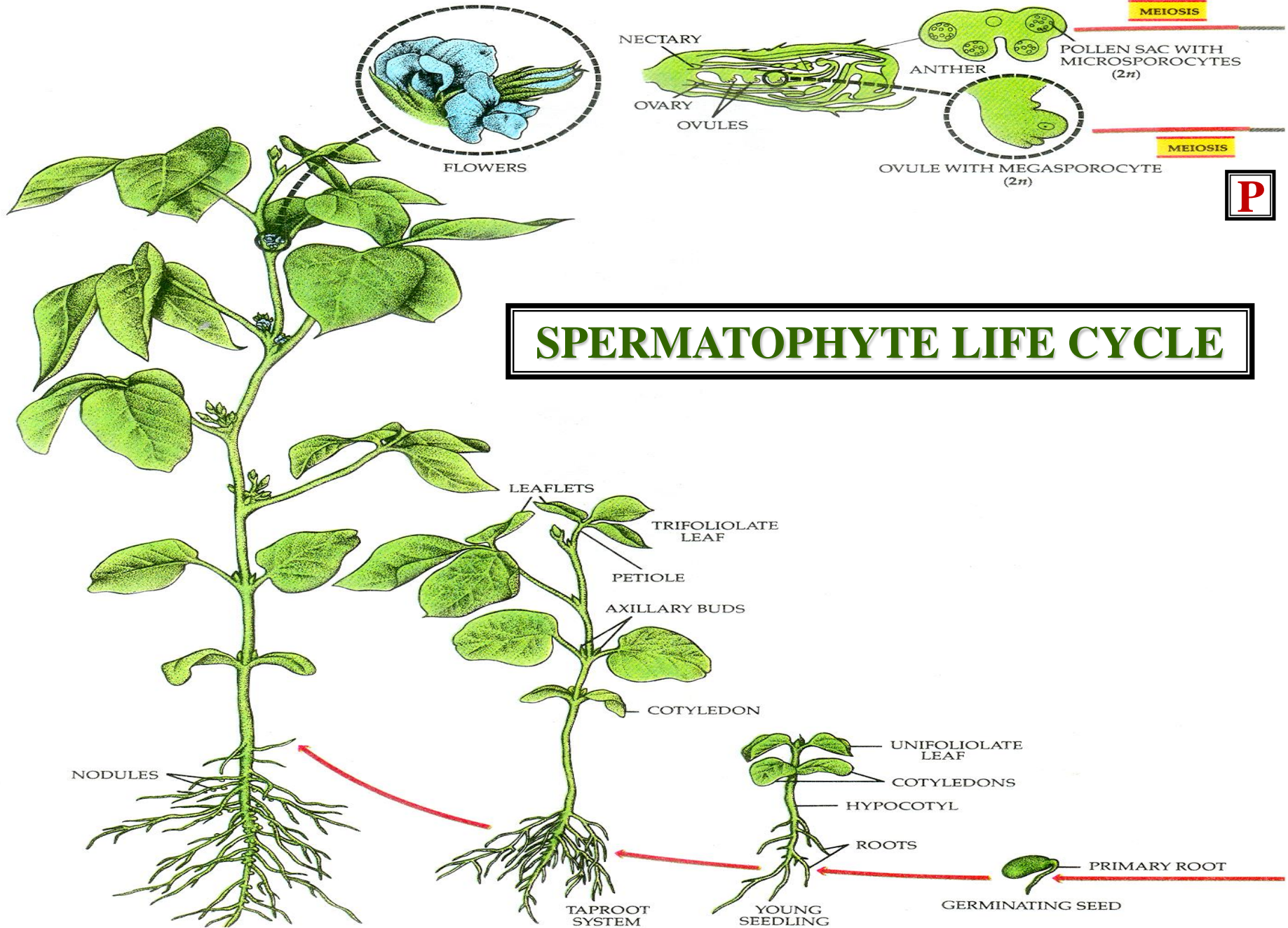


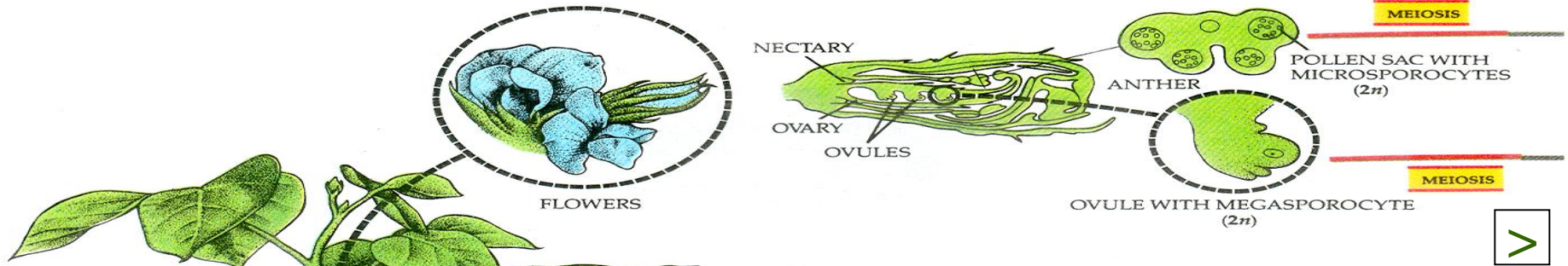
**SEED BEARING
TRACHEOPHYTES**

SPERMATOPHYTES

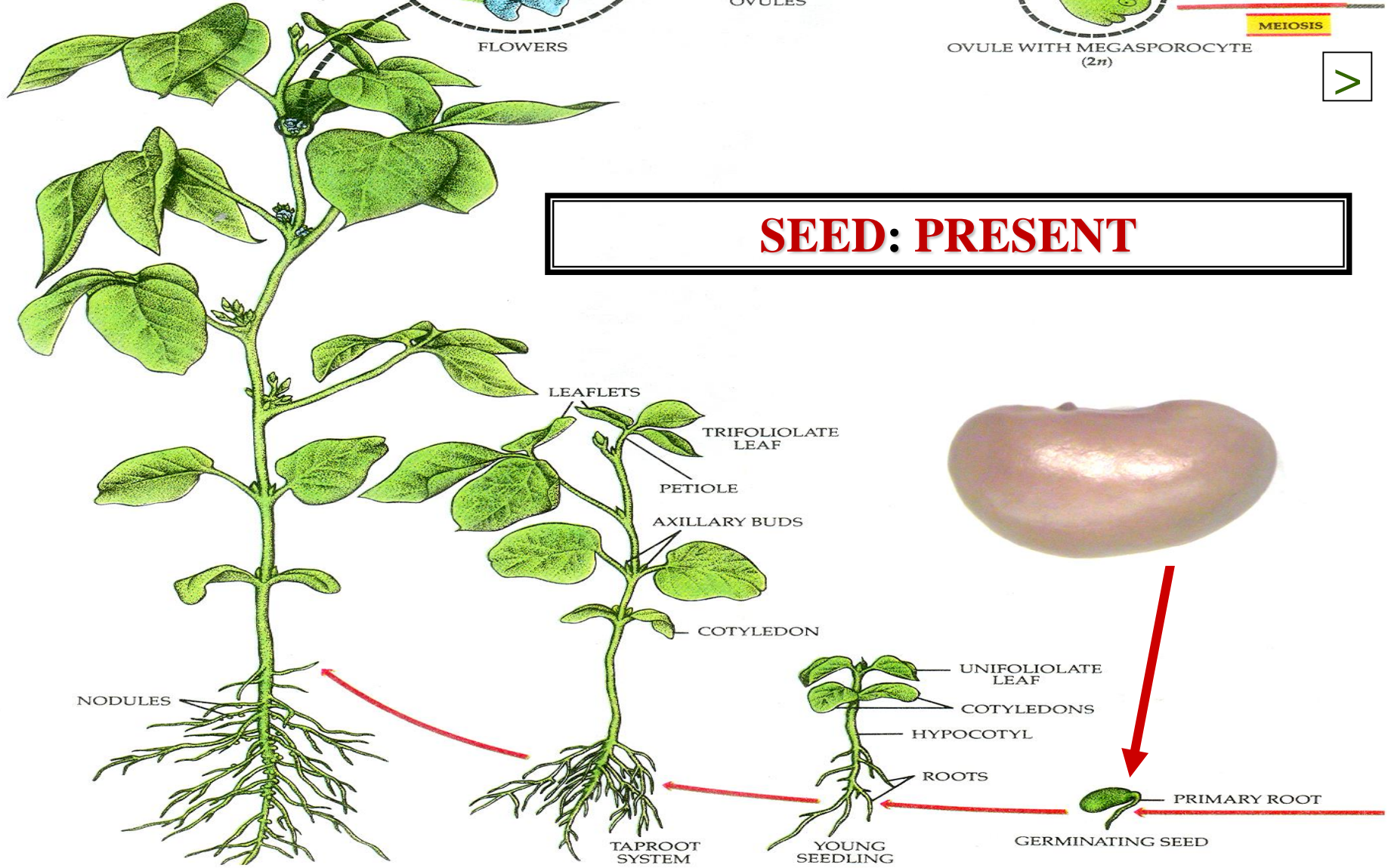
SPERMATOPHYTES







SEED: PRESENT





ATTENTION STUDENTS



**ALABAMA
TRACHEOPHYTES
KNOW
CLASSIFICATION
ALL FOR EXAMS**



ALABAMA PTERIDOPHYTE DIVERSITY



ALABAMA PTERIDOPHYTES



COMMON NAMES



LYCOPHYTES





FERNS



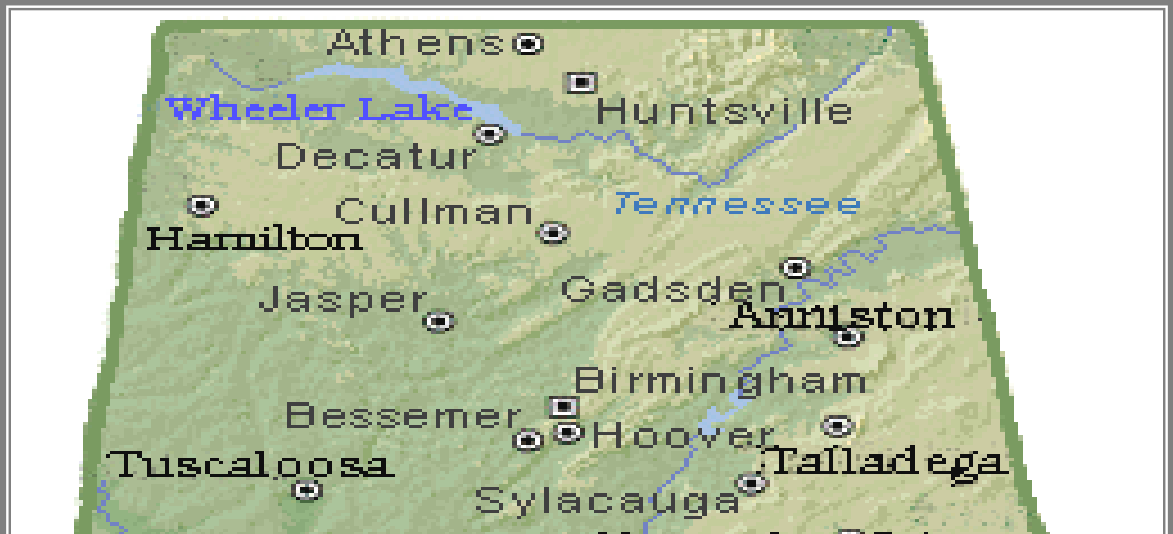


DIVERSITY



~12,000 SPECIES

EARTH



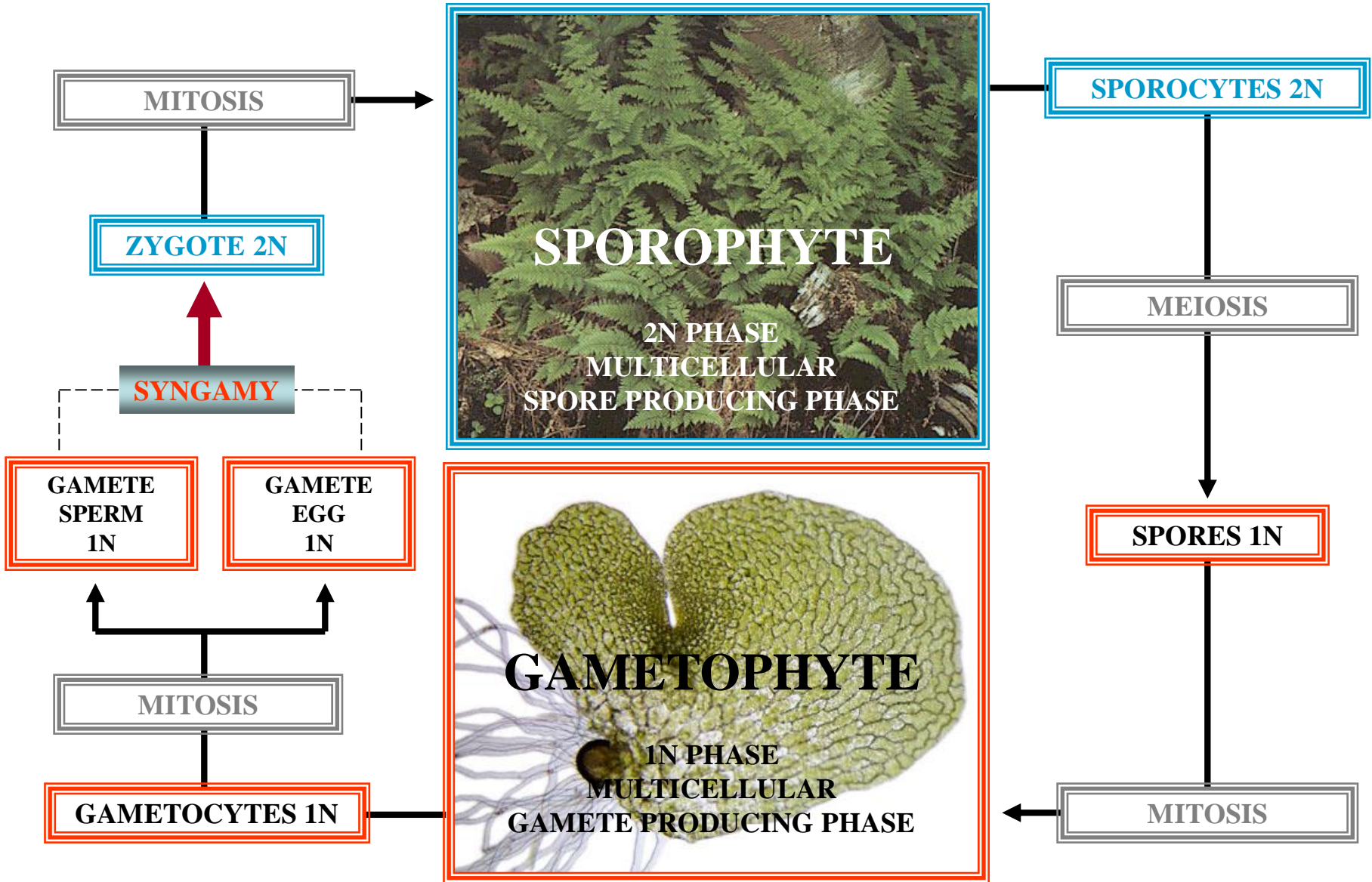
~76 SPECIES





GENERAL CHARACTERS

PTERIDOPHYTE LIFE CYCLE





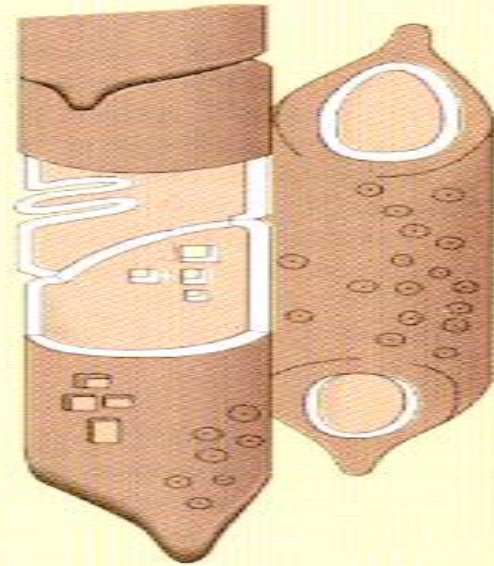
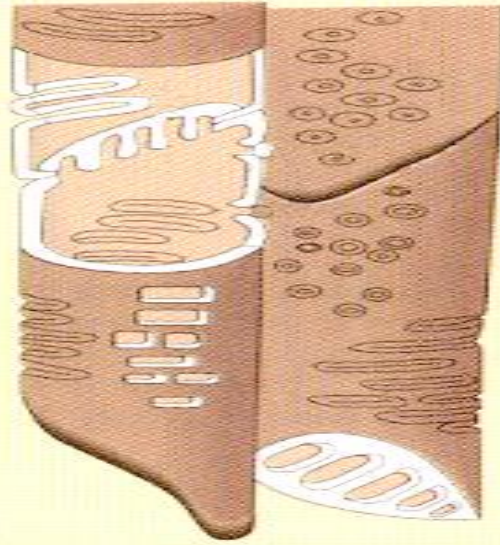
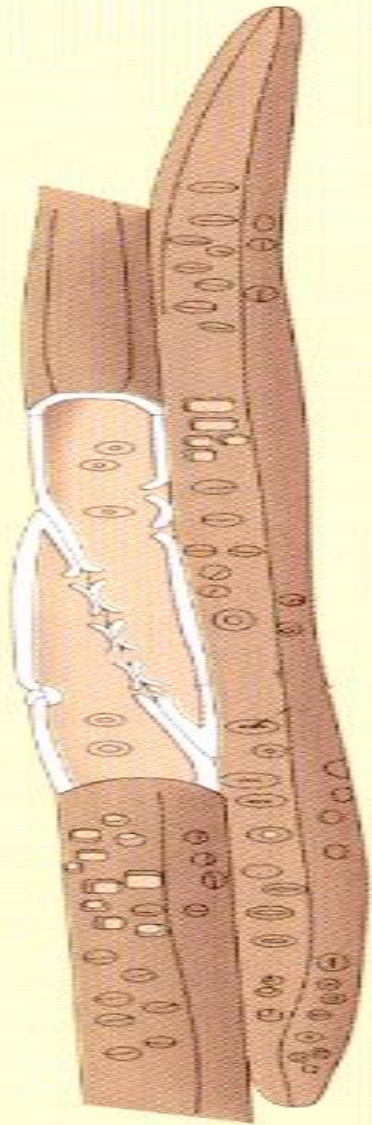
SPOROPHYTE CHARACTERS



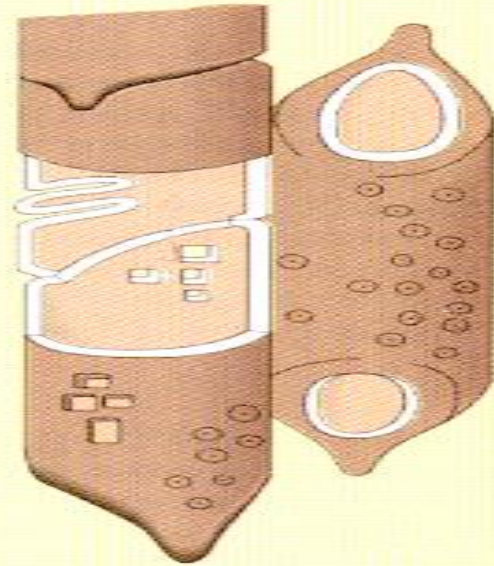
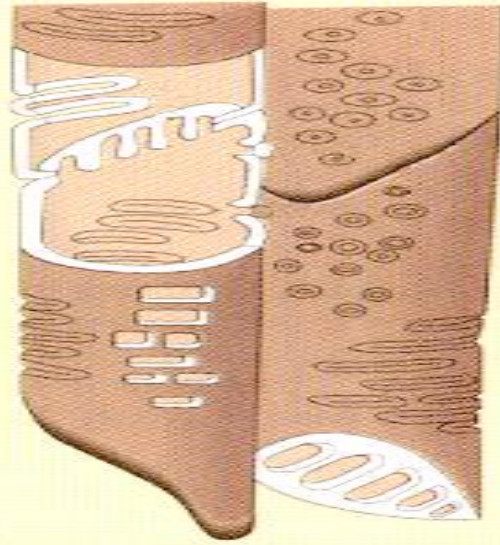
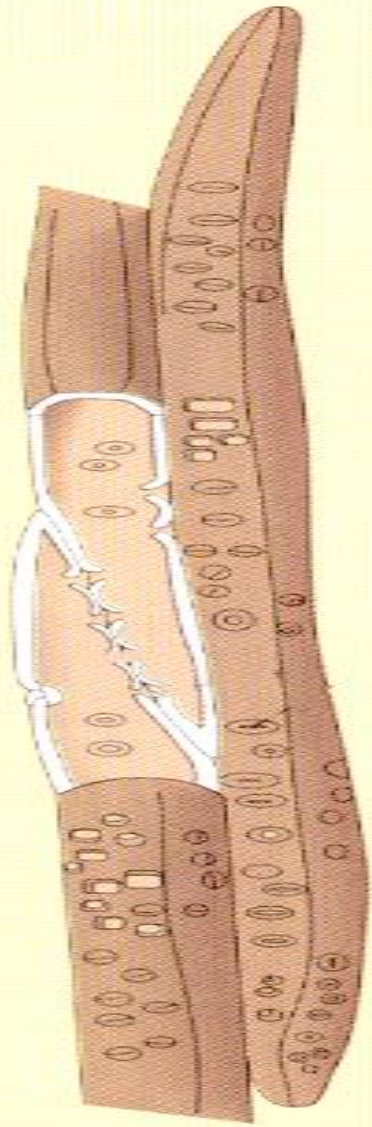
VASCULAR TISSUE



XYLEM



XYLEM CELLS



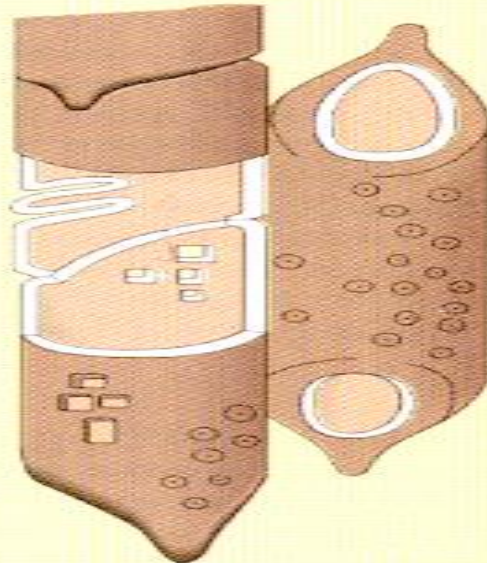
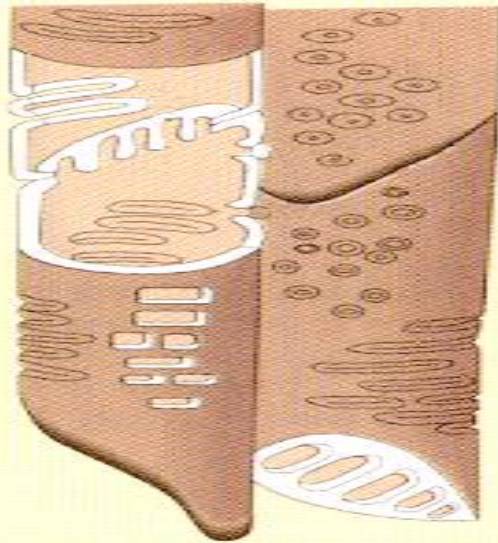
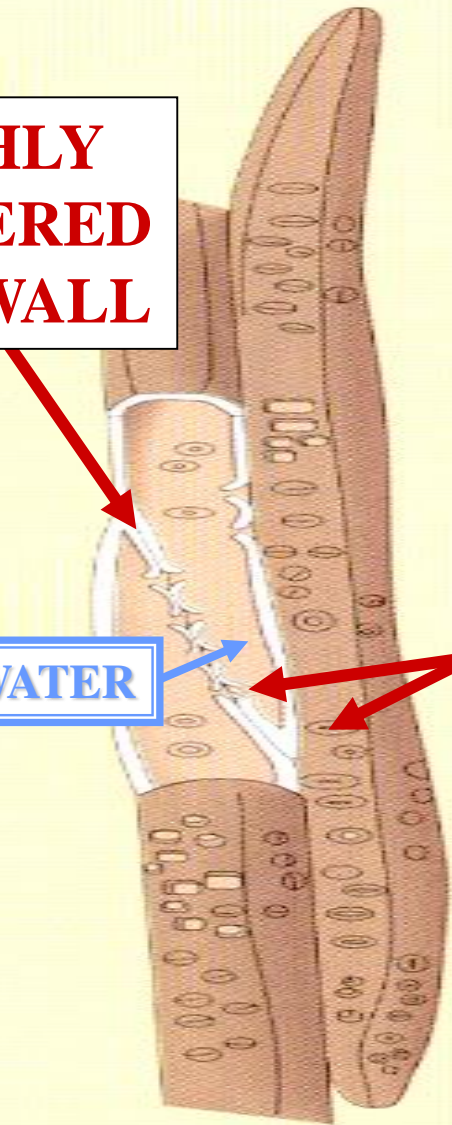
TRACHEARY ELEMENTS

**HIGHLY
TAPPED
END WALL**

WATER

PITS

?

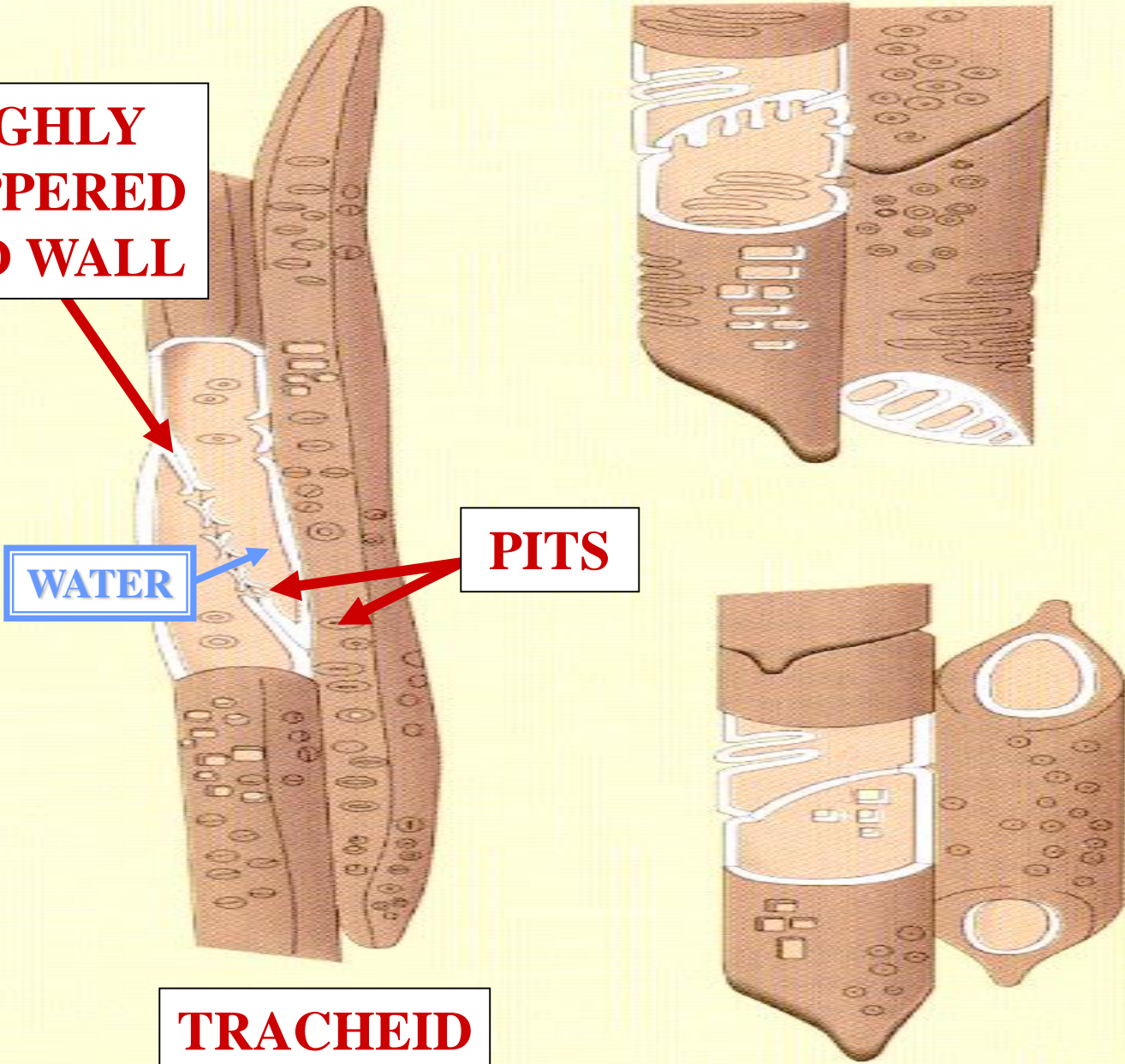


**HIGHLY
TAPPED
END WALL**

WATER

PITS

TRACHEID



**HIGHLY
TAPPED
END WALL**

**LESS
TAPPED
END WALL**

?

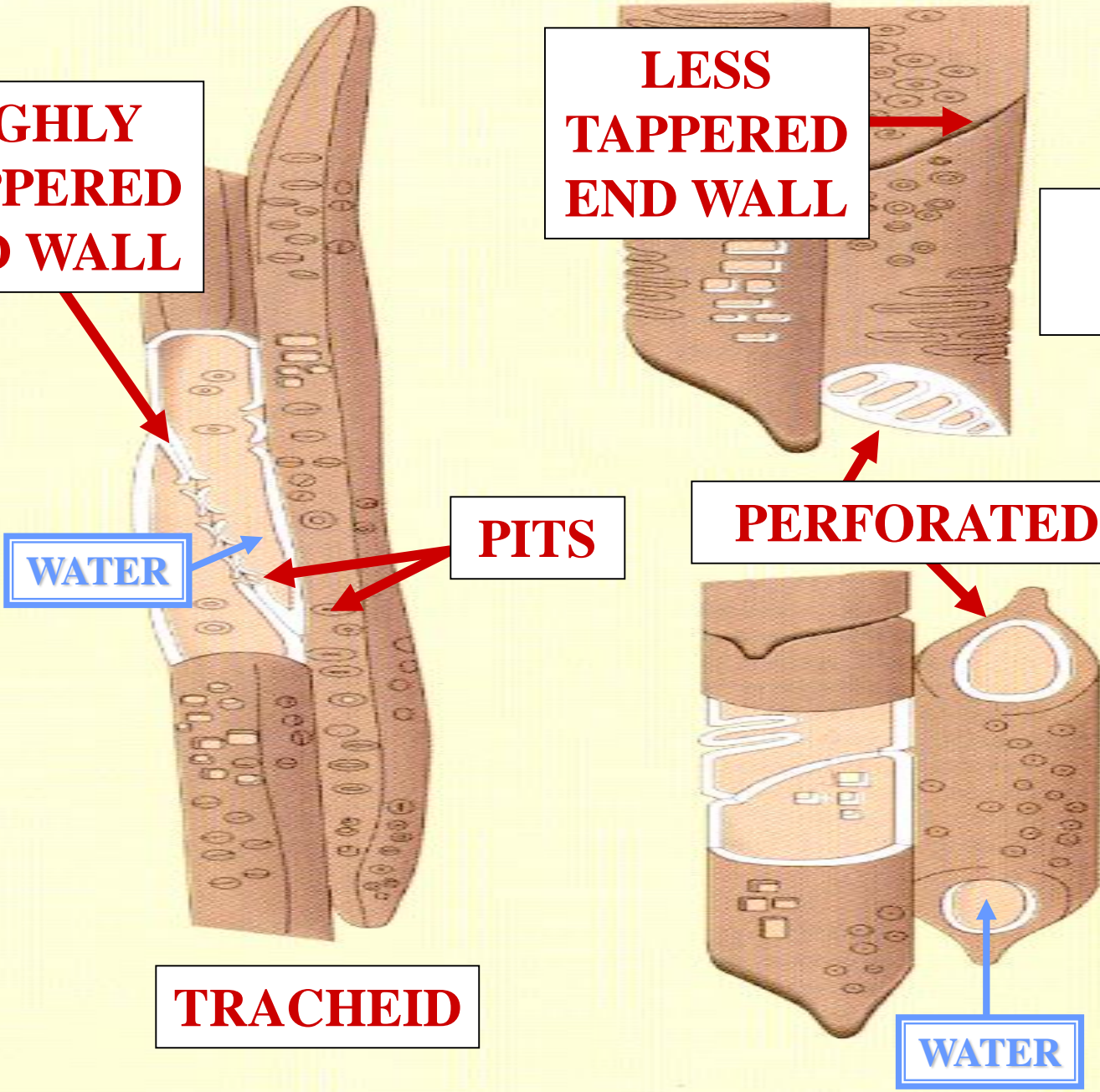
WATER

PITS

PERFORATED PLATE

TRACHEID

WATER





T

**HIGHLY
TAPPED
END WALL**

**LESS
TAPPED
END WALL**

**VESSEL
MEMBER**

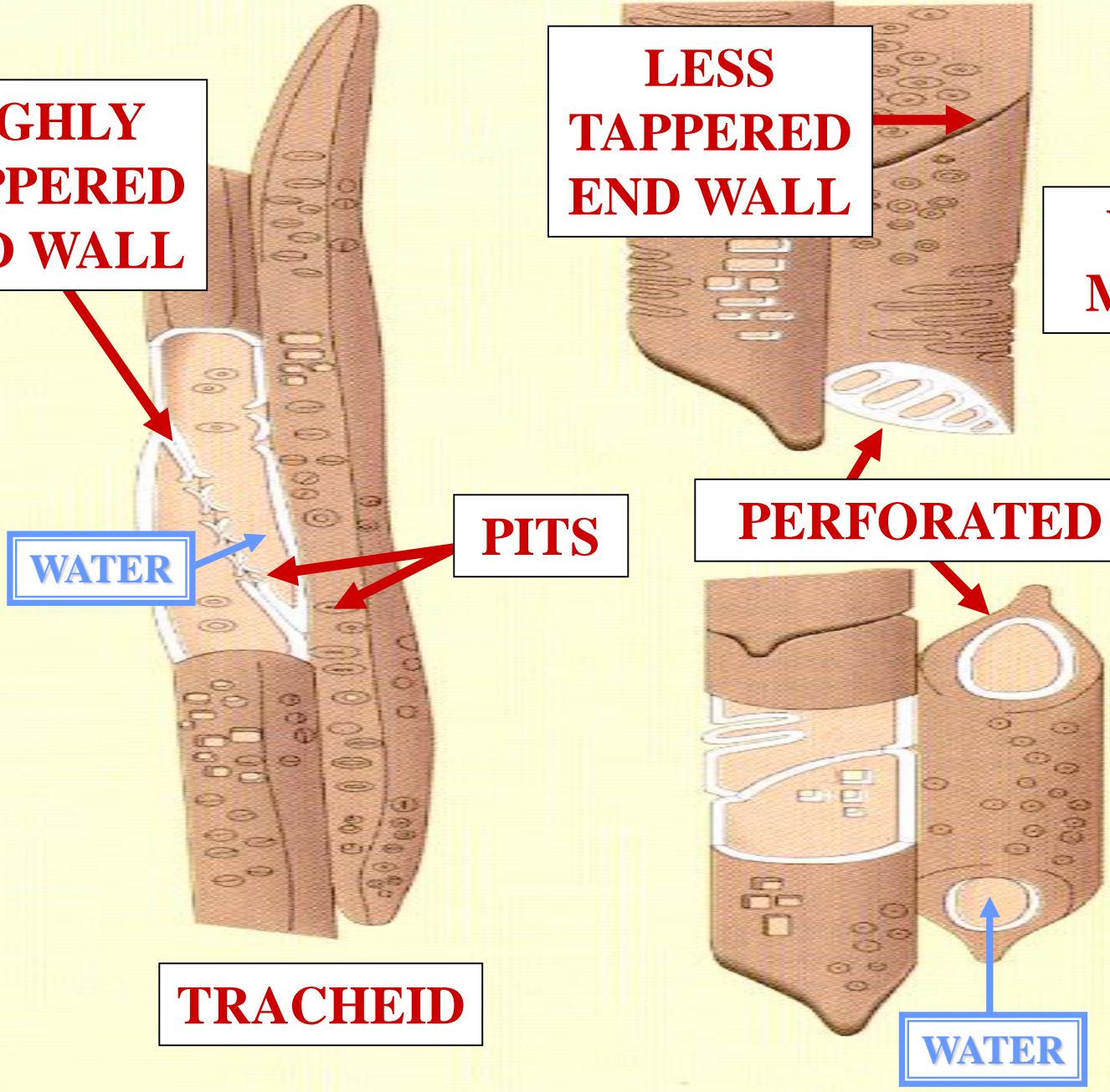
WATER

PITS

PERFORATED PLATE

TRACHEID

WATER



TRACHEIDS

PTERIDOPHYTES



**TRACHEIDS
&
VESSEL MEMBERS**

PTERIDOPHYTES



PHLOEM

PTERIDOPHYTES

SE

SUGAR

NUCLEUS

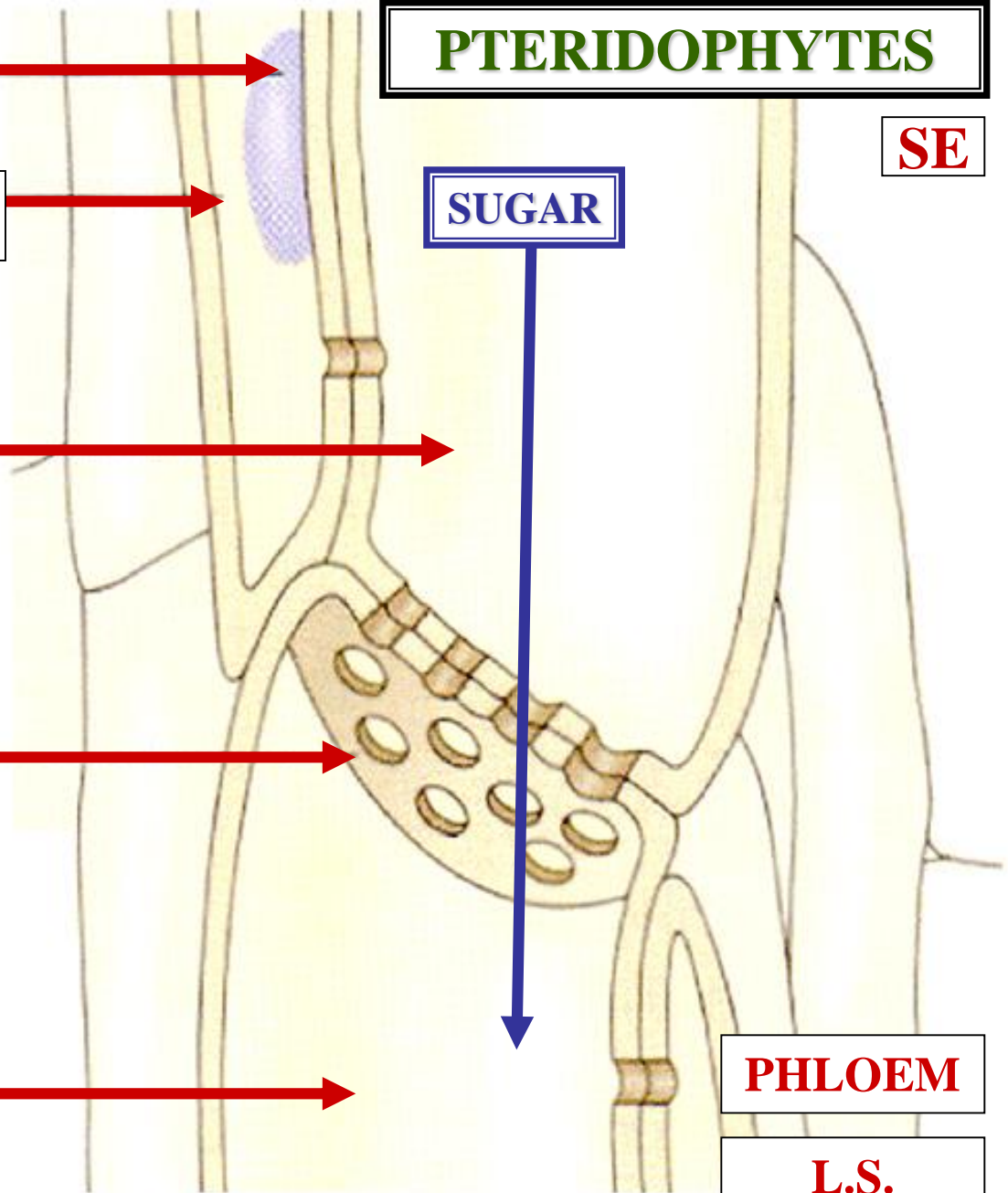
PHLOEM CELL

END WALL

PHLOEM CELL

PHLOEM

L.S.



PTERIDOPHYTES

?

NUCLEUS



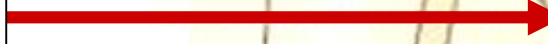
SUGAR



SIEVE ELEMENTS



**SIEVE AREA
SMALL PORES**

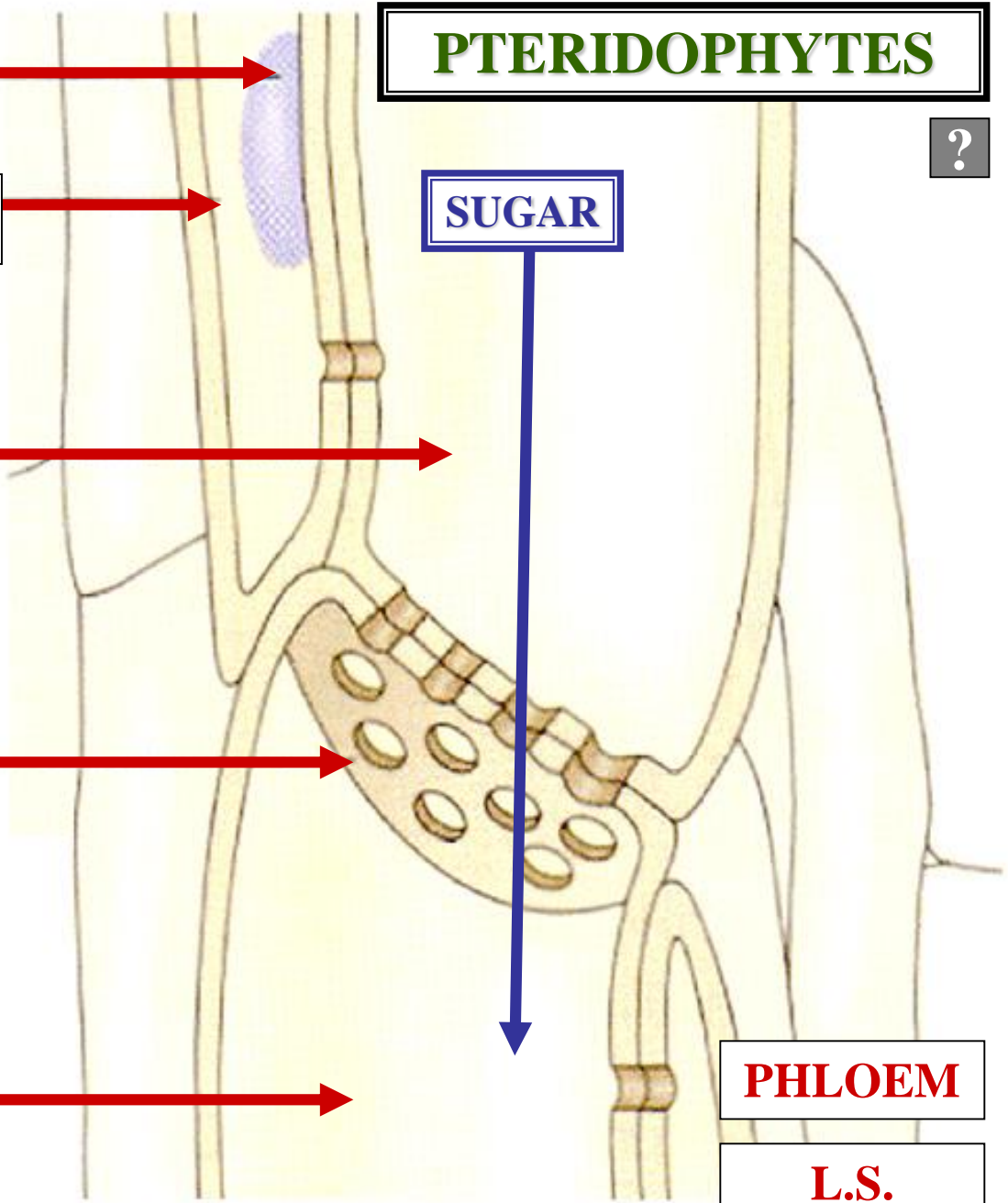


SIEVE ELEMENTS



PHLOEM

L.S.



PTERIDOPHYTES

SC

NUCLEUS

SUGAR

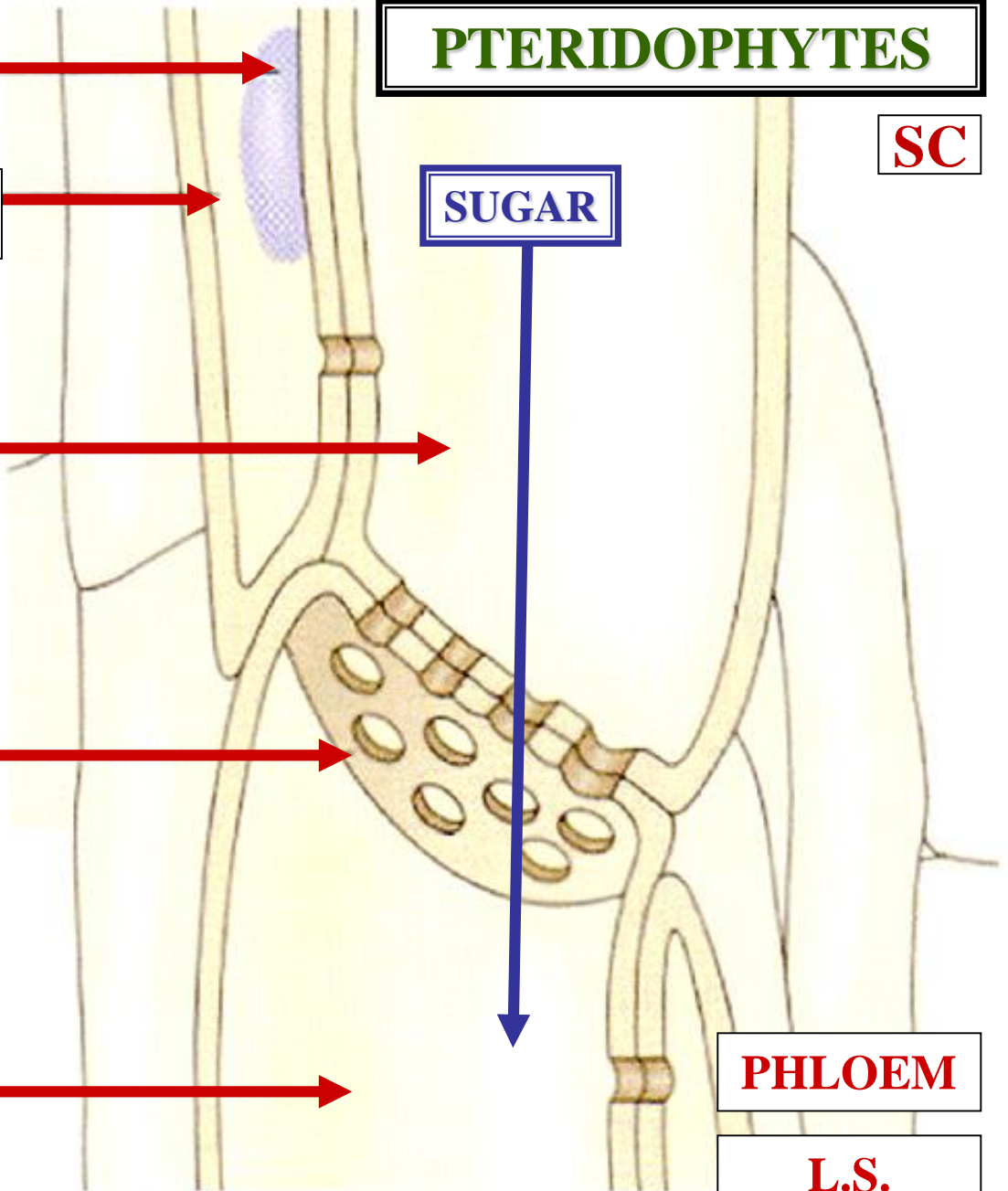
?

**SIEVE AREA
SMALL PORES**

?

PHLOEM

L.S.



PTERIDOPHYTES

?

NUCLEUS



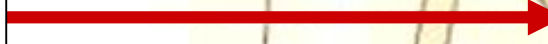
SUGAR



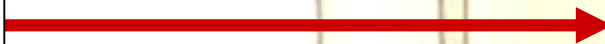
SIEVE CELL



**SIEVE AREA
SMALL PORES**

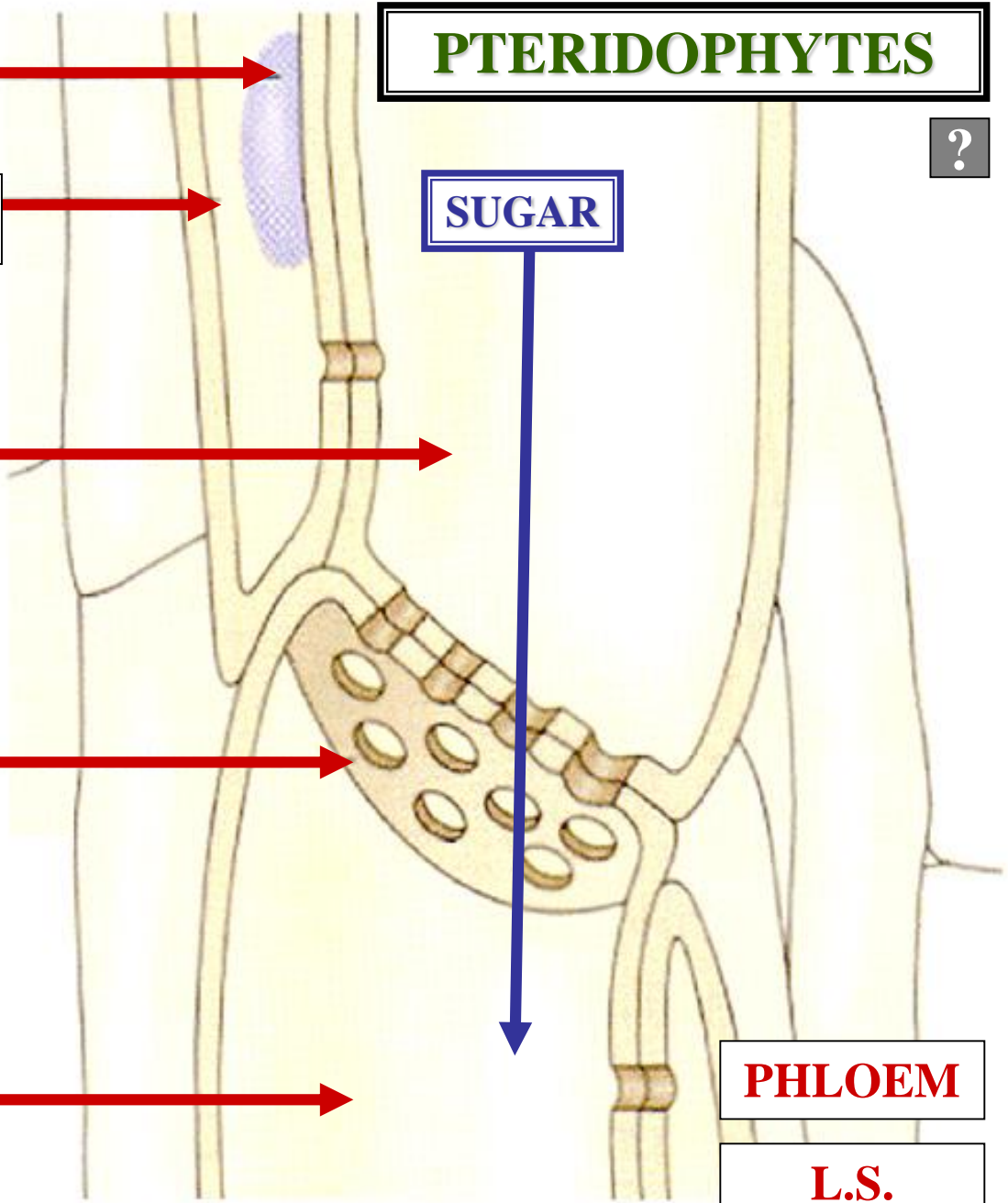


SIEVE CELL



PHLOEM

L.S.



PTERIDOPHYTES

AC

NUCLEUS



?



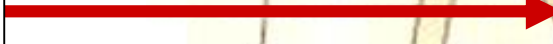
SUGAR



SIEVE CELL



**SIEVE AREA
SMALL PORES**

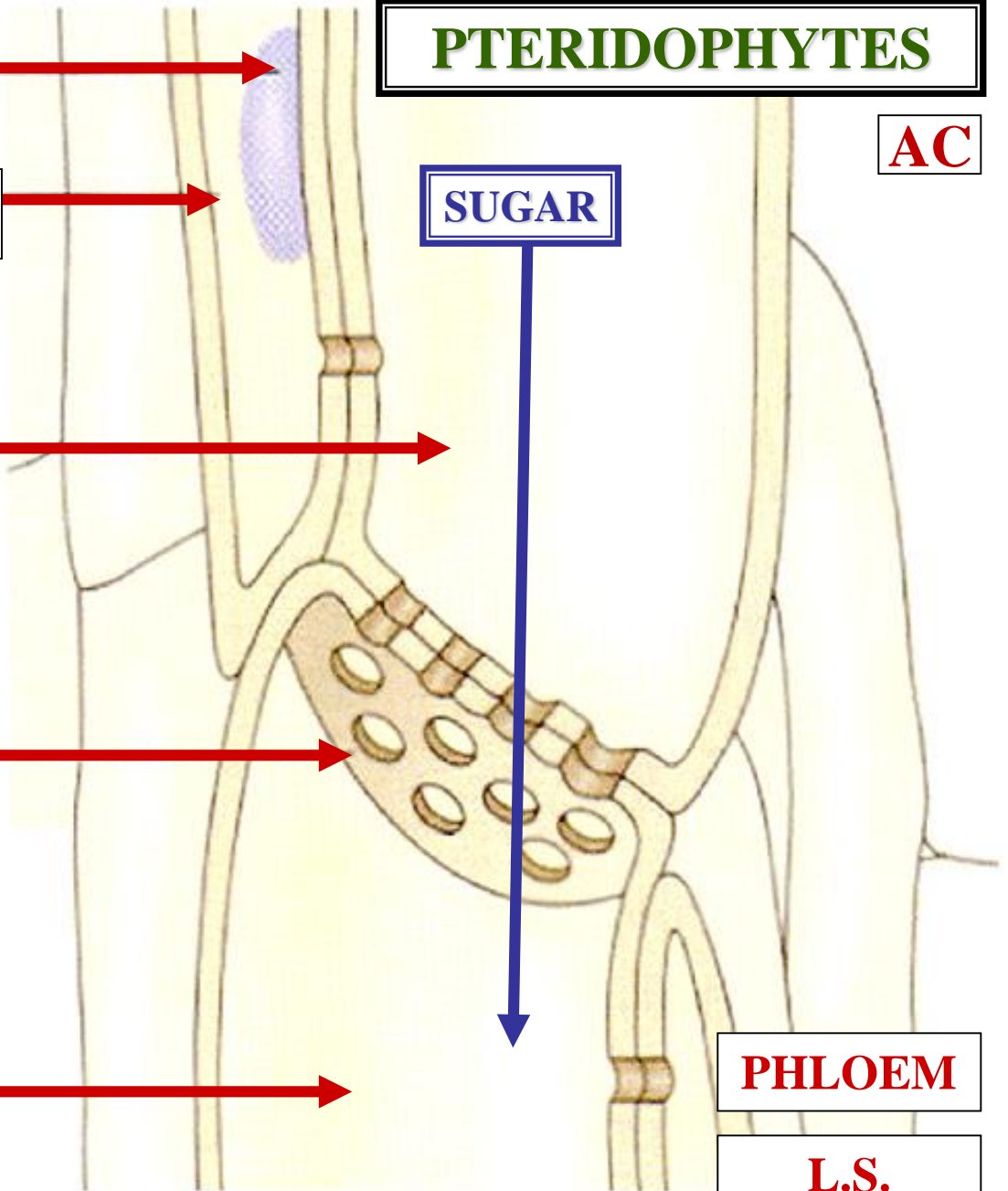


SIEVE CELL



PHLOEM

L.S.



PTERIDOPHYTES



S

NUCLEUS

ALBUMINOUS CELL

SIEVE CELL

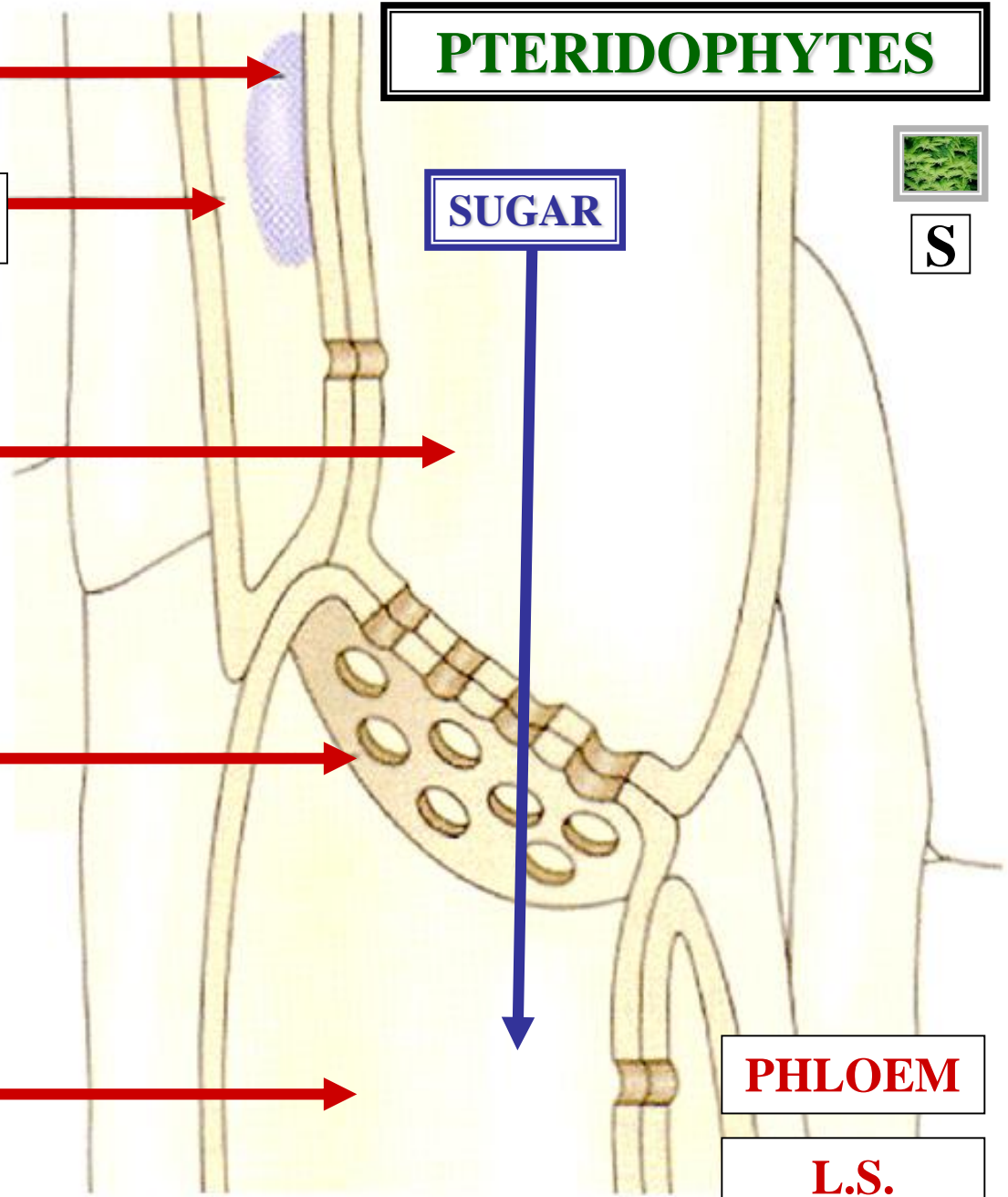
SIEVE AREA
SMALL PORES

SIEVE CELL

SUGAR

PHLOEM

L.S.





**SIEVE CELLS
&
ALBUMINOUS CELLS**

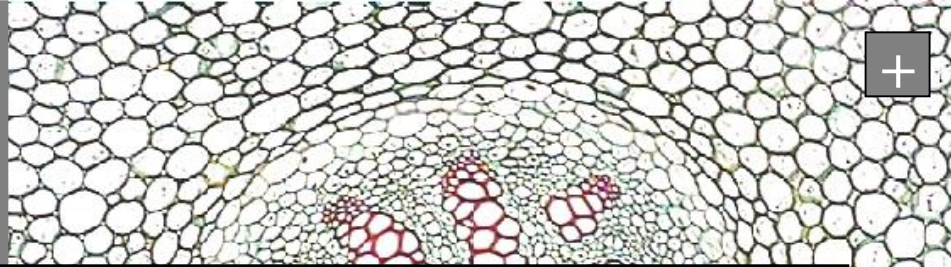
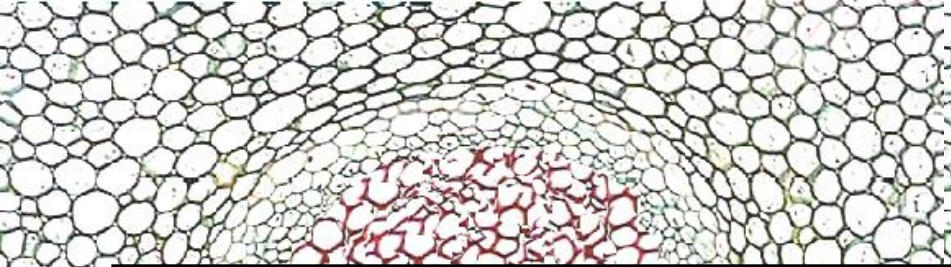
PTERIDOPHYTES



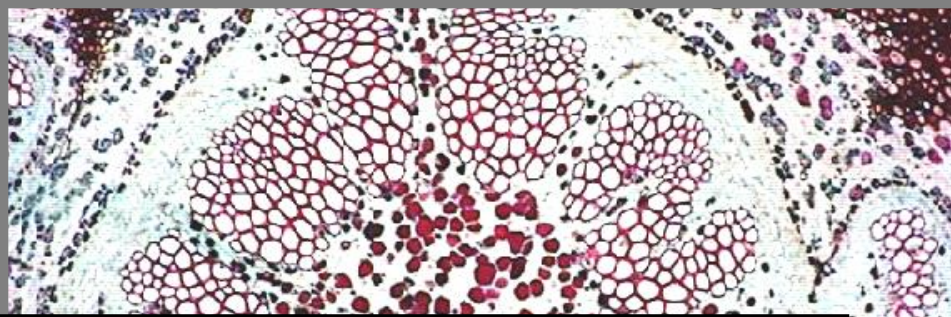
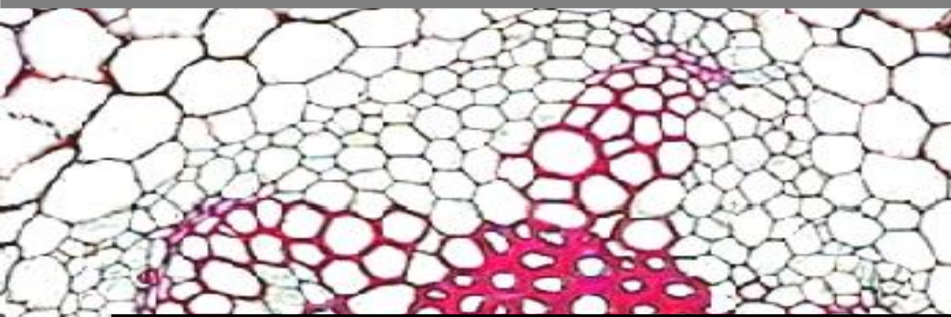
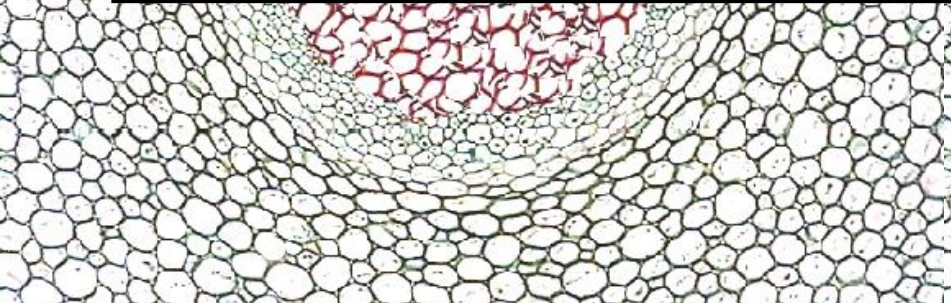
STEM



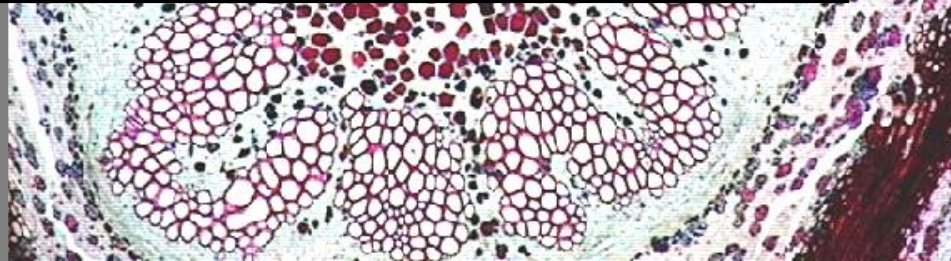
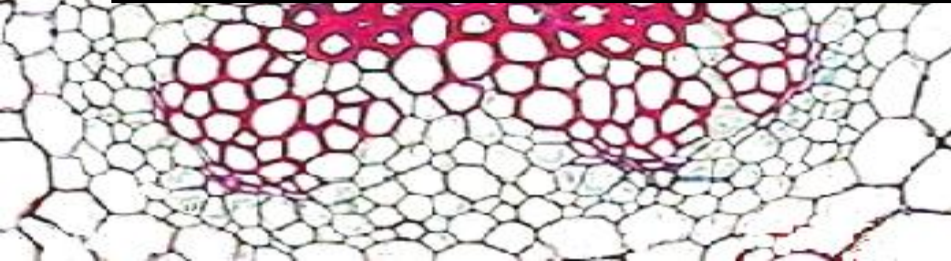
STEM STELE

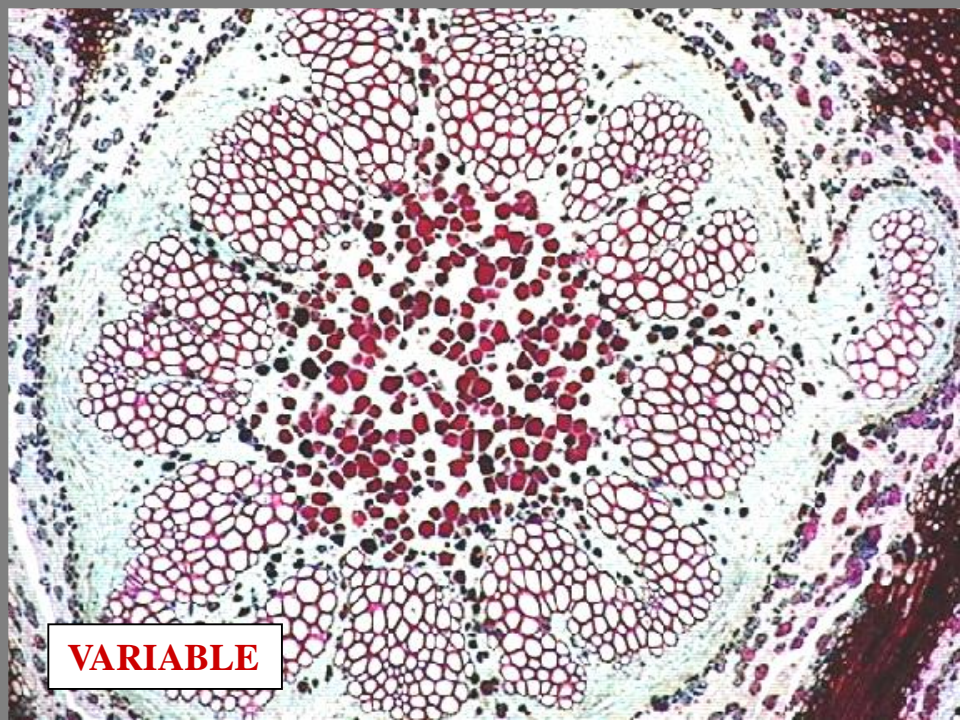
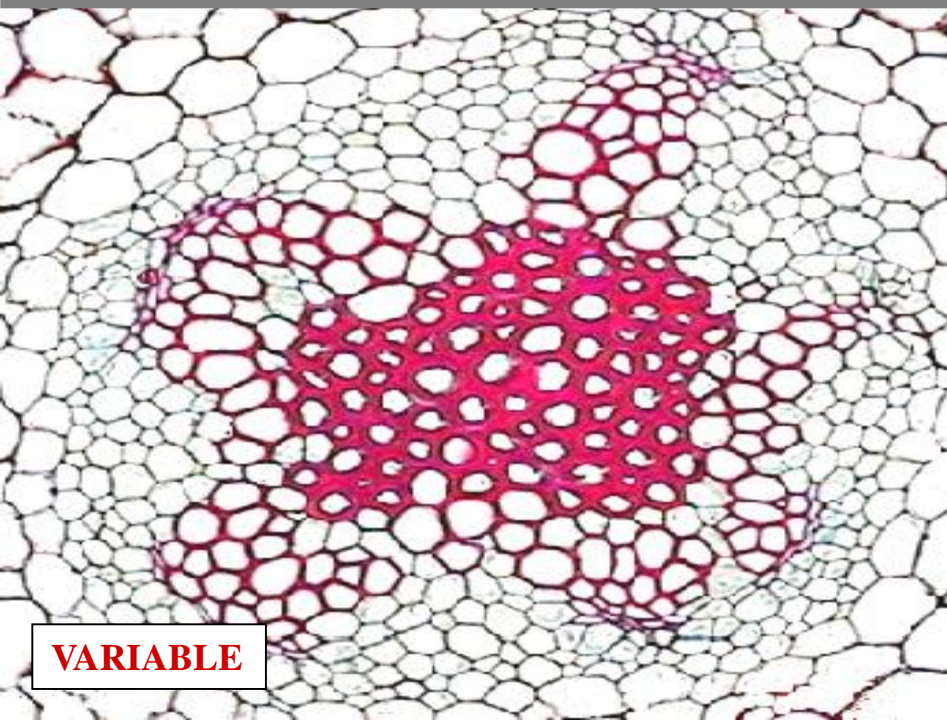
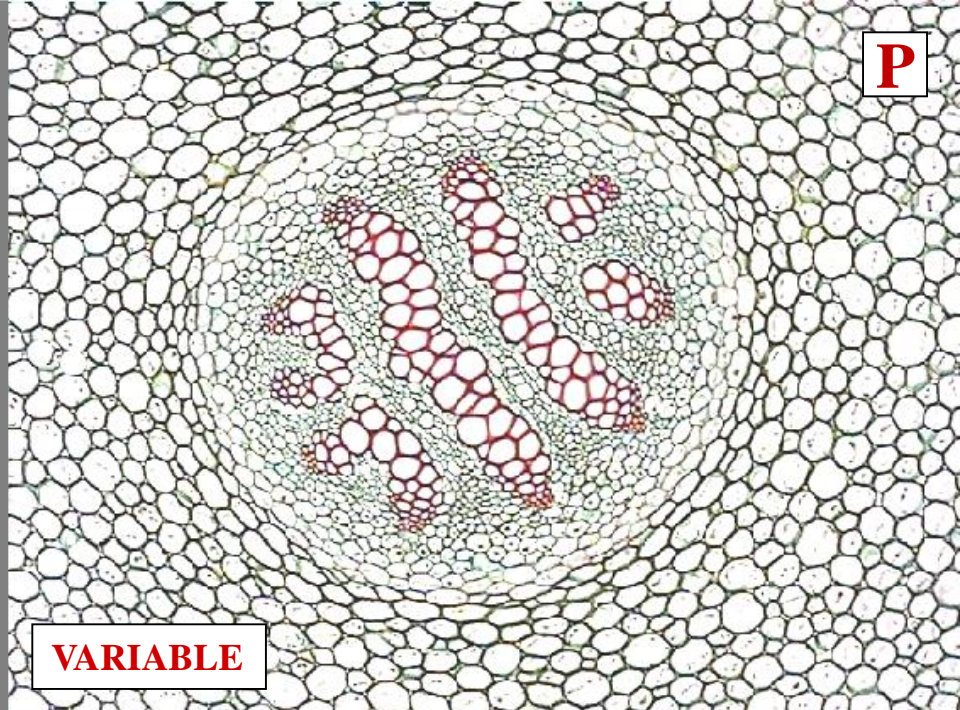
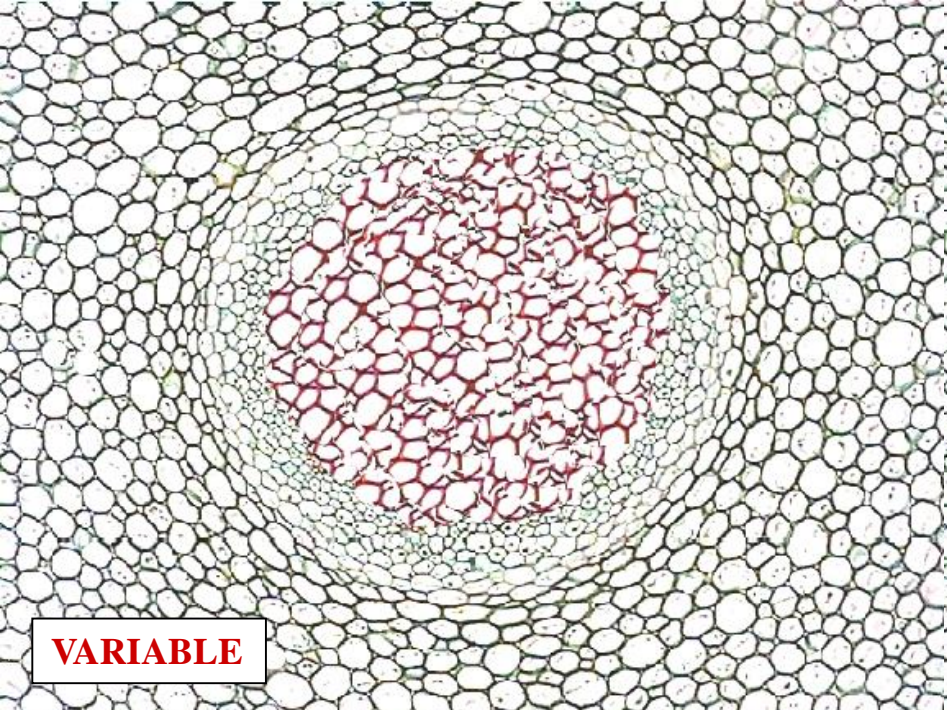


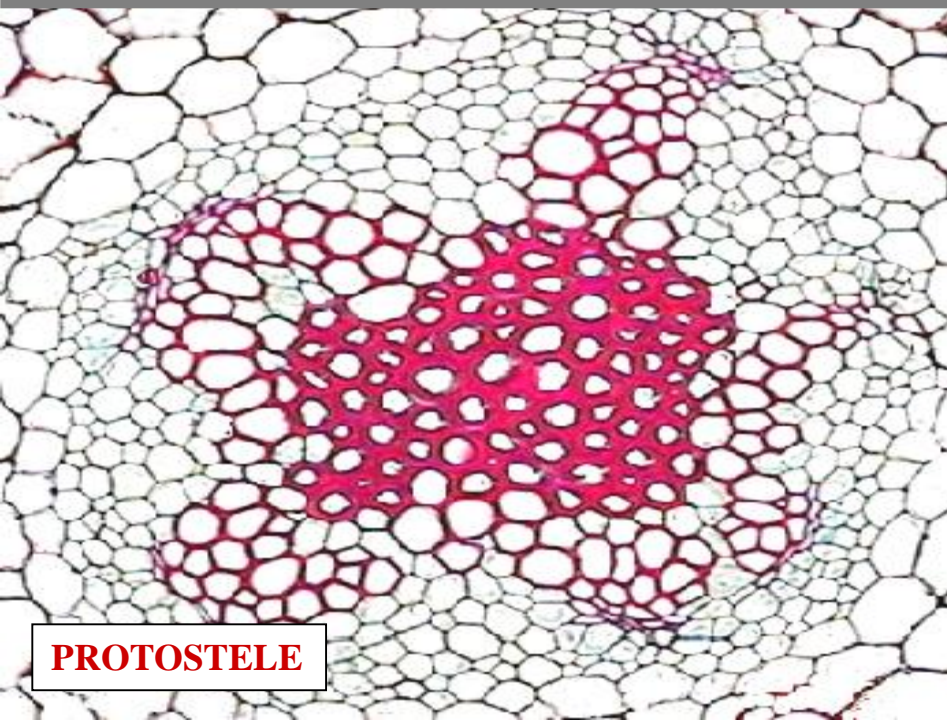
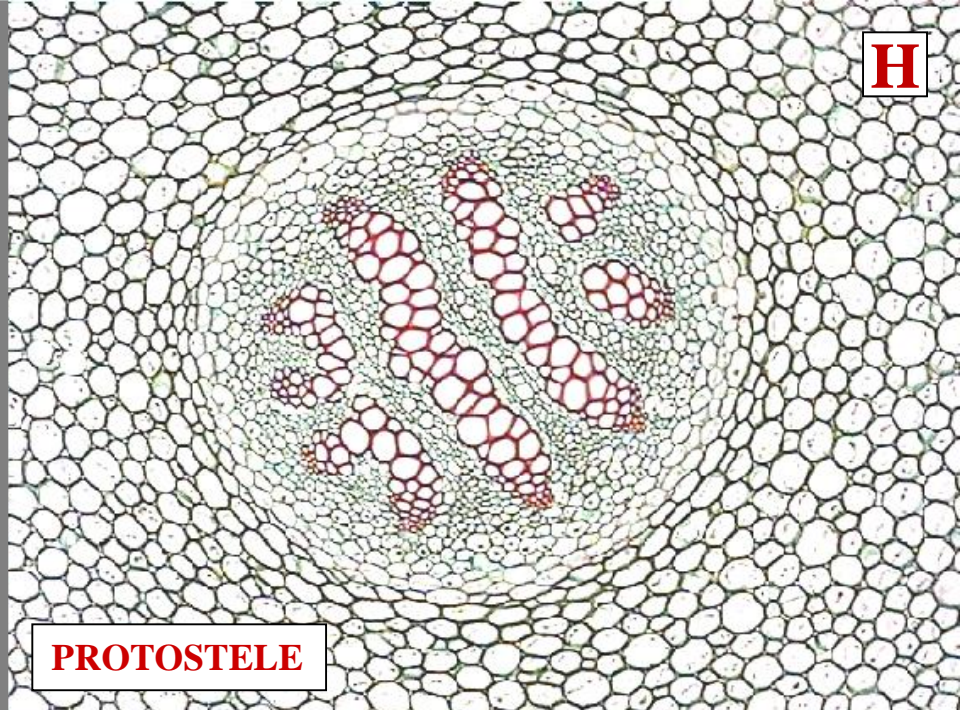
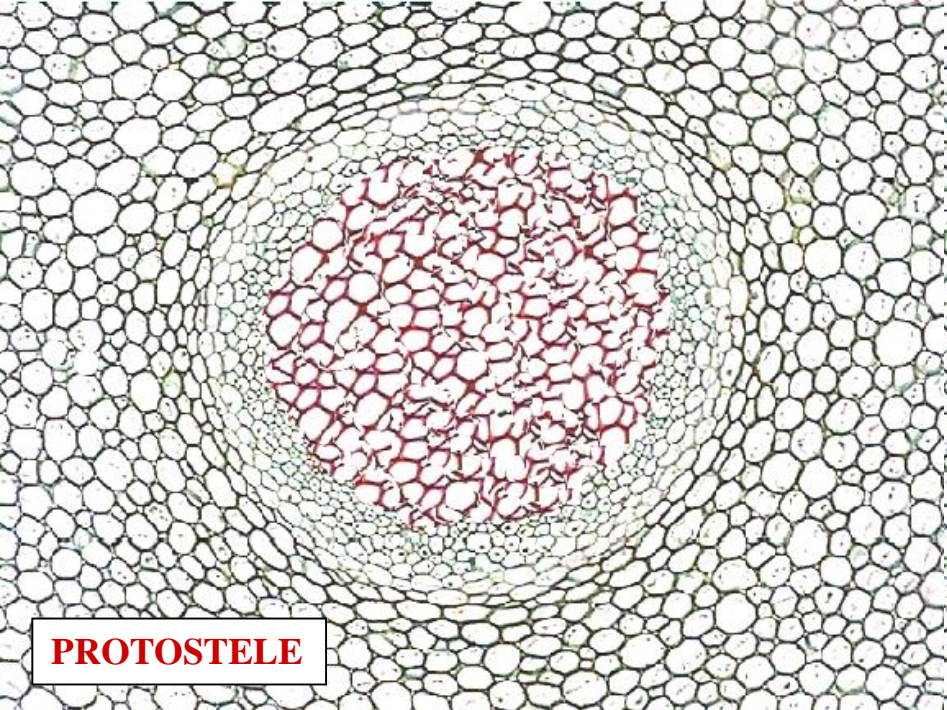
PTERIDOPHYTE STELE VARIABLE

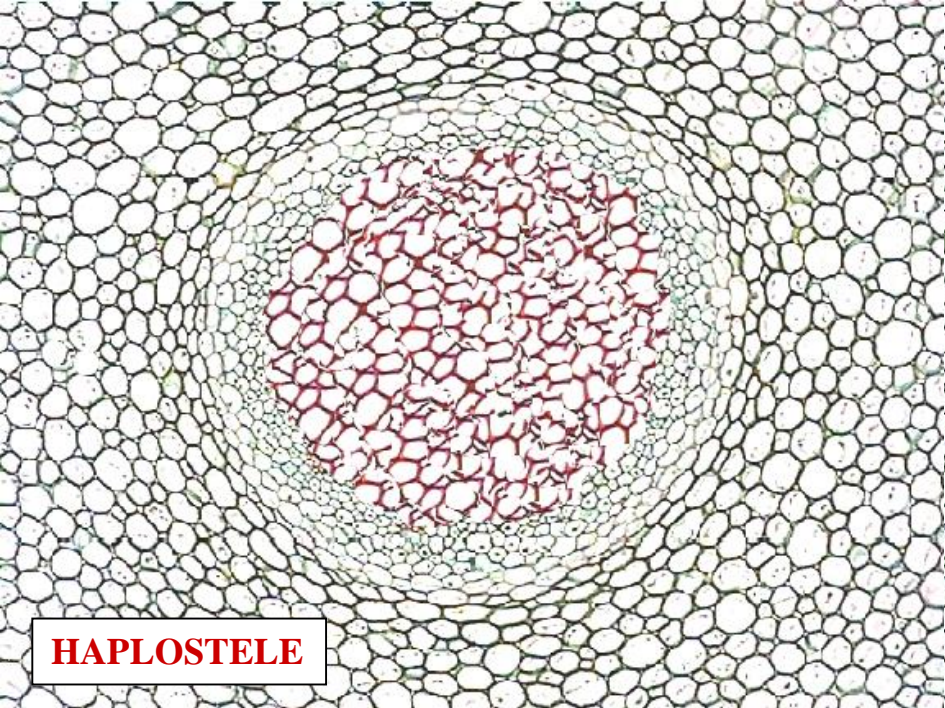


PTERIDOPHYTE STELE VARIABLE

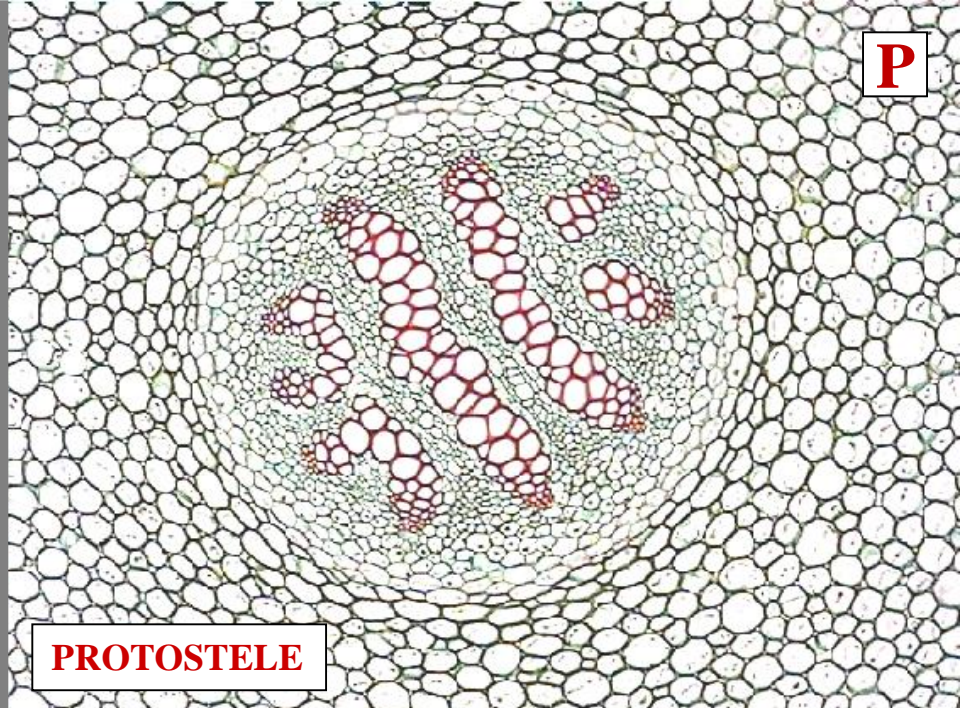




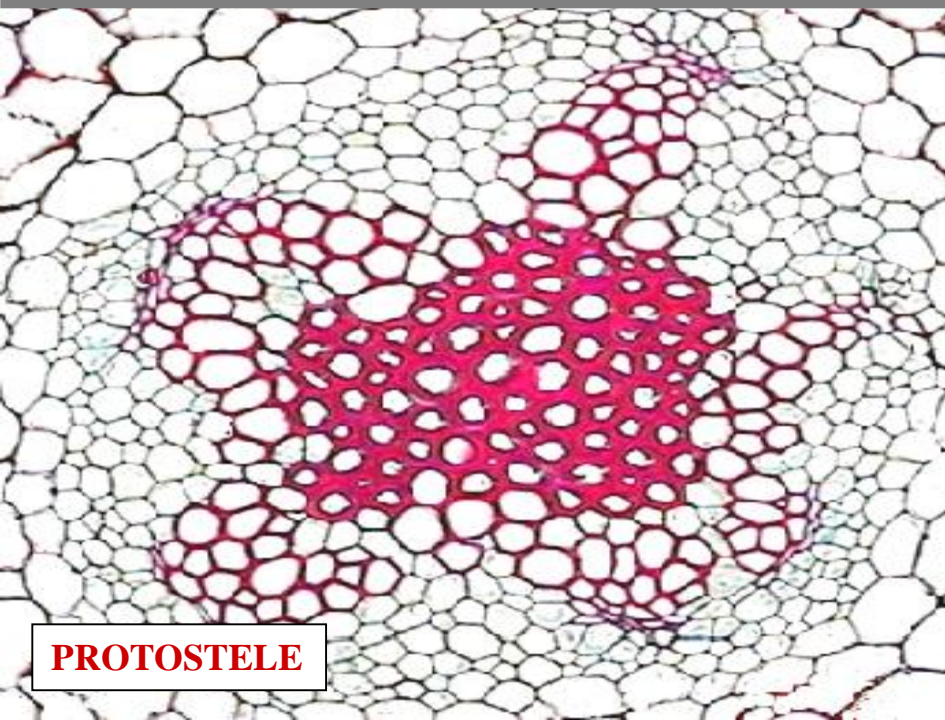




HAPLOSTELE



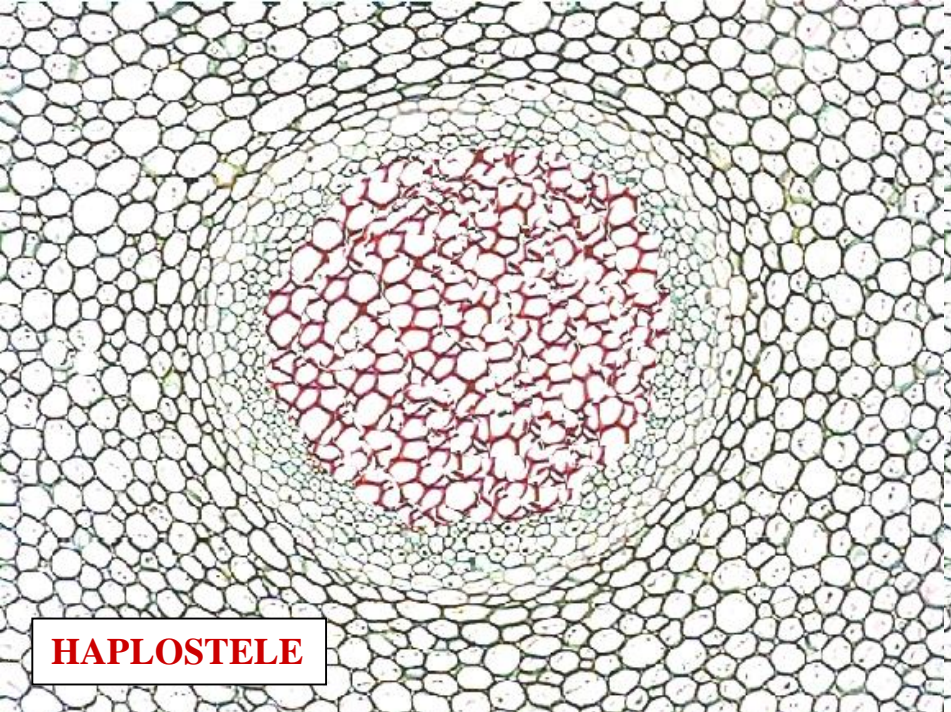
PROTOSTELE



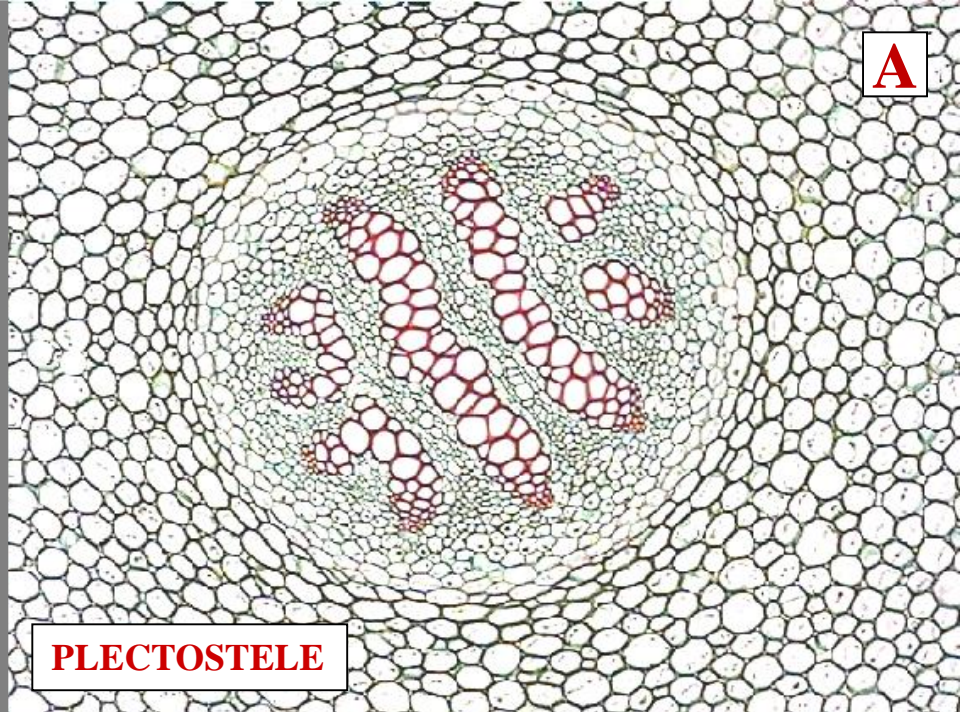
PROTOSTELE



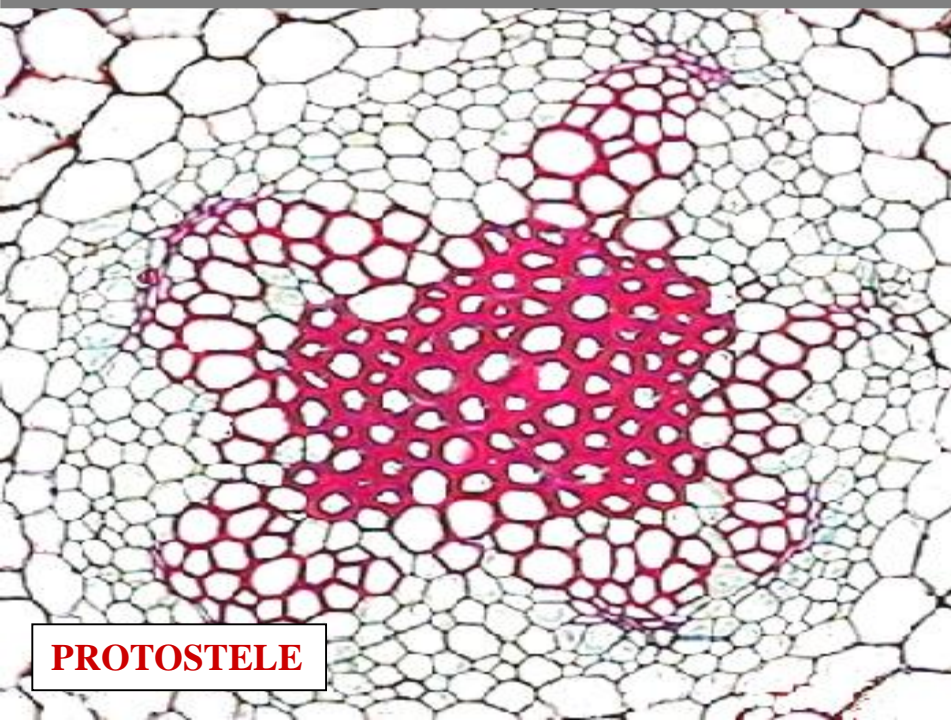
SIPHONOSTELE



HAPLOSTELE



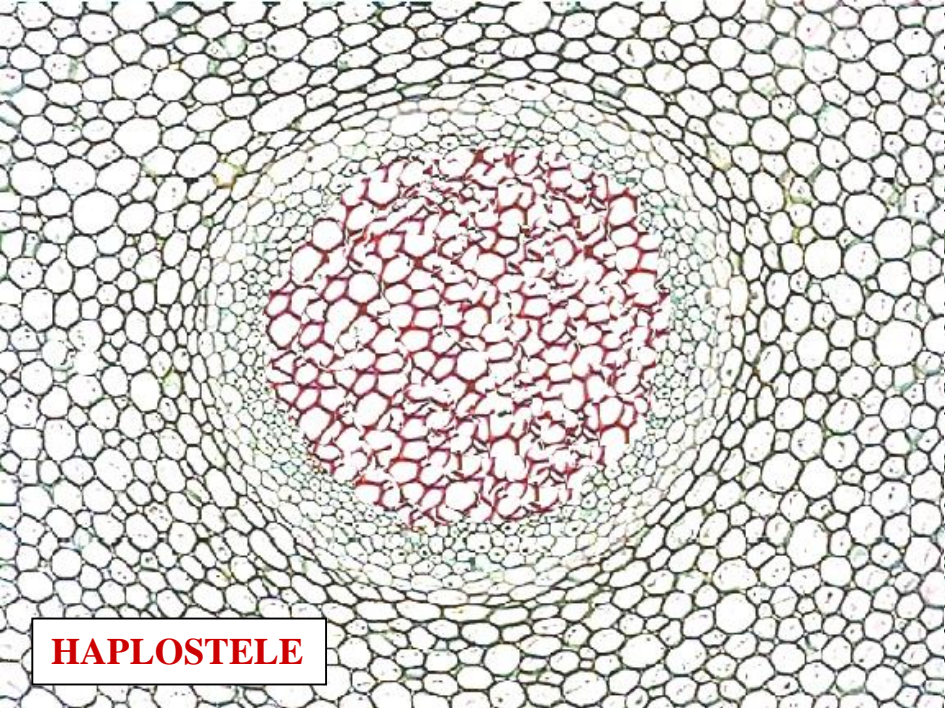
PLECTOSTELE



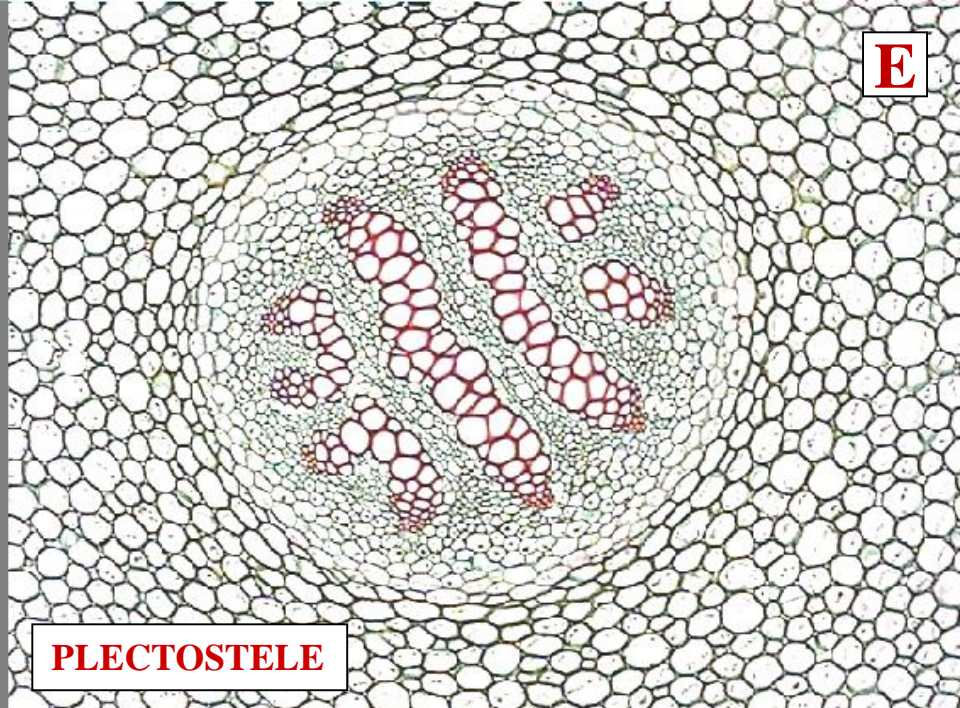
PROTOSTELE



SIPHONOSTELE

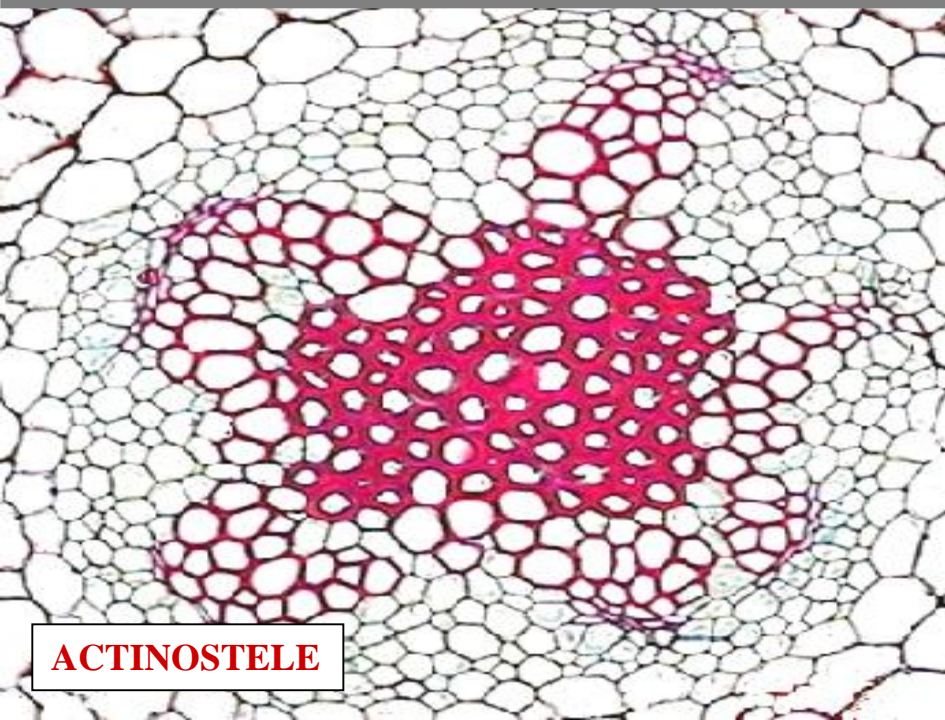


HAPLOSTELE



E

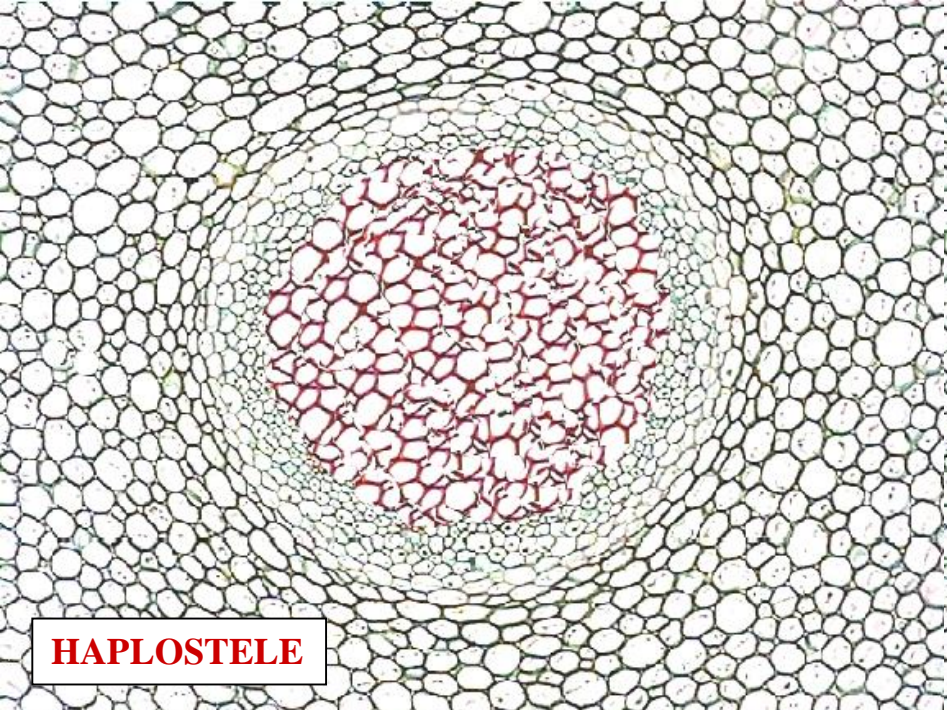
PLECTOSTELE



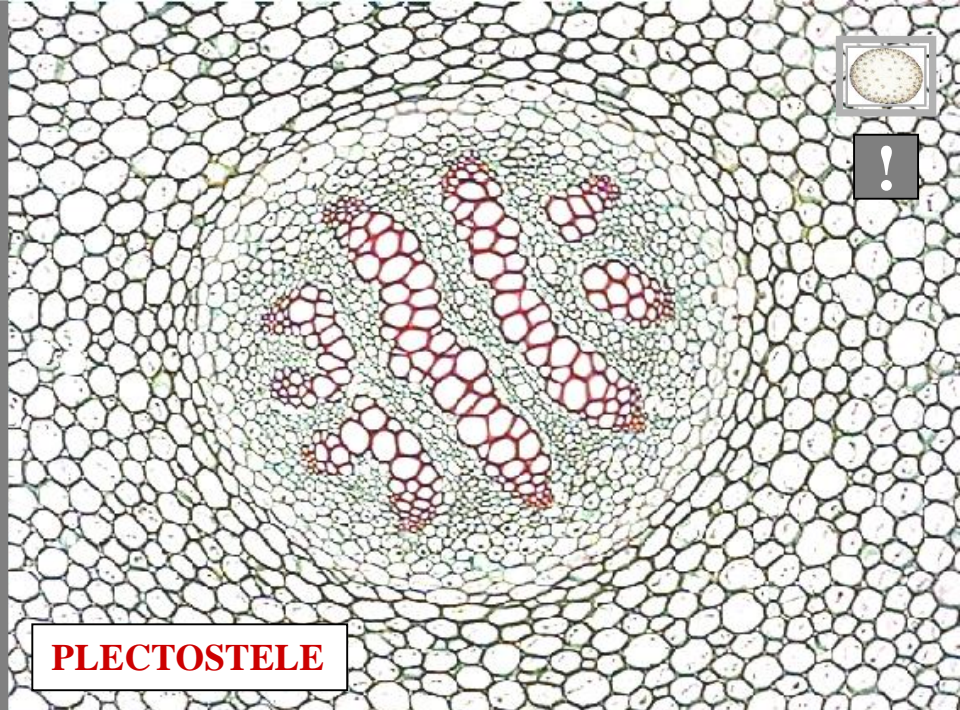
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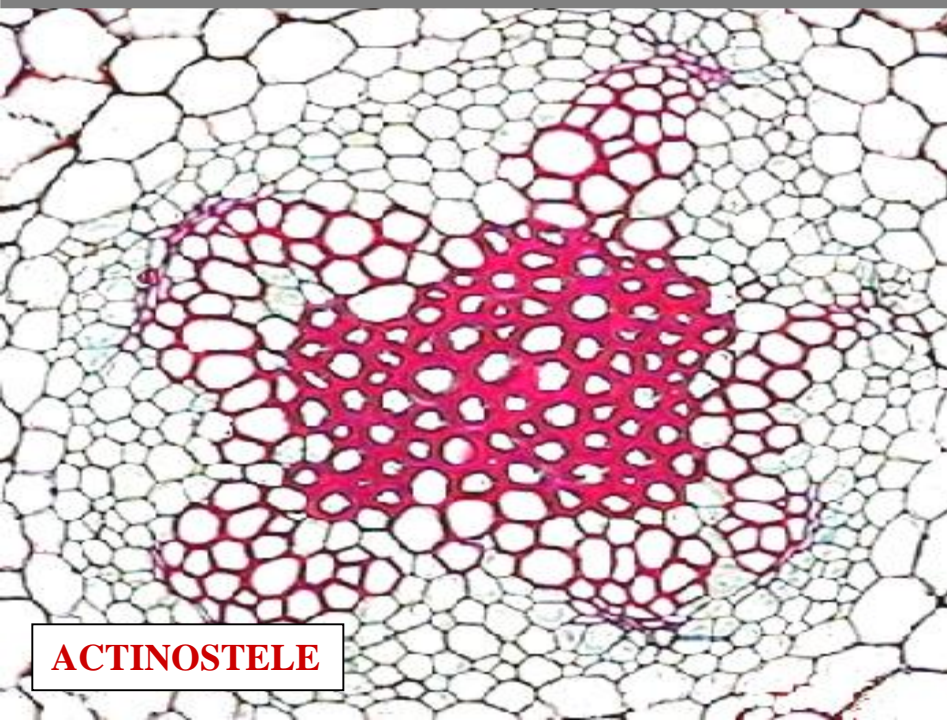
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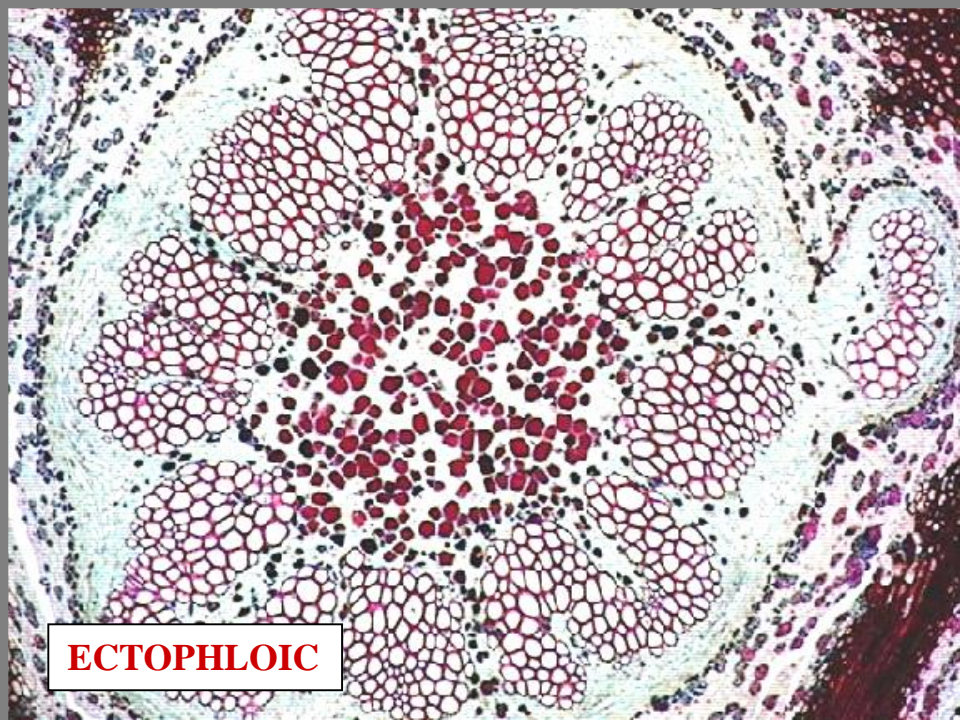
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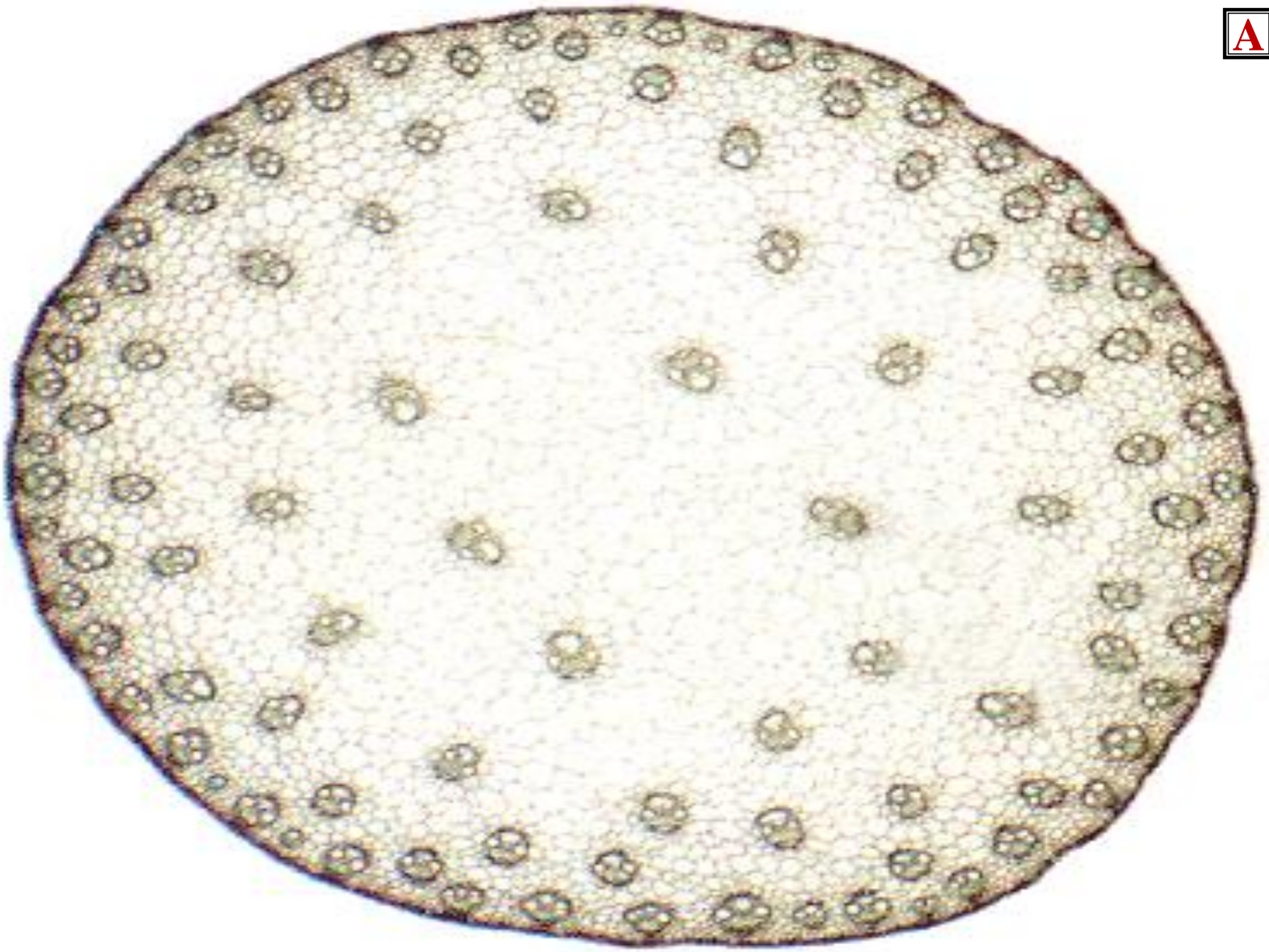
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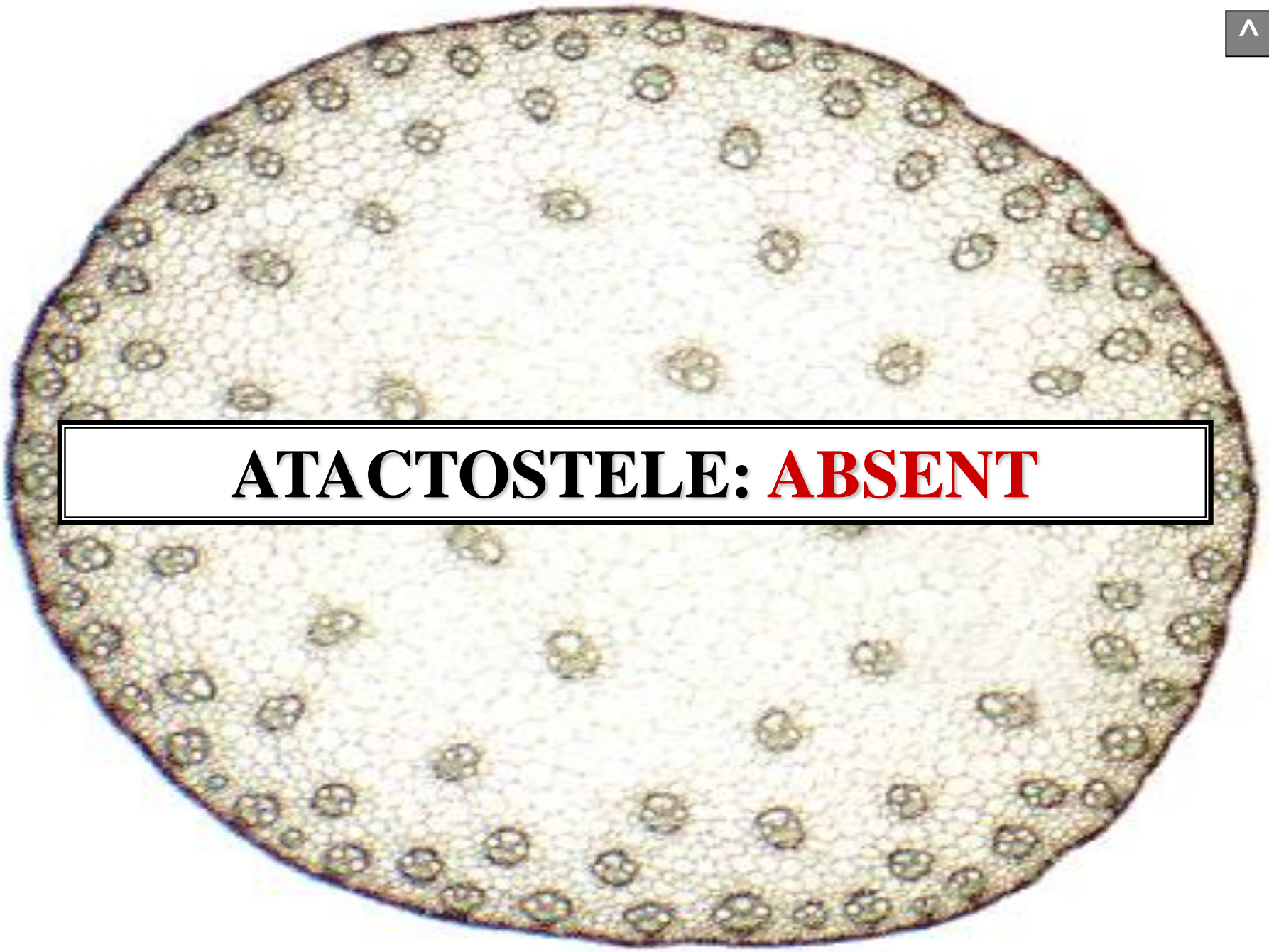


ACTINOSTELE



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FERNS

PTERIDOPHYTA



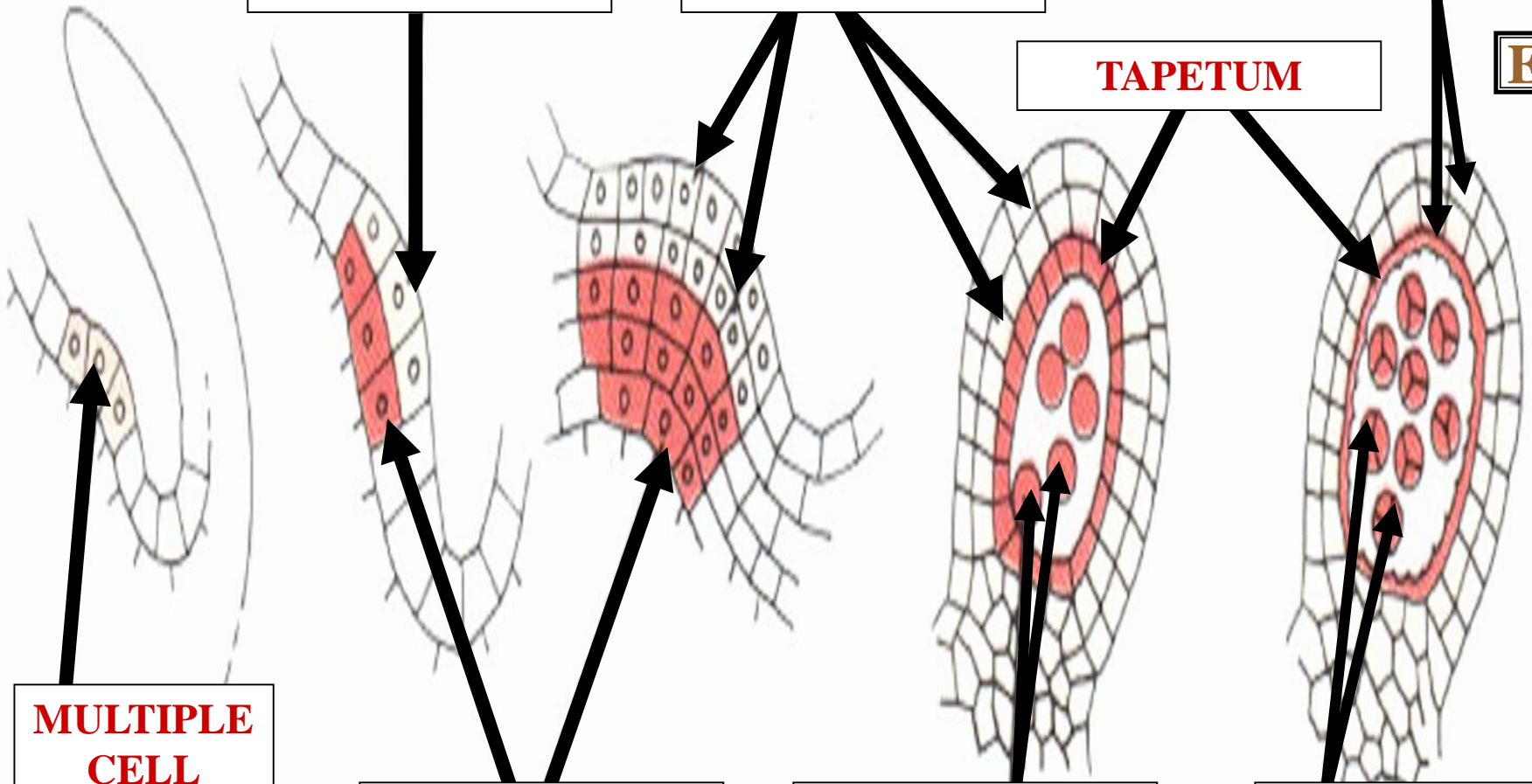
MEGAPHYLLS

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SPORANGIUM



WALL CELLS

WALL CELLS

LARGE SIZE

THICK WALL

TAPETUM

E

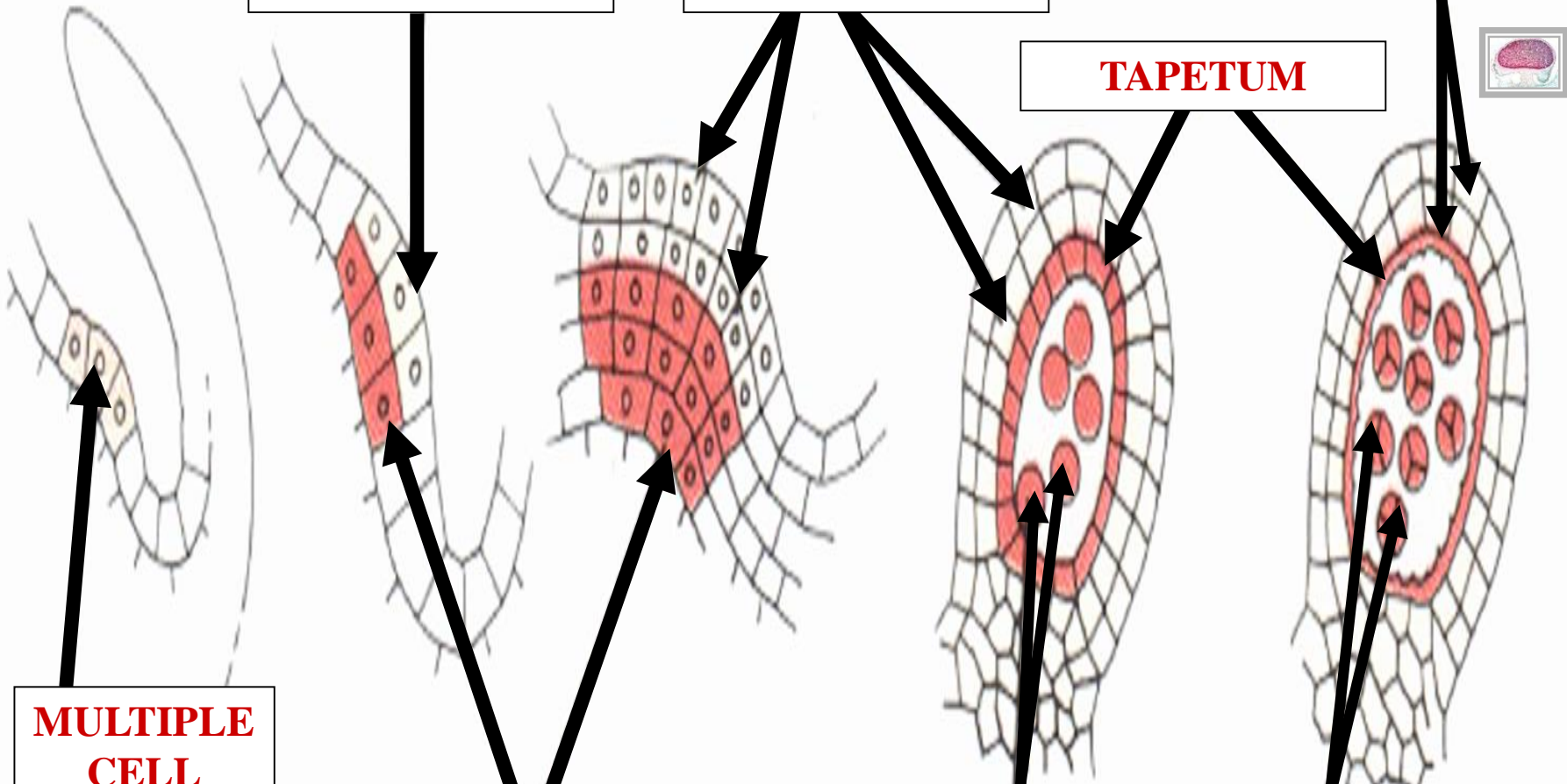
**MULTIPLE
CELL
INITIALS**

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**NUMEROUS
SPORES**

L.S.



WALL CELLS

WALL CELLS

LARGE SIZE

THICK WALL

TAPETUM

**MULTIPLE
CELL
INITIALS**

SPOROCYTES

SPOROCYTES

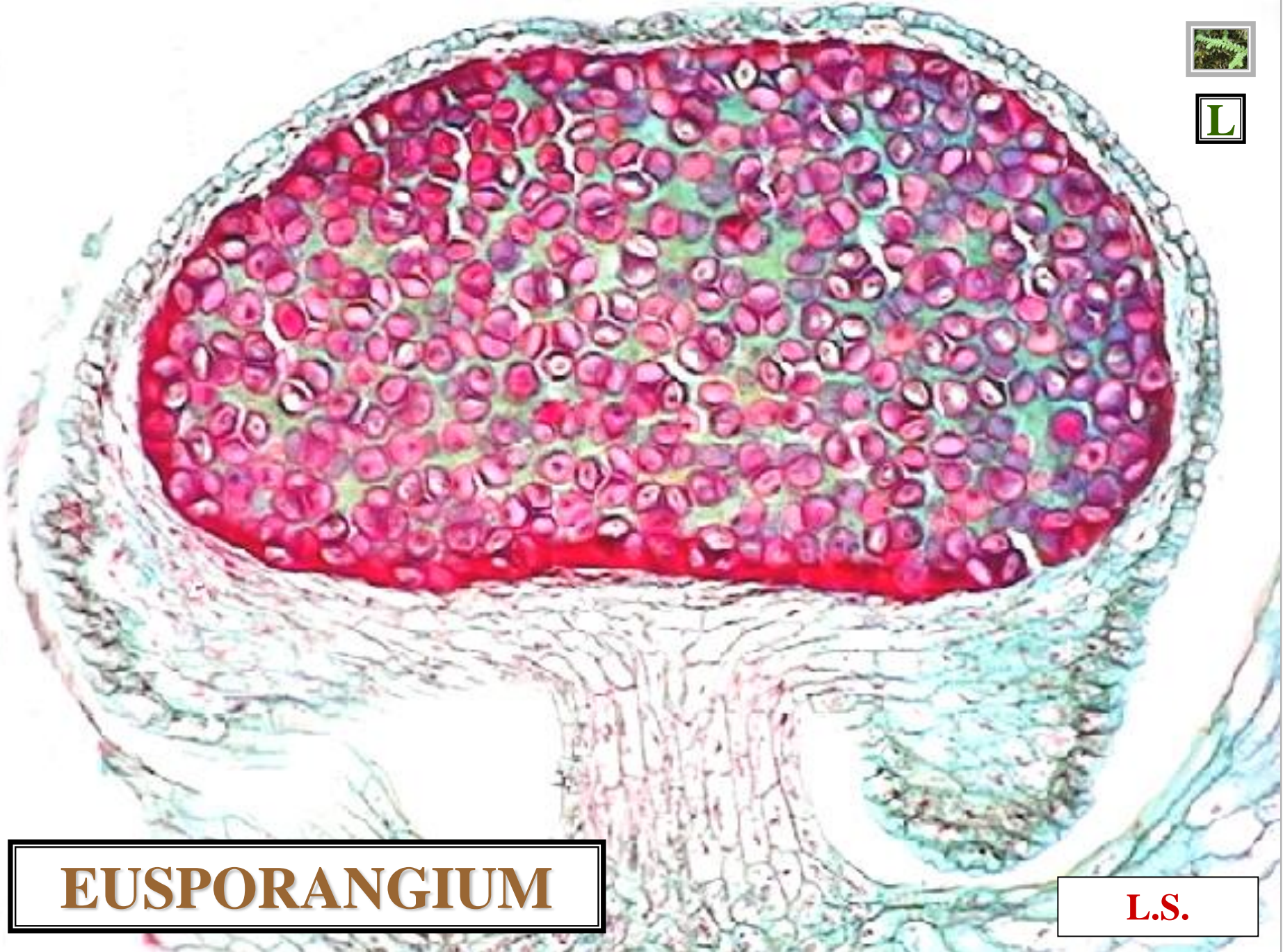
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EUSPORANGIUM

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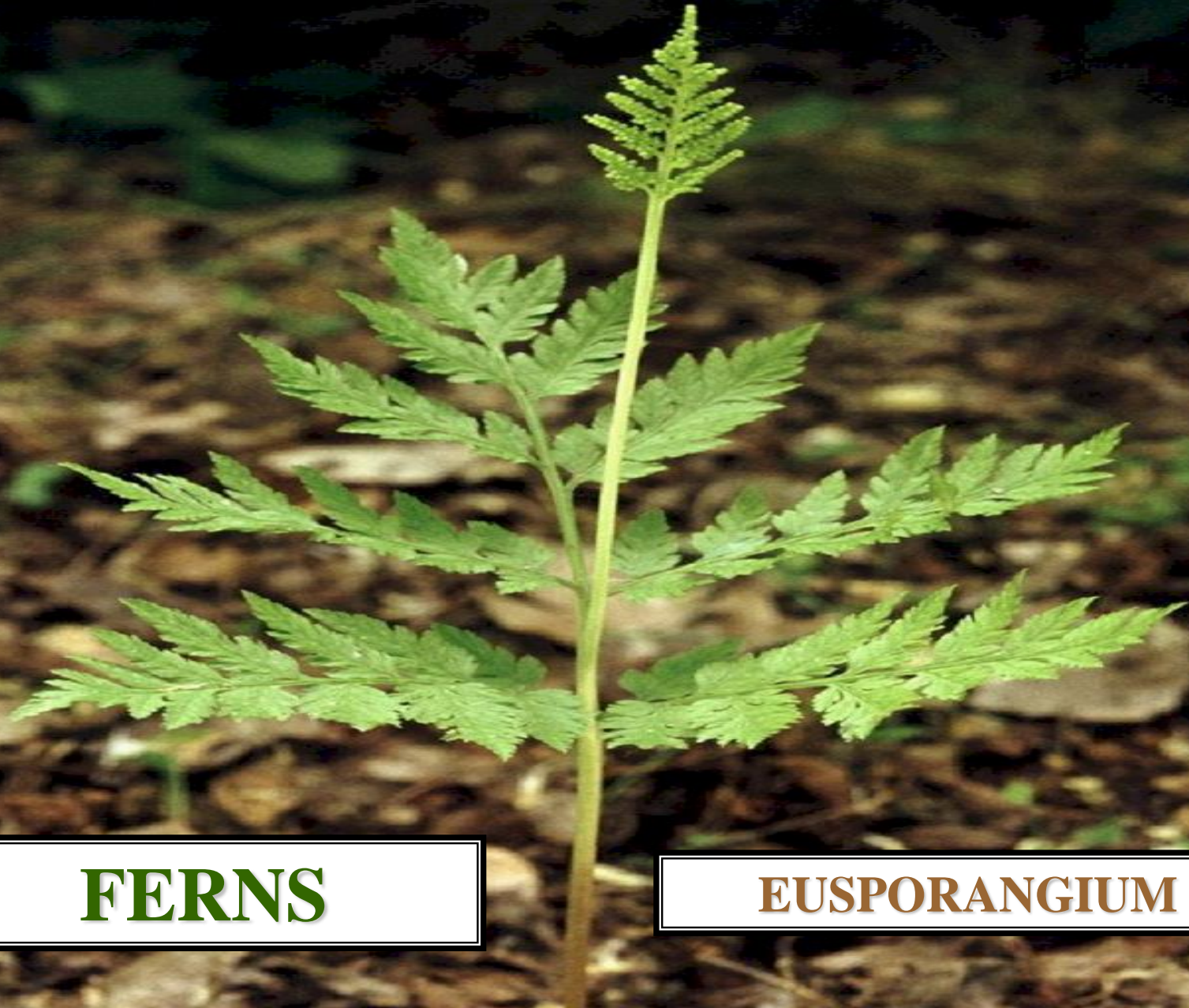
EUSPORANGIUM

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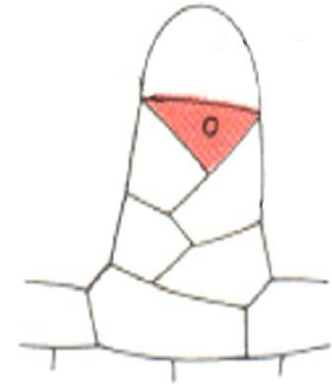
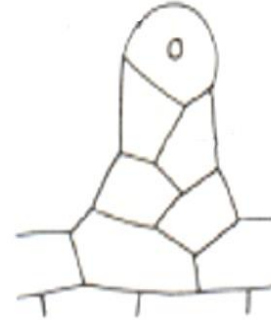
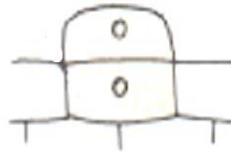
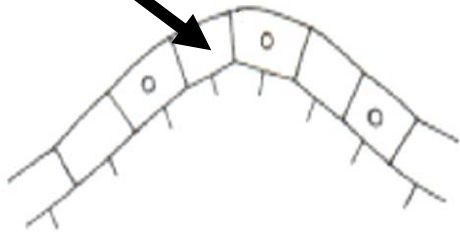


FERNS

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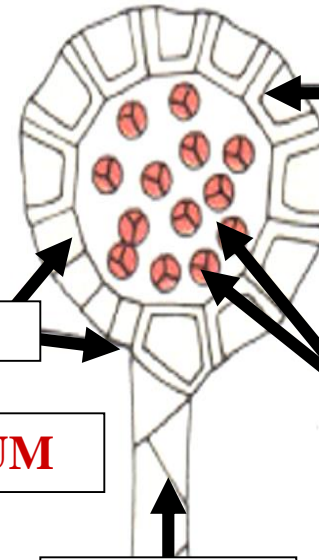
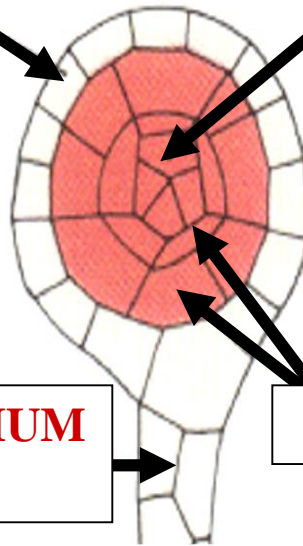
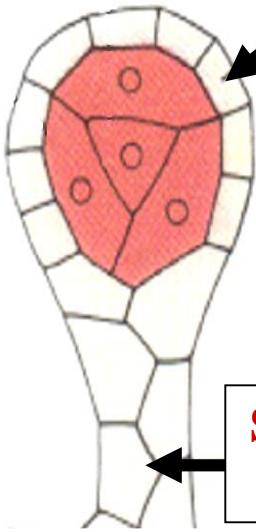
CELL INITIAL



SPORANGIUM WALL

SPOROCYTES

SMALL SIZE



ANNULUS

THIN WALL

FEW SPORES

STOMIUM

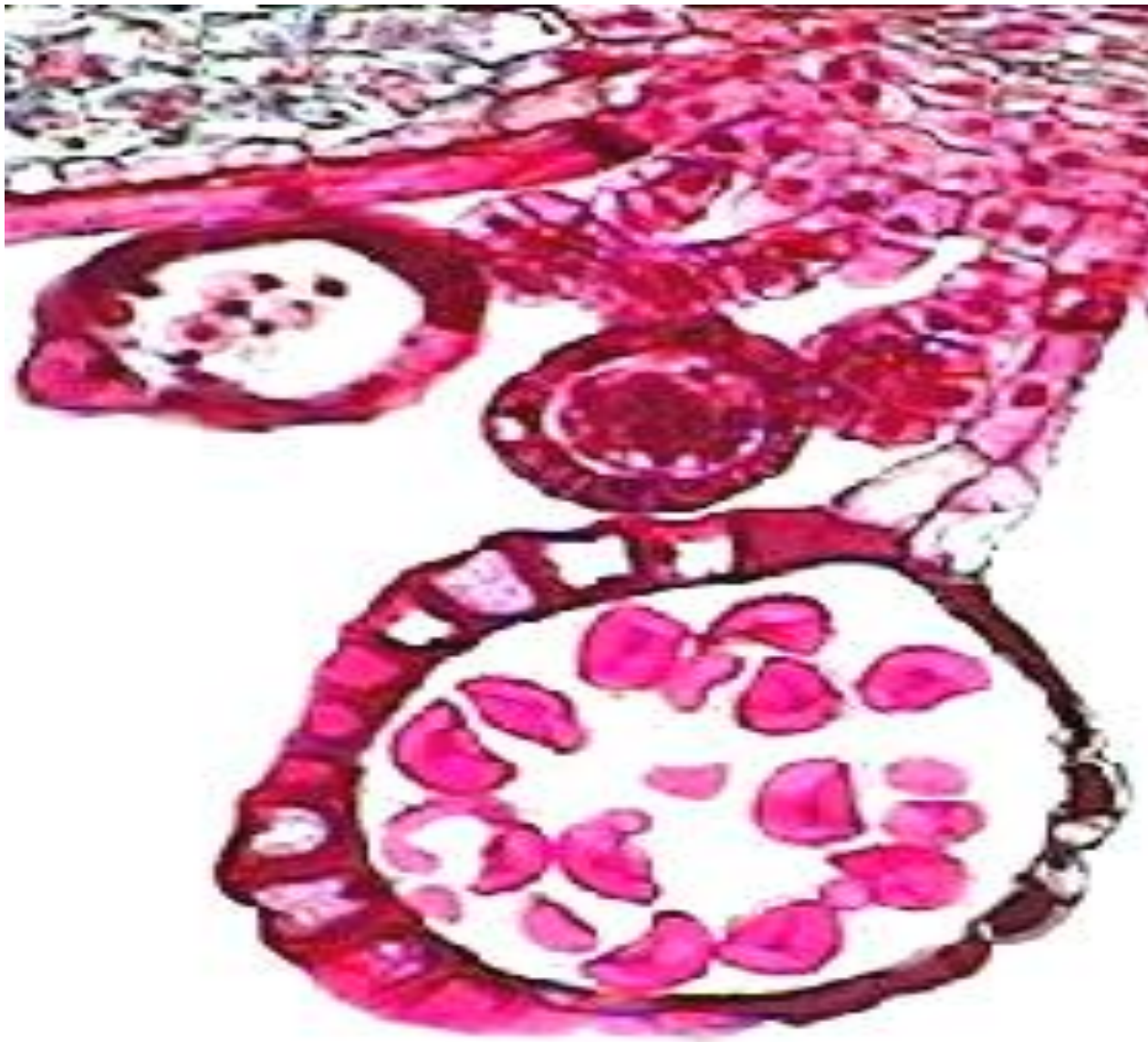
TAPETUM

SPORANGIUM STALK

STALK

LEPTOSPORANGIUM

L.S.



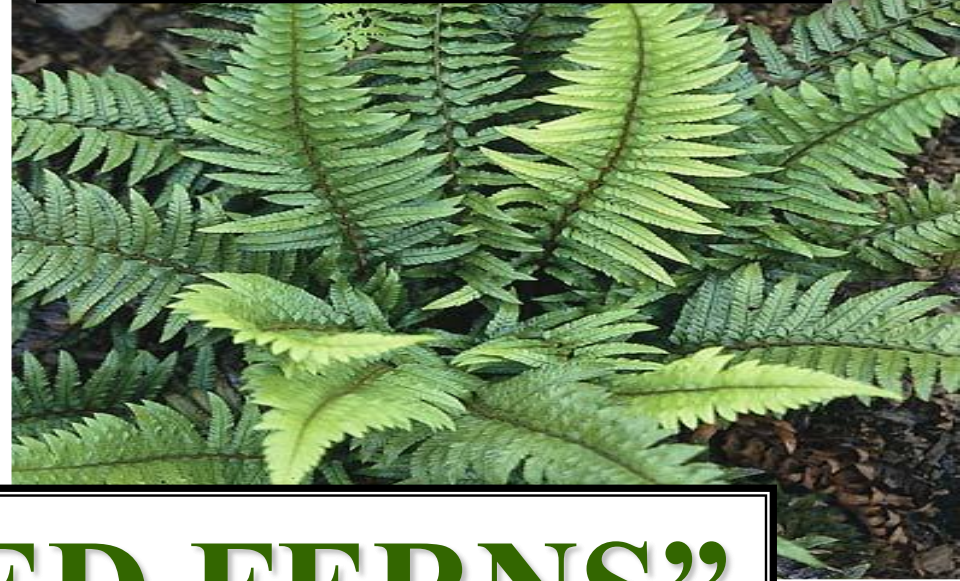
LEPTOSPORANGIUM

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LEPTOSPORANGIUM



LEPTOSPORANGIUM



“ADVANCED FERNS”

LEPTOSPORANGIUM



LEPTOSPORANGIUM





SPORE HABIT

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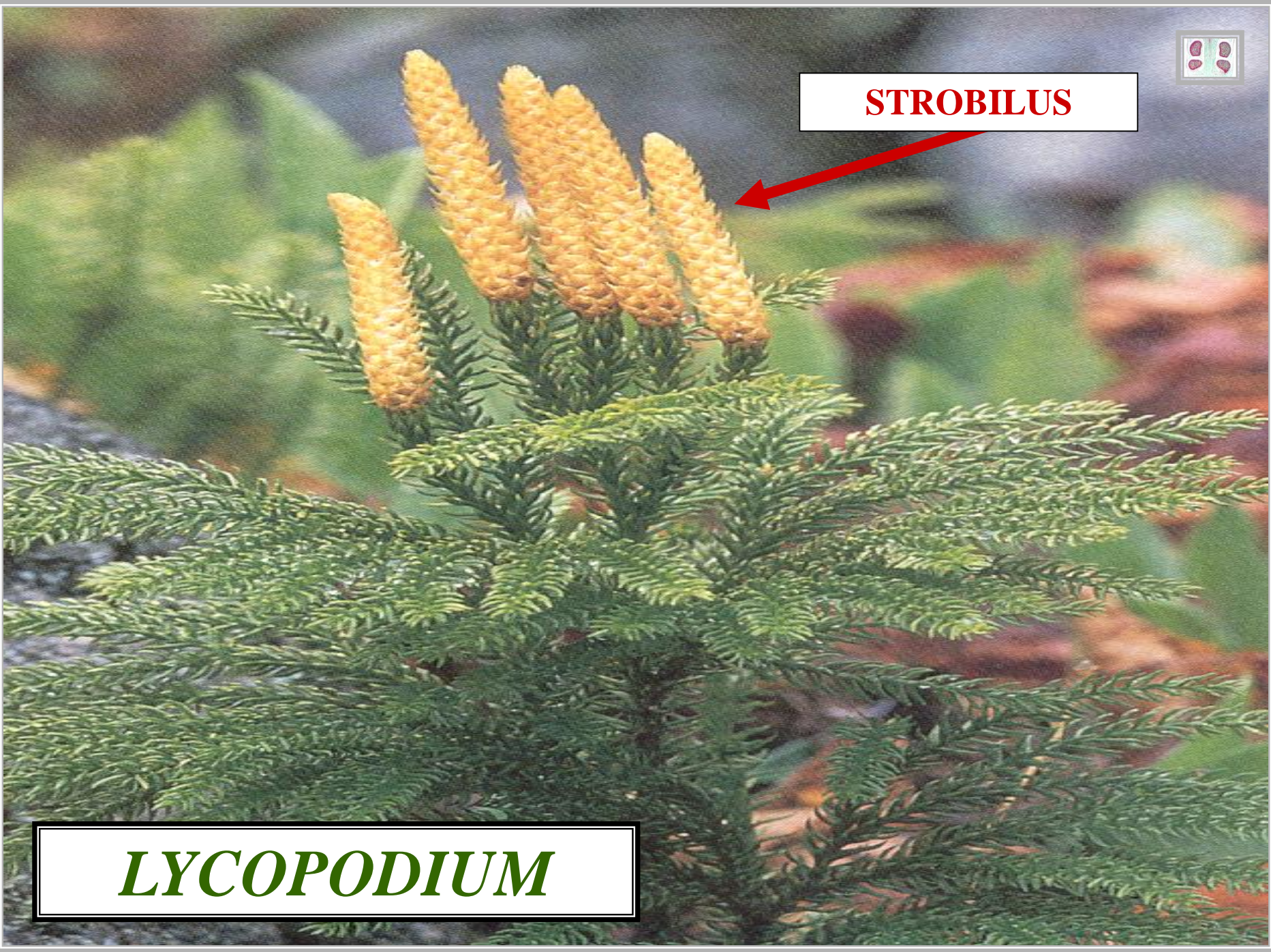
LYCOPODIUM



STROBILUS



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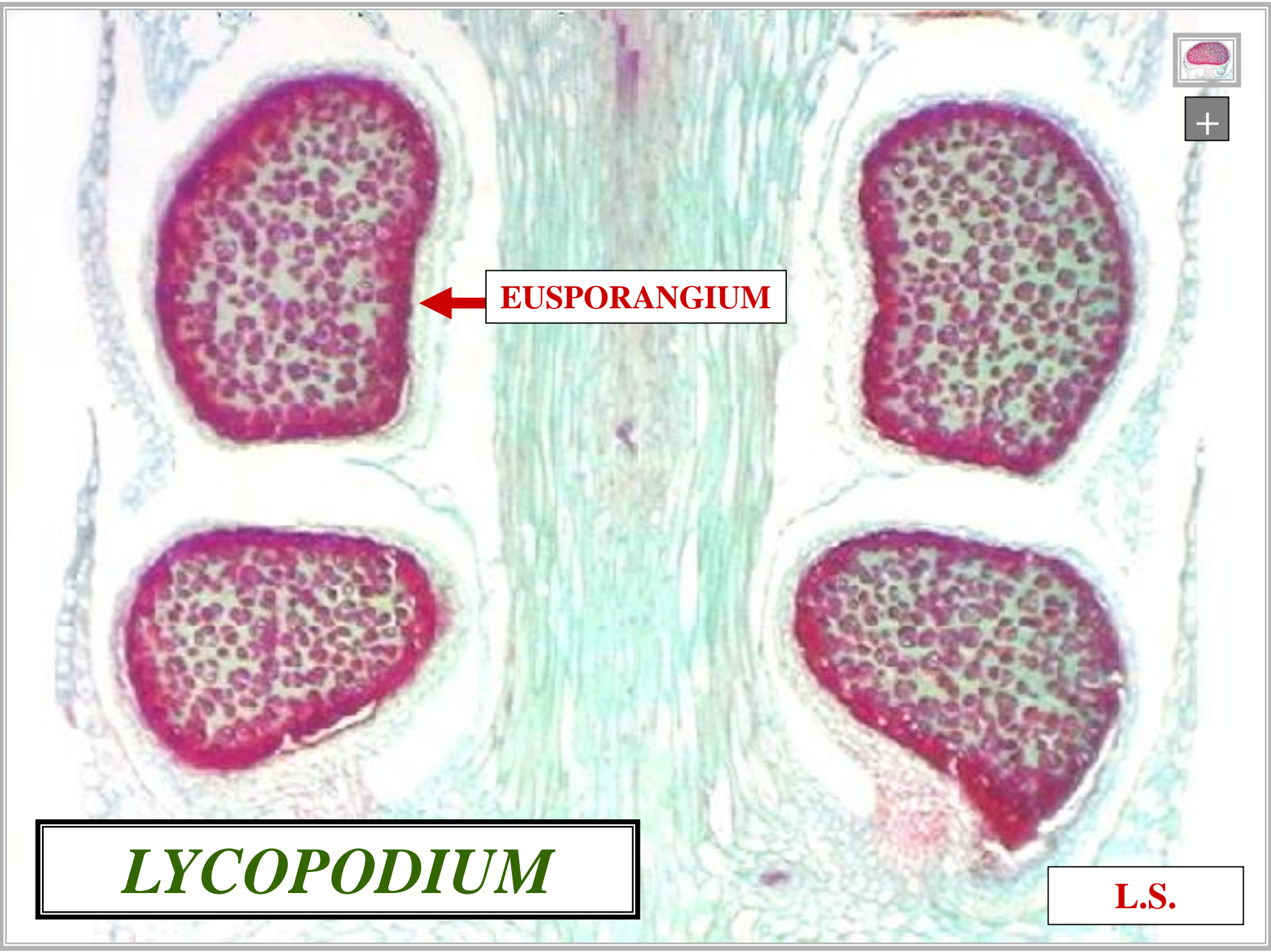


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