

VASCULAR TISSUE

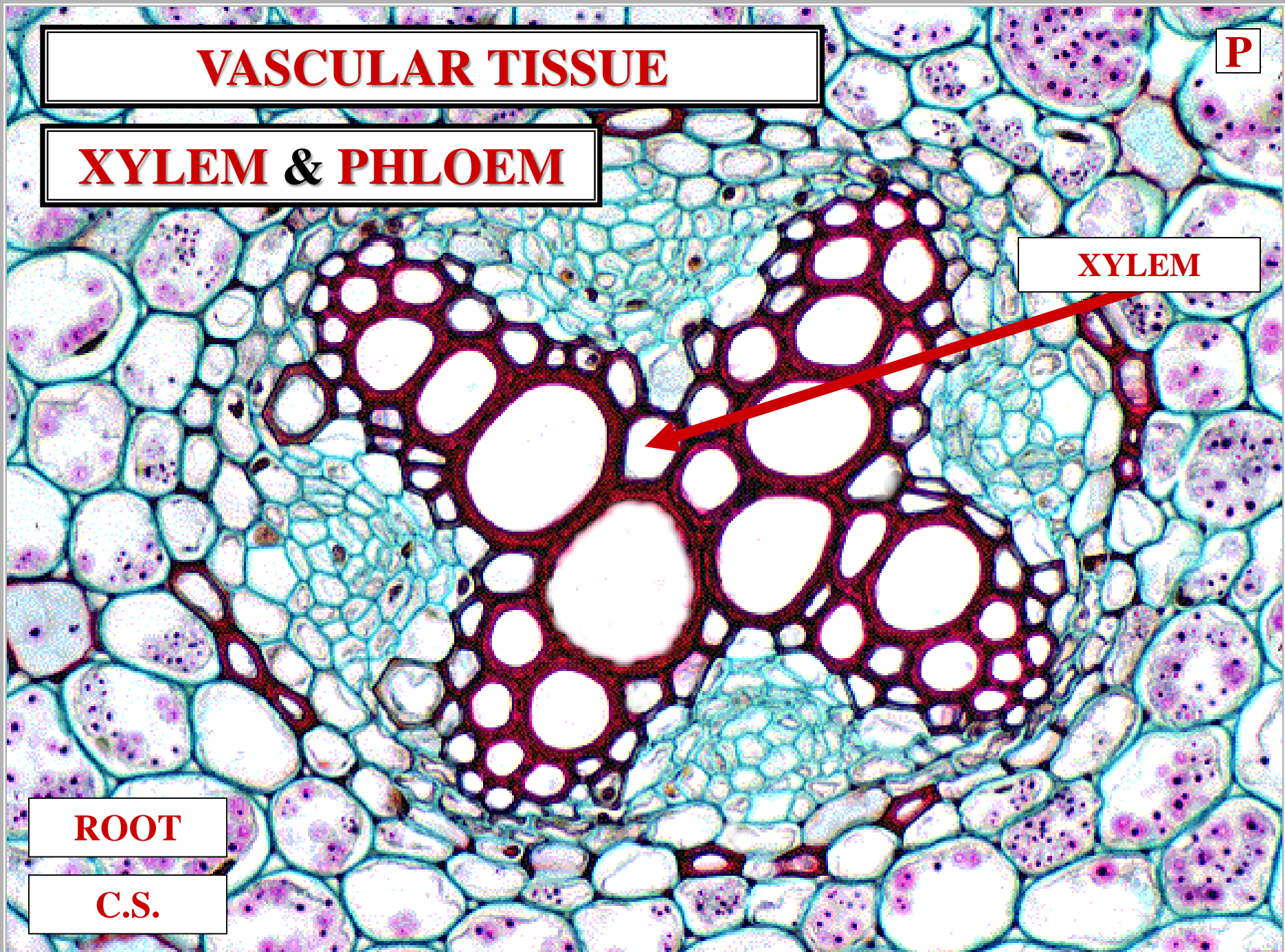
XYLEM & PHLOEM

P

XYLEM

ROOT

C.S.



VASCULAR TISSUE

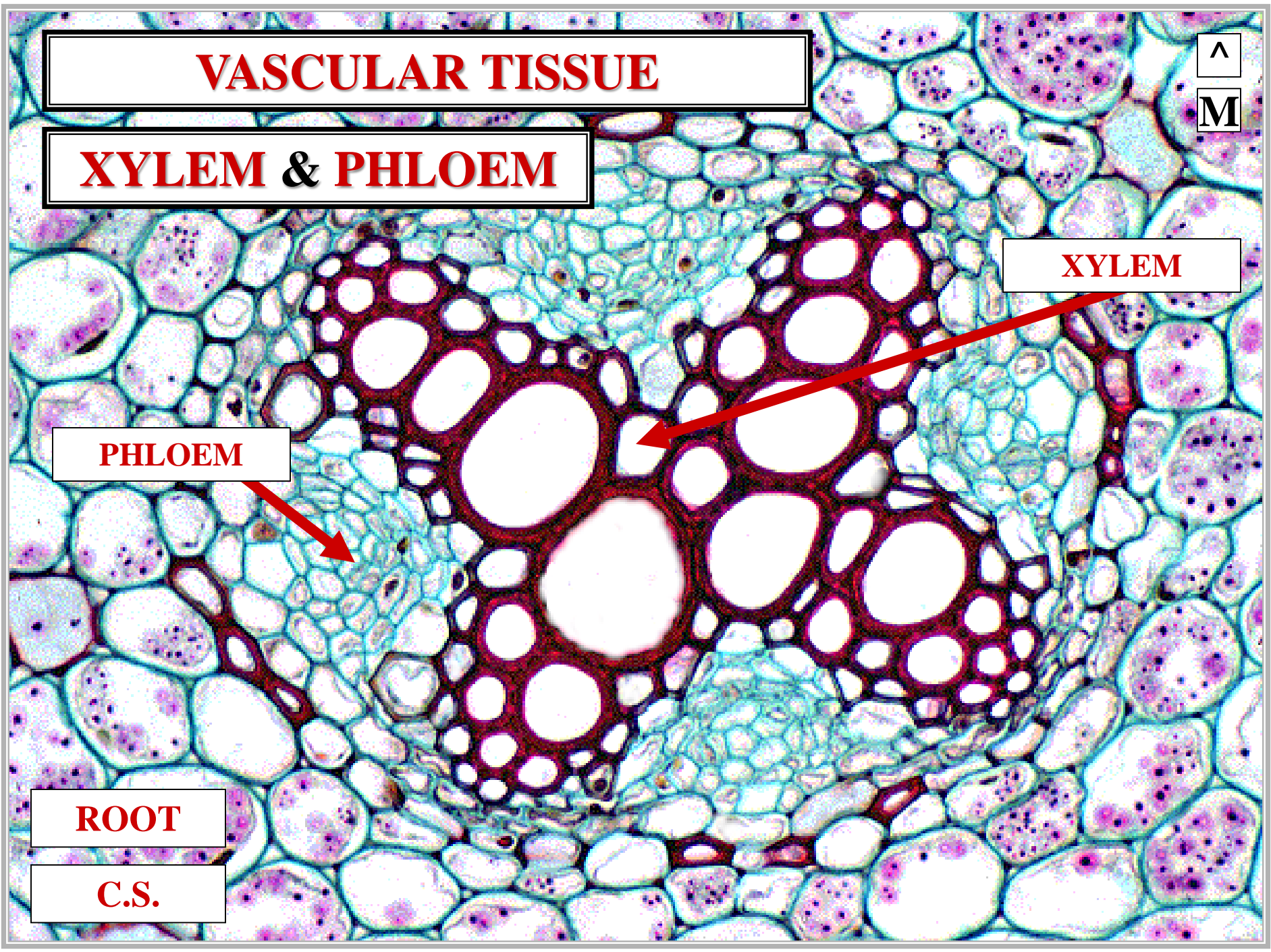
XYLEM & PHLOEM

XYLEM

PHLOEM

ROOT

C.S.



MORPHOLOGY

MORPHIOLOGY



STUDY PLANT

EXTERNAL STRUCTURE

MORPHOLOGY



MORPHOLOGY

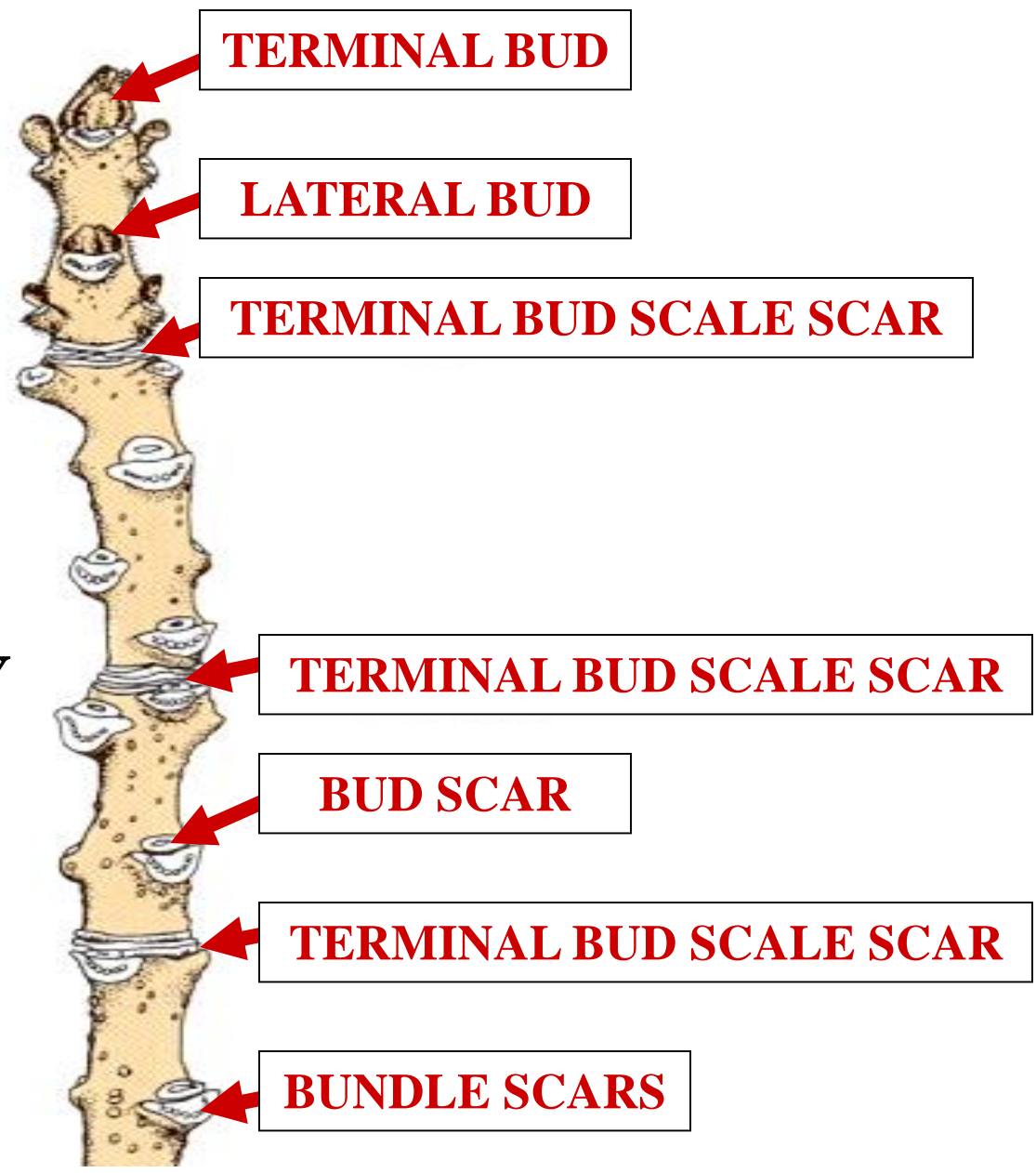
STUDY

EXTERNAL

PLANT STRUCTURE



ANGIOSPERM TWIG MORPHOLOGY



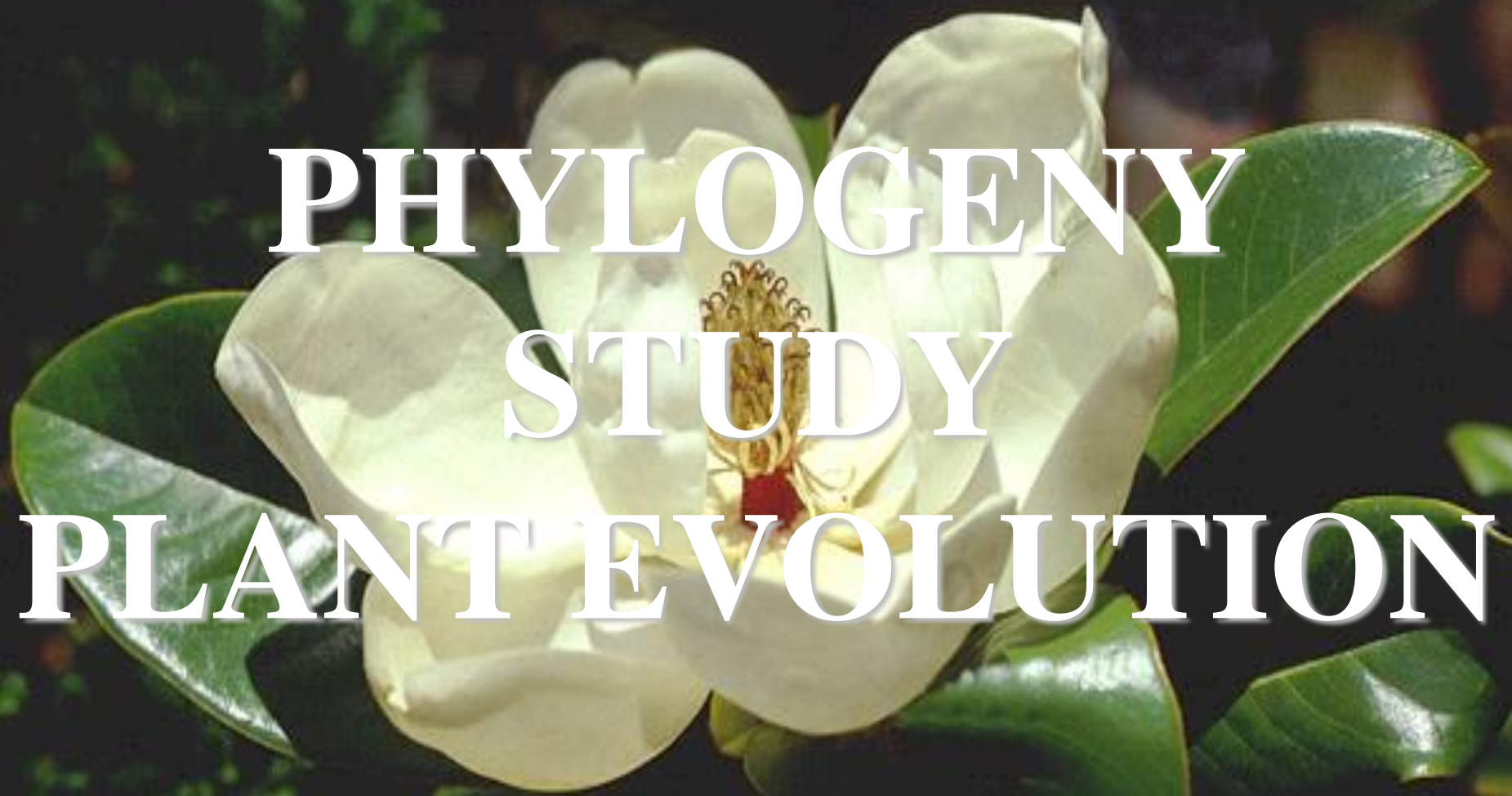
PHYLOGENY

PHYLOGENY



STUDY PLANT EVOLUTION

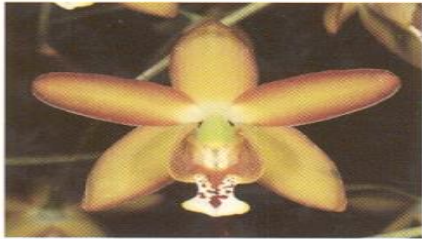
PHYLOGENY

A large, close-up photograph of a white magnolia flower in full bloom. The flower has multiple layers of petals and a prominent, golden-brown stamen. The background is dark and out of focus, showing green leaves. The text is overlaid on the flower.

**PHYLOGENY
STUDY
PLANT EVOLUTION**

PLANT PHYLOGENY

^ T



TRACHEOPHYTES

TAXONOMY

TAXONOMY



STUDY PLANT CLASSIFICATION

TAXONOMY



**TAXONOMY
STUDY
PLANT
CLASSIFICATION**



Common potato



Eggplant



Habanero pepper



Tomato



Morning glory



Sweet potato



Maple



Sunflower



Pea



Corn



Grass



PLANTAE



MAGNOLIOPHYTA



MAGNOLIOPSIDA



MAGNOLIALES



MAGNOLIACEAE



LIRIODENDRON

TULIP POPLAR



TULIPIFERA

TAXONOMIC CLASSIFICATION





PLANT DEFINITION



PLANT DEFINITION

NO

COMMON DEFINITION

AMONGST BOTANISTS

A close-up photograph of a large, white magnolia flower in full bloom, surrounded by dark green, glossy leaves. The background is dark and out of focus. The text is overlaid on the center of the flower.

PLANT DEFINITION
SUBJECTIVE

PLANT CLASS DEFINITION

PLANT



PLANT

**ORGANISM THAT
POSSESSES PLASTIDS**

PLANT

PLANT CELL

P

PLASTID

C.S.



PLASTID

PLASTID

PLANT ORGANELLE
ASSOCIATED WITH:

PLASTID

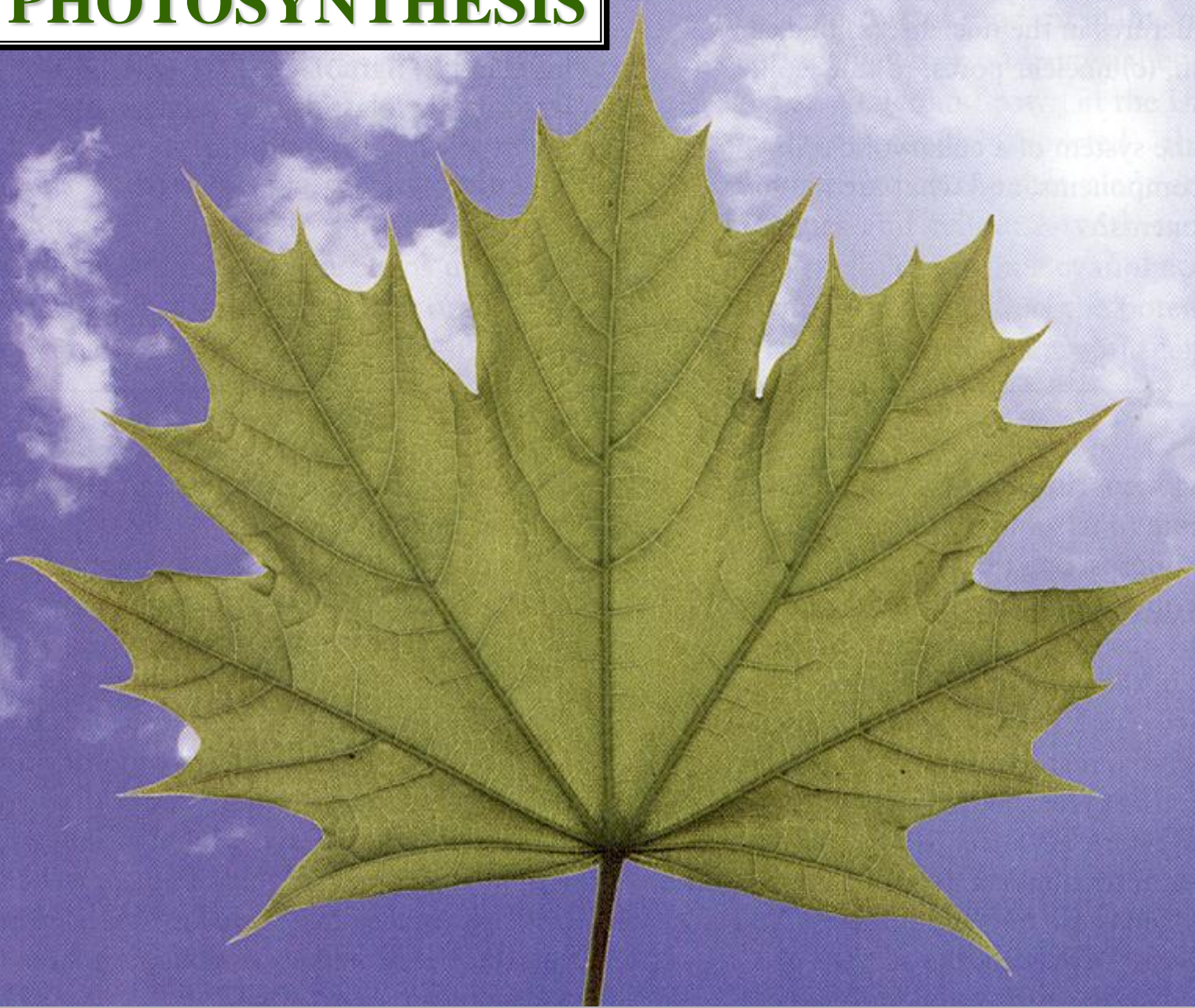


PLASTID

**PLANT ORGANELLE
ASSOCIATED WITH:
PHOTOSYNTHESIS**

PLASTID

PHOTOSYNTHESIS

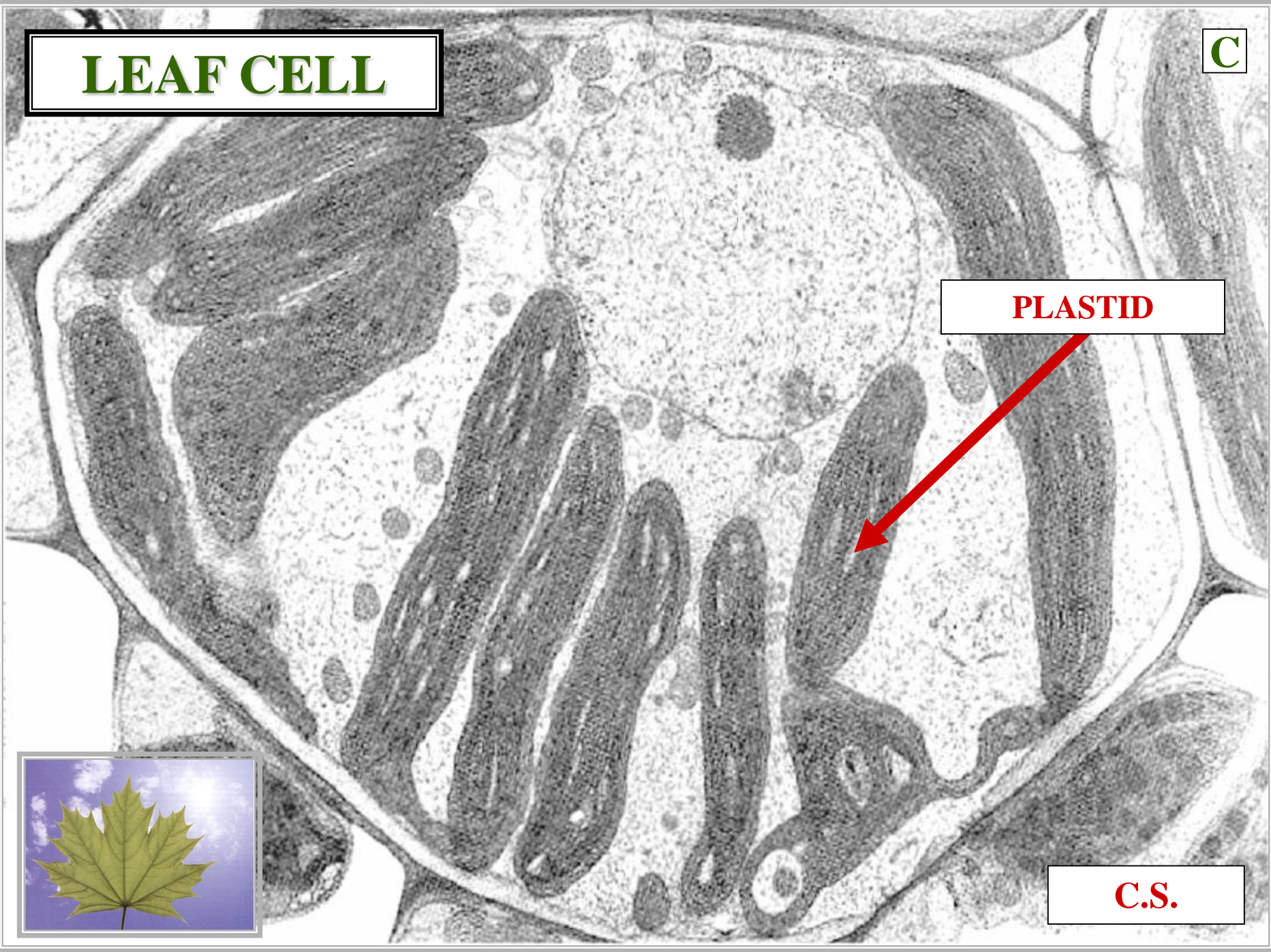


LEAF CELL

C

PLASTID

C.S.

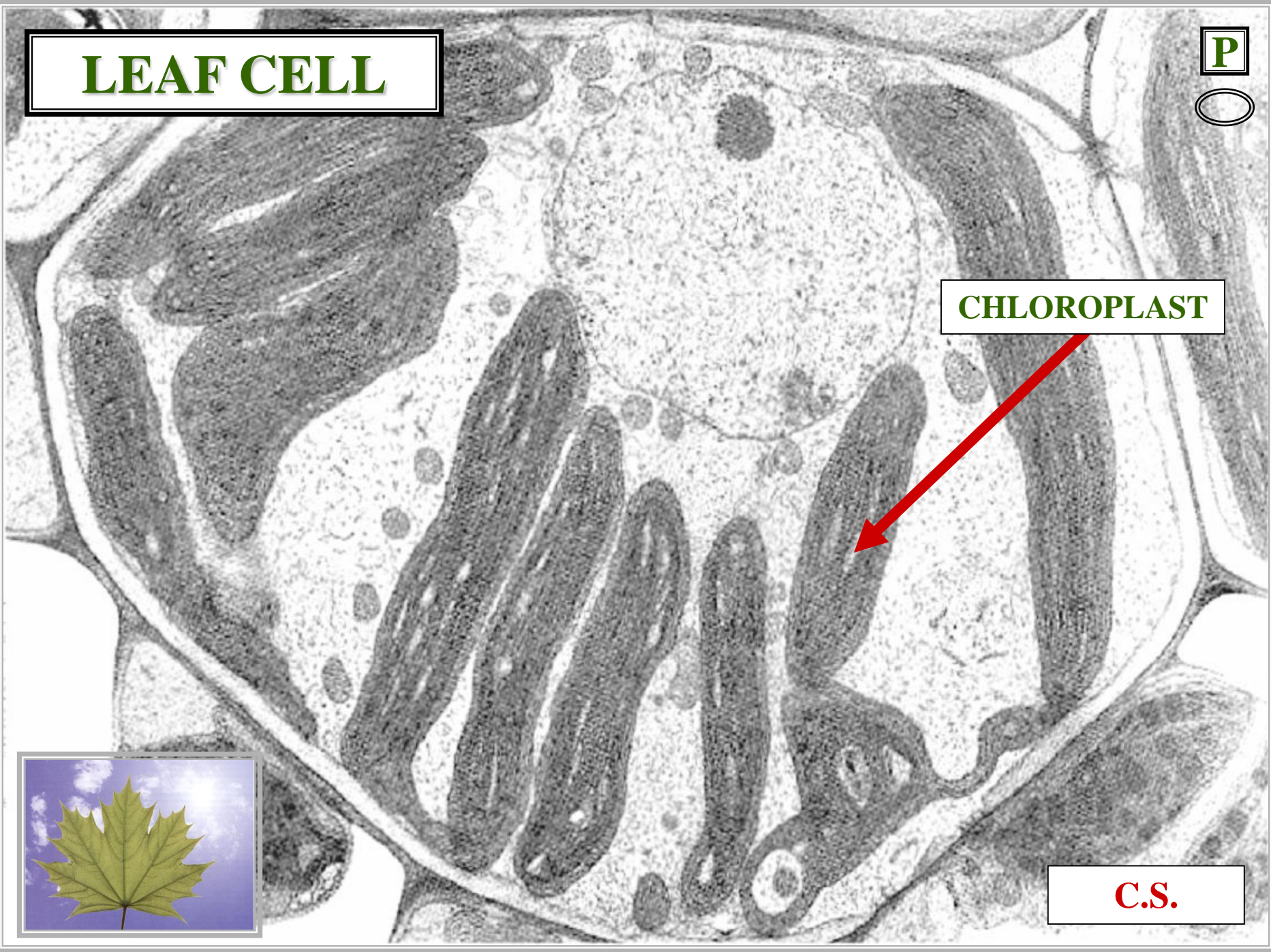


LEAF CELL

P

CHLOROPLAST

C.S.



PHOTOSYNTHESIS

2
P



WATER

CO₂

LIGHT ENERGY

PHOTO

ATMOSPHERE

E-

PHOTOLYSIS

LT RXT

THYLAKOID

CHEMICAL ENERGY

DK RXT

STROMA

SYNTHESIS

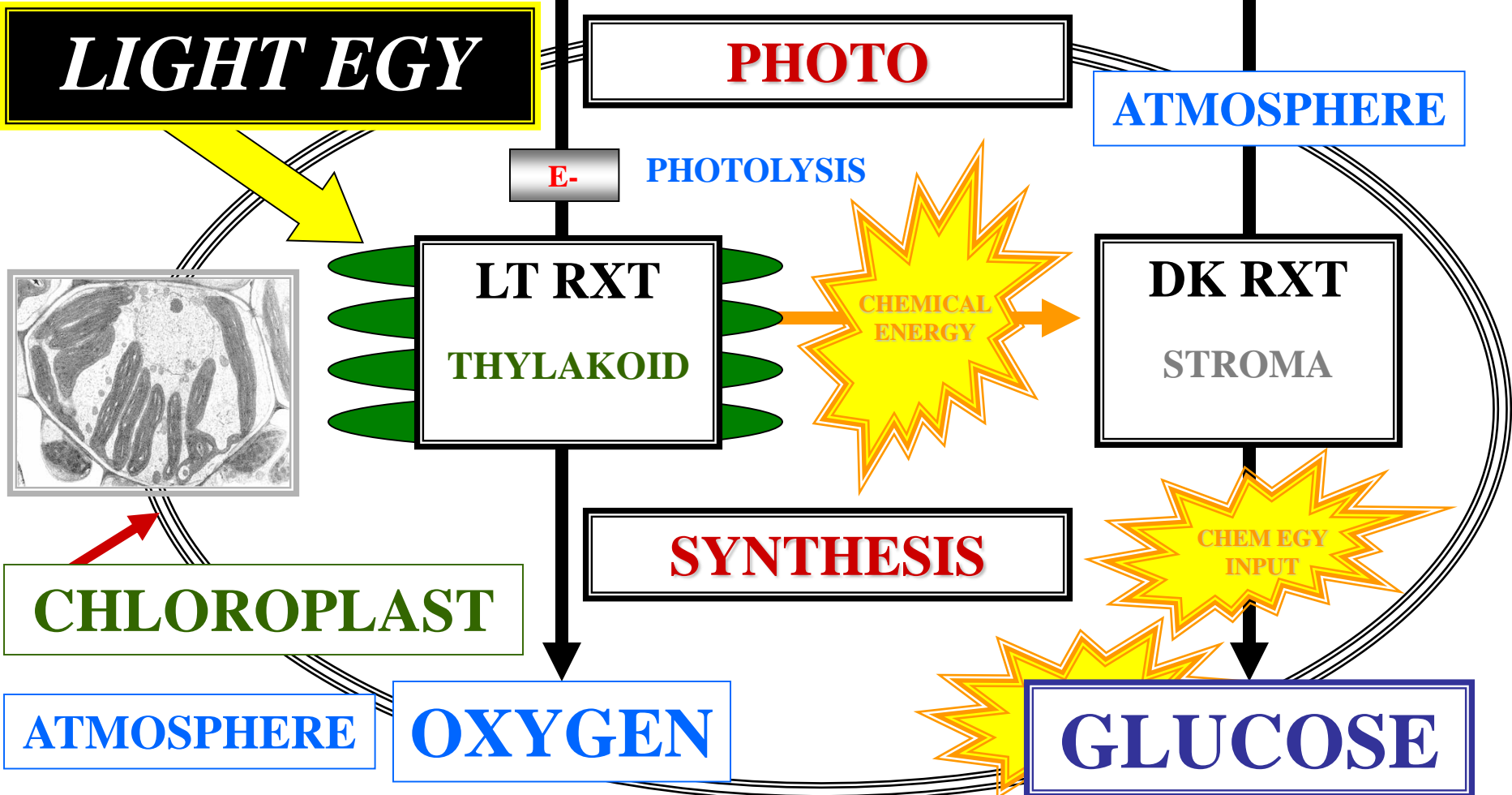
CHEMICAL ENERGY INPUT

CHLOROPLAST

ATMOSPHERE

OXYGEN

GLUCOSE



PLASTID

PLANT ORGANELLE
ASSOCIATED WITH:

PLASTID



PLASTID

PLANT ORGANELLE
ASSOCIATED WITH:
STARCH STORAGE

PLASTID

PHOTOSYNTHESIS

S



WATER

CO₂

LIGHT ENERGY

PHOTO

ATMOSPHERE

E-

PHOTOLYSIS

LT RXT

THYLAKOID

CHEMICAL ENERGY

DK RXT

STROMA

SYNTHESIS

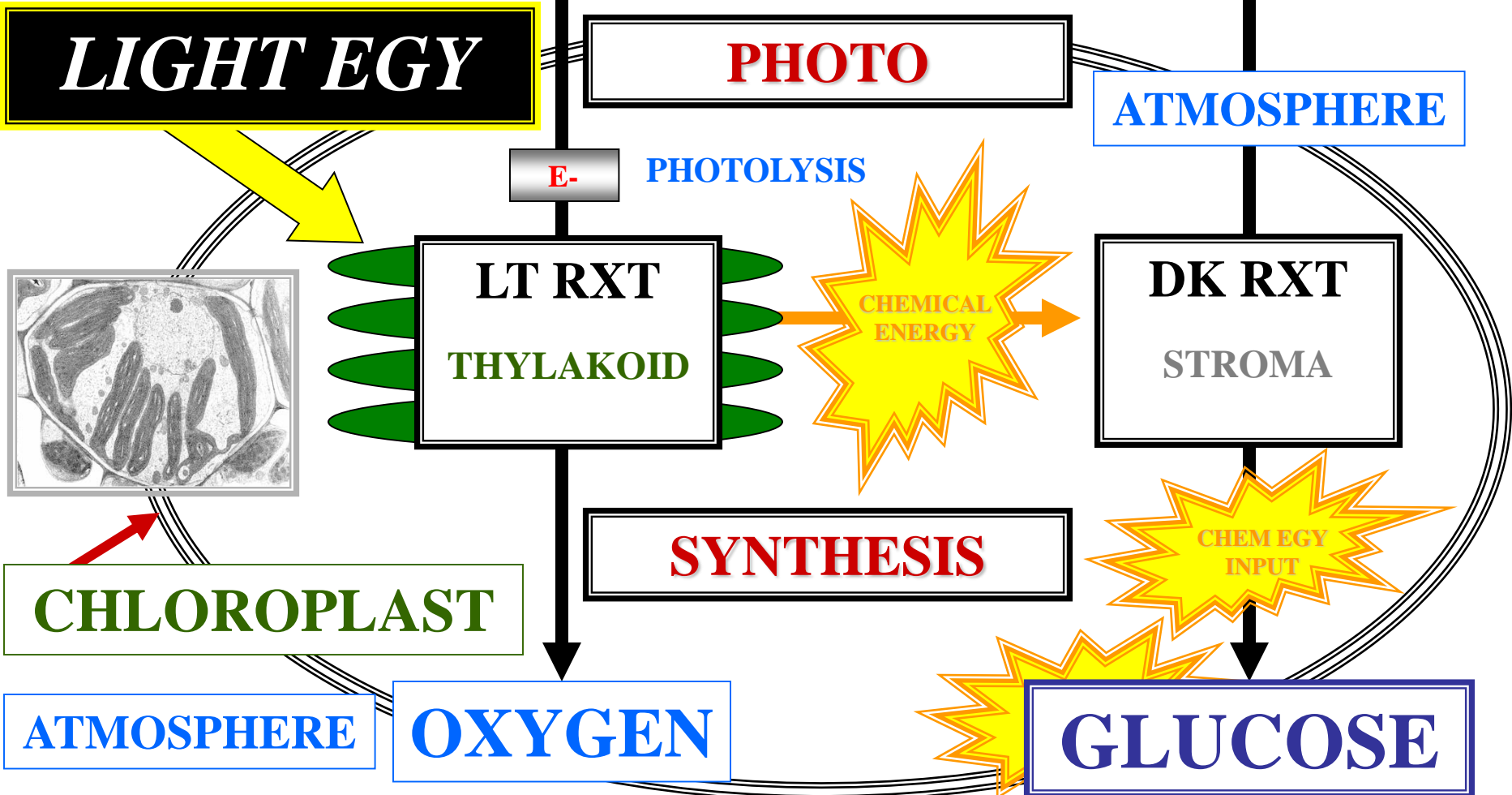
CHEMICAL ENERGY INPUT

CHLOROPLAST

ATMOSPHERE

OXYGEN

GLUCOSE



PHOTOSYNTHESIS



WATER

CO₂

LIGHT ENERGY

PHOTO

ATMOSPHERE

E-

PHOTOLYSIS

LT RXT

THYLAKOID

CHEMICAL ENERGY

DK RXT

STROMA

SYNTHESIS

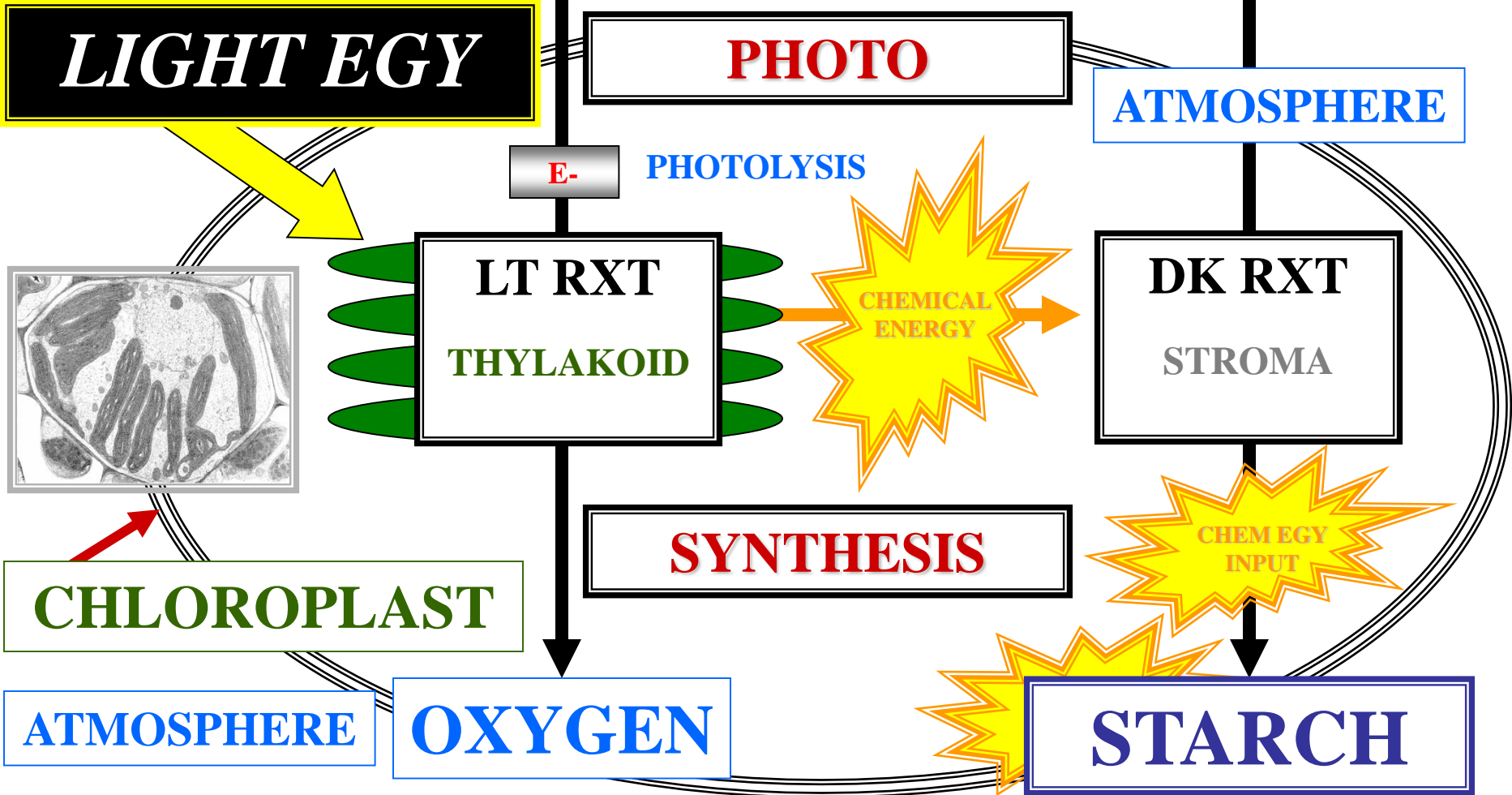
CHEMICAL ENERGY INPUT

CHLOROPLAST

ATMOSPHERE

OXYGEN

STARCH



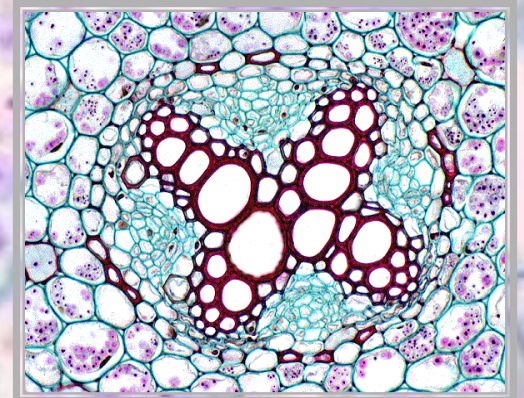
STARCH STORAGE

P

STARCH GRAINS

ROOT

C.S.



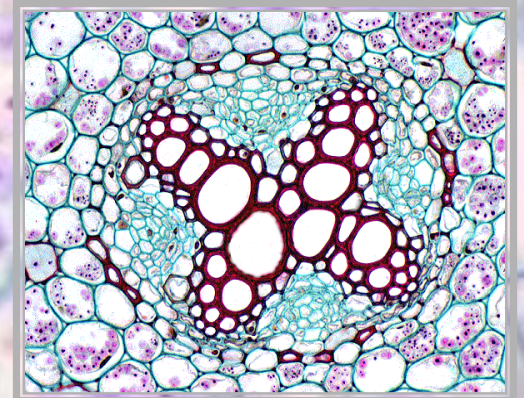
STARCH STORAGE

L

PLASTIDS

ROOT

C.S.



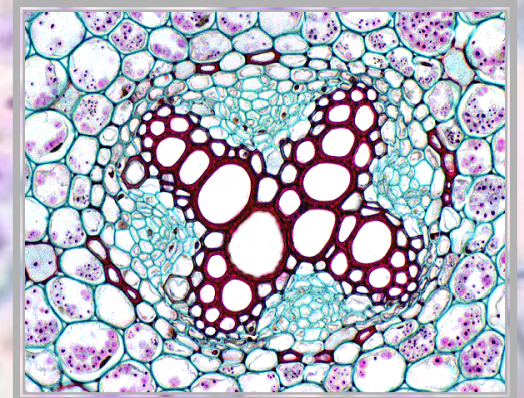
STARCH STORAGE

^
T

LEUCOPLASTS

ROOT

C.S.



TRUE PLANT



TRUE PLANT

POSSESSES

CHLOROPLASTS WITH:

TRUE PLANT



TRUE PLANT

POSSESSES

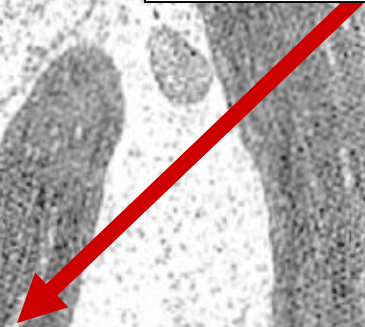
**CHLOROPLASTS WITH:
DOUBLE MEMBRANE**

TRUE PLANT

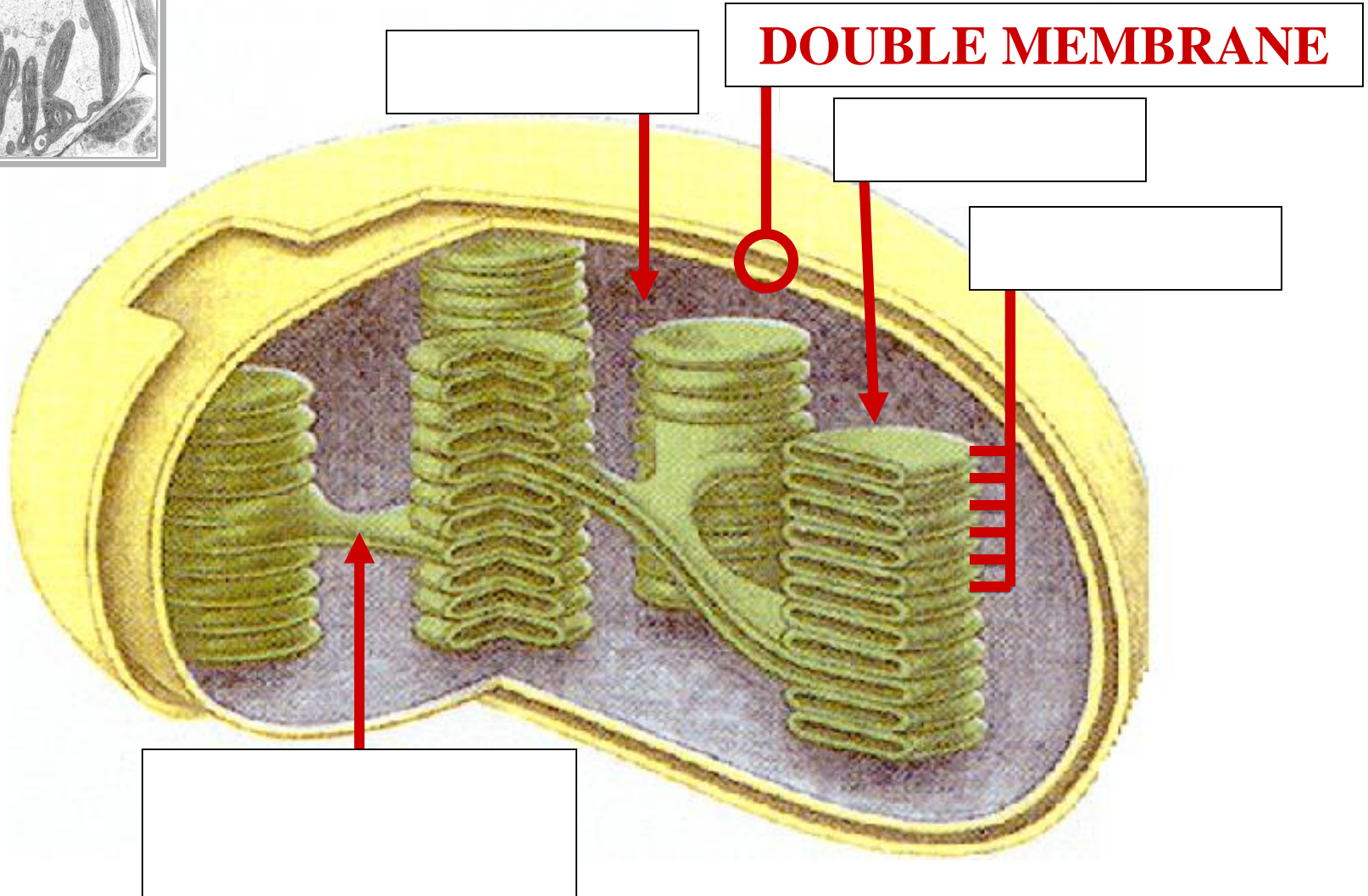
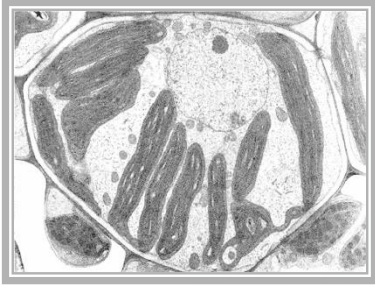
TRUE PLANT CELL



CHLOROPLAST



TRUE PLANT CHLOROPLAST ULTRASTRUCTURE



DOUBLE MEMBRANE



TRUE PLANT

POSSESSES

CHLOROPLASTS WITH:

TRUE PLANT



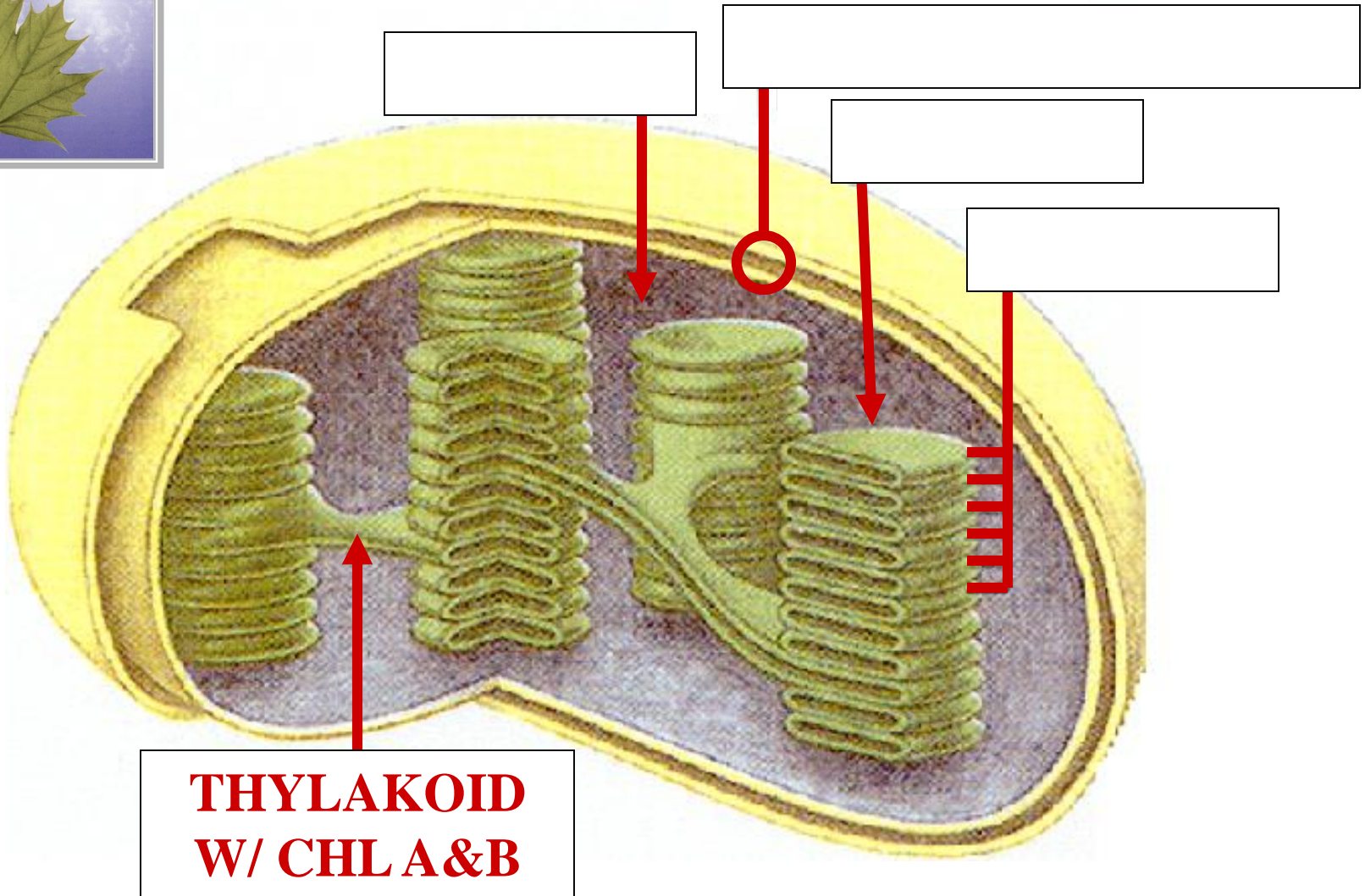
TRUE PLANT

POSSESSES

**CHLOROPLASTS WITH:
CHLOROPHYLL A&B**

TRUE PLANT

TRUE PLANT CHLOROPLAST ULTRASTRUCTURE





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MAGNOLIA



TRUE PLANTS



ANGIOSPERMS



GENERAL TAXONOMIC TERMS

THALLOPHYTES
VS
EMBRYOPHYTES

THALLOPHYTES

THALLOPHYTES



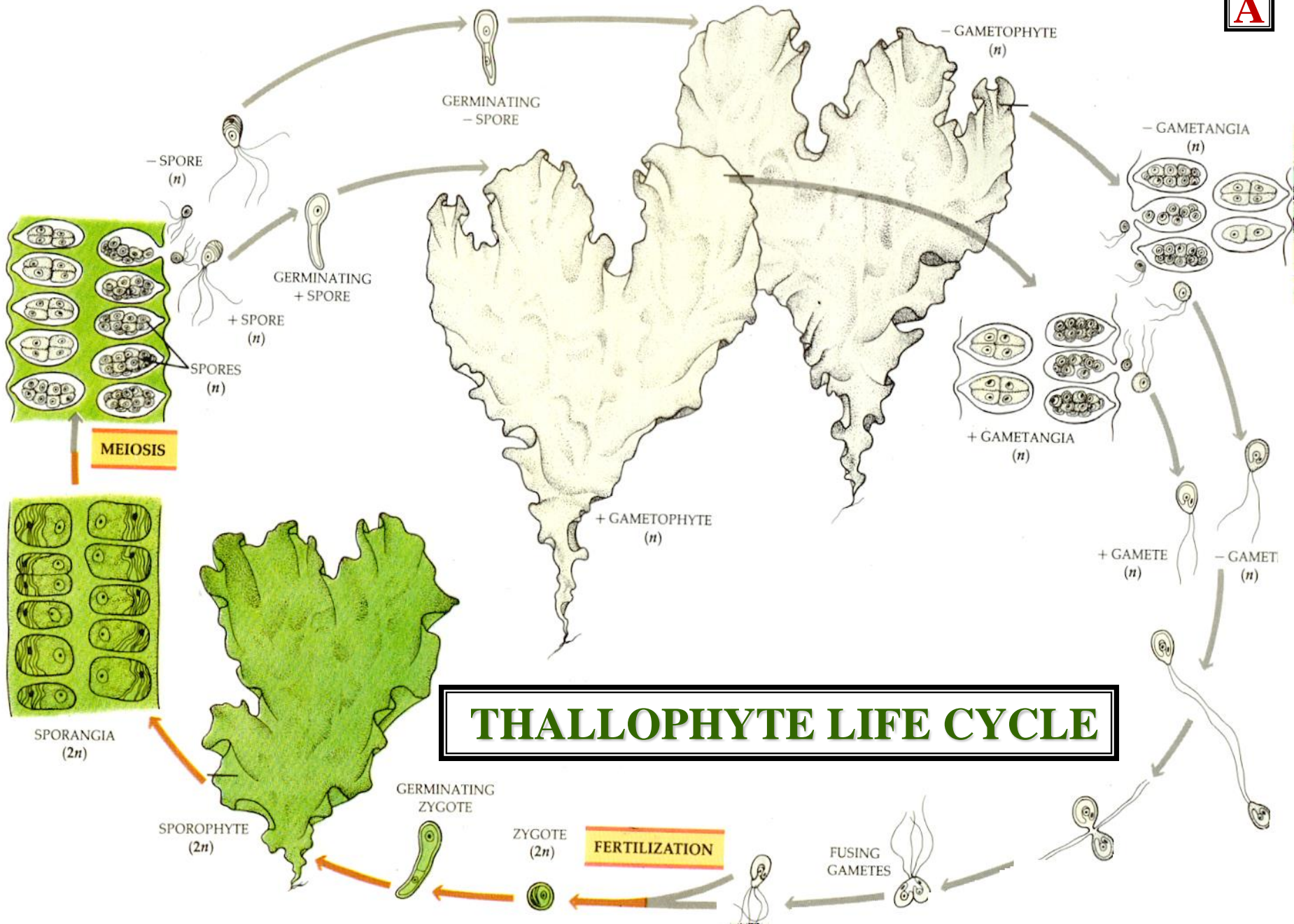
NON-EMBRYO BEARING PLANTS

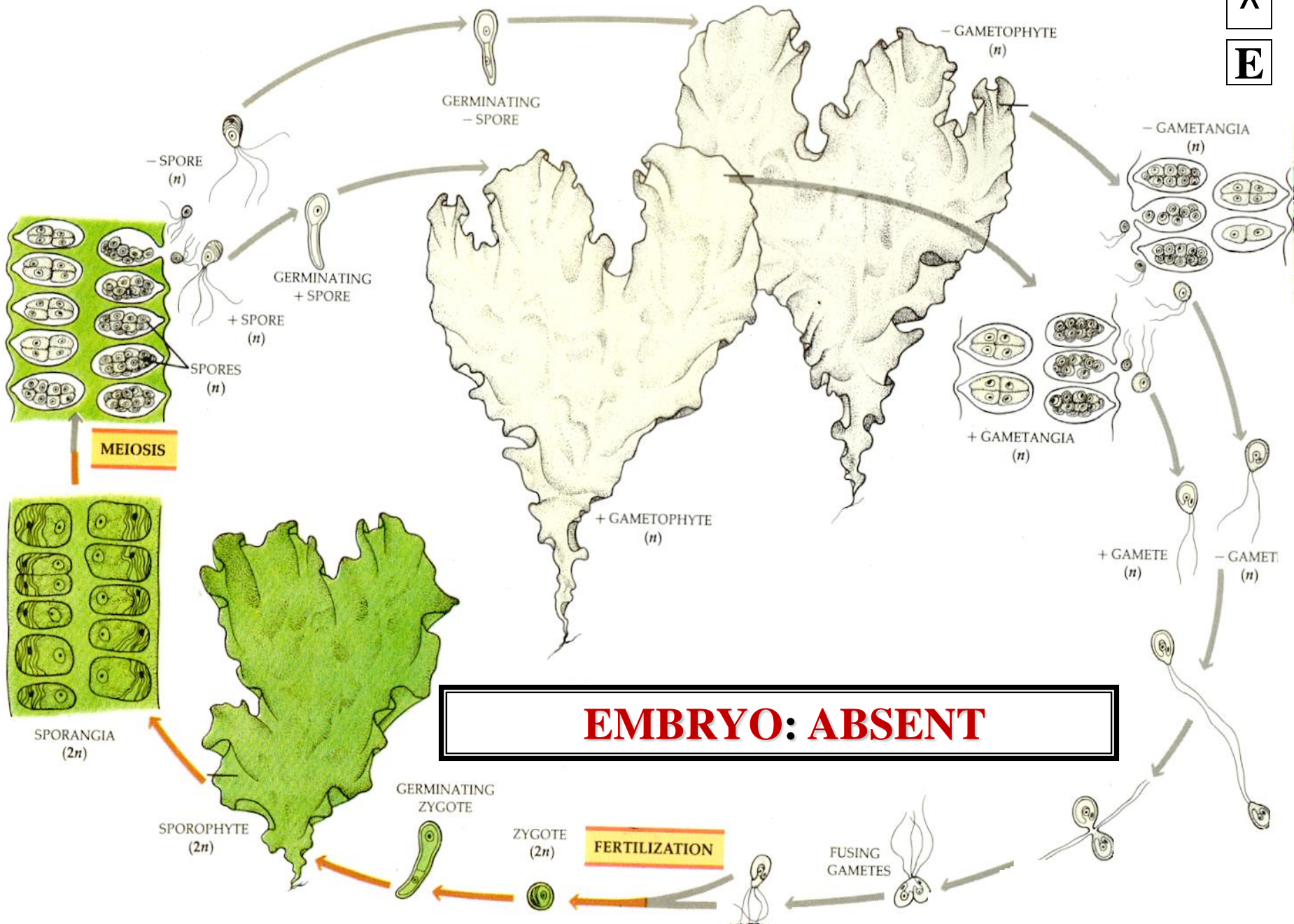
THALLOPHYTES



NON-EMBRYO BEARING PLANTS

THALLOPHYTES





EMBRYOPHYTES

EMBRYOPHYTES



EMBRYO BEARING PLANTS

EMBRYOPHYTES

EMBRYOPHYTES



EMBRYO BEARING PLANTS

EMBRYOPHYTE LIFE CYCLE

P

YOUNG SPOROPOPHYTE FROND

GAMETOPHYTE

FOOT

SHOOT APEX

RHIZOIDS

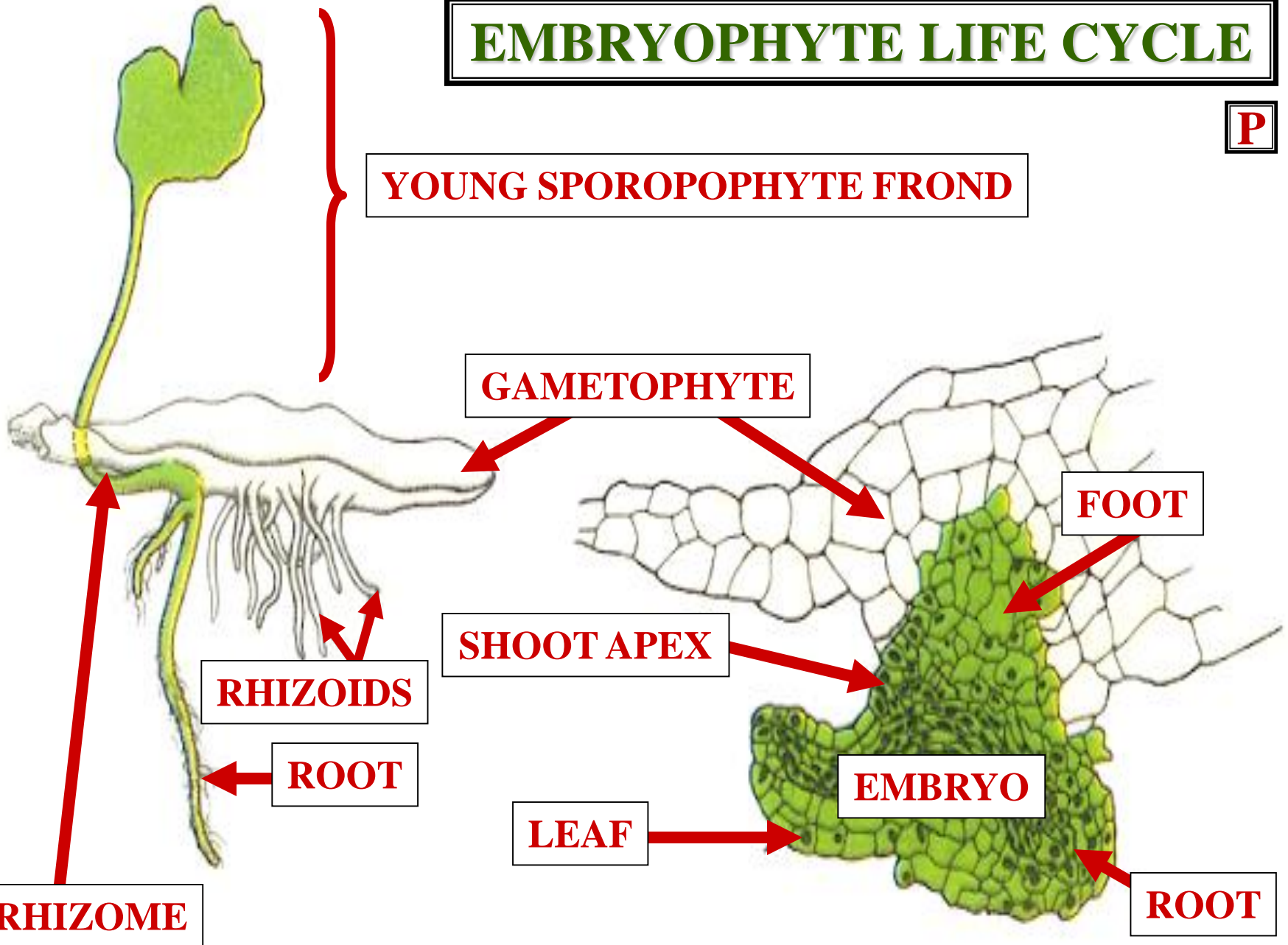
EMBRYO

ROOT

LEAF

ROOT

RHIZOME



EMBRYO: PRESENT

YOUNG SPOROPOHYTE FROND

GAMETOPHYTE

FOOT

SHOOT APEX

RHIZOIDS

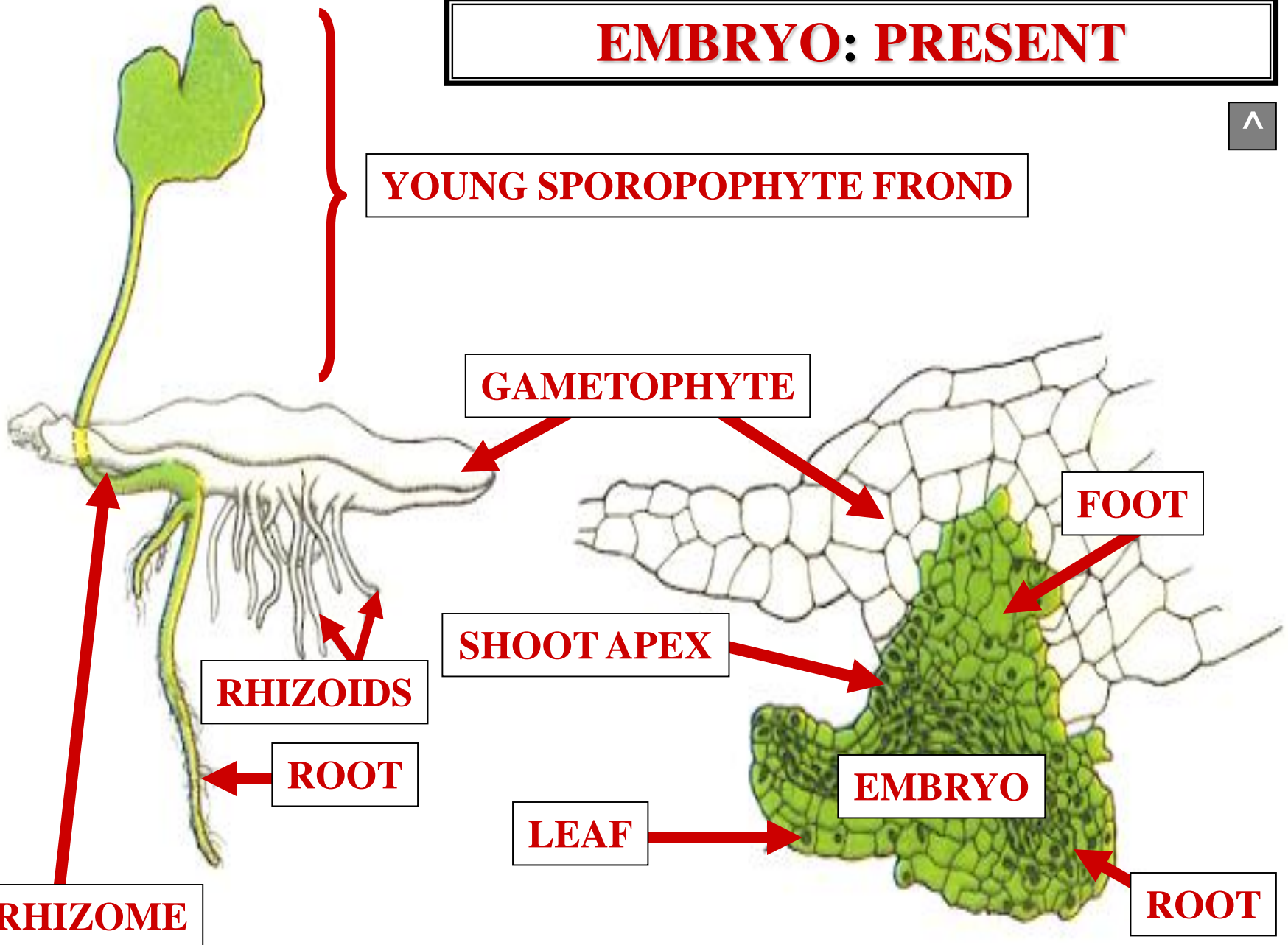
ROOT

EMBRYO

LEAF

ROOT

RHIZOME



BRYOPHYTES
VS
TRACHEOPHYTES

BRYOPHYTES

BRYOPHYTES



**NON-VASCULAR
EMBRYOPHYTES**

BRYOPHYTES



NON-VASCULAR EMBRYOPHYTES

BRYOPHYTES



VASCULAR TISSUE

A



C.S.

VASCULAR TISSUE: ABSENT

^
T



C.S.

TRACHEOPHYTES

TRACHEOPHYTES



**VASCULAR
EMBRYOPHYTES**

TRACHEOPHYTES

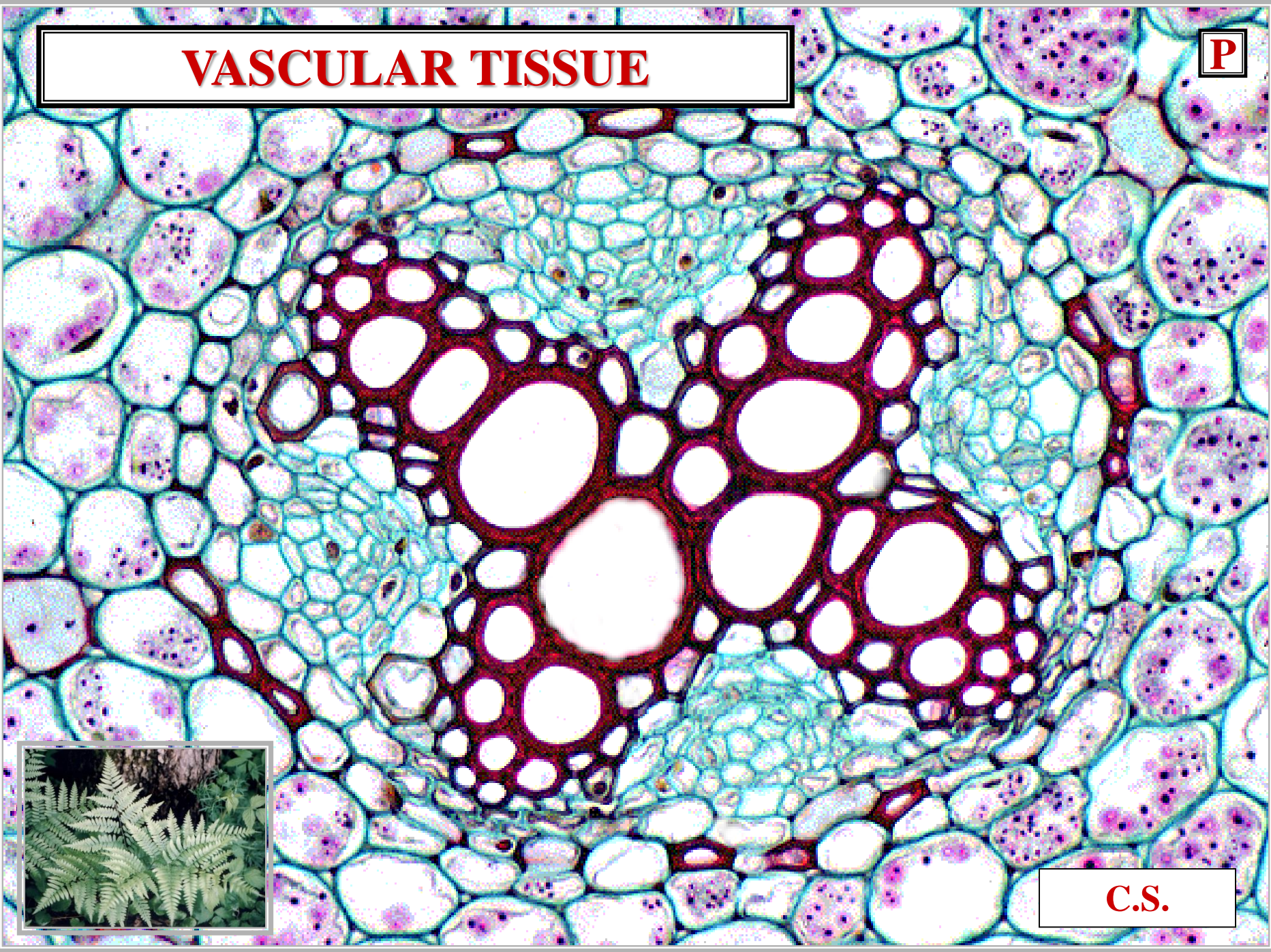
TRACHEOPHYTES



**VASCULAR
EMBRYOPHYTES**

VASCULAR TISSUE

P



C.S.

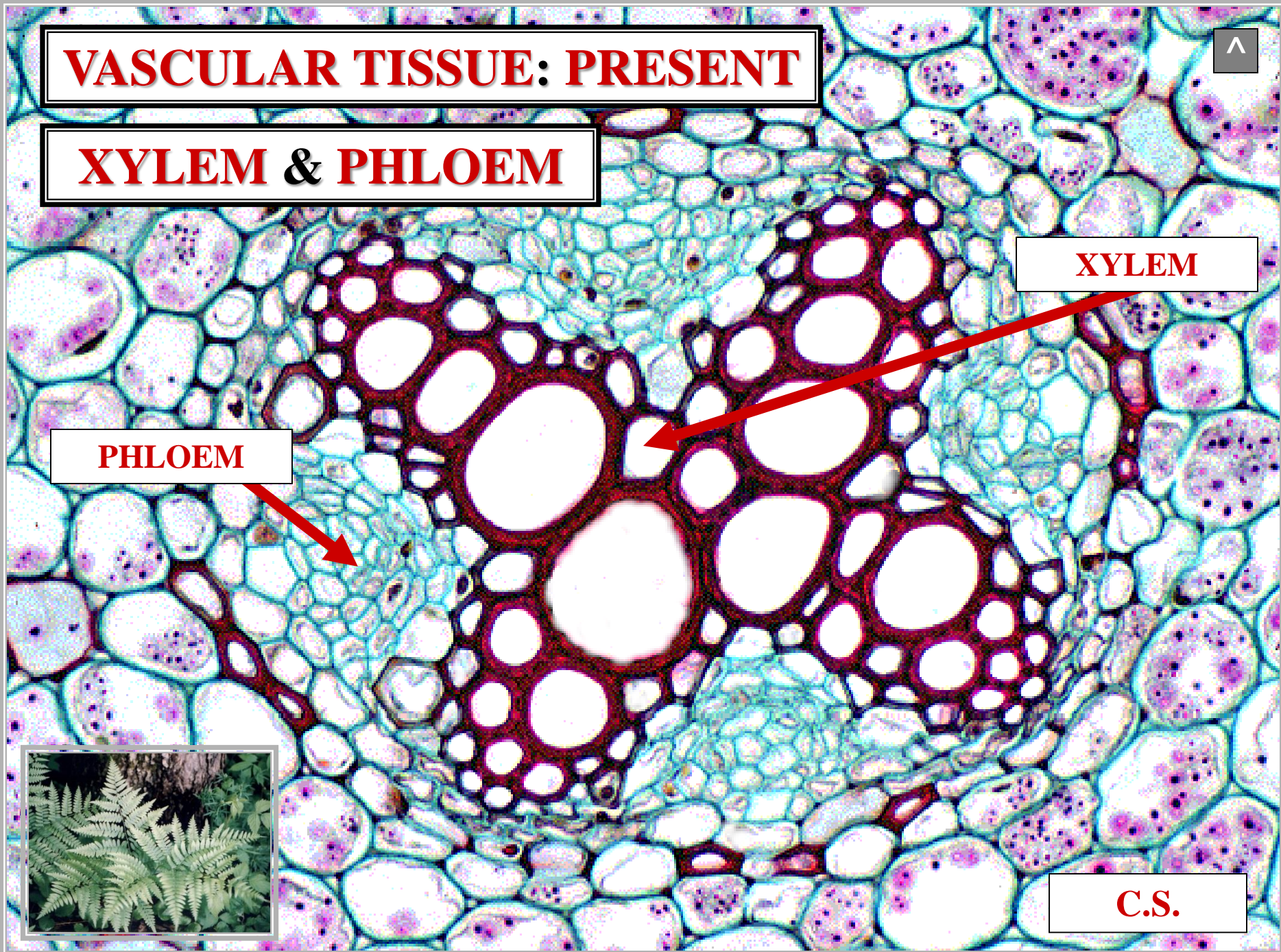
VASCULAR TISSUE: PRESENT

XYLEM & PHLOEM

XYLEM

PHLOEM

C.S.



PTERIDOPHYTES
VS
SPERMATOPHYTES

PTERIDOPHYTES

PTERIDOPHYTES



NON-SEED BEARING
TRACHEOPHYTES

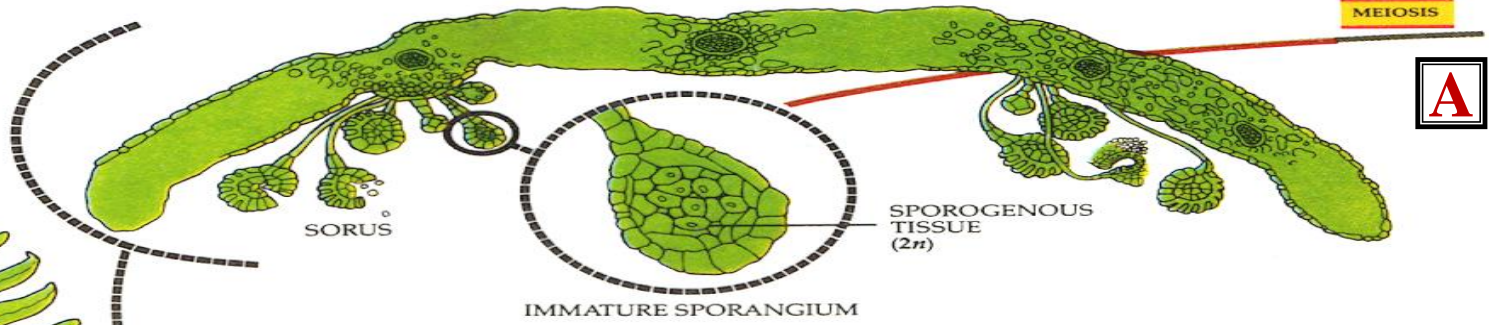
PTERIDOPHYTES



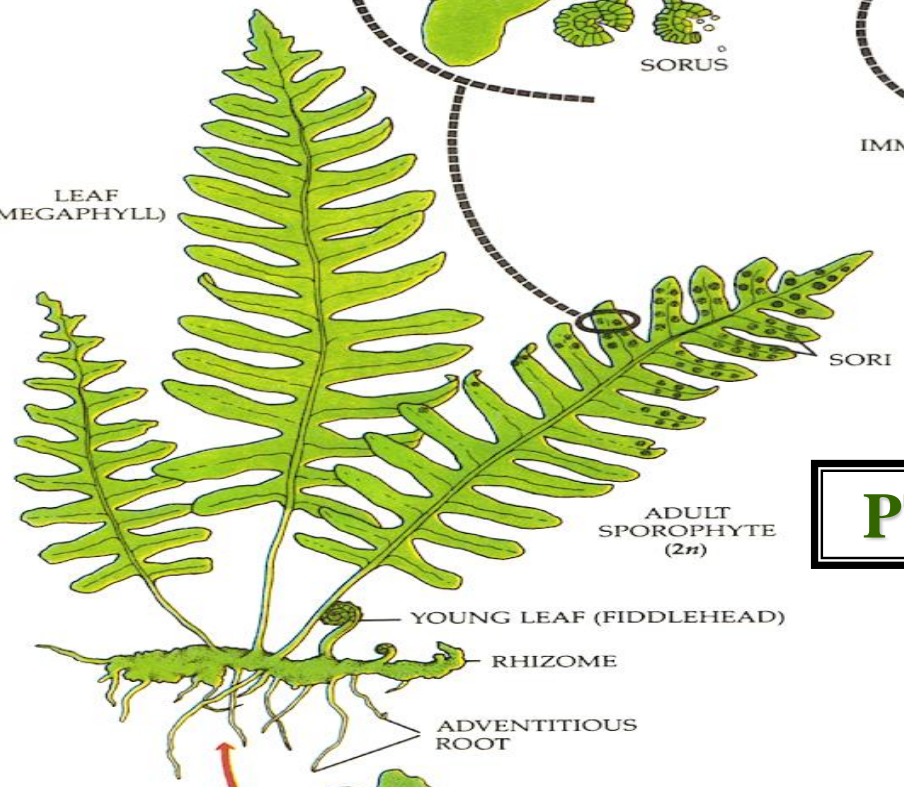
**NON-SEED BEARING
TRACHEOPHYTES**

PTERIDOPHYTES

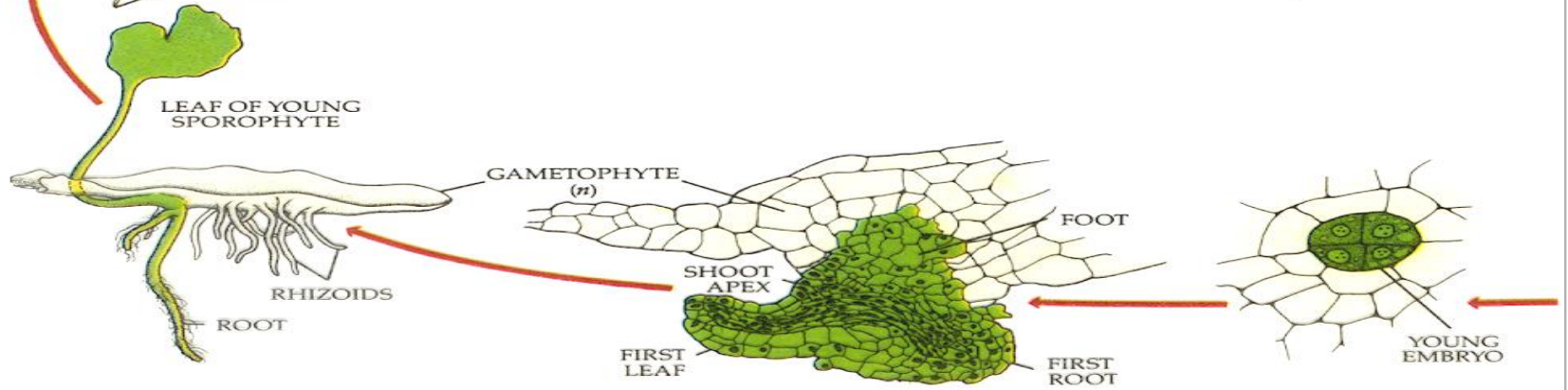
MEIOSIS



LEAF (MEGAPHYLL)

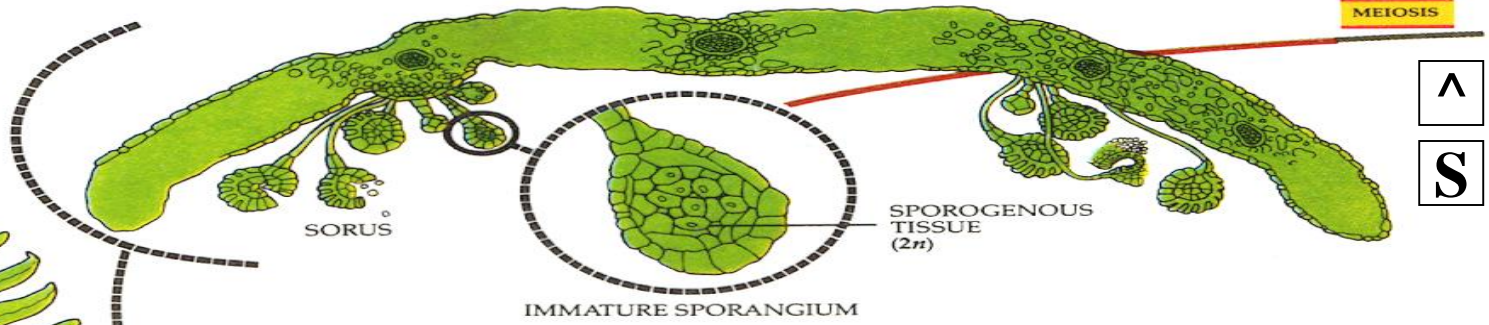


PTERIDOPHYTE LIFE CYCLE

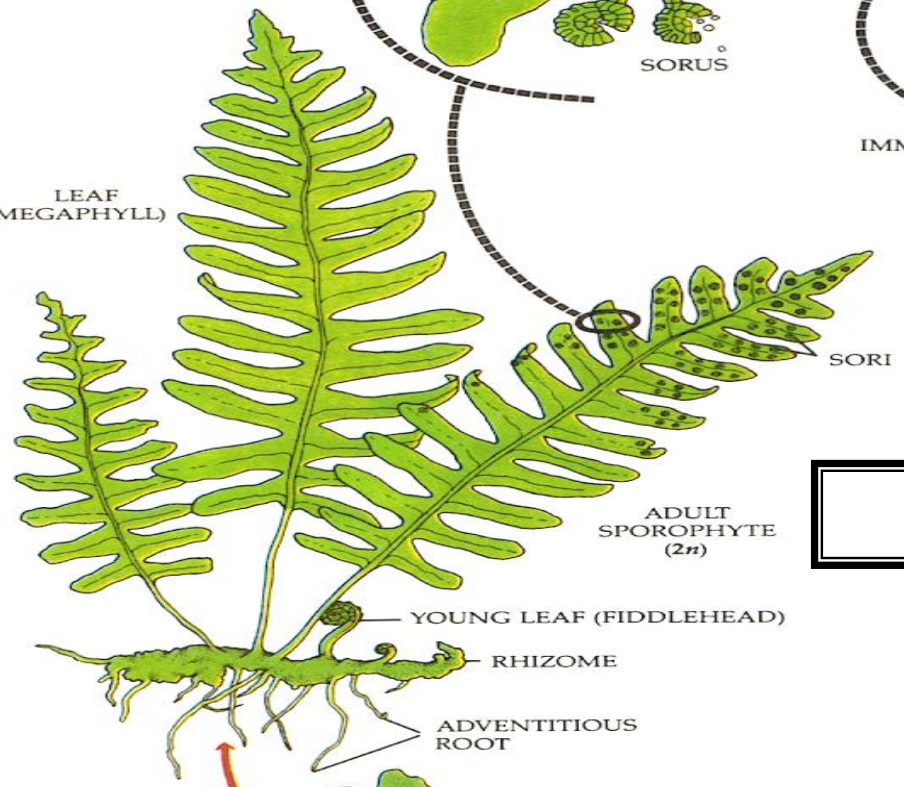


MEIOSIS

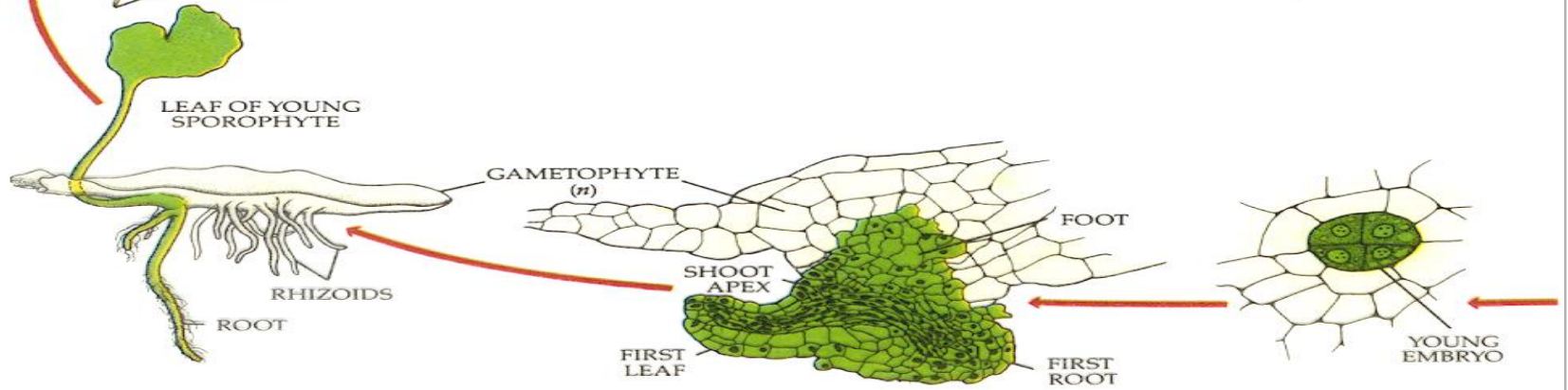
^
S



LEAF (MEGAPHYLL)



SEED: ABSENT



SPERMATOPHYTES

SPERMATOPHYTES



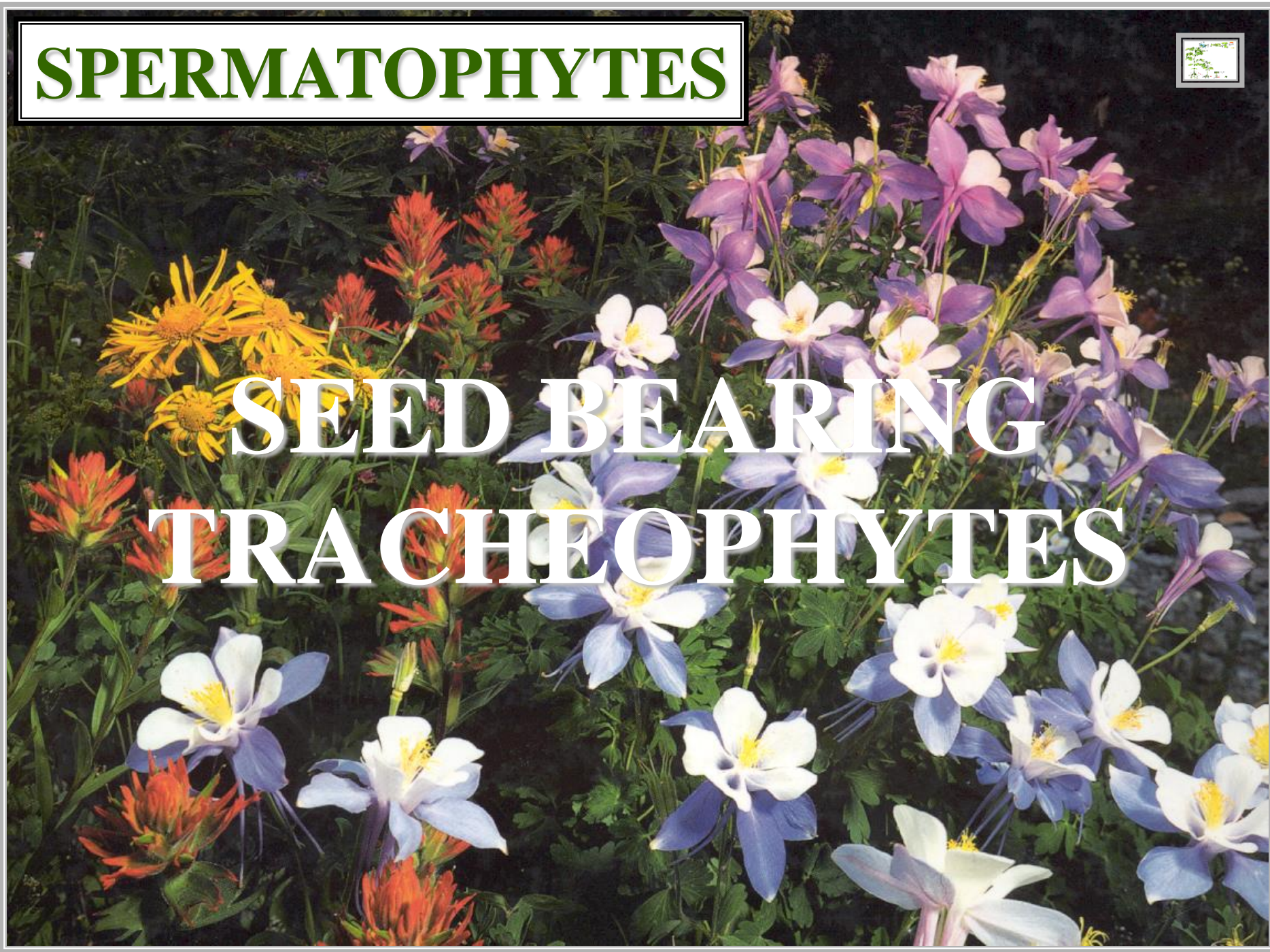
**SEED BEARING
TRACHEOPHYTES**

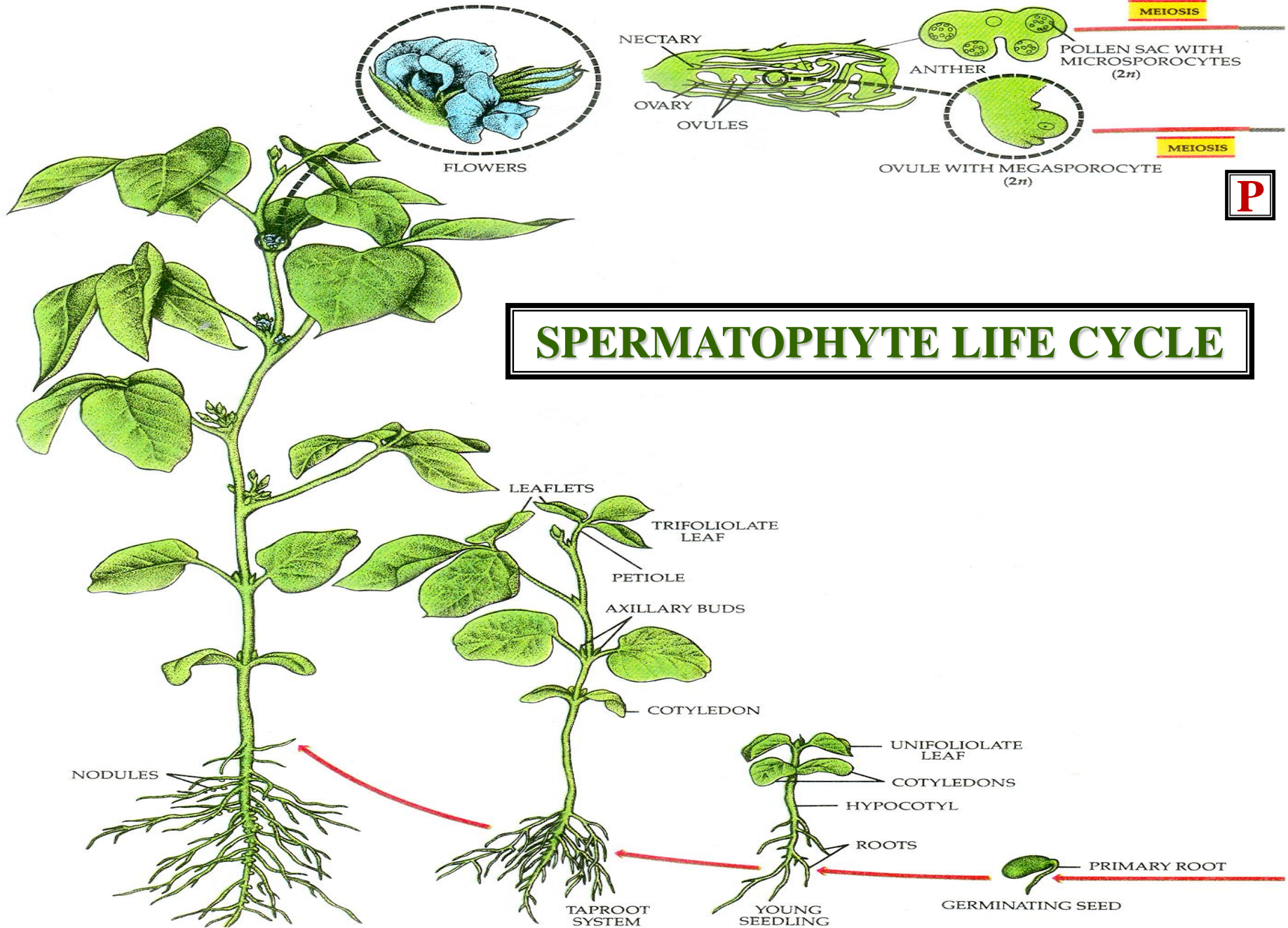
SPERMATOPHYTES

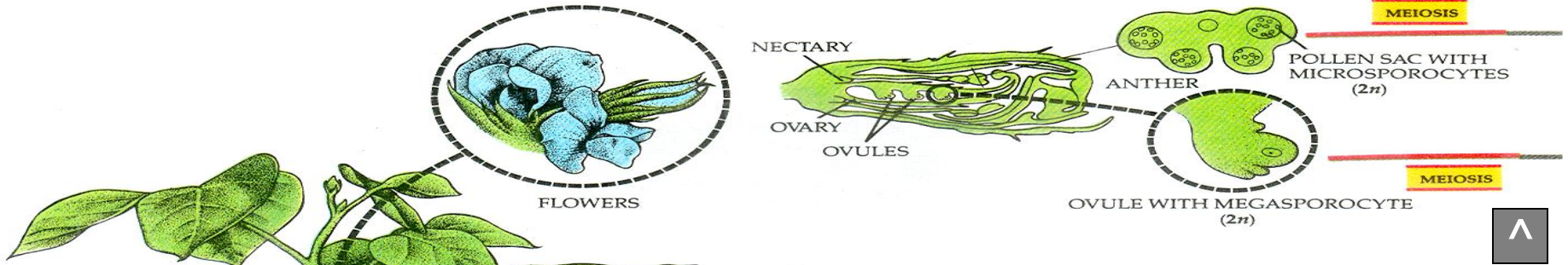
SPERMATOPHYTES



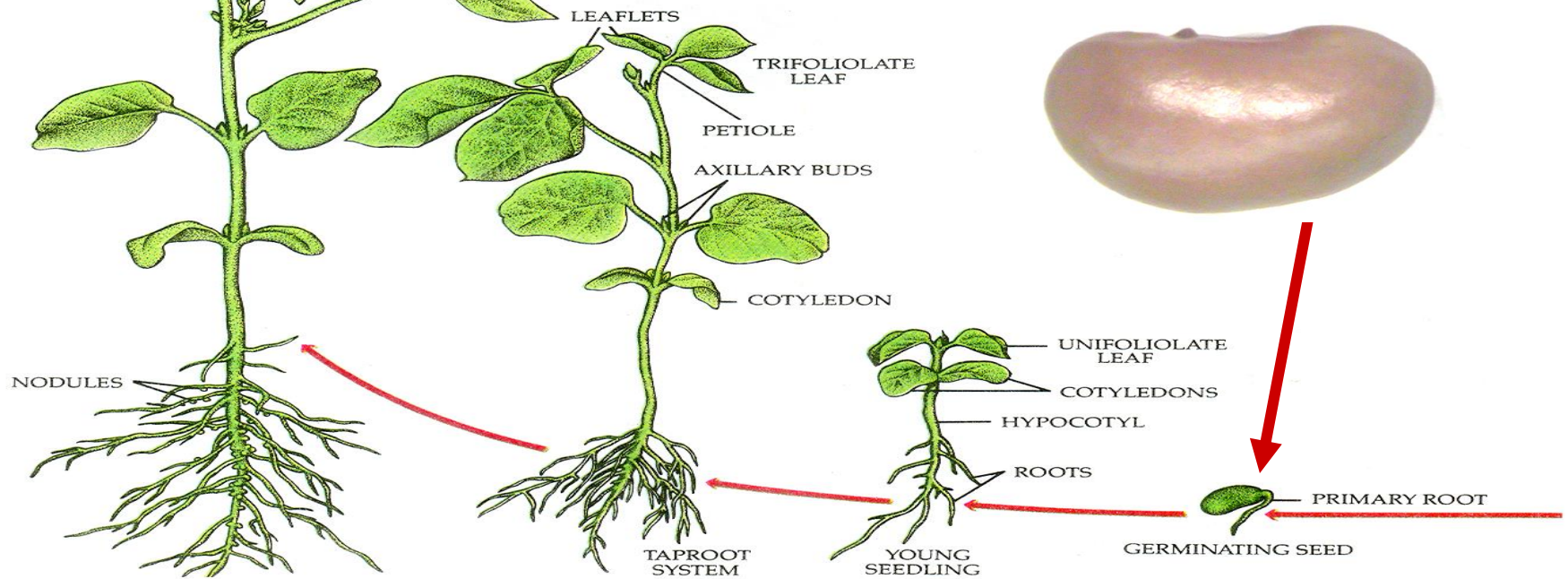
SEED BEARING
TRACHEOPHYTES







SEED: PRESENT



GYMNOSPERMS
VS
ANGIOSPERMS

GYMNOSPERMS

GYMNOSPERMS



NON-FLOWERING
SPERMATOPHYTES

GYMNOSPERMS



**NON-FLOWERING
SPERMATOPHYTES**

GYMNOSPERMS

FLOWER: ABSENT

^

A

NON-FLOWERING SPERMATOPHYTES

GYMNOSPERMS



ANGIOSPERMS

ANGIOSPERMS



**FLOWERING
SPERMATOPHYTES**

ANGIOSPERMS

A close-up photograph of two vibrant pink lotus flowers in full bloom, set against a backdrop of large, green lily pads. The flowers have numerous layers of petals and bright yellow stamens. The lily pads are covered in water droplets, and the background is a dark, calm pond.

FLOWERING SPERMATOPHYTES

ANGIOSPERMS



FLOWER: PRESENT

**FLOWERING
SPERMATOPHYTES**

ANGIOSPERMS



TAXONOMIC HIERARCHY

RANK VS TAXON

RANK



TAXONOMIC RANK

ANY LEVEL

TAXONOMIC HIERARCHY

TAXONOMIC RANK



Common potato



Eggplant



Habanero pepper



Tomato



Morning glory



Sweet potato



Maple



Sunflower



Pea



Corn



Grass



LEVEL

R



LEVEL



LEVEL



LEVEL

TULIP POPLAR



LEVEL

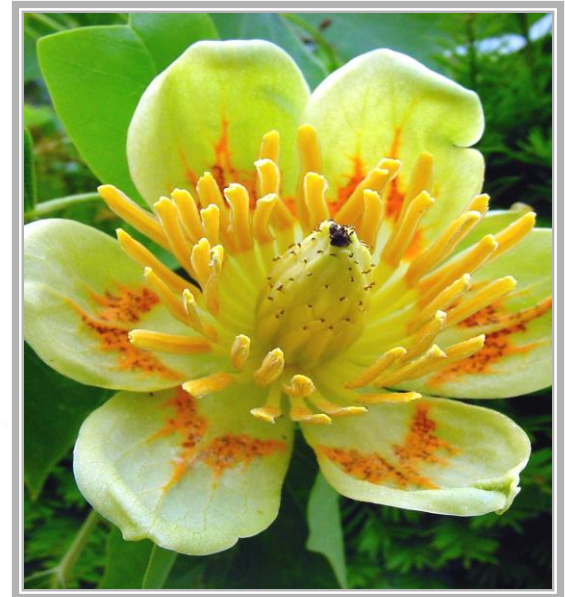


LEVEL



LEVE

RANK ANY LEVEL OF THE TAXONOMIC HIERARCHY





Common potato



Eggplant



Habanero pepper



Tomato



Morning glory



Sweet potato



Maple



Sunflower



Pea



Corn



Grass



RANK

^

T



RANK



RANK



RANK

TULIP POPLAR



RANK



RANK



RANK

RANK
ANY LEVEL OF THE
TAXONOMIC
HIERARCHY



TAXON

TAXONOMIC TAXON



**ANY TAXONOMIC
ENTITY WITHIN
RANK**

TAXONOMIC TAXON



Common potato



Eggplant



Habanero pepper



Tomato



Morning glory



Sweet potato



Maple



Sunflower



Pea



Corn



Grass



LEVEL

R



LEVEL



LEVEL



LEVEL

TULIP POPLAR



LEVEL

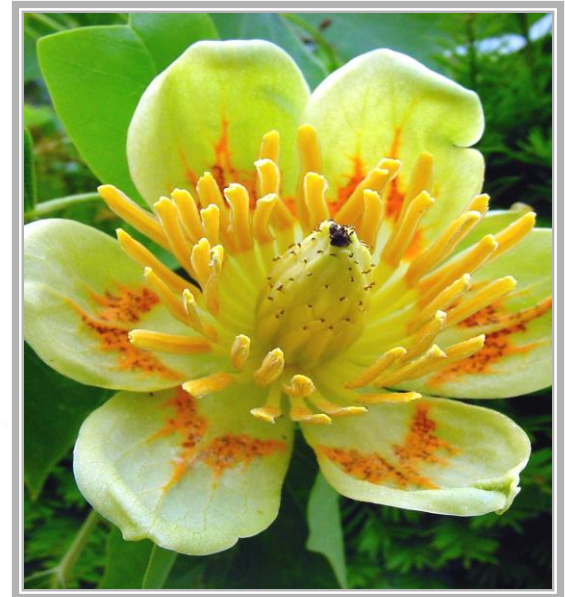


LEVEL



LEVE

RANK ANY LEVEL OF THE TAXONOMIC HIERARCHY





Common potato



Eggplant



Habanero pepper



Tomato



Morning glory



Sweet potato



Maple



Sunflower



Pea



Corn



Grass



RANK

T



RANK



RANK



RANK

TULIP POPLAR



RANK



RANK



RANK

RANK
ANY LEVEL OF THE
TAXONOMIC
HIERARCHY

