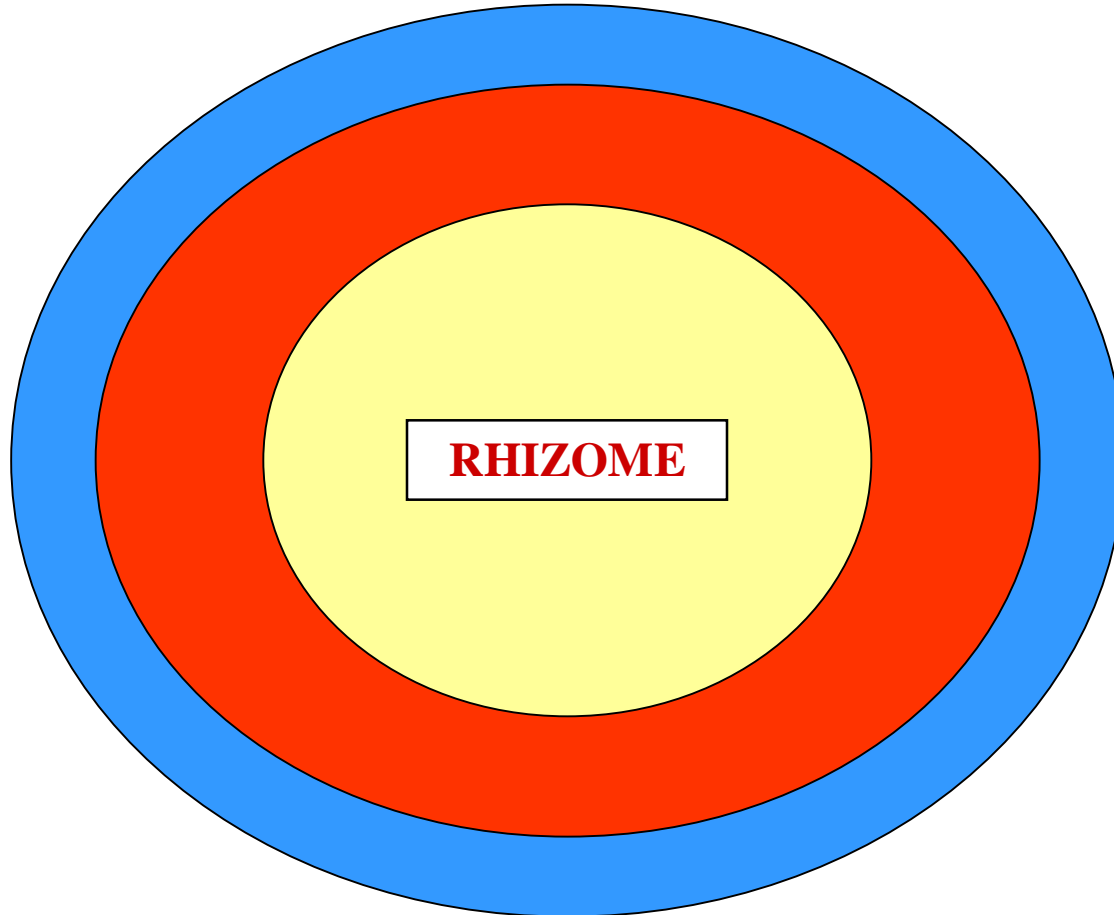


LEAF FROND

FROND

F

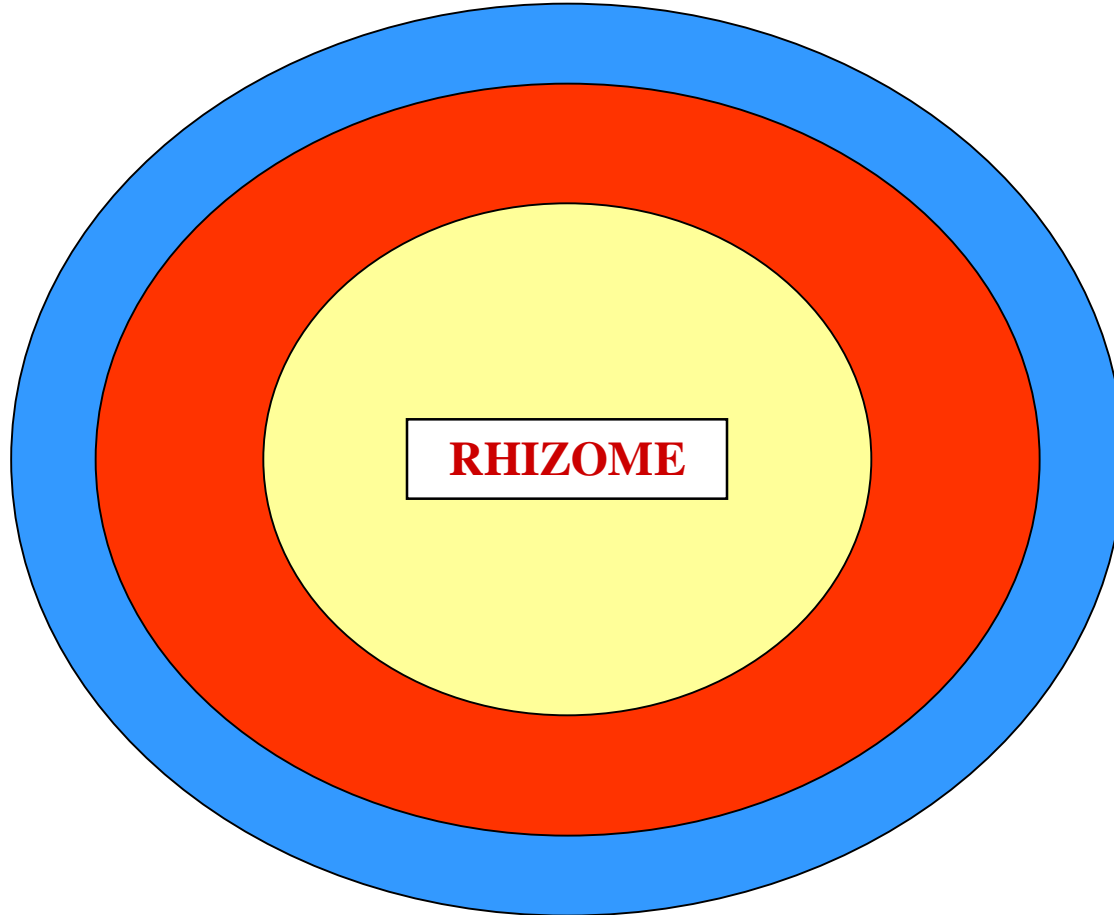


LEAF FROND

FROND

LEAF FROND

F



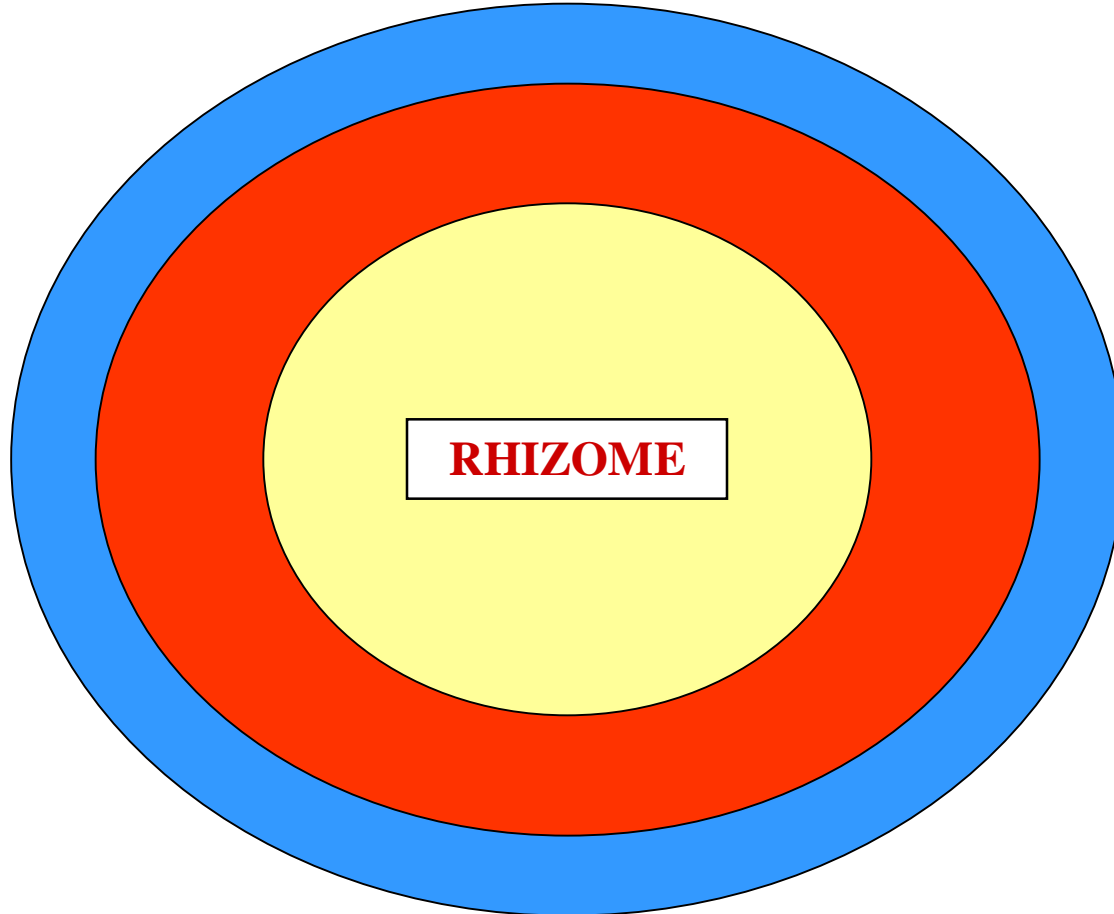
FROND

LEAF FROND

FROND

LEAF FROND

F



FROND

FROND

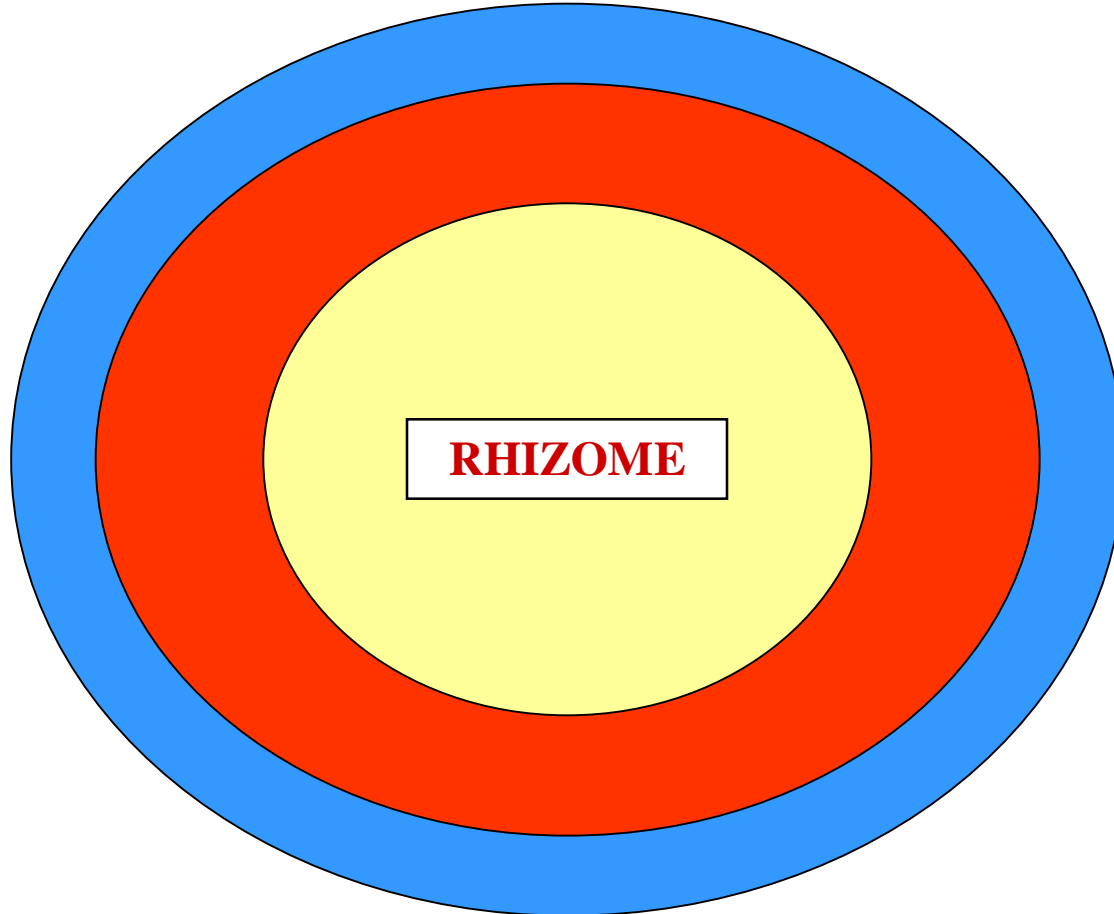
LEAF FROND

LEAF FROND

FROND

LEAF FROND

LT



FROND

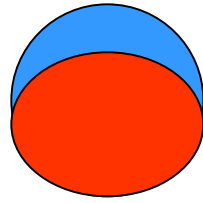
FROND

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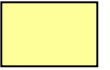
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LEAF FROND

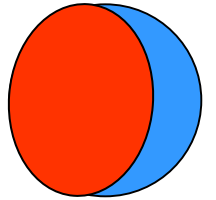
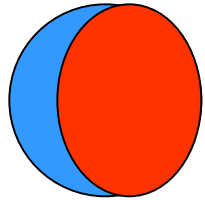
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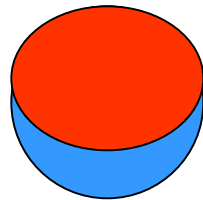
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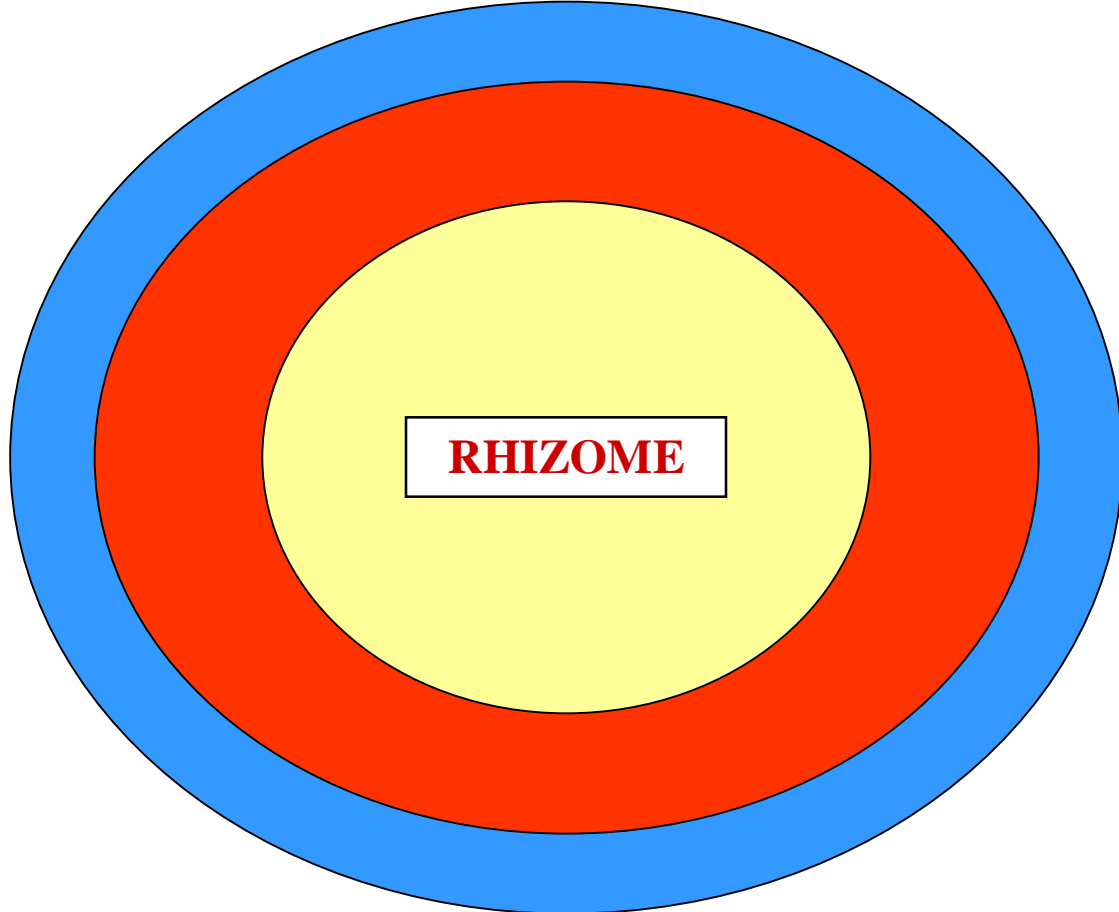
RHIZOME



LEAF TRACE



LEAF TRACE



LEAF TRACE

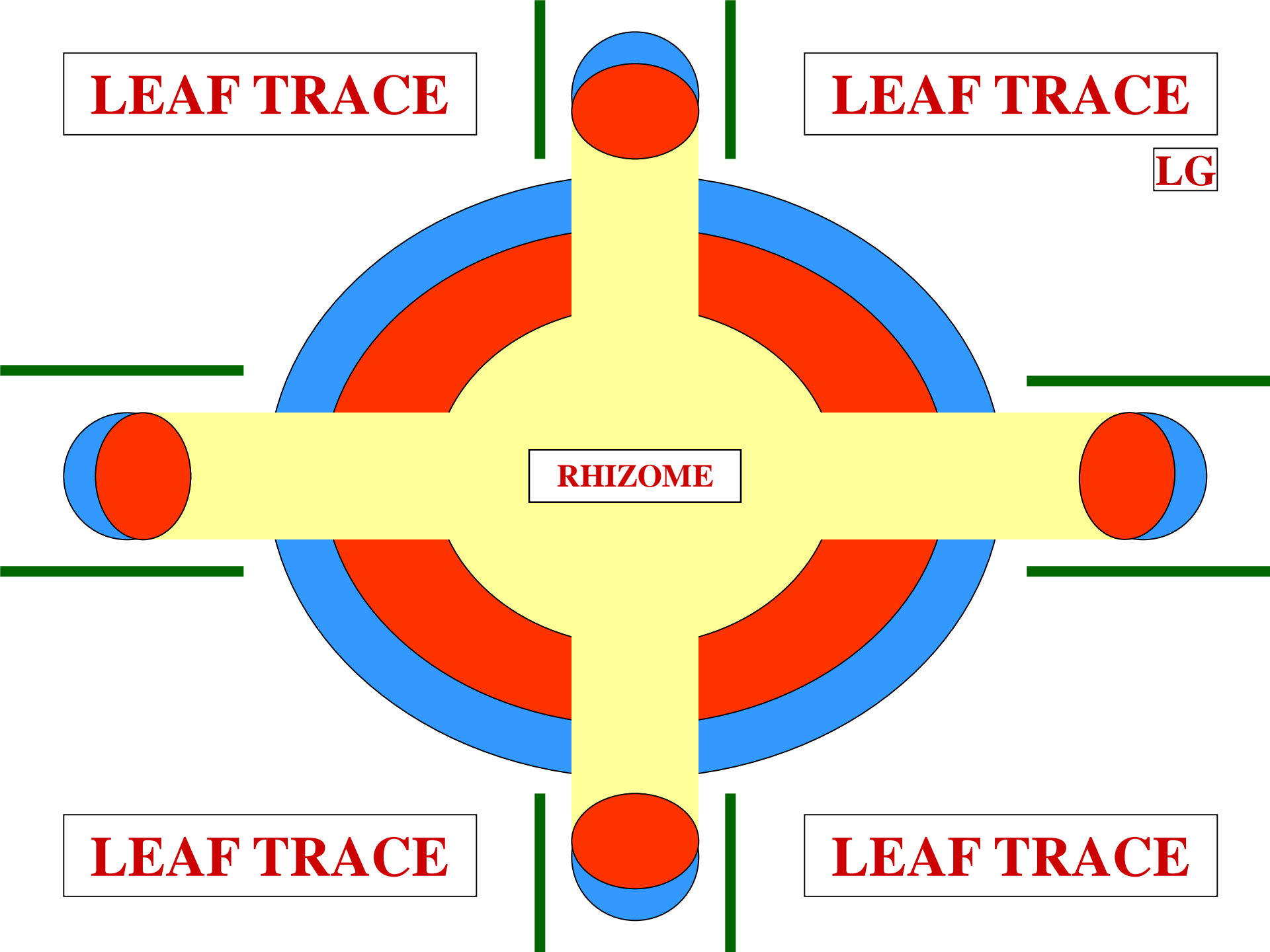
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LG

RHIZOME

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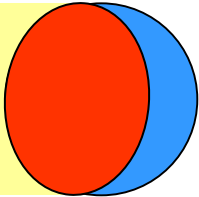
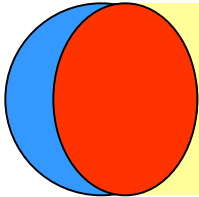
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LEAF GAP

LEAF GAP

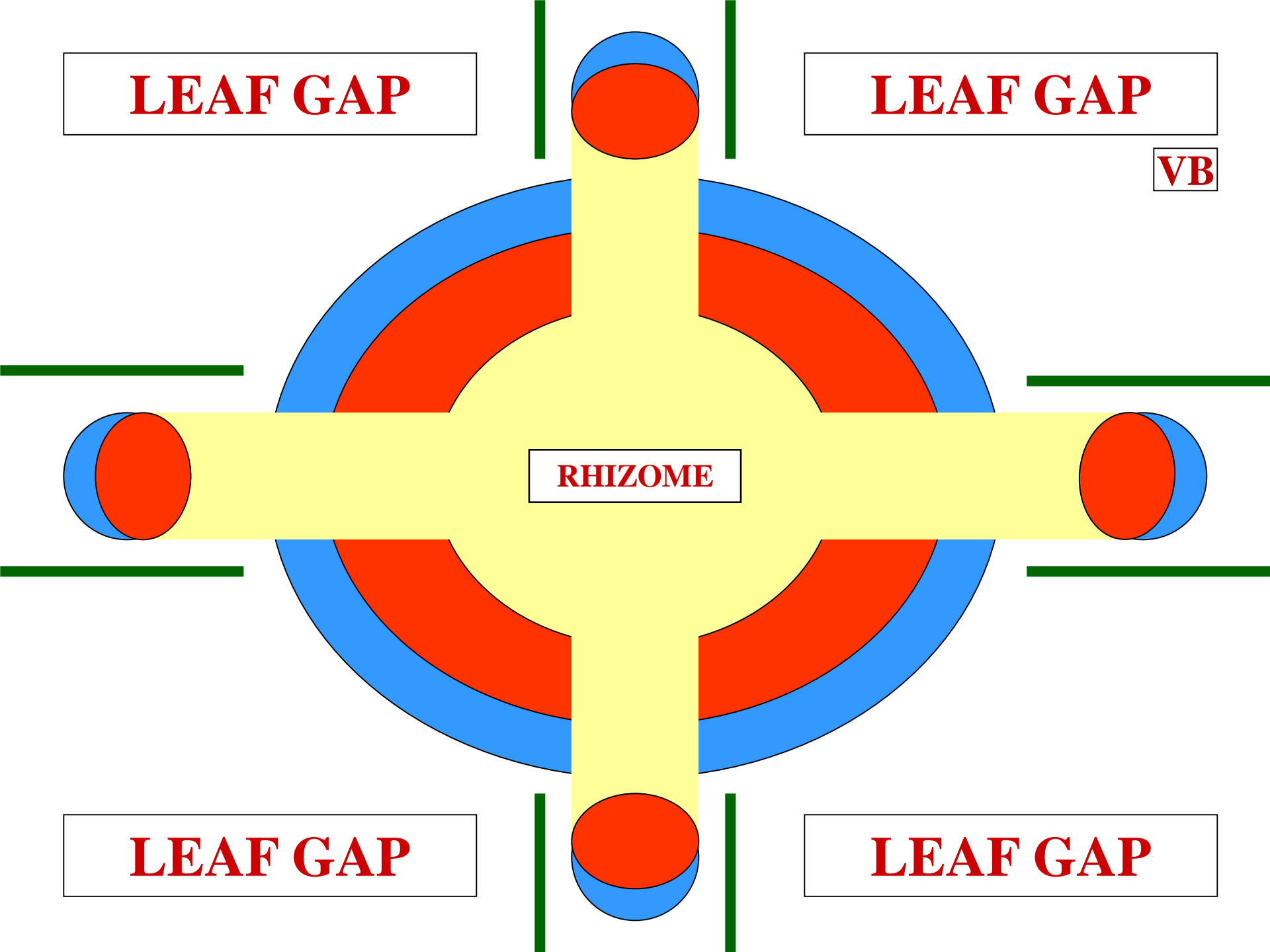
VB



RHIZOME

LEAF GAP

LEAF GAP



**“VASCULAR
BUNDLE”**

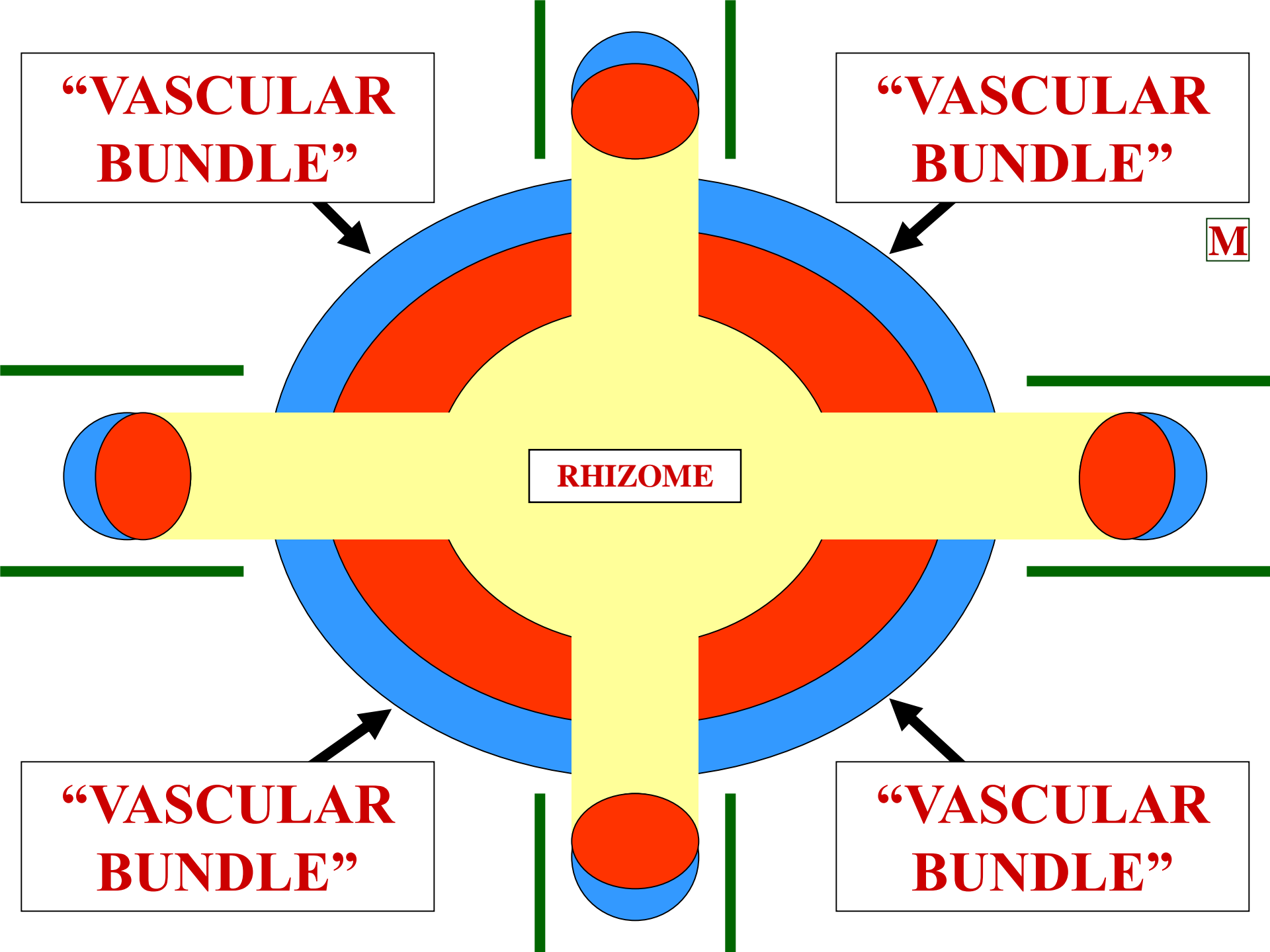
**“VASCULAR
BUNDLE”**

M

RHIZOME

**“VASCULAR
BUNDLE”**

**“VASCULAR
BUNDLE”**



MERISTELE

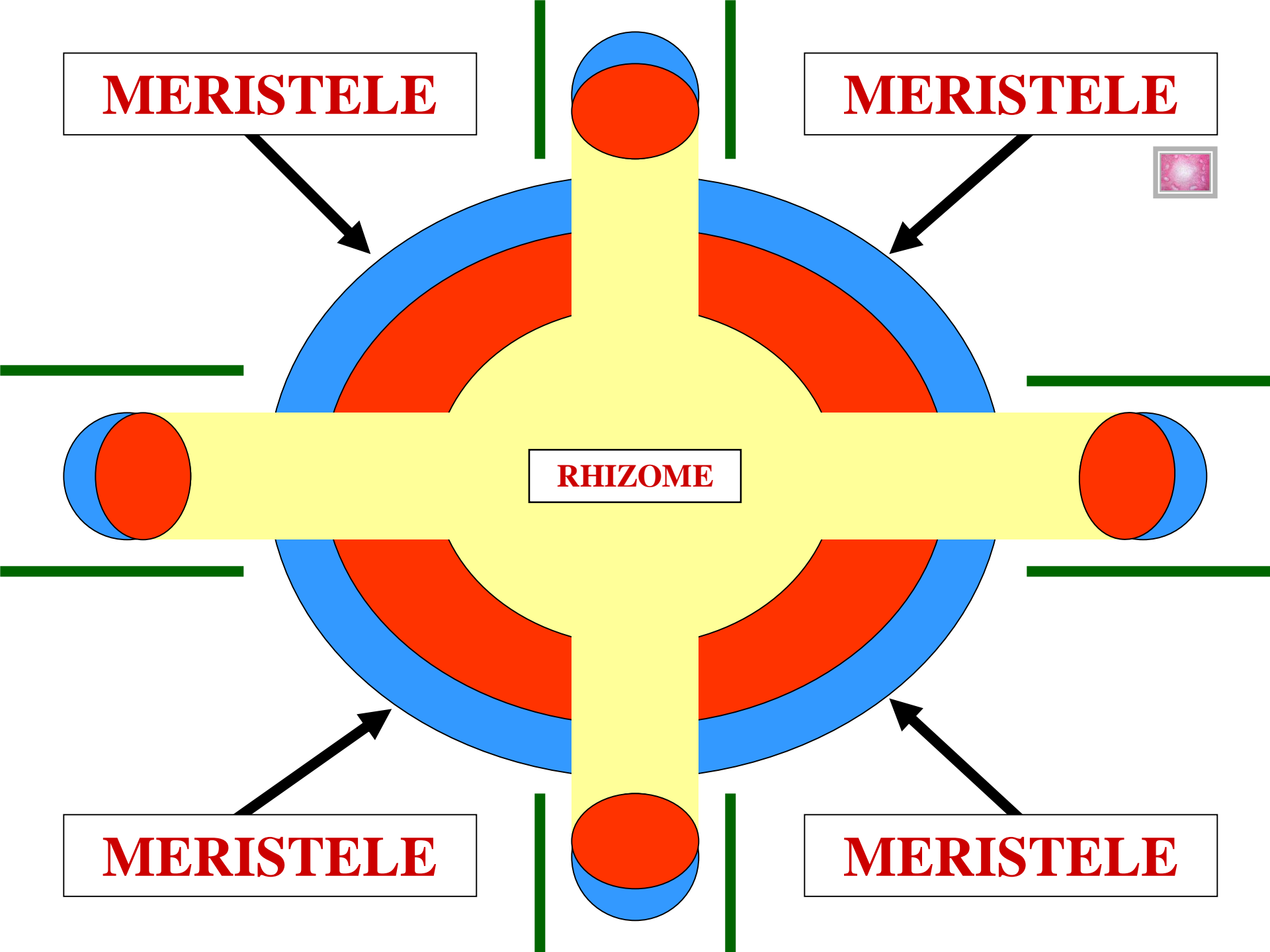
MERISTELE

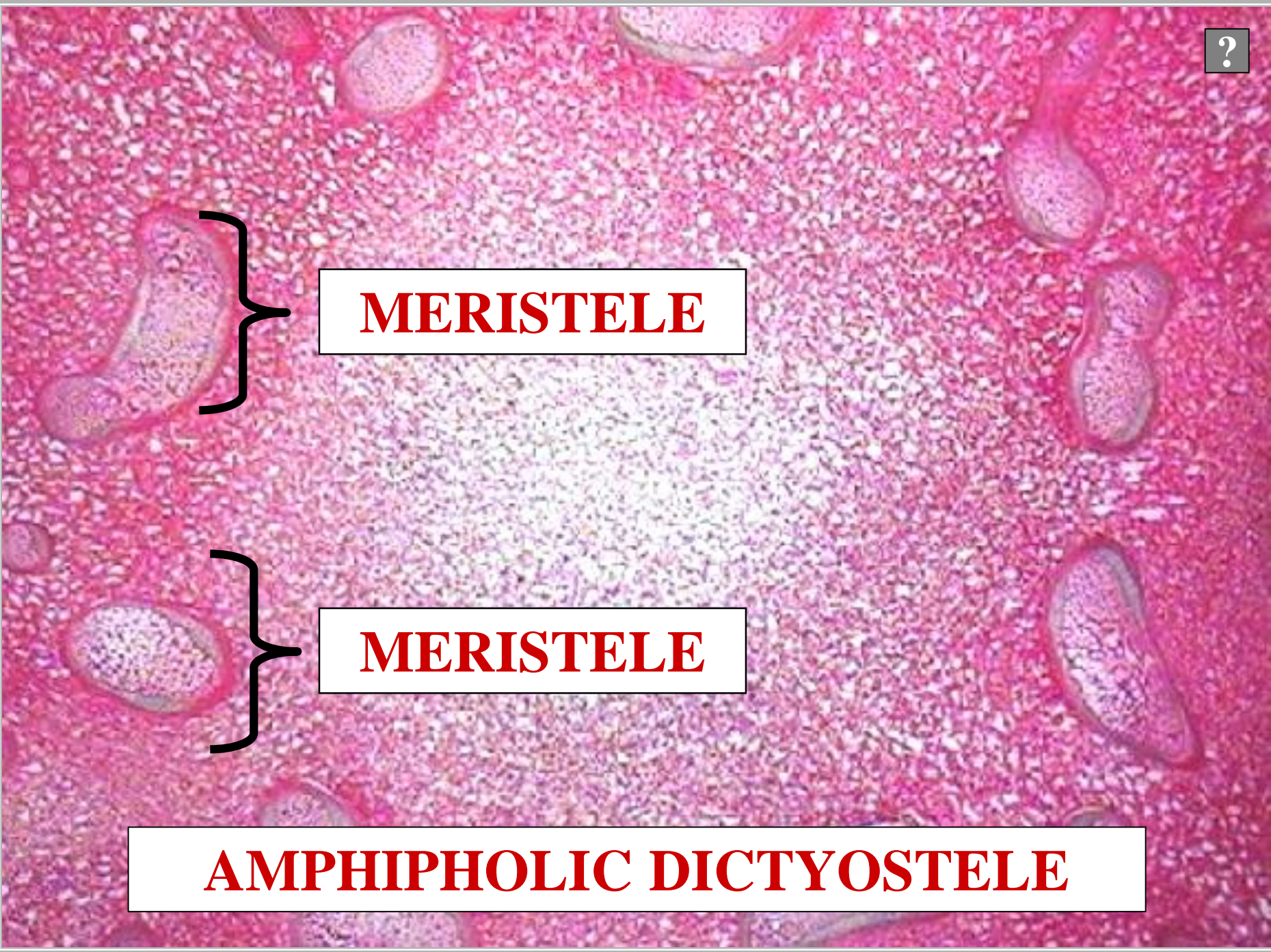


RHIZOME

MERISTELE

MERISTELE





MERISTELE

MERISTELE

AMPHIPHOLIC DICTYOSTELE



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AMPHIPHOLIC DICTYOSTELE

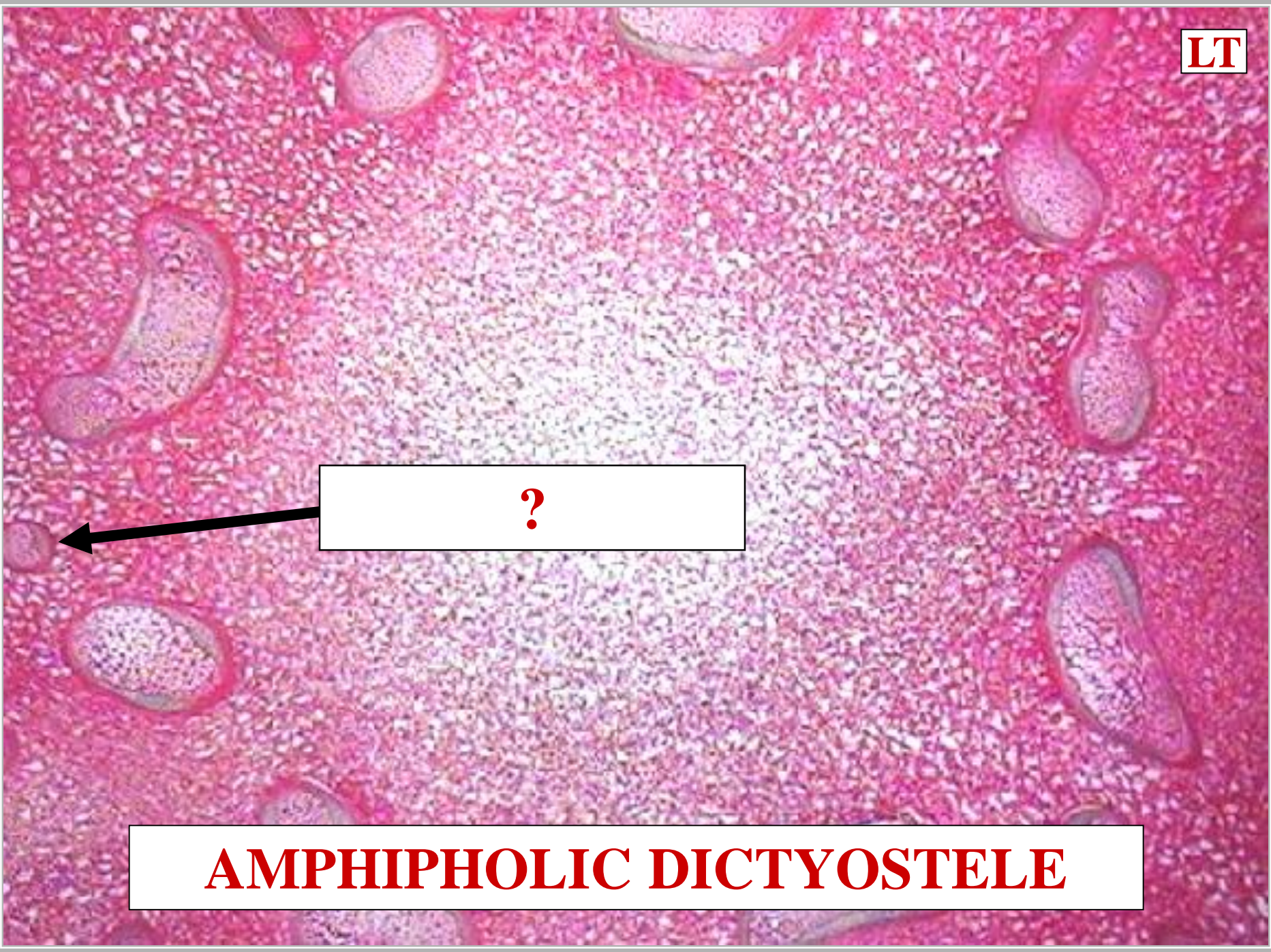


LEAF GAP

AMPHIPHOLIC DICTYOSTELE

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AMPHIPHOLIC DICTYOSTELE





RHIZOME

NON-FERTILE FRONDS

MATURE SPOROPHYTE

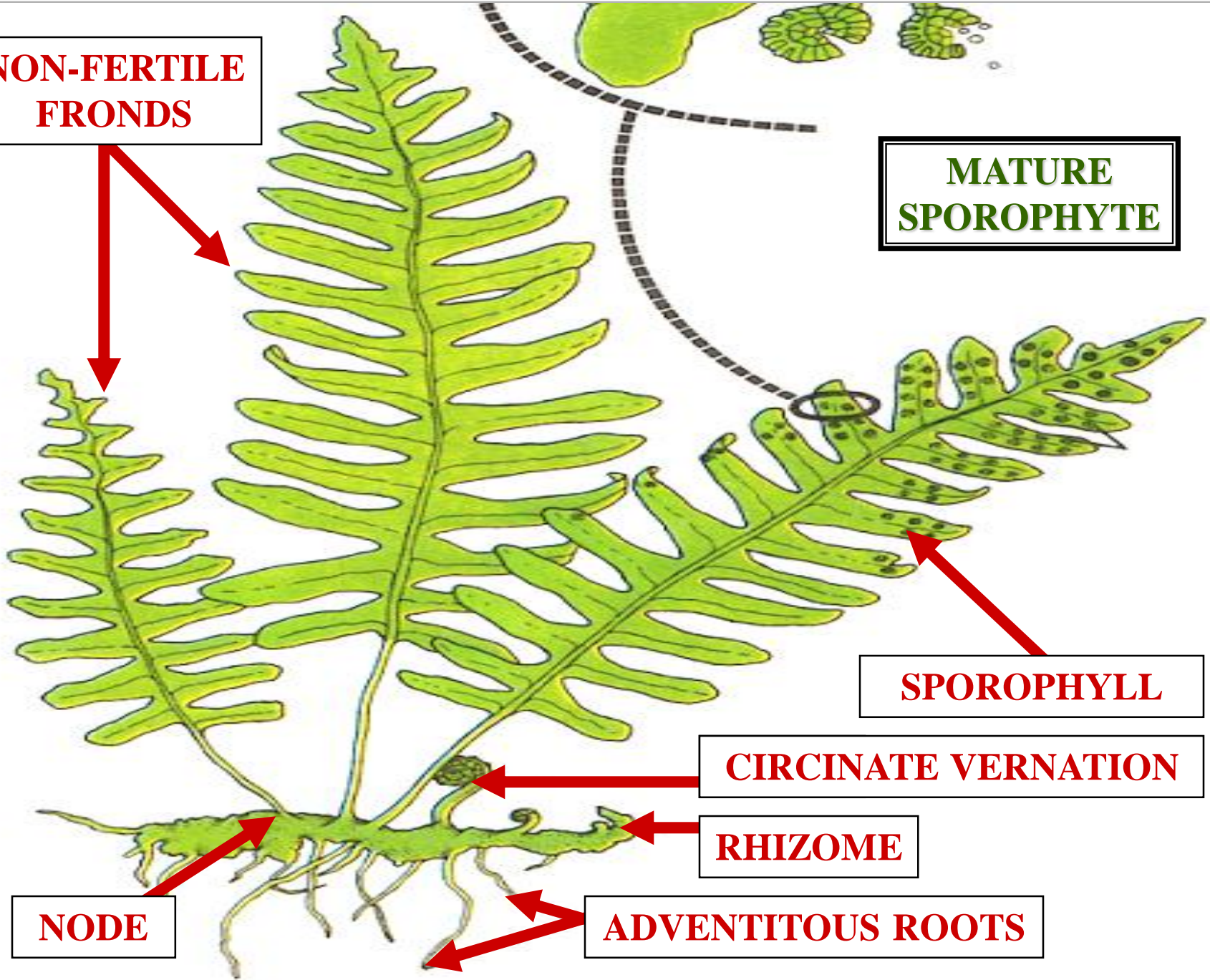
SPOROPHYLL

CIRCINATE VERNATION

RHIZOME

NODE

ADVENTITIOUS ROOTS



NON-FERTILE FRONDS

MATURE SPOROPHYTE

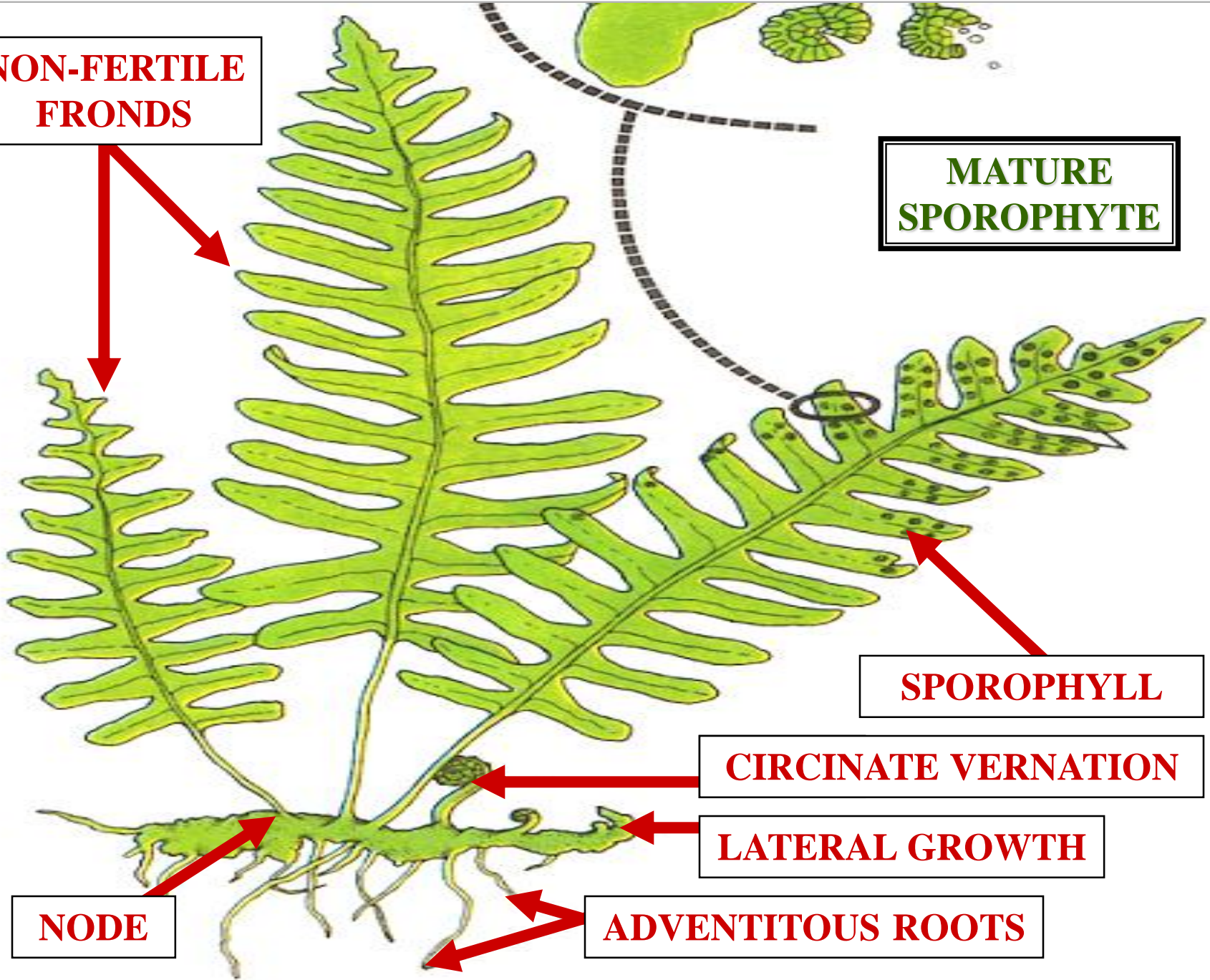
SPOROPHYLL

CIRCINATE VERNATION

LATERAL GROWTH

NODE

ADVENTITIOUS ROOTS



**NON-FERTILE
FRONDS**

**MATURE
SPOROPHYTE**

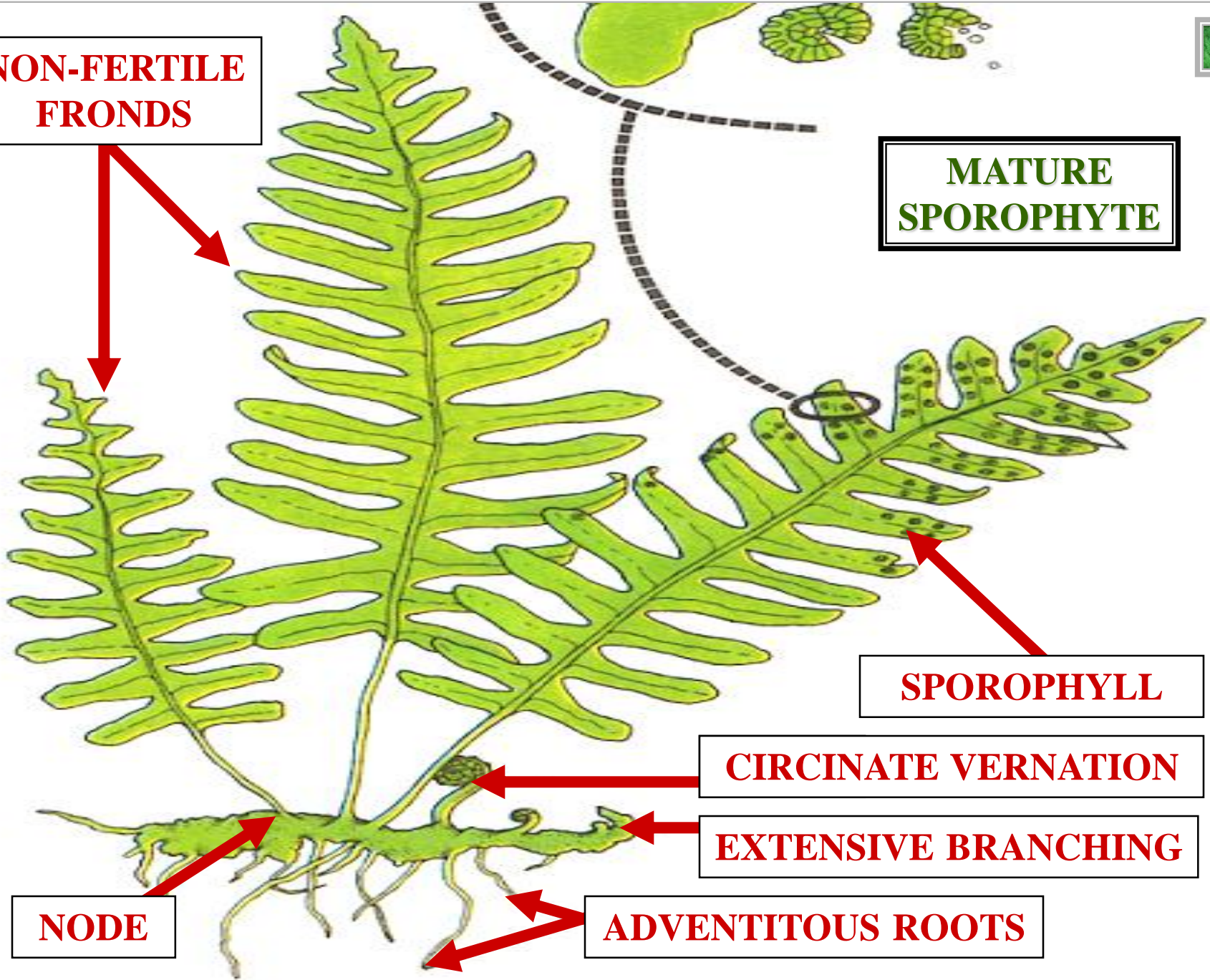
SPOROPHYLL

CIRCINATE VERNATION

EXTENSIVE BRANCHING

NODE

ADVENTITIOUS ROOTS





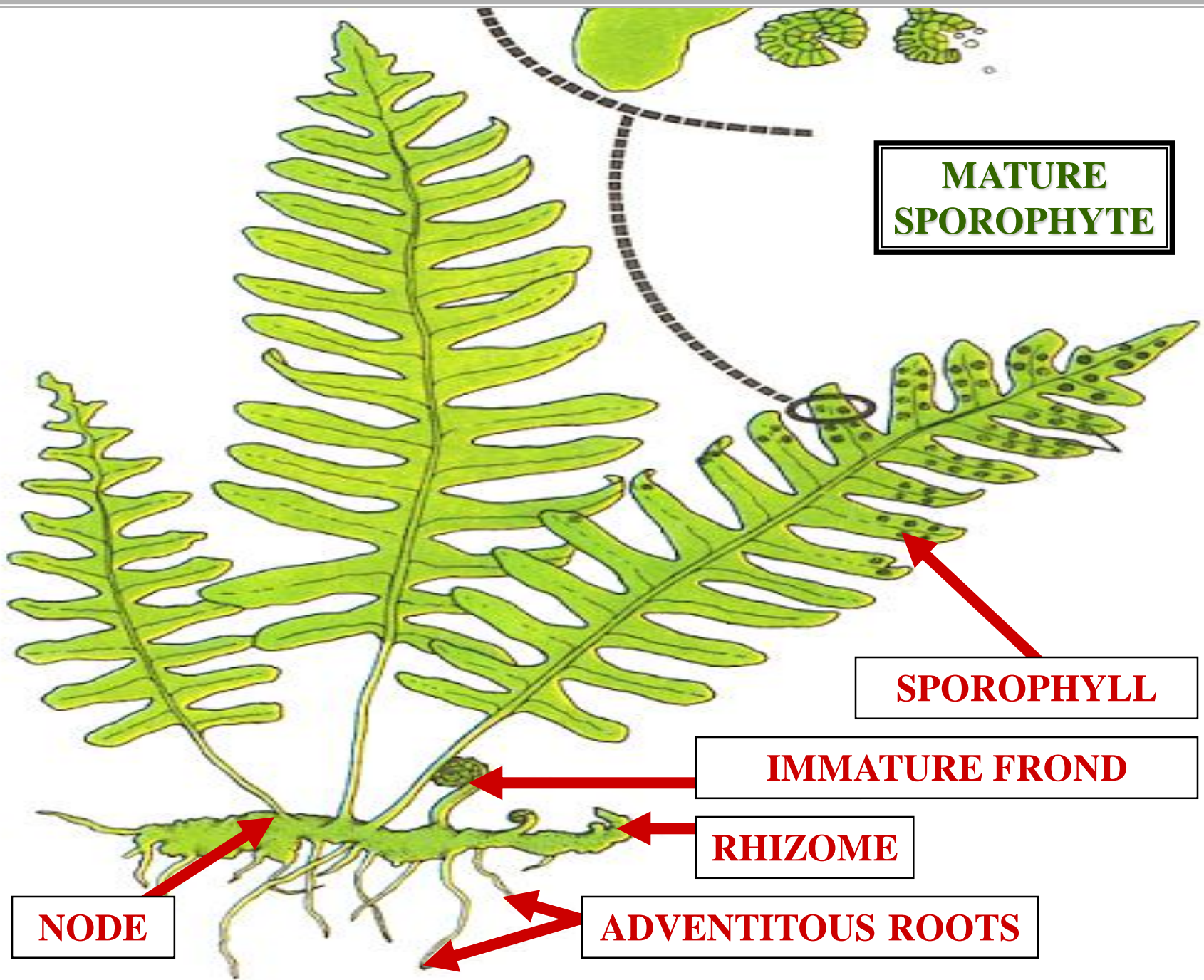
EXTENSIVE LATERAL RHIZOME



FROND



PHYLLOTAXY



MATURE SPOROPHYTE

SPOROPHYLL

IMMATURE FROND

RHIZOME

NODE

ADVENTITIOUS ROOTS

**1 FROND
PER NODE**

**MATURE
SPOROPHYTE**

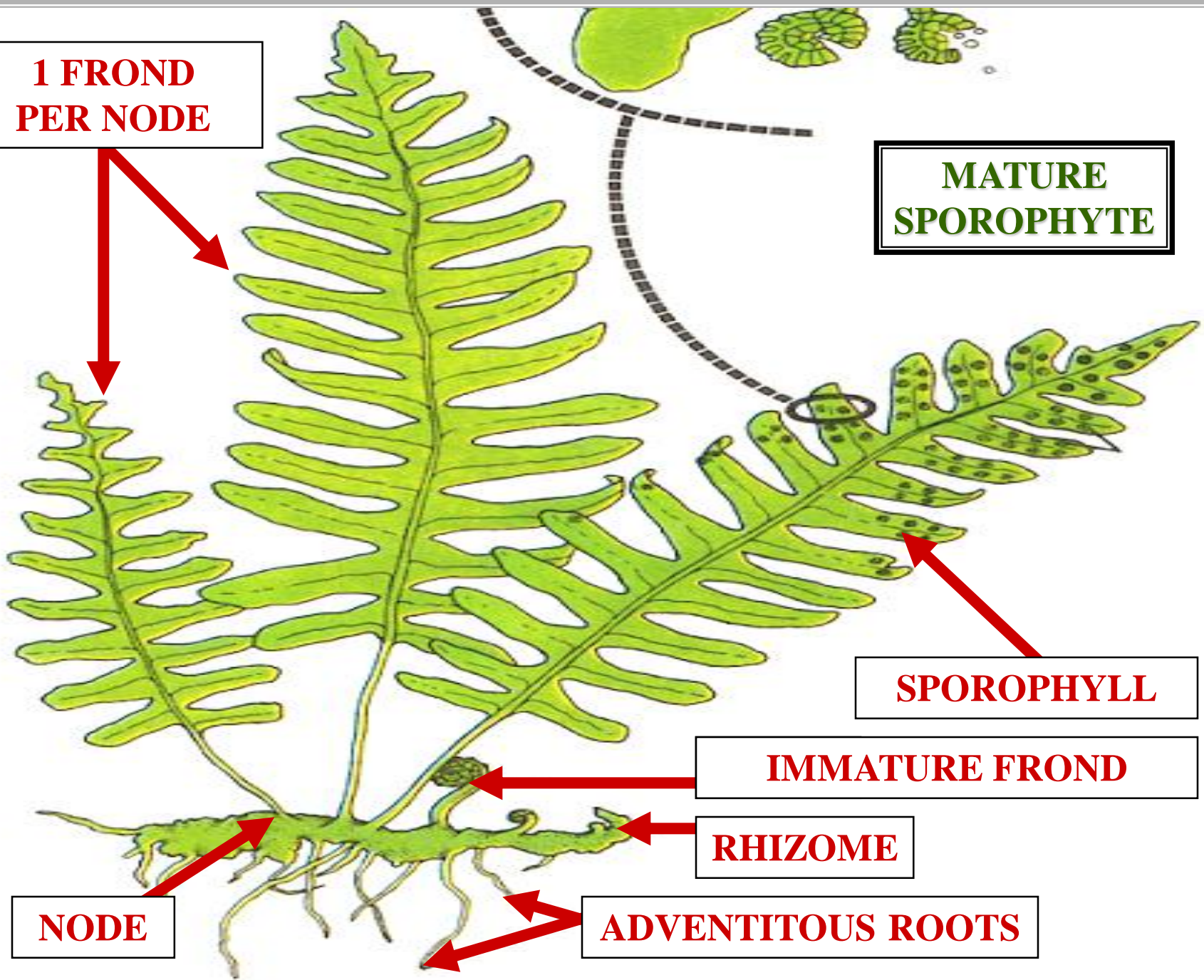
SPOROPHYLL

IMMATURE FROND

RHIZOME

NODE

ADVENTITIOUS ROOTS





**ALTERNATE
PHYLLOTAXY**

**MATURE
SPOROPHYTE**

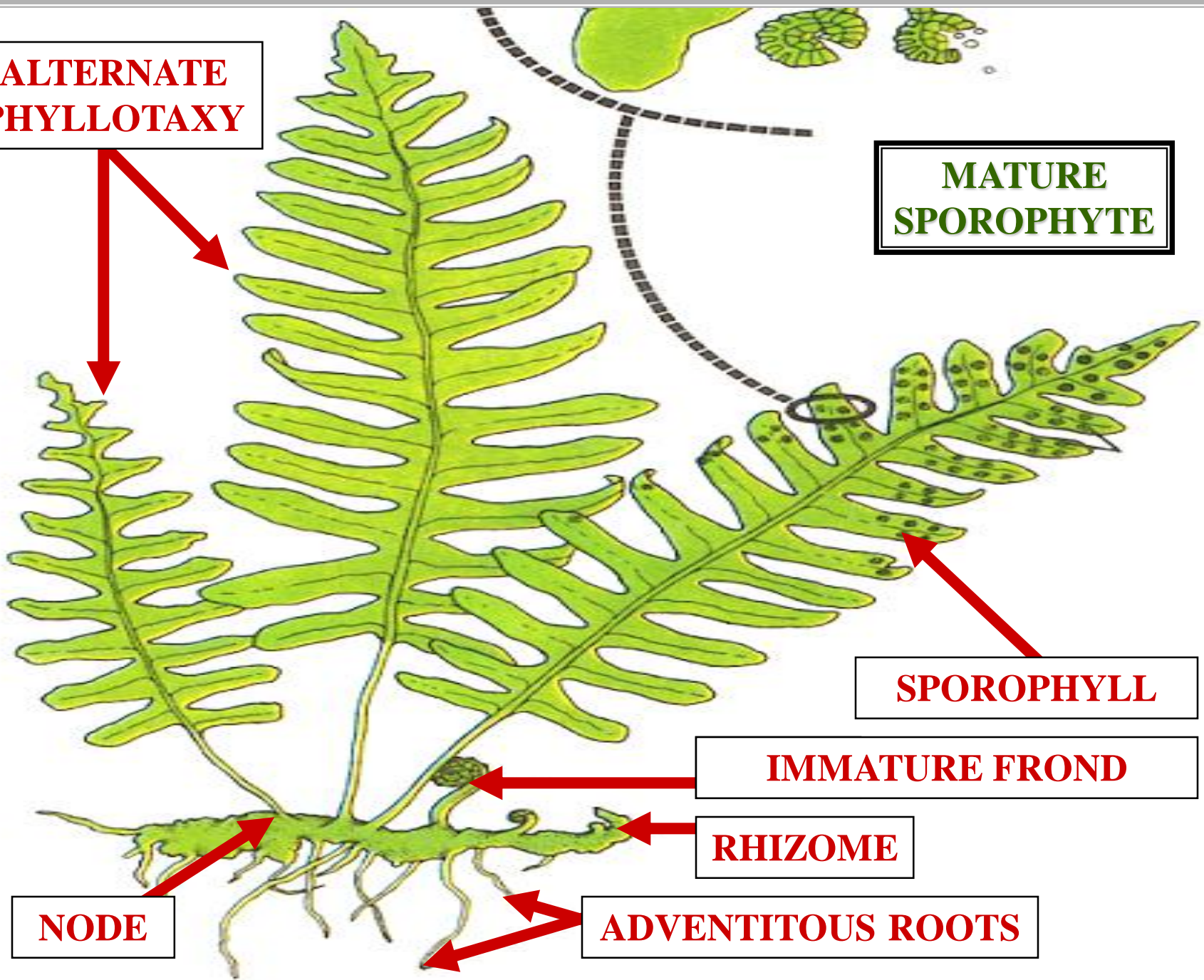
SPOROPHYLL

IMMATURE FROND

RHIZOME

NODE

ADVENTITIOUS ROOTS





VERNATION



FH

**ALTERNATE
PHYLLOTAXY**

**MATURE
SPOROPHYTE**

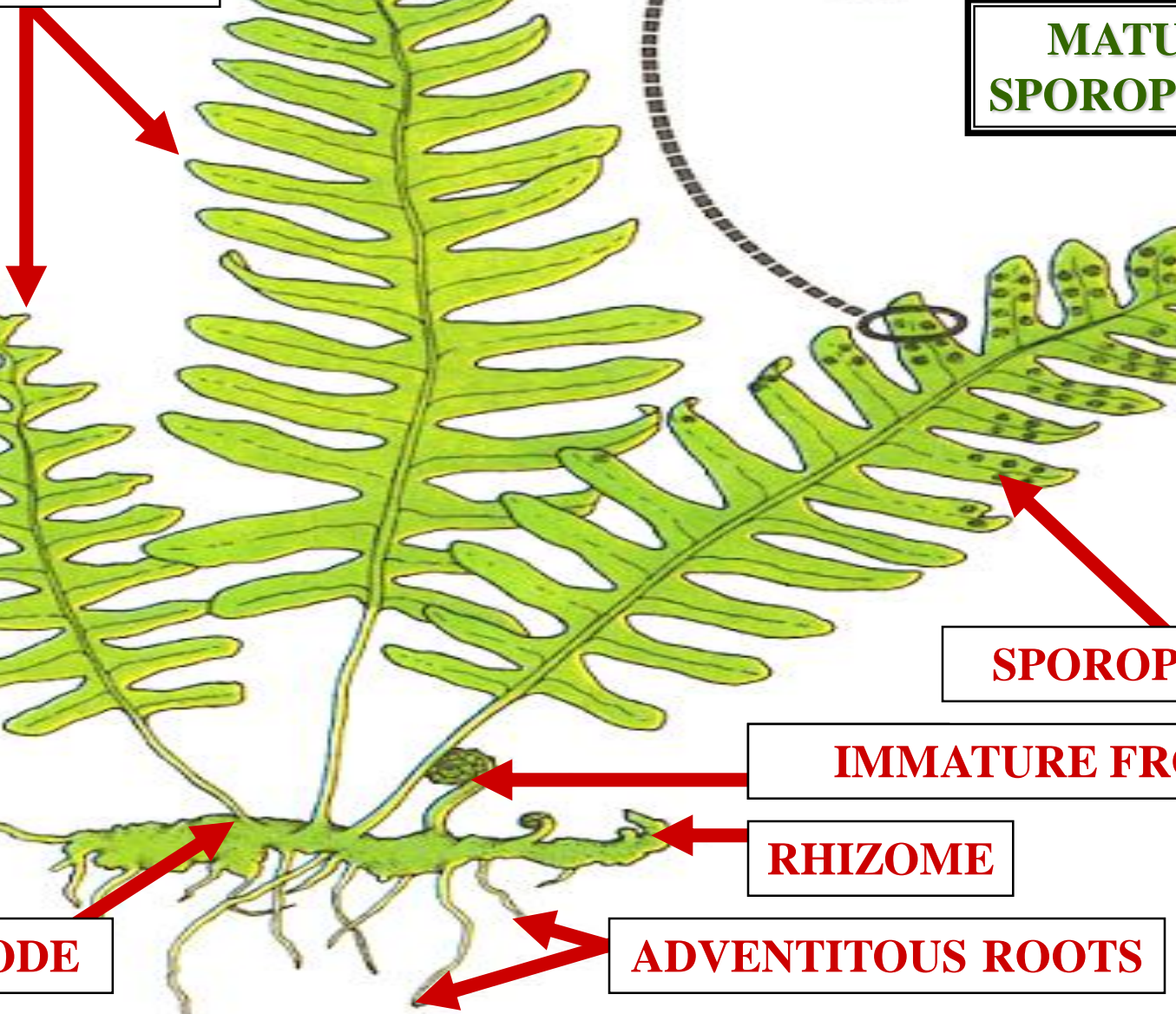
SPOROPHYLL

IMMATURE FROND

RHIZOME

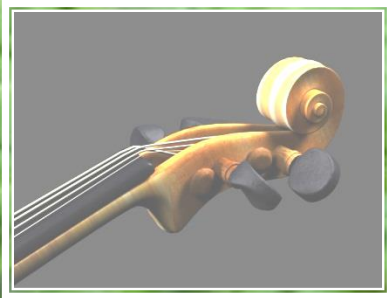
NODE

ADVENTITIOUS ROOTS





“FIDDLEHEAD”

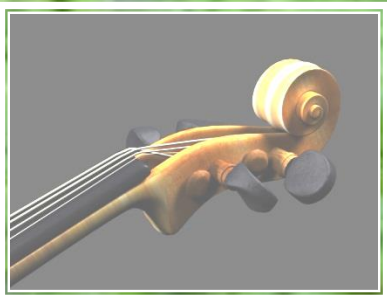


CV



“FIDDLEHEAD”

CROZIER

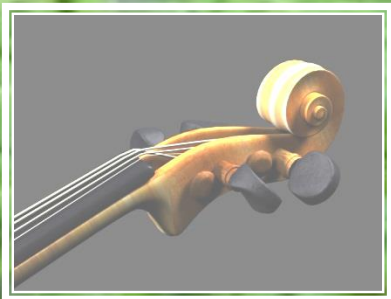




“FIDDLEHEAD”

CROZIER

CIRCINATE VERNATION





FROND MORPHOLOGY

FROND MORPHOLOGY TYPES

FROND MORPHOLOGY TYPES

COMPOUND FROND

FROND MORPHOLOGY TYPES

FROND MORPHOLOGY TYPES



COMPOUND FROND
SIMPLE FROND

FROND MORPHOLOGY
TYPES

COMPOUND FROND

**COMPOUND
FROND**

FROND MORPHOLOGY

COMPOUND FROND



PINNAE PRESENT

FROND MORPHOLOGY

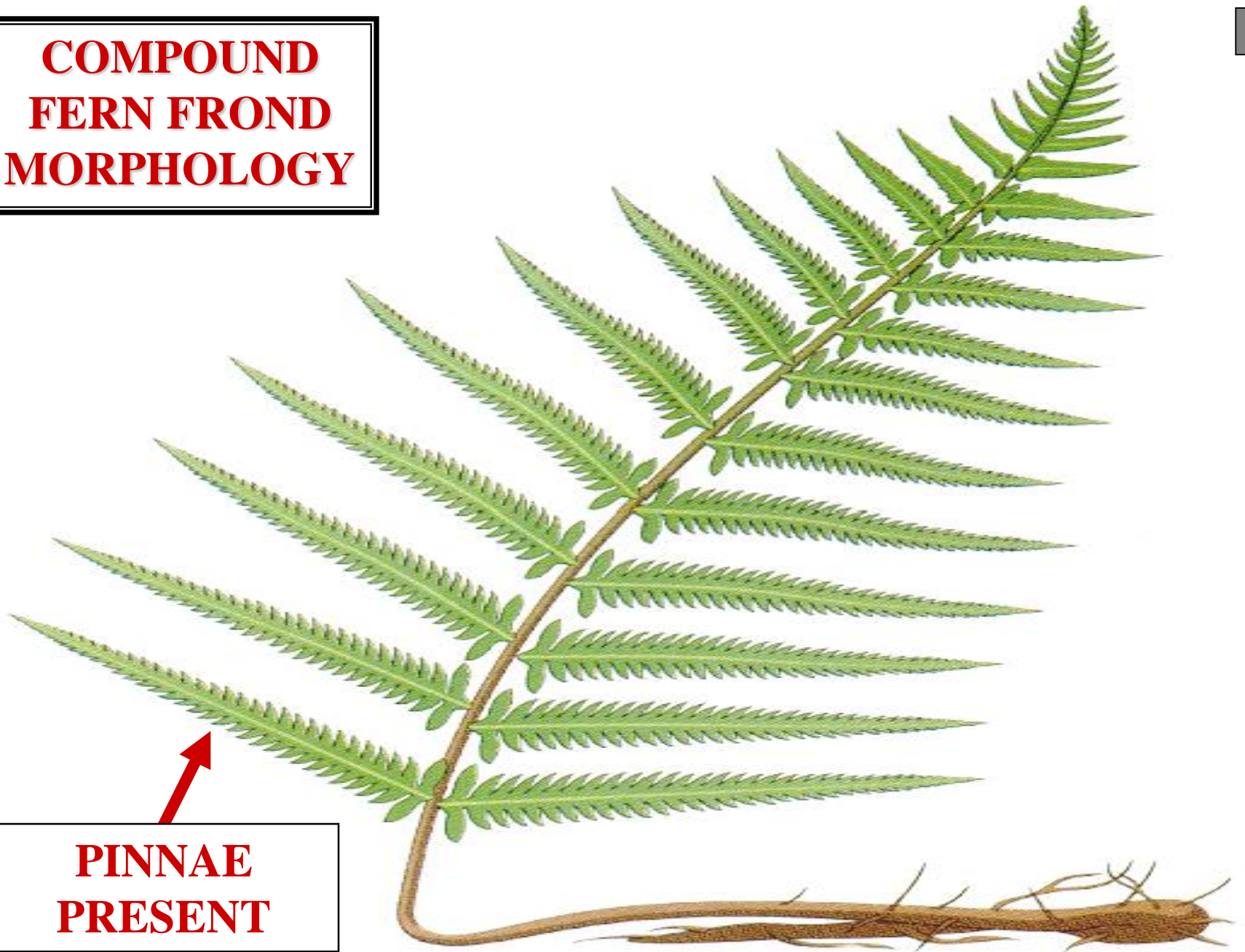
COMPOUND FROND

**COMPOUND
FERN FROND
MORPHOLOGY**

PR



**COMPOUND
FERN FROND
MORPHOLOGY**



**PINNAE
PRESENT**

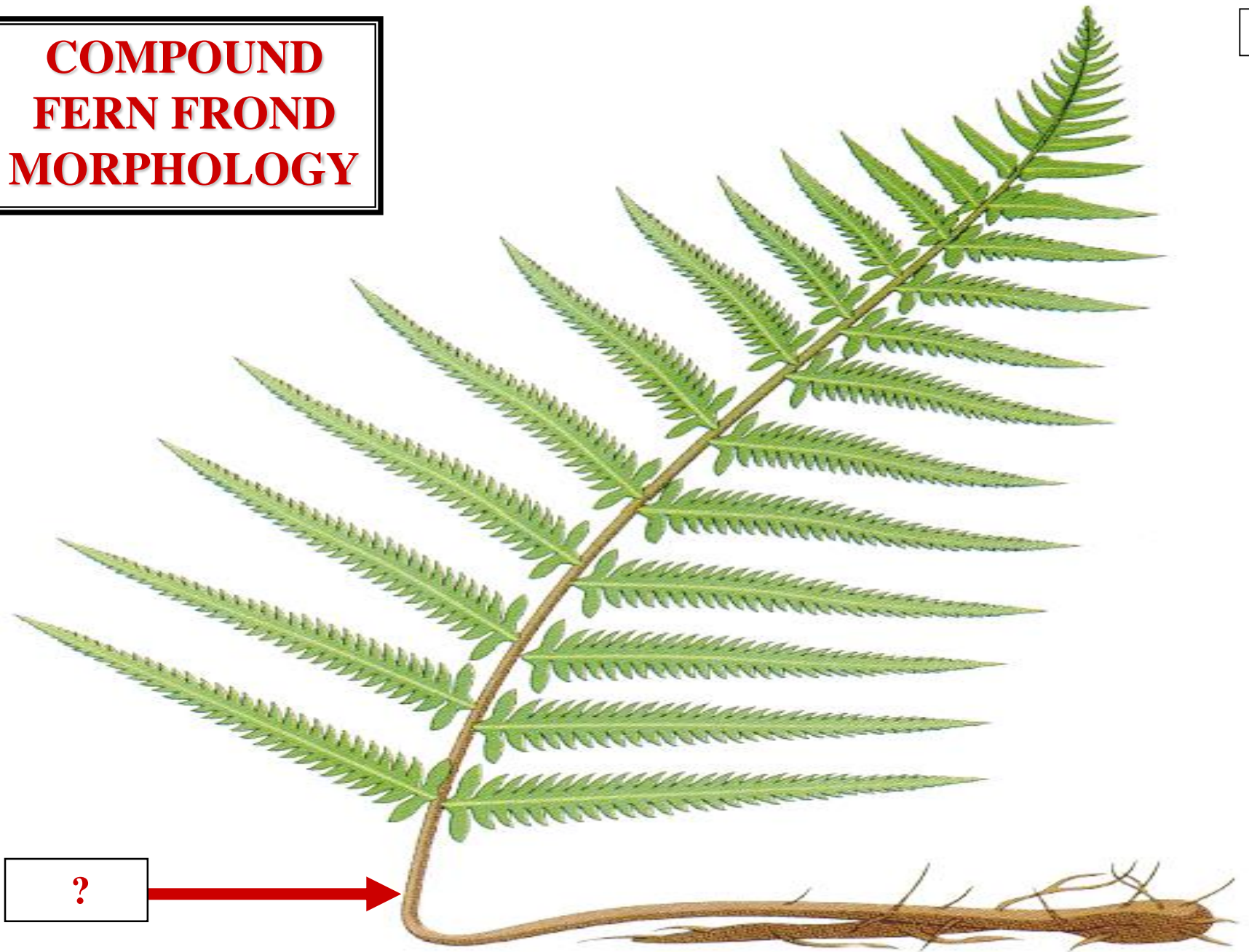




COMPOUND FROND MORPHOLOGY

COMPOUND FERN FROND MORPHOLOGY

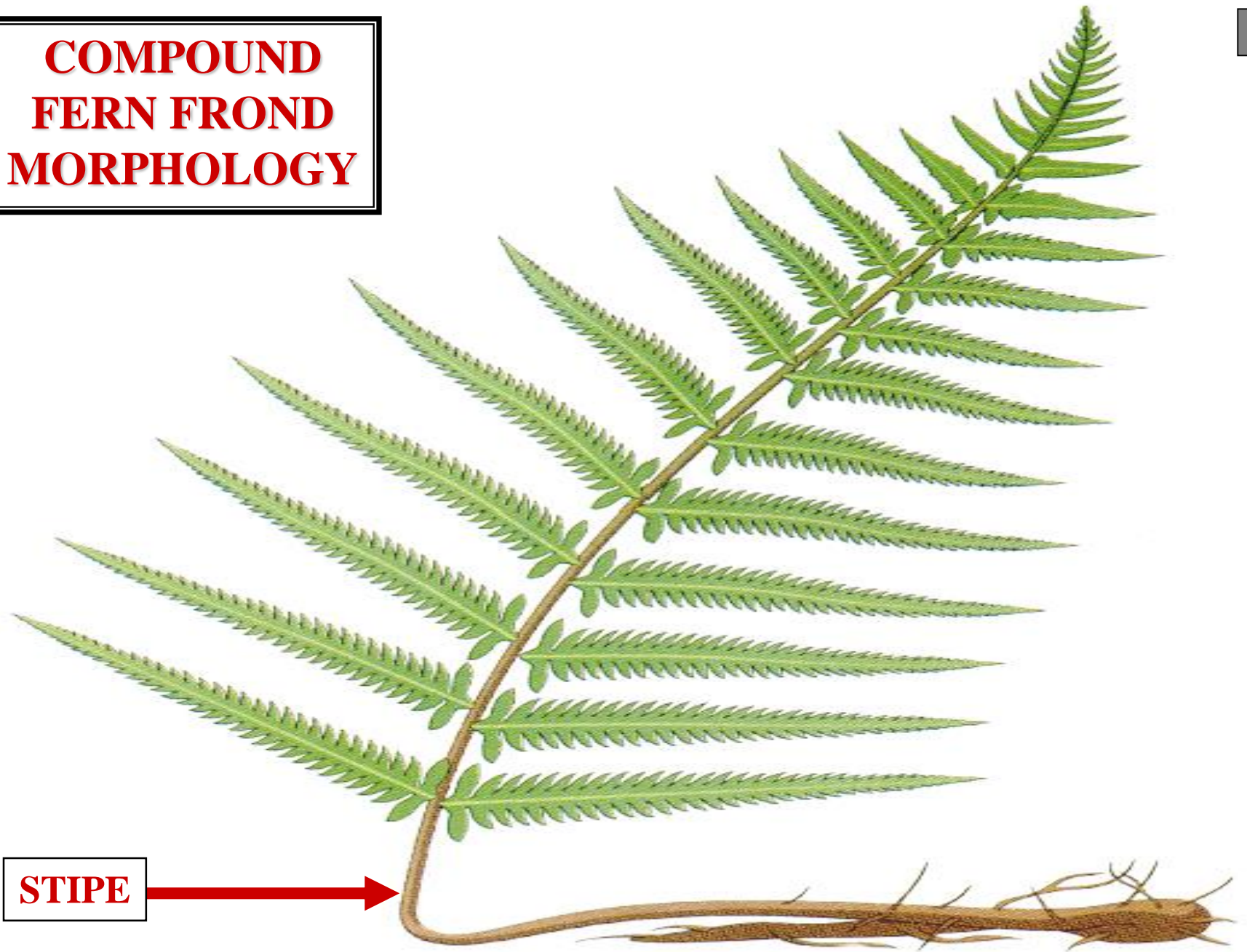
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**COMPOUND
FERN FROND
MORPHOLOGY**

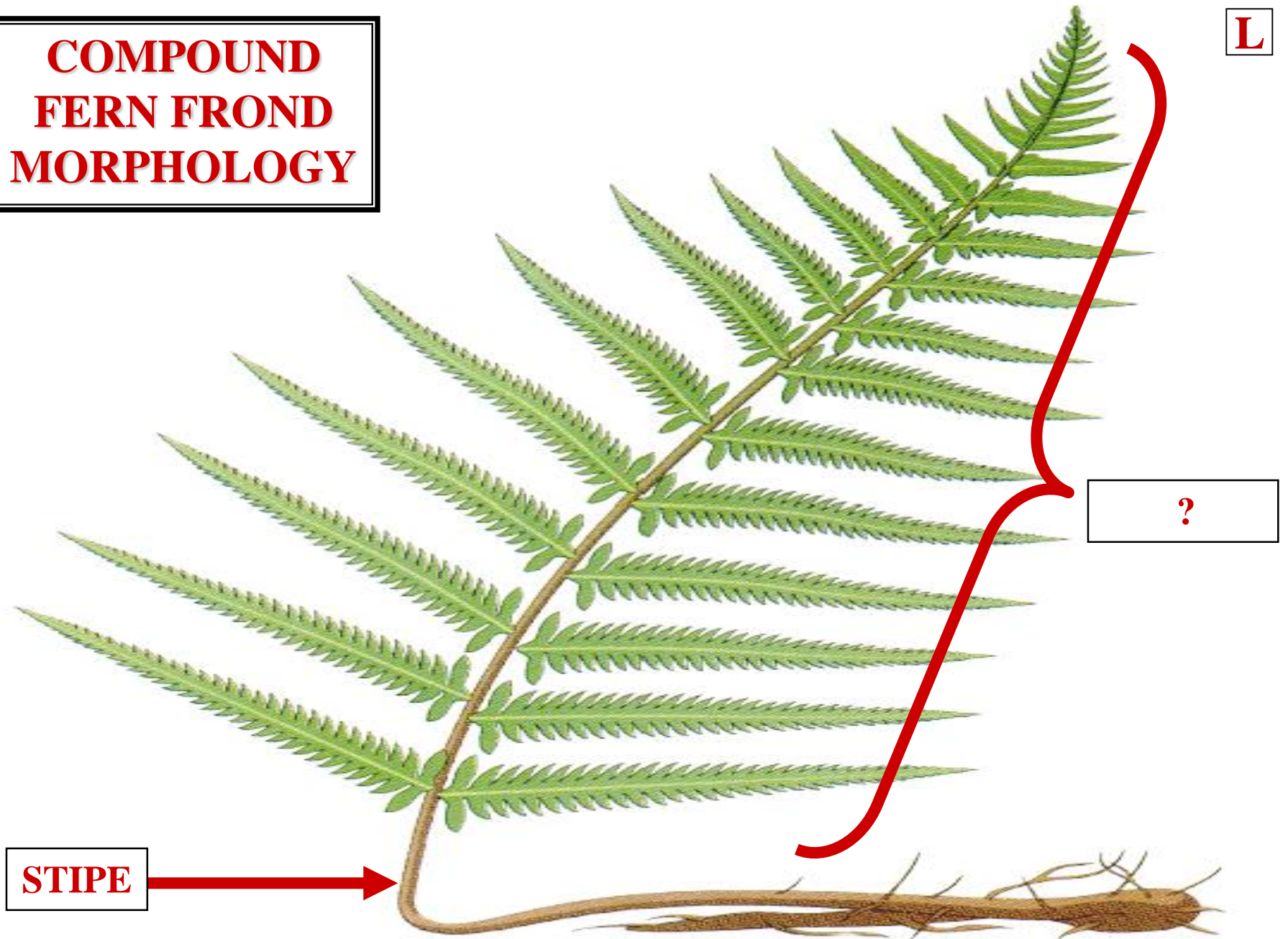
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STIPE

**COMPOUND
FERN FROND
MORPHOLOGY**

L

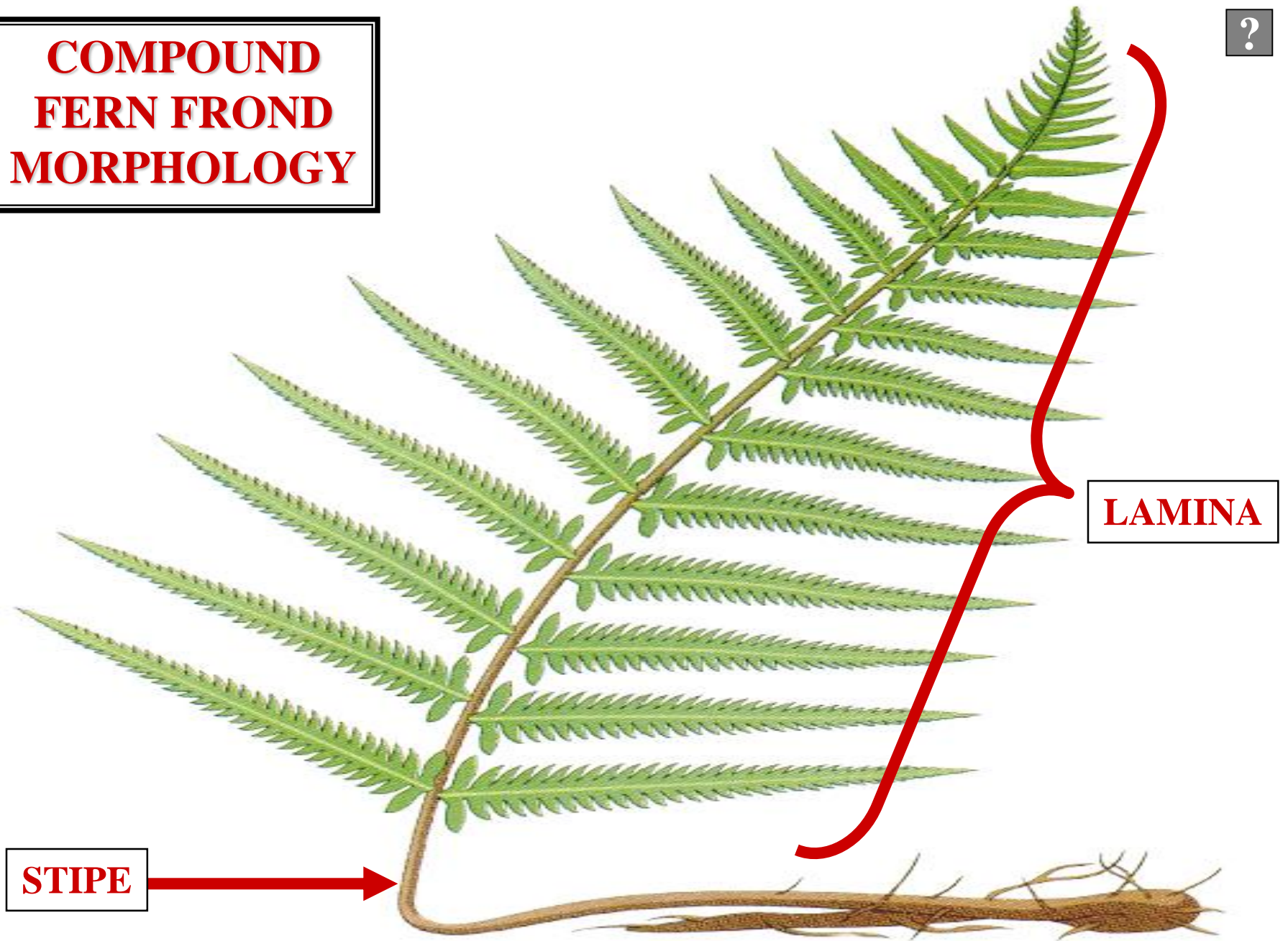


STIPE

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**COMPOUND
FERN FROND
MORPHOLOGY**

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STIPE

LAMINA

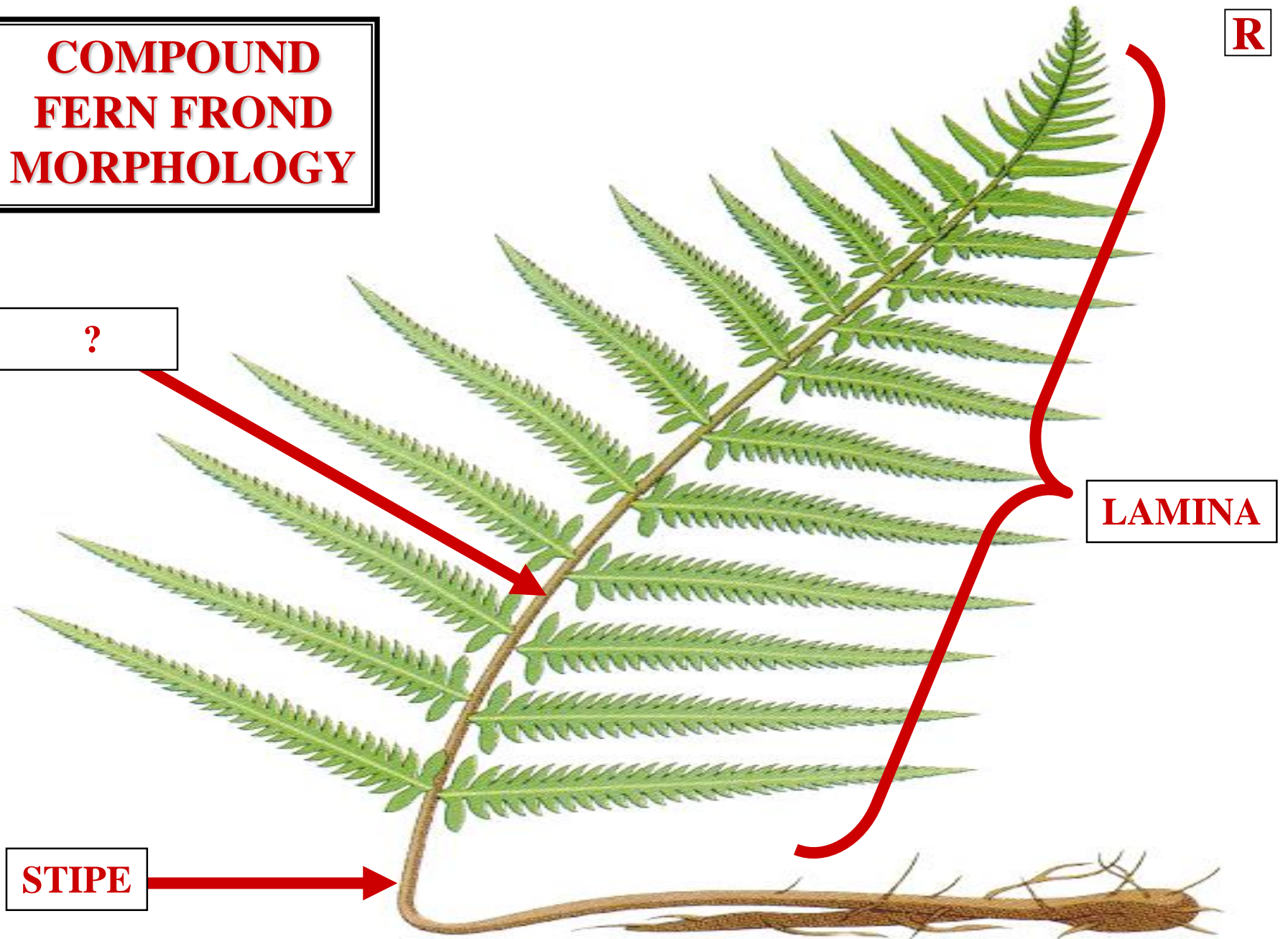
COMPOUND FERN FROND MORPHOLOGY

R

?

LAMINA

STIPE



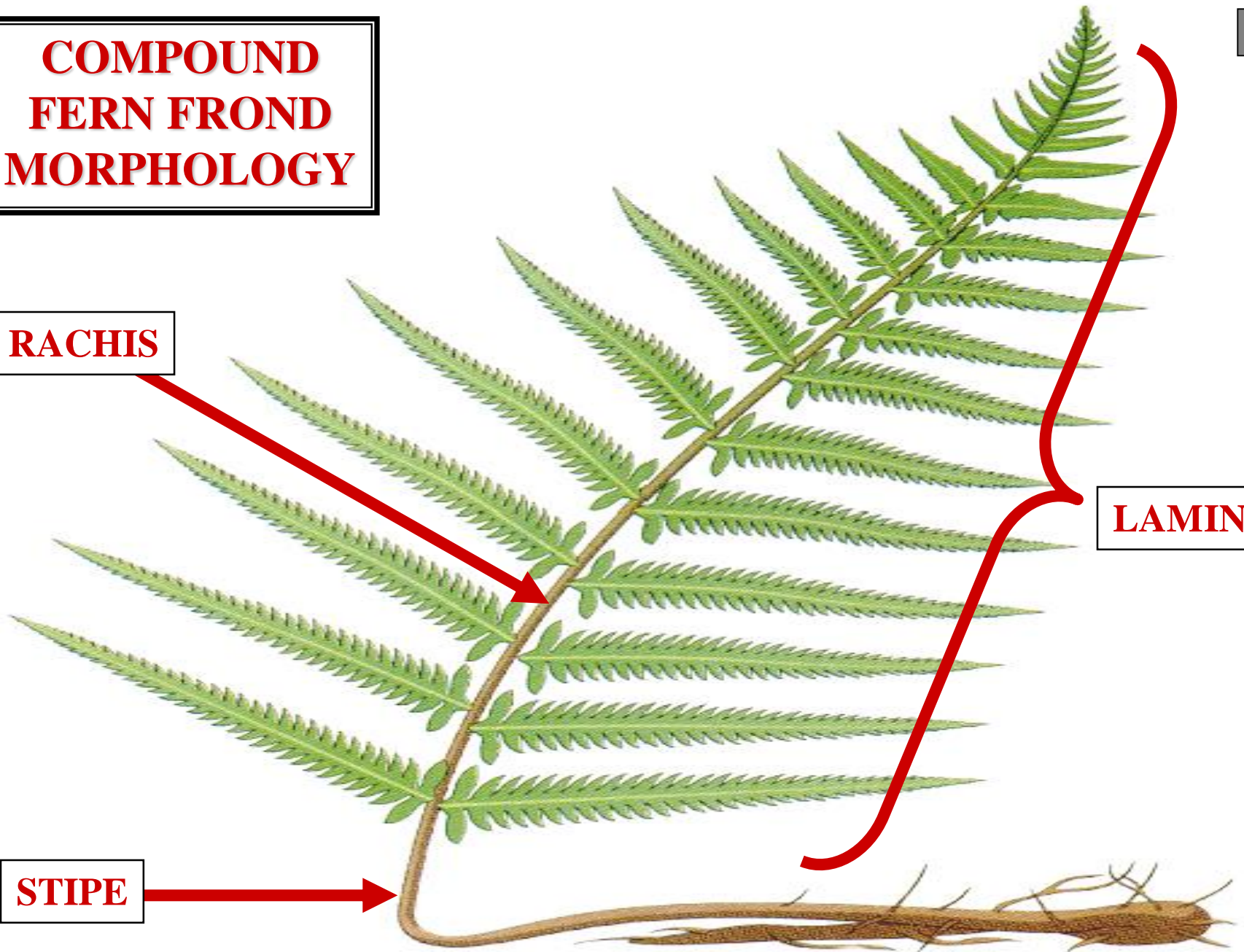
COMPOUND FERN FROND MORPHOLOGY

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RACHIS

LAMINA

STIPE



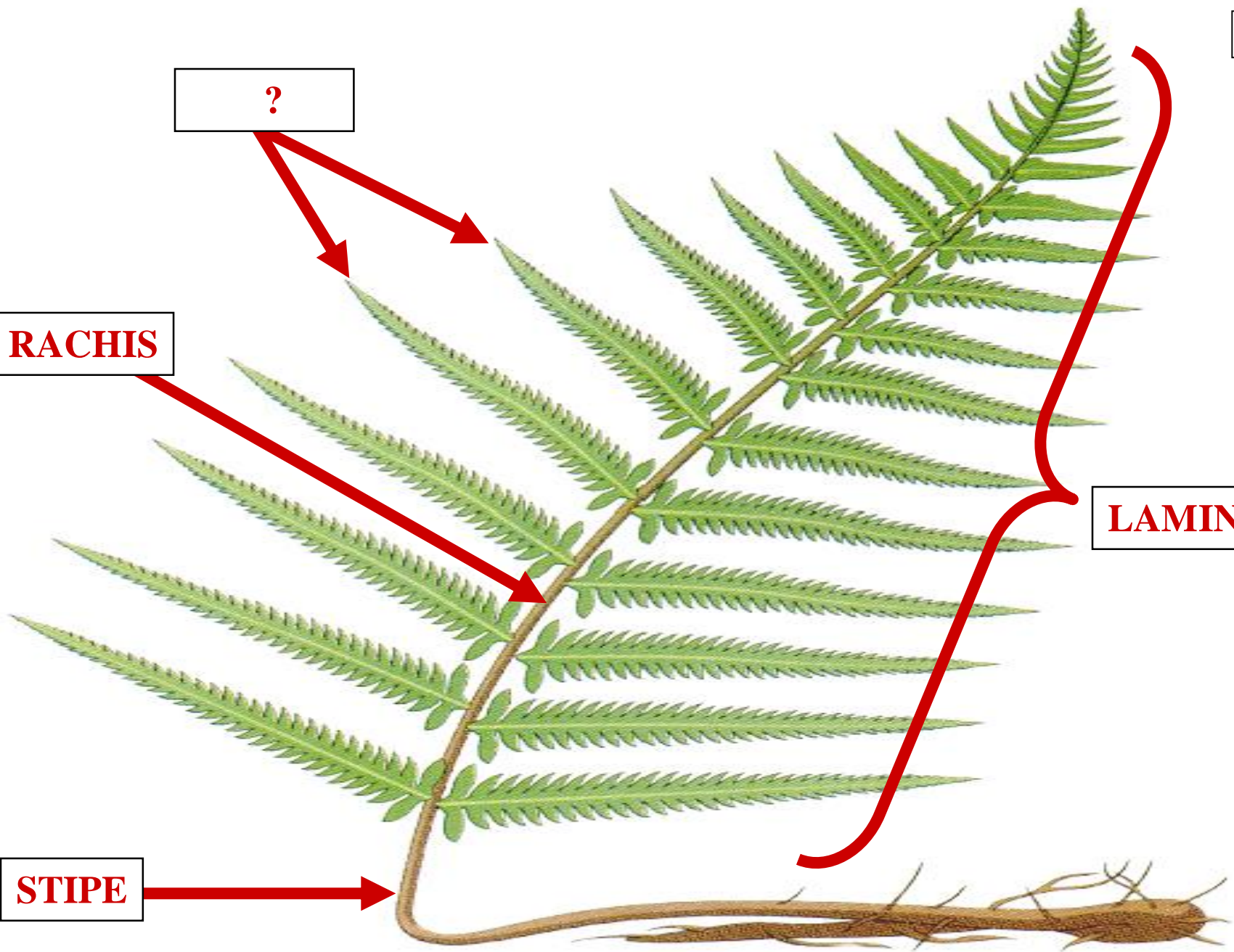
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RACHIS

LAMINA

STIPE

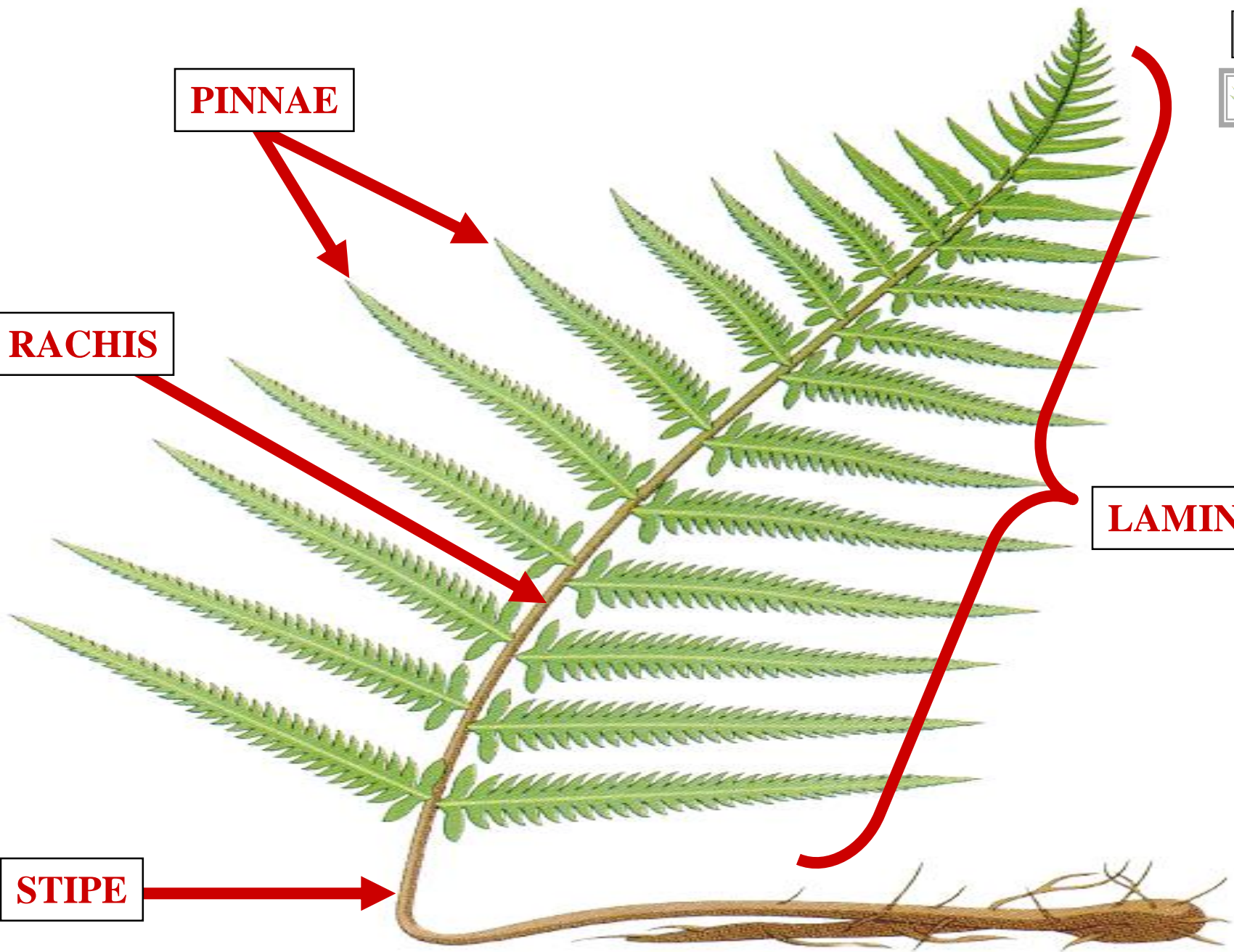
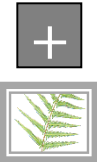


PINNAE

RACHIS

STIPE

LAMINA



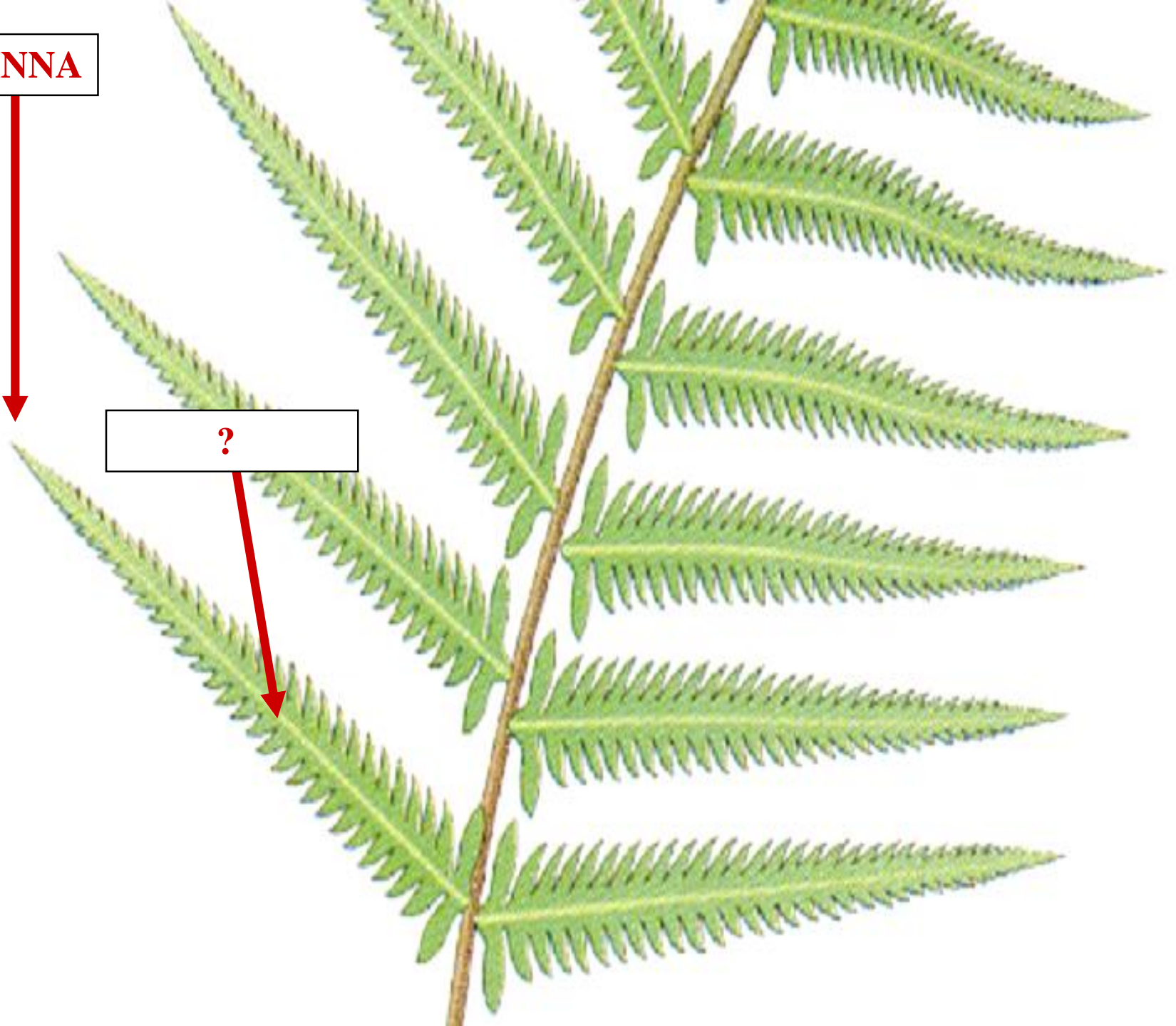
PINNA



PINNA



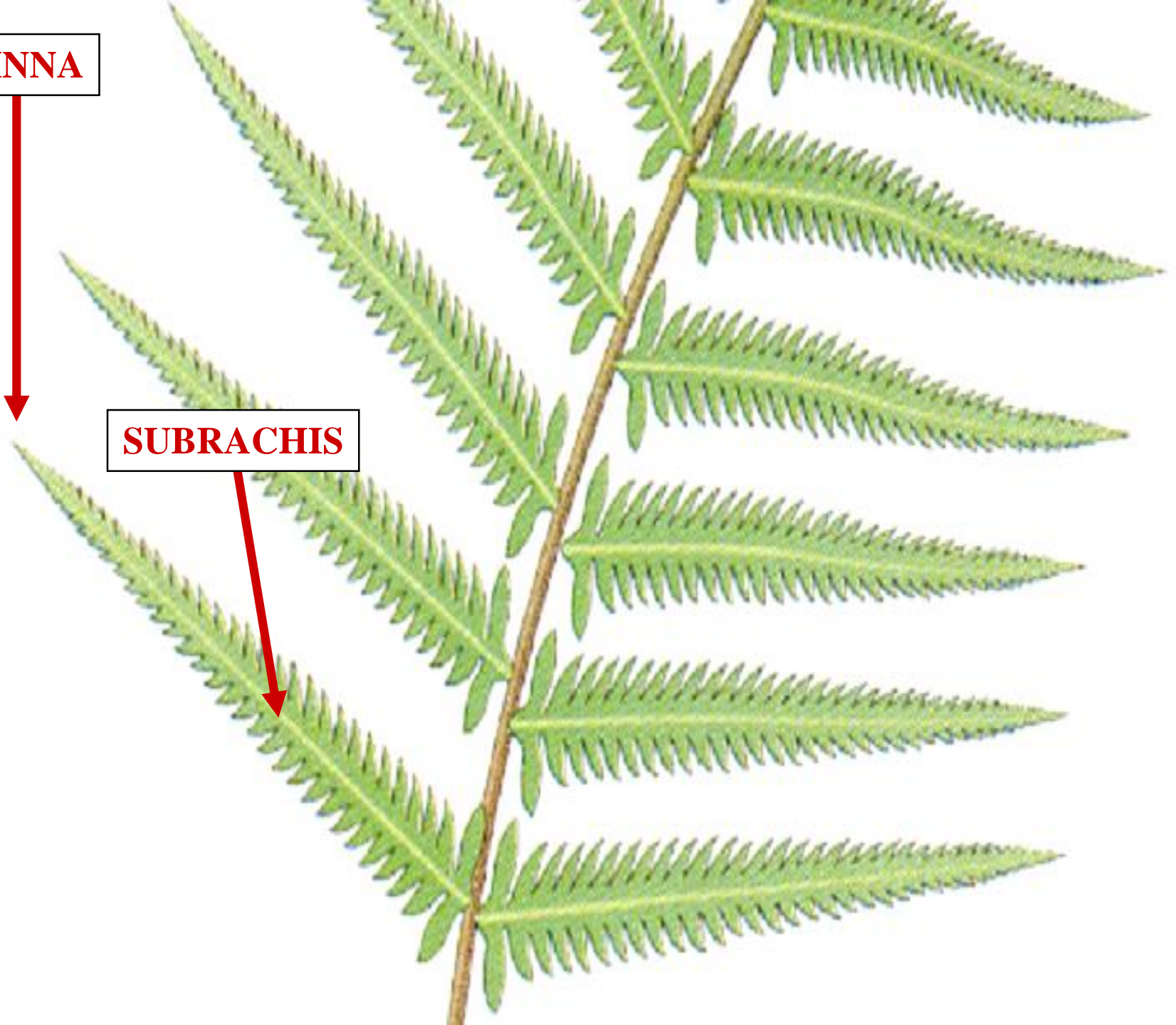
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PINNA



SUBRACHIS



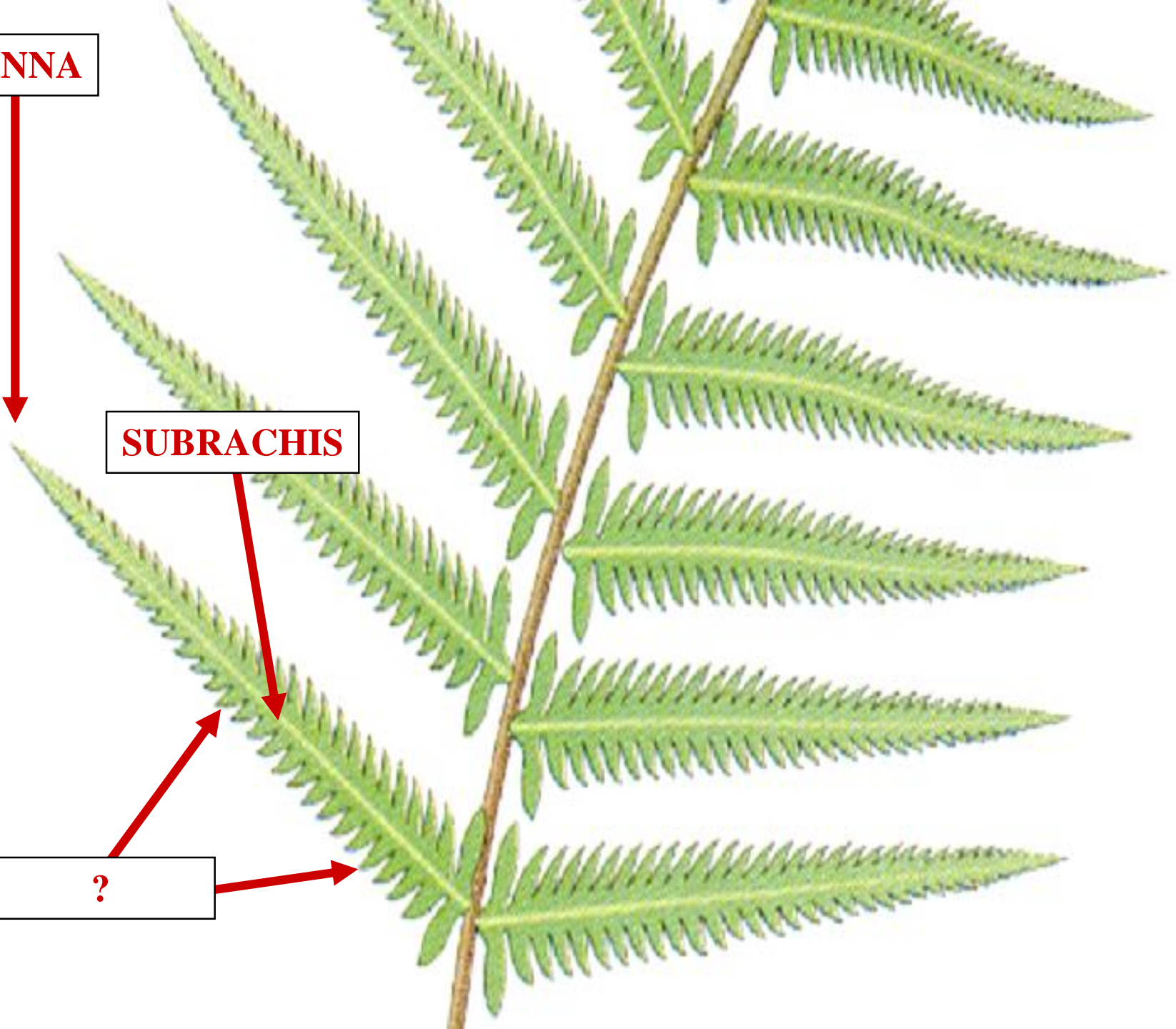
PINNA



SUBRACHIS



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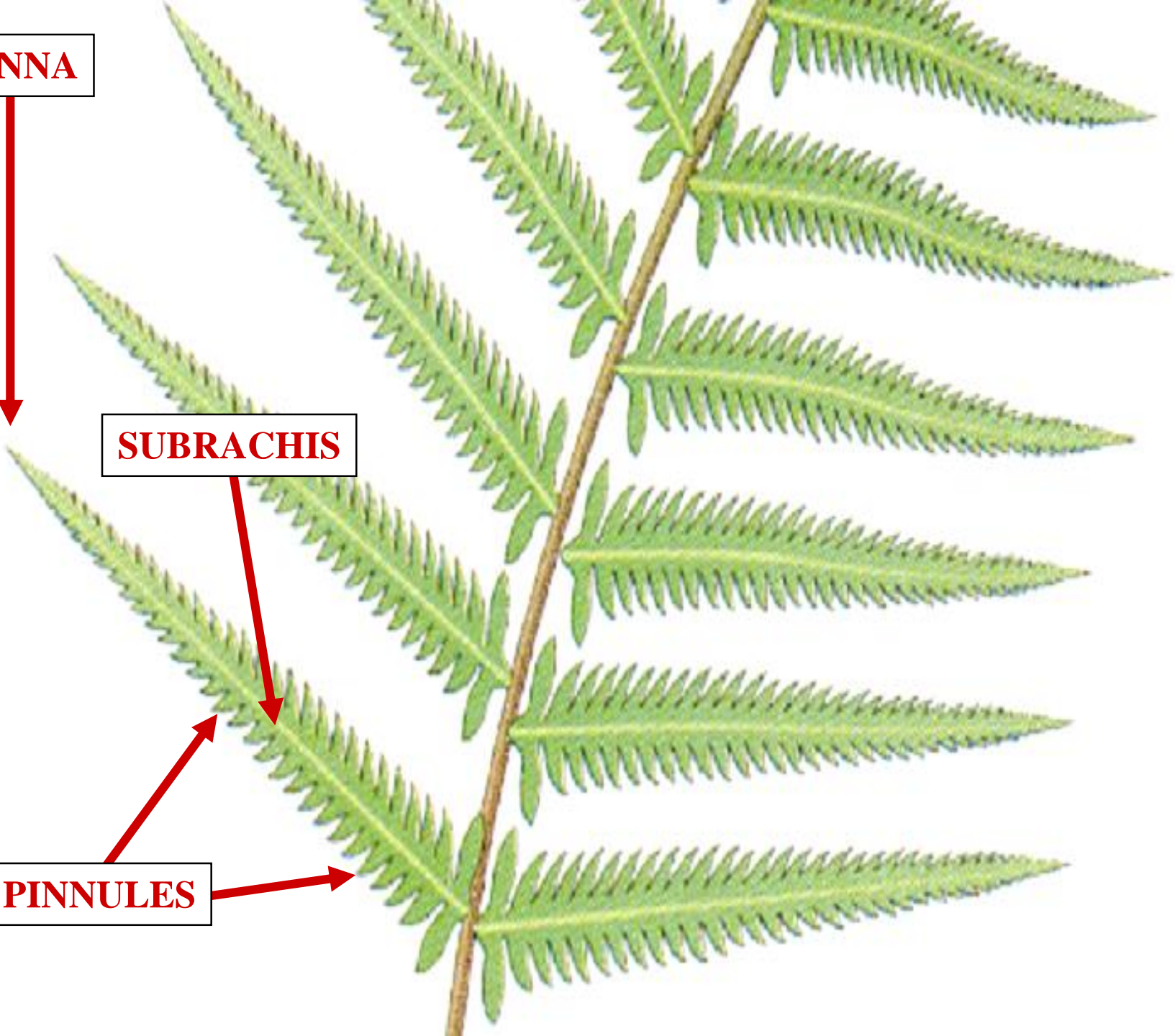
PINNA



SUBRACHIS



PINNULES



**COMPOUND
FERN FROND
MORPHOLOGY**



COMPOUND FROND TYPES

COMPOUND FROND TYPES

ONCE PINNATE

COMPOUND FROND TYPES

COMPOUND FROND TYPES

0

ONCE PINNATE
TWICE PINNATE

COMPOUND FROND
TYPES

**ONCE PINNATE
COMPOUND
FROND**

**COMPOUND FROND
ONCE PINNATE**



**BEARS
PINNAE ONLY**

**COMPOUND FROND
ONCE PINNATE**

**ONCE PINNATE
COMPOUND
FROND**

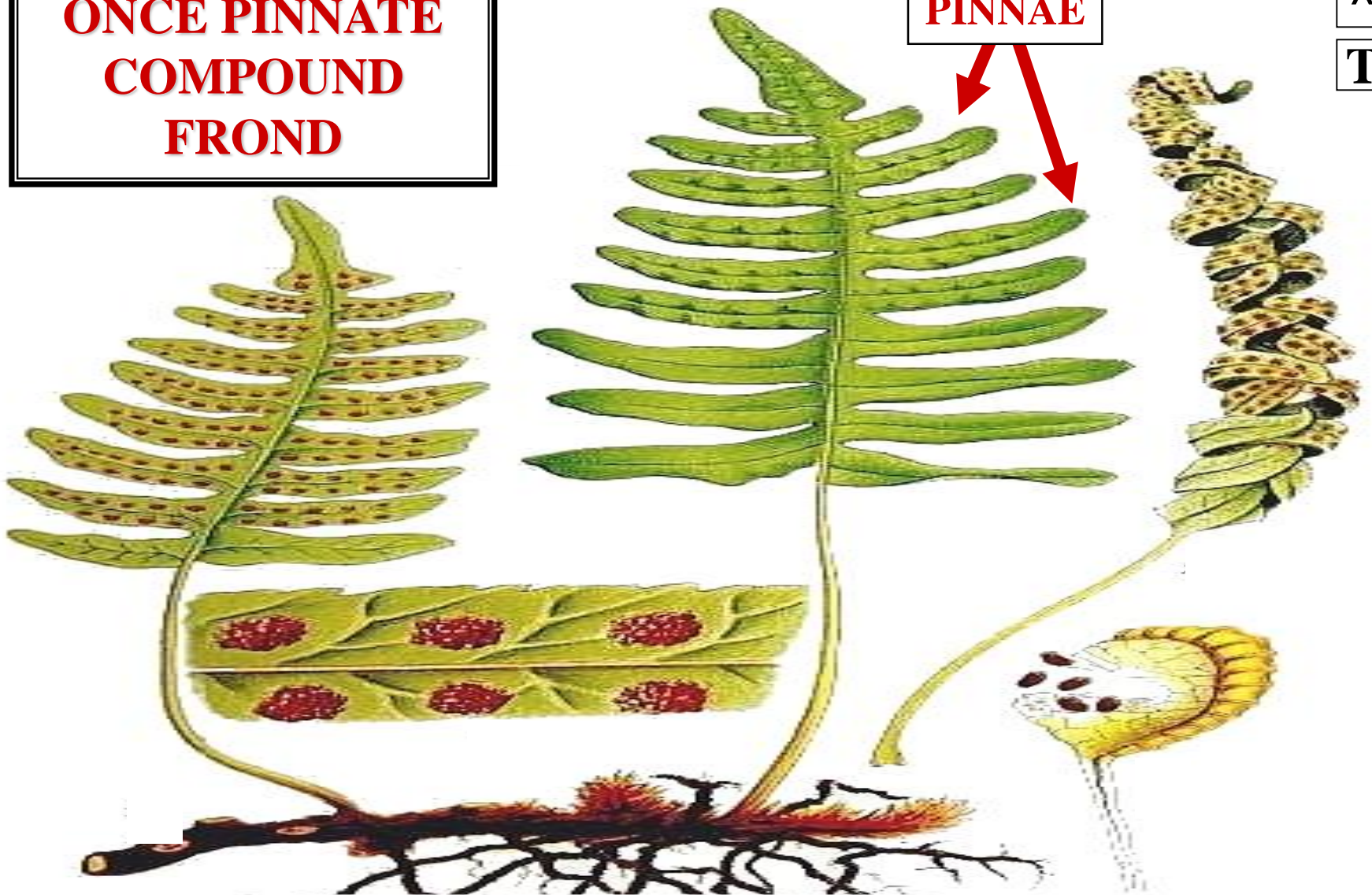


POLYPODIUM

**ONCE PINNATE
COMPOUND
FROND**

PINNAE

^
T



POLYPODIUM

**TWICE PINNATE
COMPOUND
FROND**

COMPOUND FROND TWICE PINNATE



BEARS
PINNAE & PINNULES

COMPOUND FROND
TWICE PINNATE

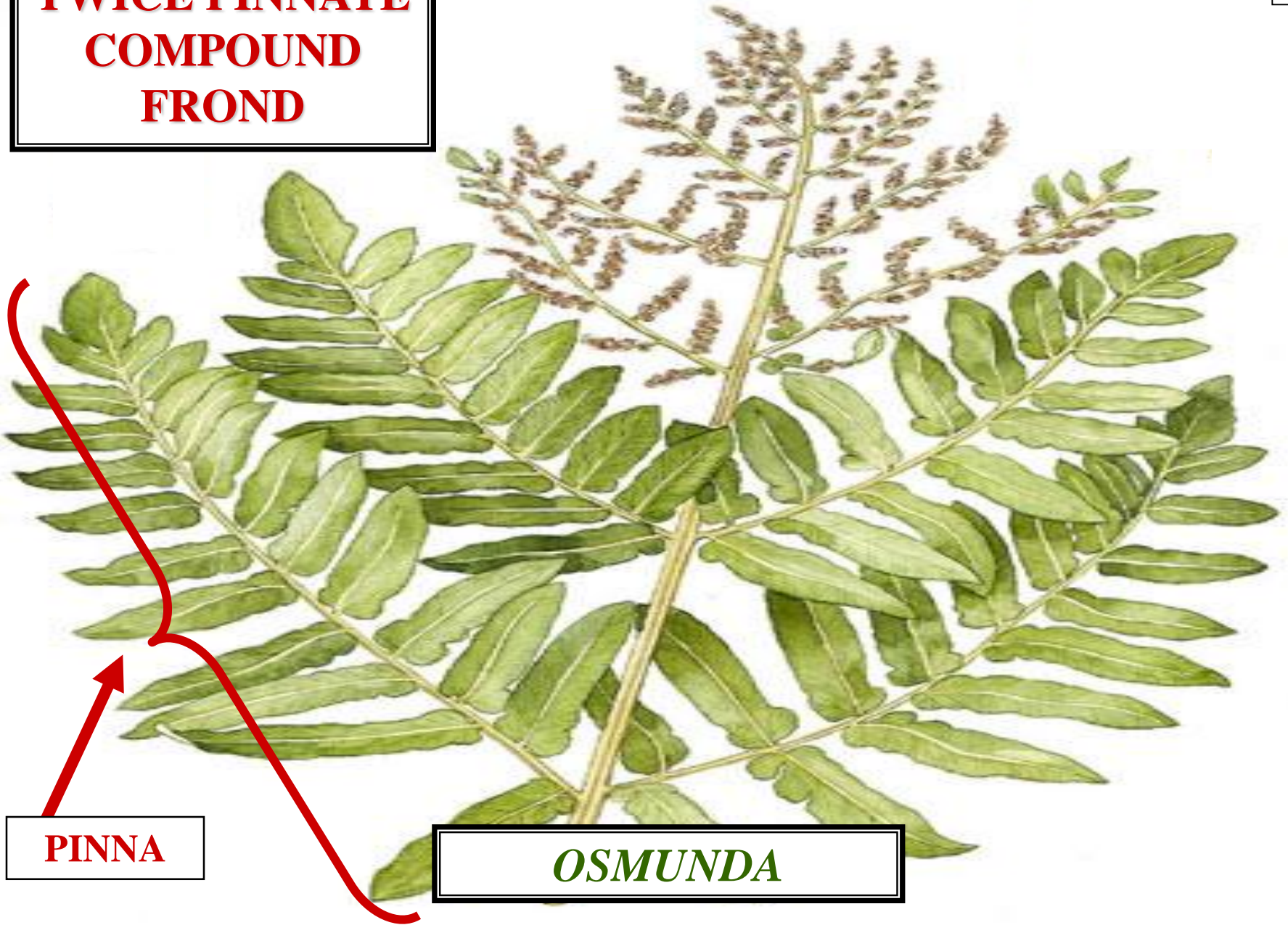
**TWICE PINNATE
COMPOUND
FROND**

P



OSMUNDA

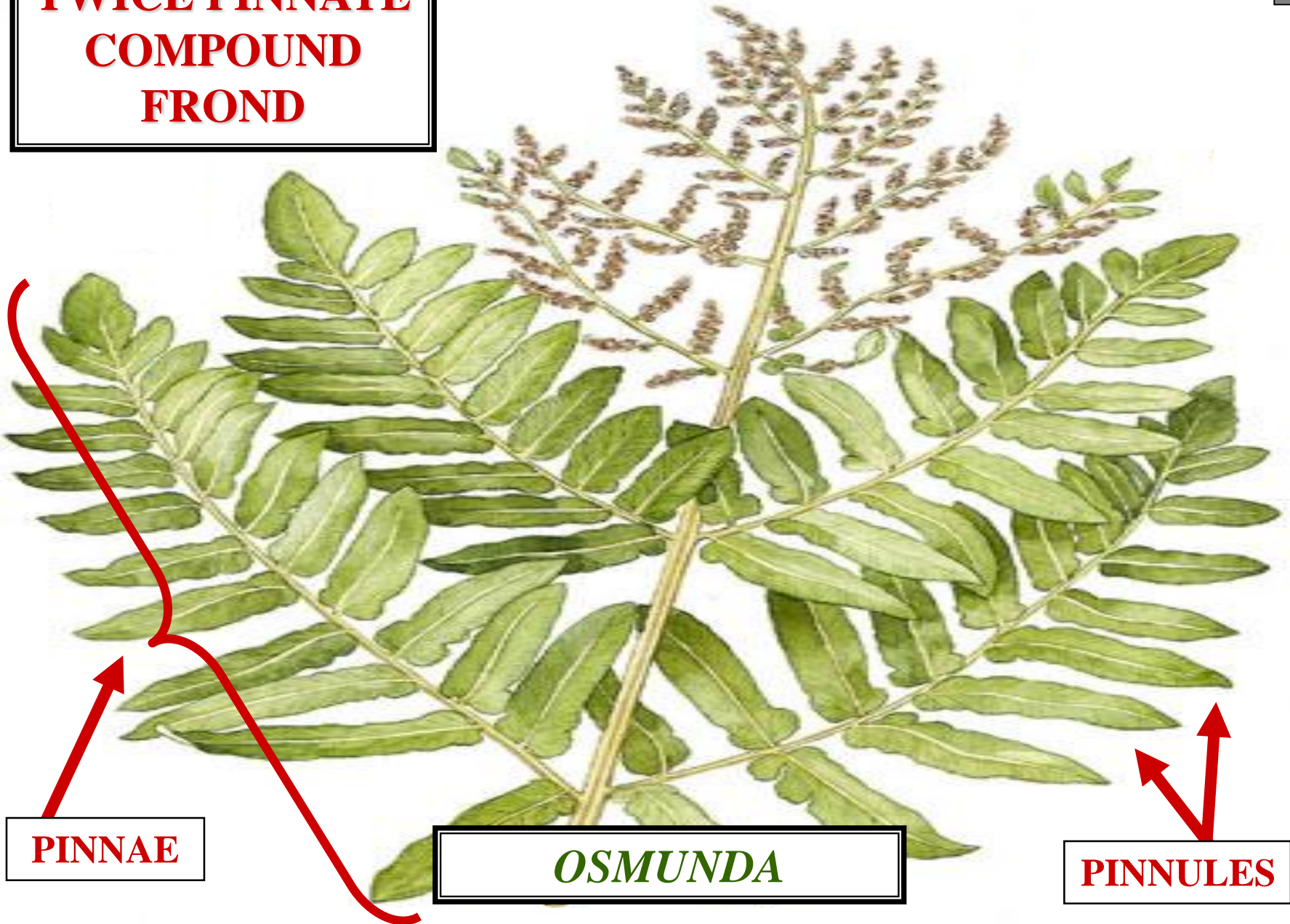
**TWICE PINNATE
COMPOUND
FROND**



PINNA

OSMUNDA

**TWICE PINNATE
COMPOUND
FROND**



PINNAE

OSMUNDA

PINNULES

SIMPLE FROND

SIMPLE FROND

FROND MORPHOLOGY

SIMPLE FROND



PINNAE ASBSENT

FROND MORPHOLOGY

SIMPLE FROND

**SIMPLE
FERN FROND
MORPHOLOGY**



**SIMPLE
FERN FROND
MORPHOLOGY**



**PINNAE
ABSENT**



SIMPLE FROND MORPHOLOGY

**SIMPLE
FERN FROND
MORPHOLOGY**



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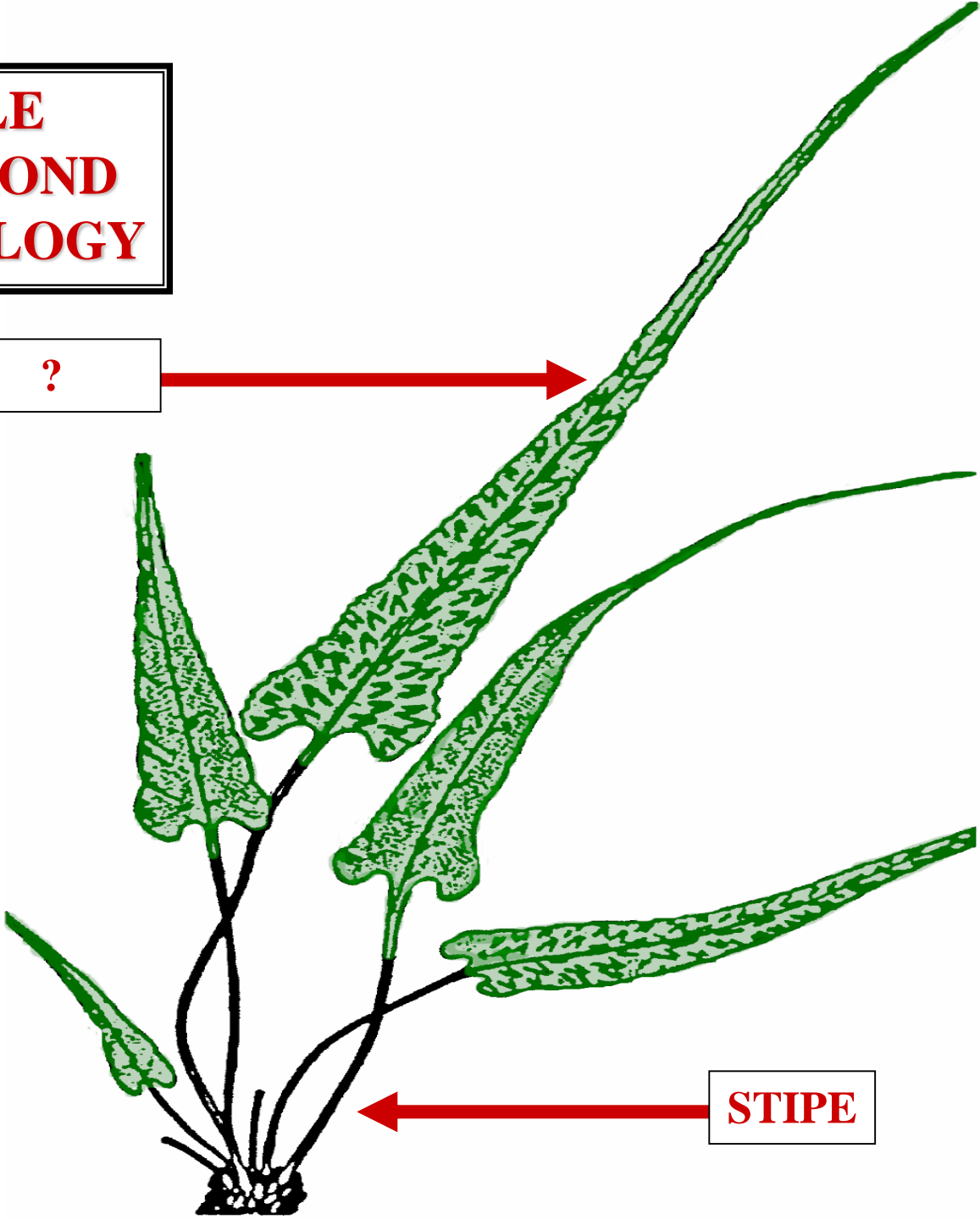
**SIMPLE
FERN FROND
MORPHOLOGY**



STIPE

**SIMPLE
FERN FROND
MORPHOLOGY**

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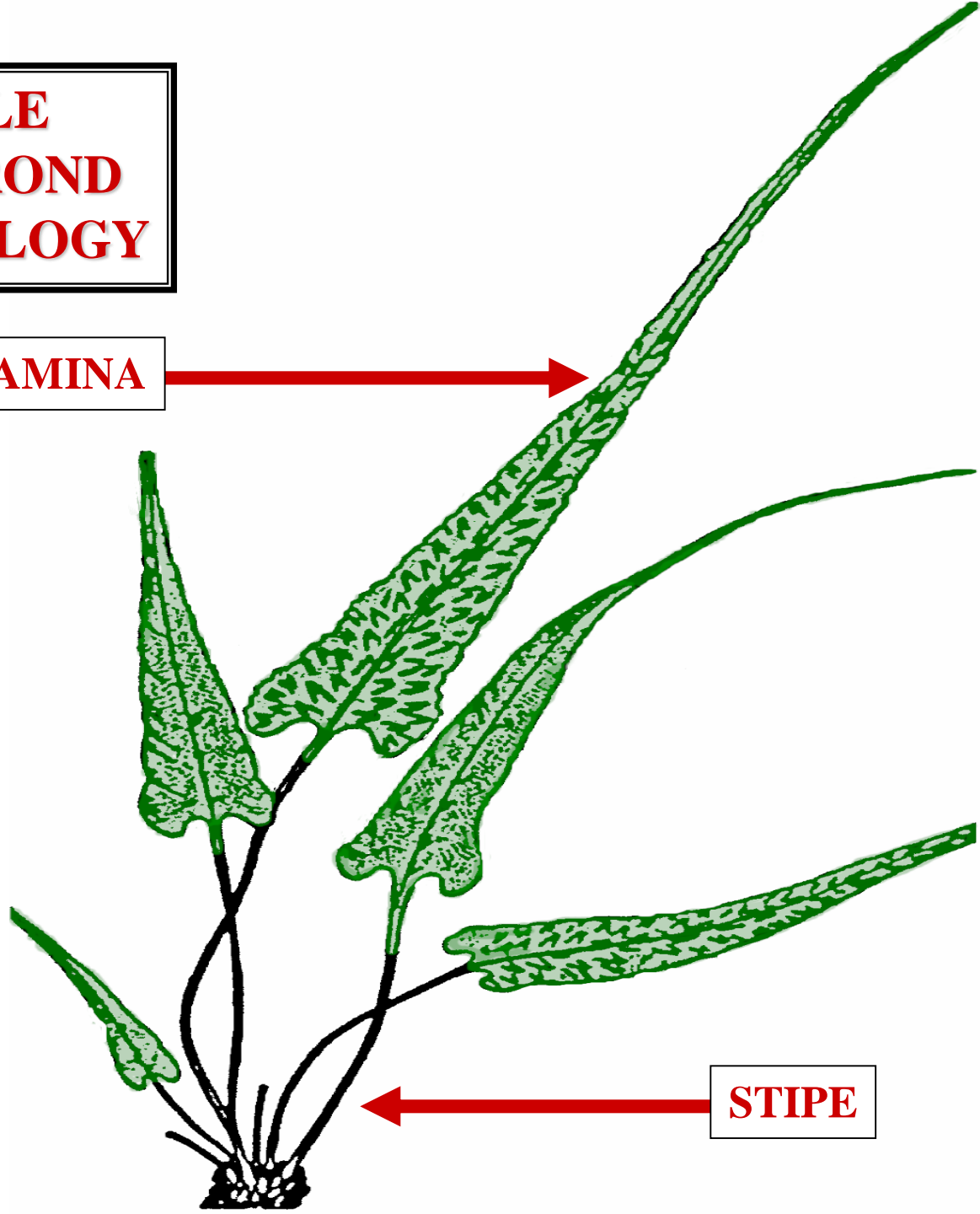


STIPE



**SIMPLE
FERN FROND
MORPHOLOGY**

LAMINA



STIPE



SORUS

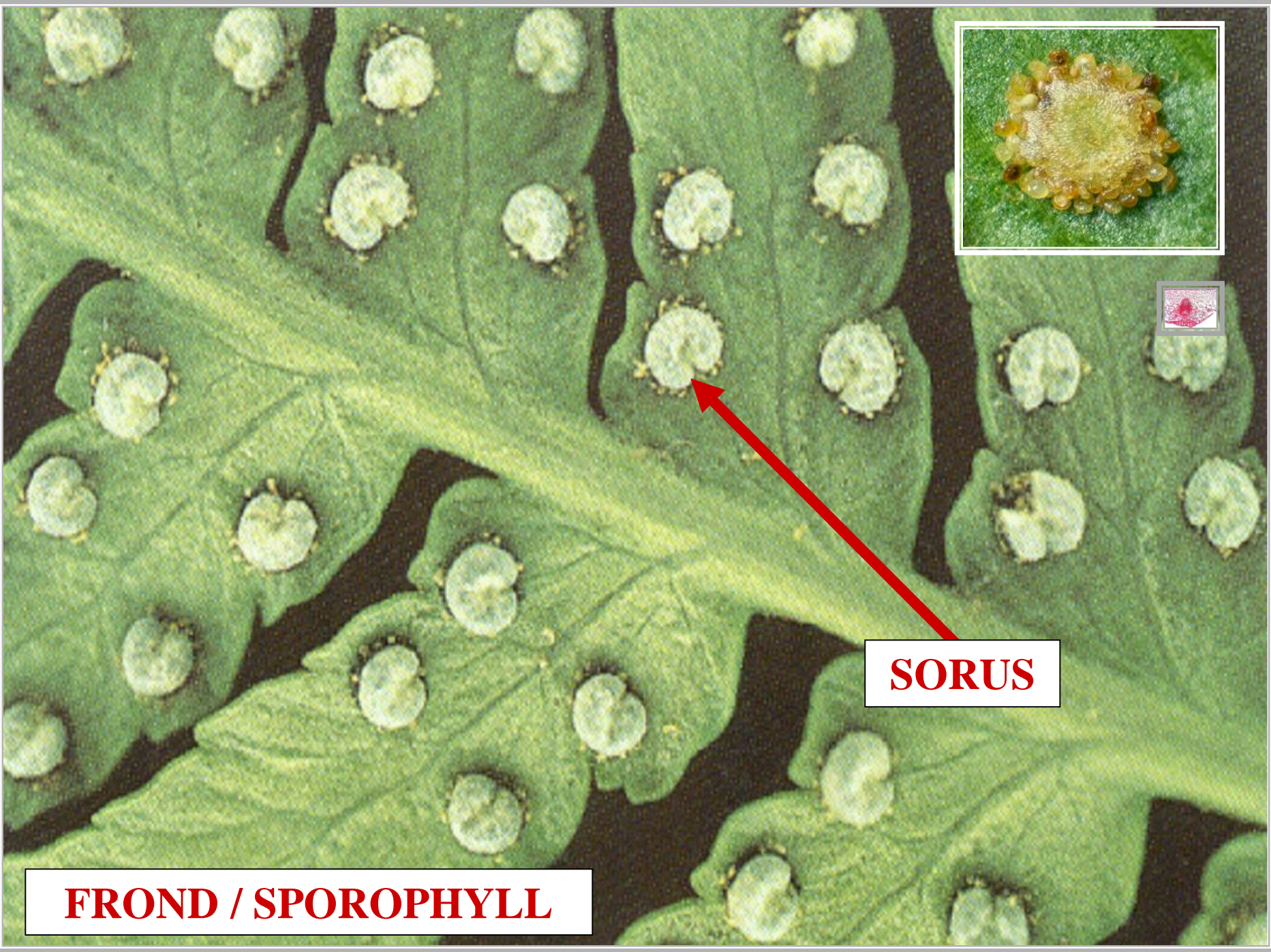
SORUS

PTERALES SORUS



**SPORANGIA
CLUSTER**

**PTERALES
SORUS**



FROND / SPOROPHYLL

SORUS



L.S.

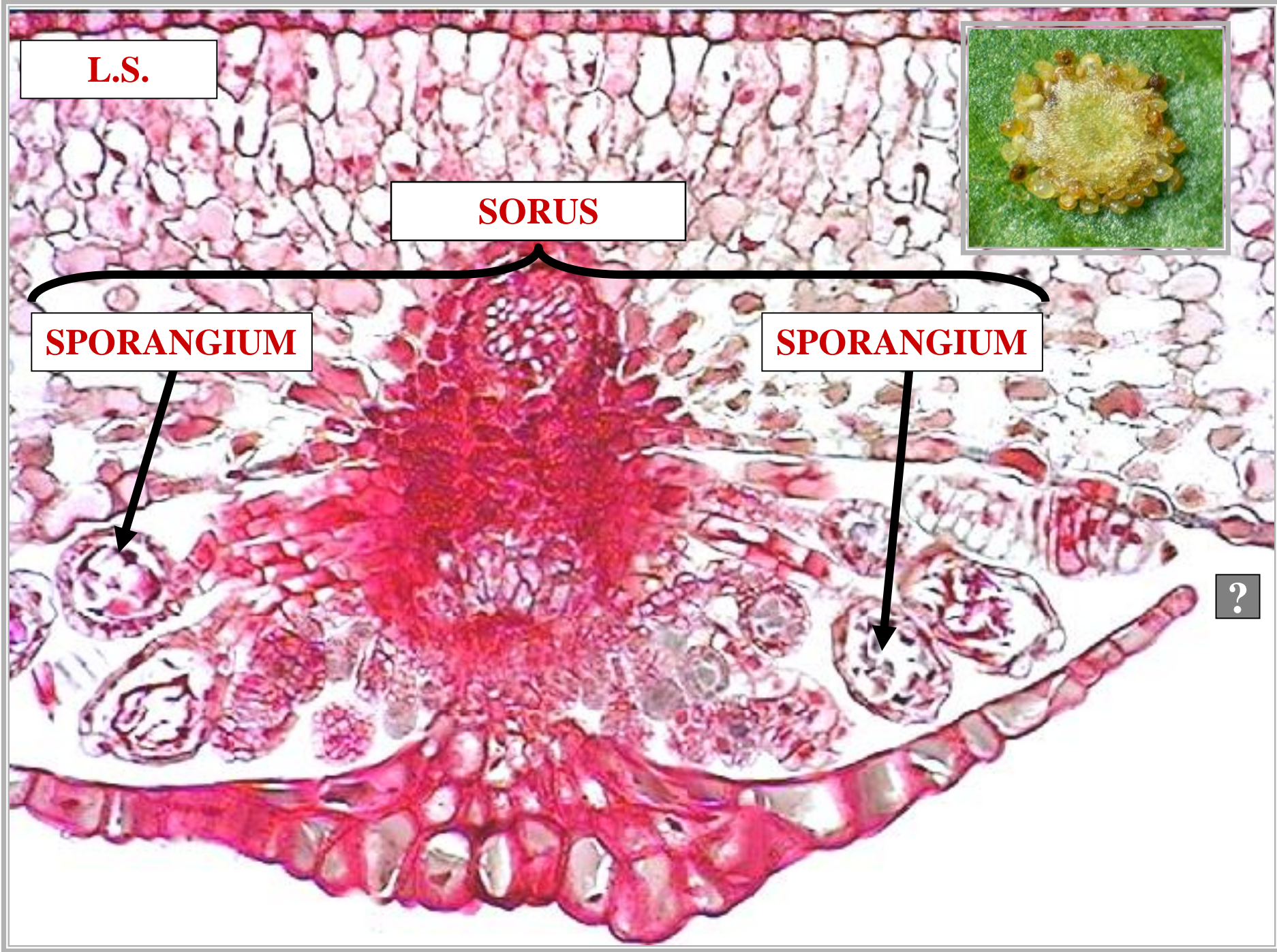
SORUS



SPORANGIUM

SPORANGIUM

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L.S.

SORUS

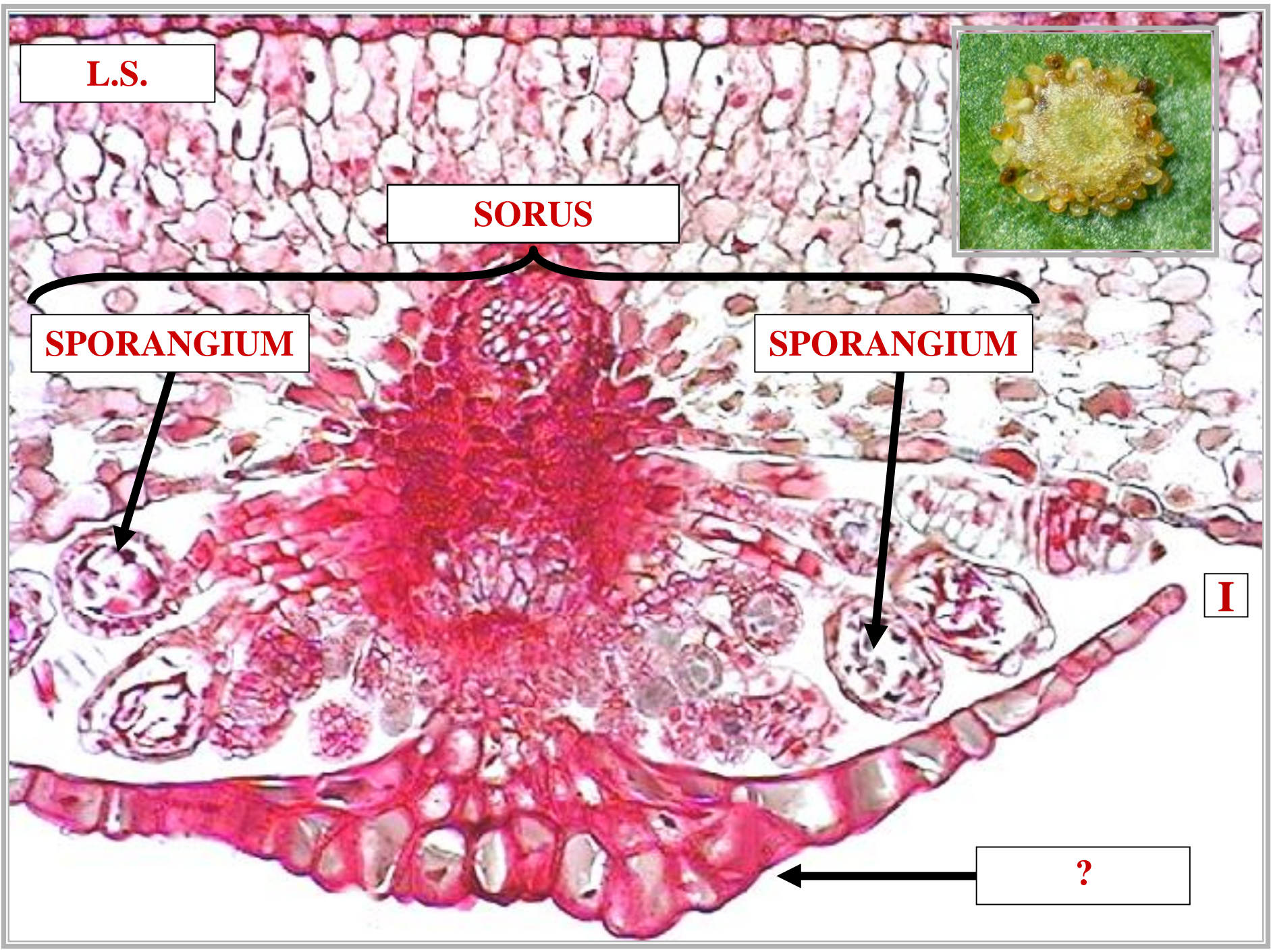


SPORANGIUM

SPORANGIUM

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L.S.

SORUS

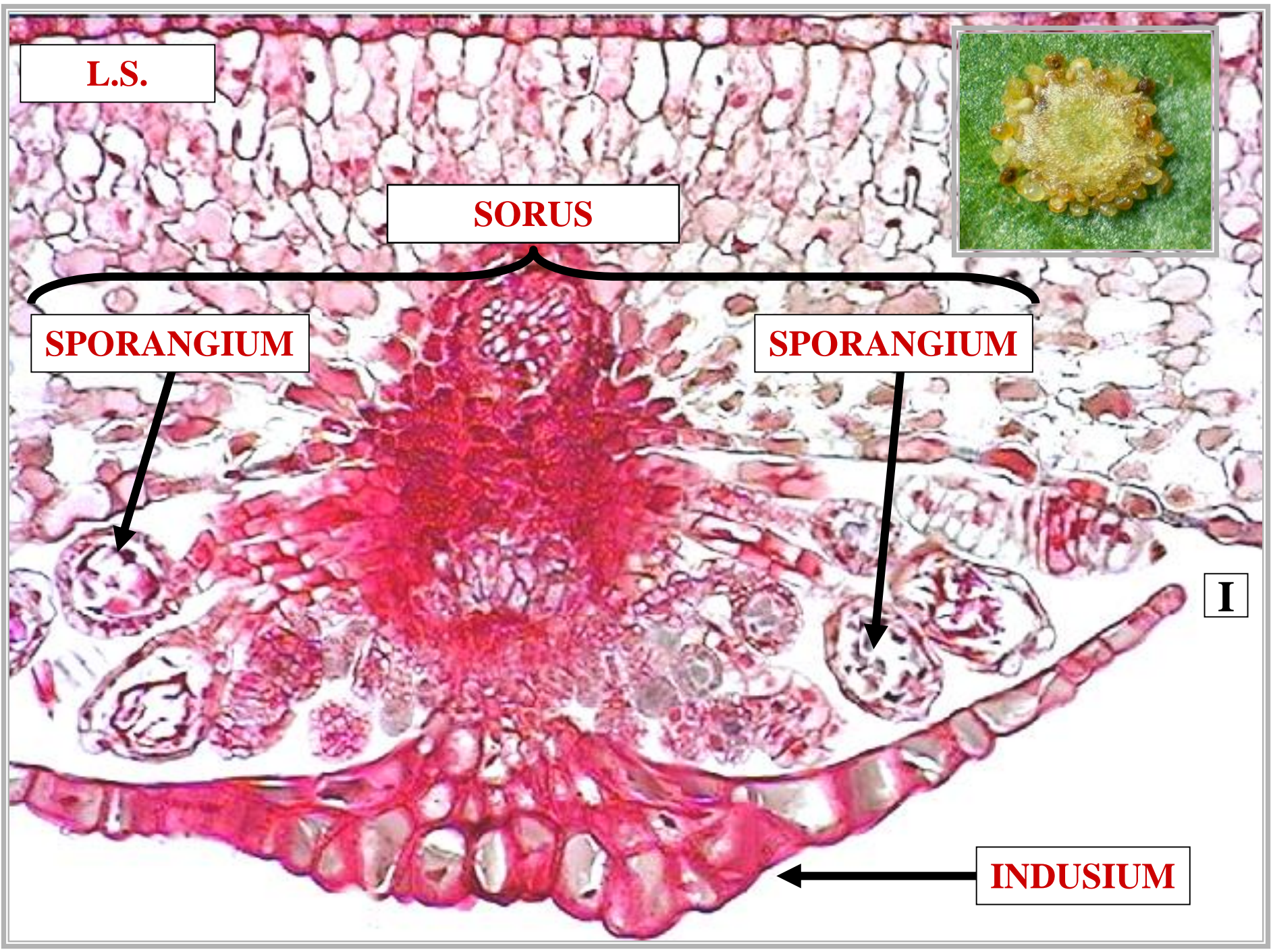


SPORANGIUM

SPORANGIUM

I

INDUSIUM



INDUSIUM



**PTERALES
INDUSIUM**

MODIFIED PLT HAIR

**PTERALES
INDUSIUM**



**PTERALES
INDUSIUM**

MODIFIED PLT HAIR

PROTECTS SPORANGIA

**PTERALES
INDUSIUM**



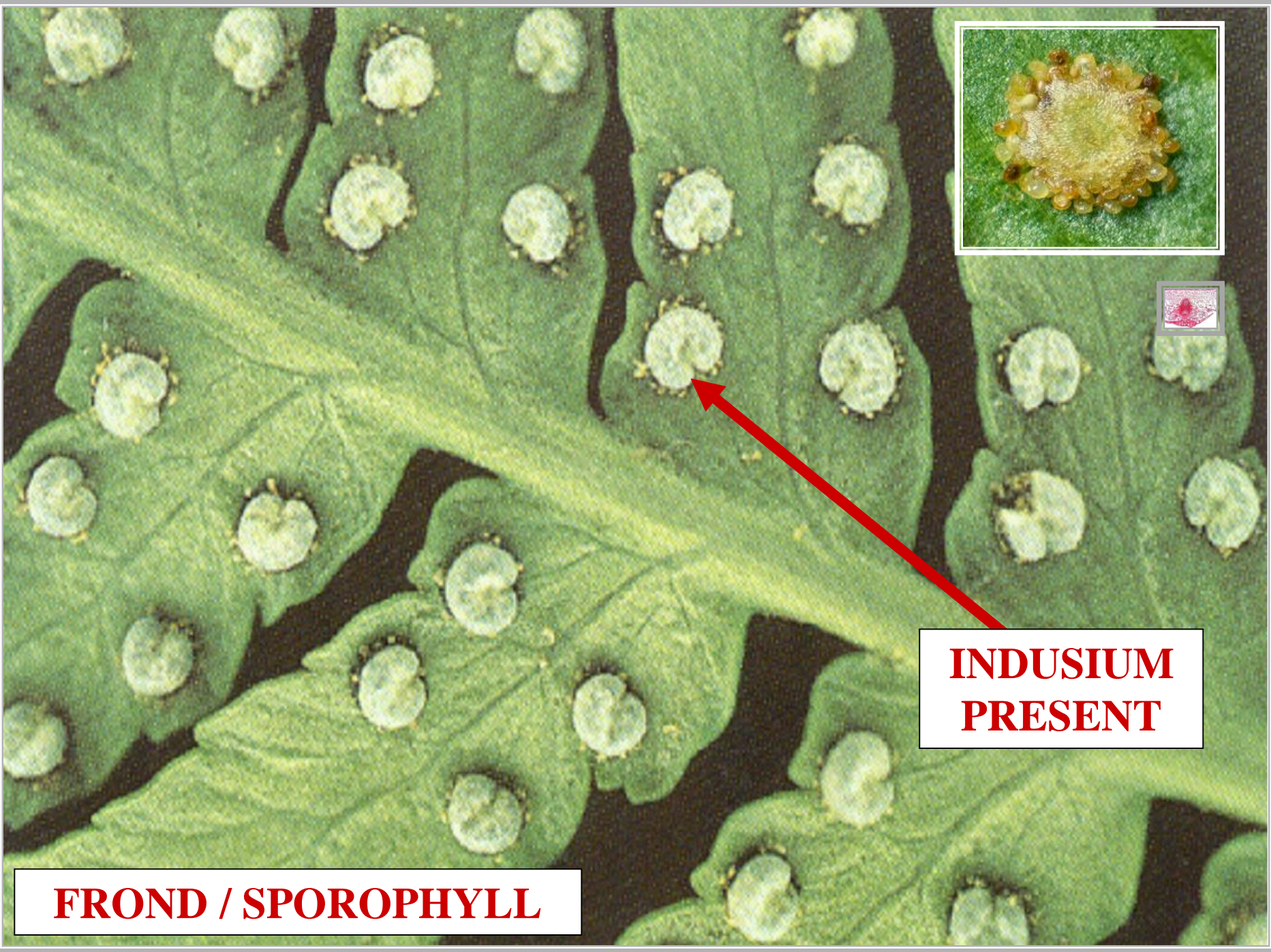
PTERALES
INDUSIUM

MODIFIED PLT HAIR

PROTECT SPORANGIA

PRESENT OR ABSENT

PTERALES
INDUSIUM



**INDUSIUM
PRESENT**

FROND / SPOROPHYLL

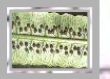
L.S.

SORUS

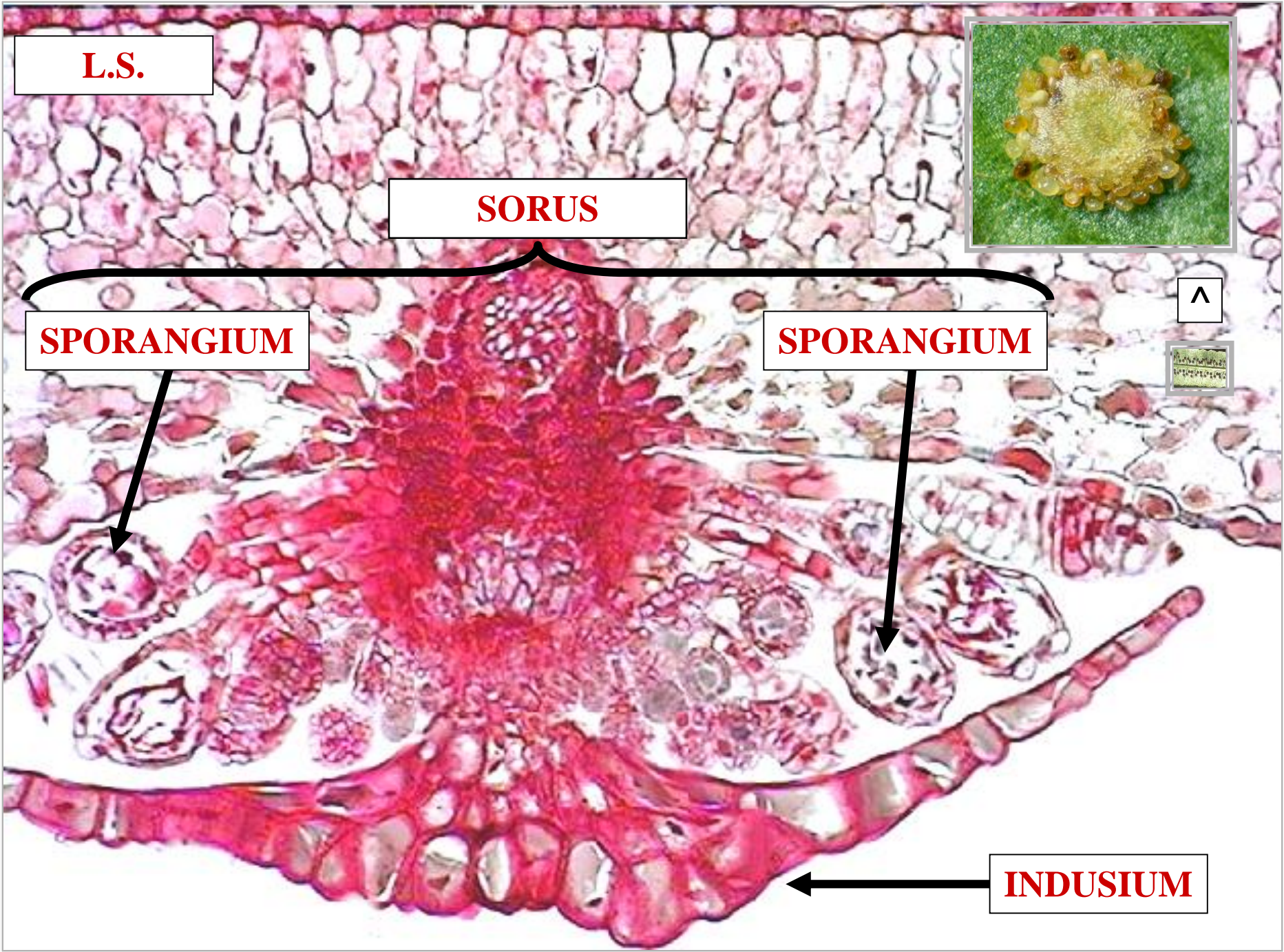


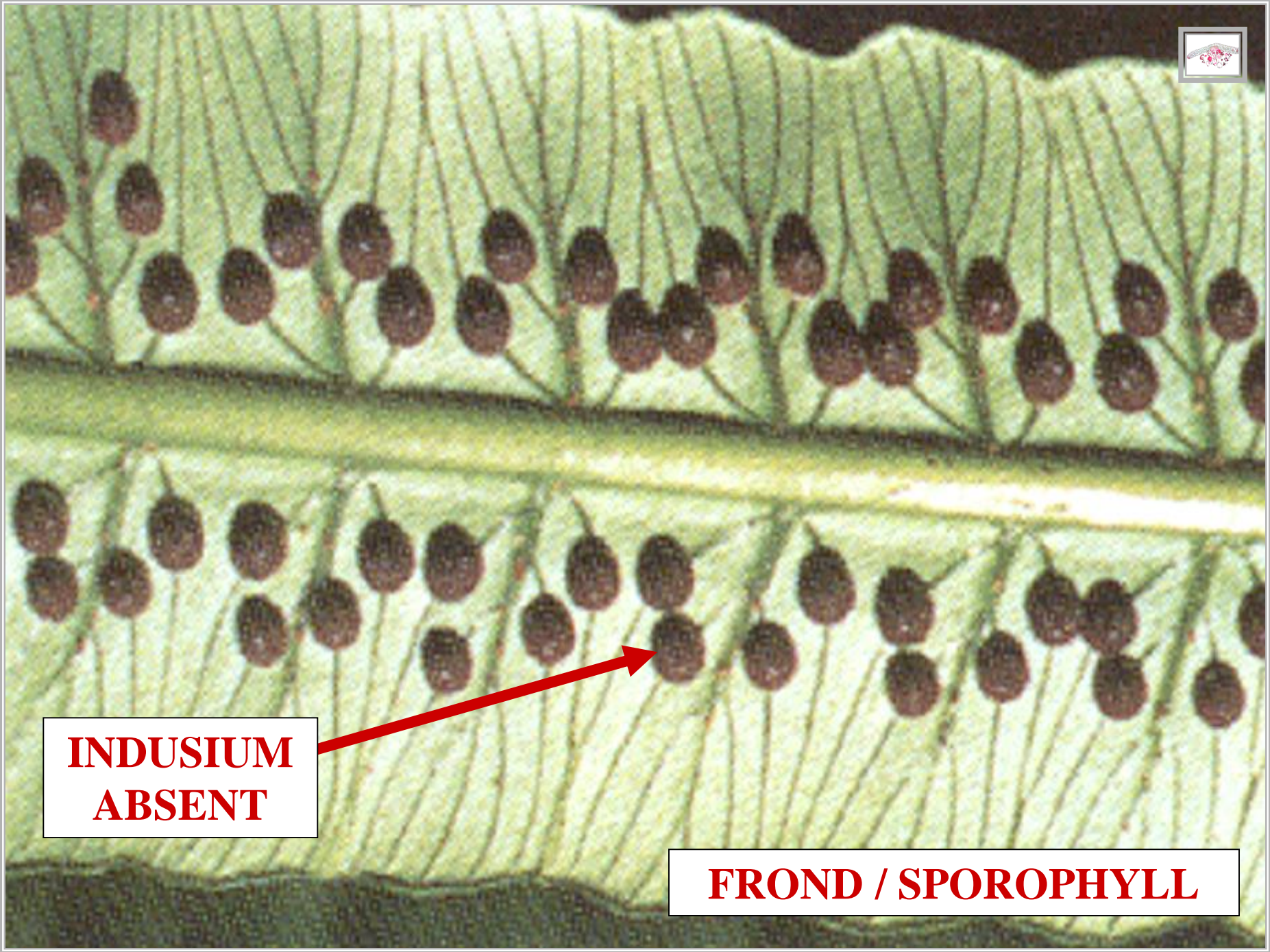
SPORANGIUM

SPORANGIUM



INDUSIUM

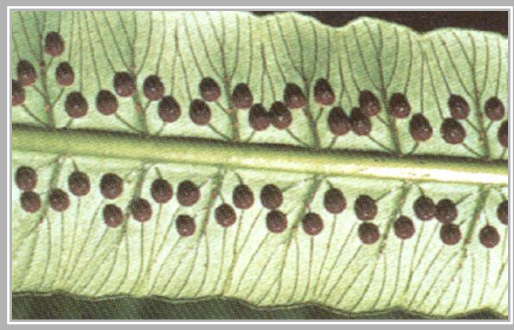




**INDUSIUM
ABSENT**

FROND / SPOROPHYLL

POLYPODIUM



SORUS



SPORANGIUM

INDUSIUM ABSENT

L.S.



SPORANGIUM

“T”



“ADVANCED FERNS”

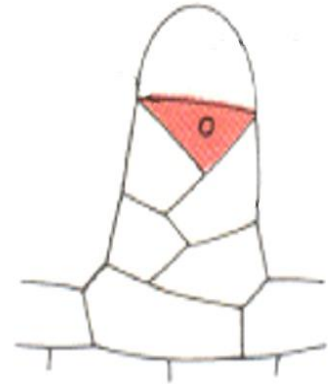
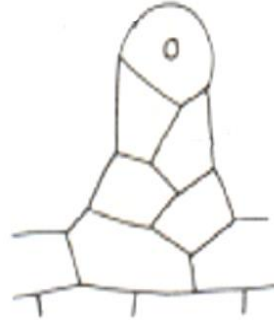
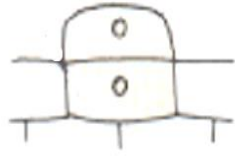
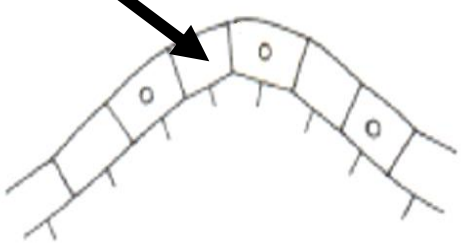




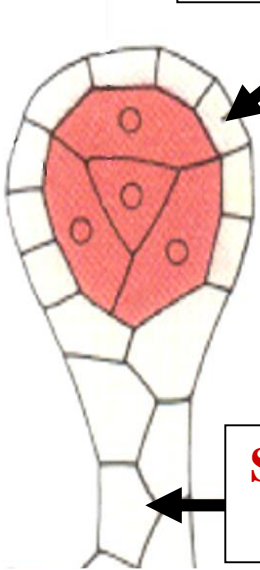
“TRUE FERNS”



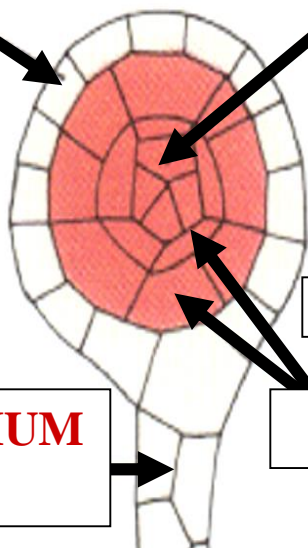
CELL INITIAL



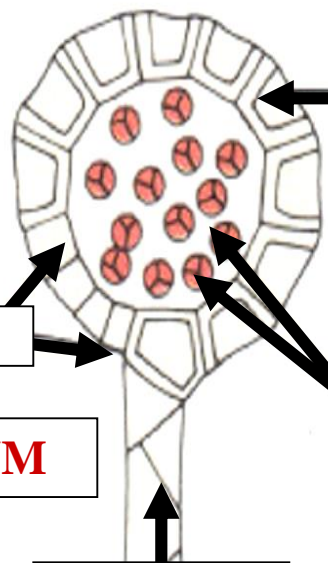
SPORANGIUM WALL



SPOROCYTES



SMALL SIZE



ANNULUS

THIN WALL

FEW SPORES

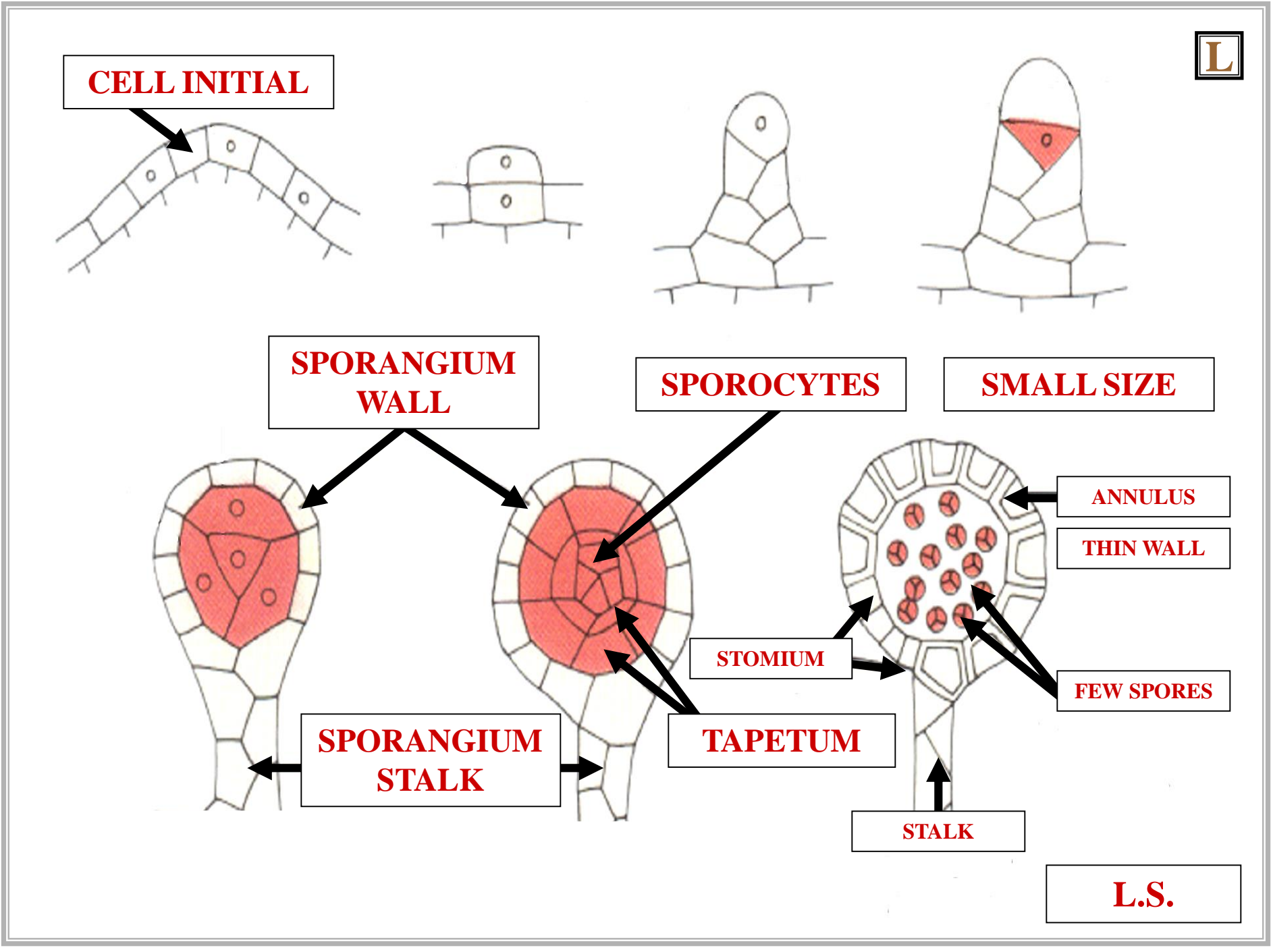
STOMIUM

TAPETUM

SPORANGIUM STALK

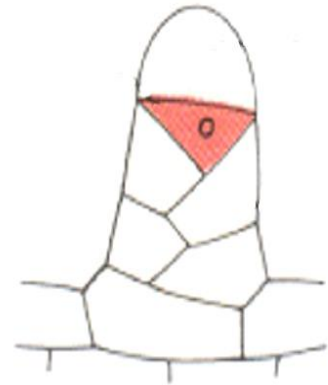
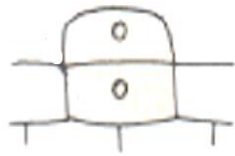
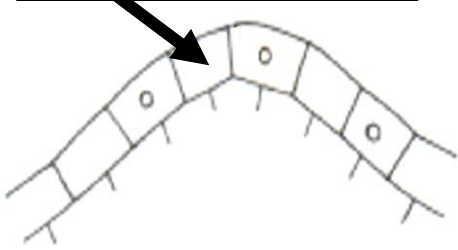
STALK

L.S.





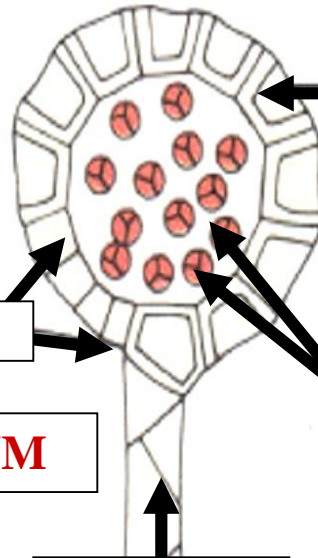
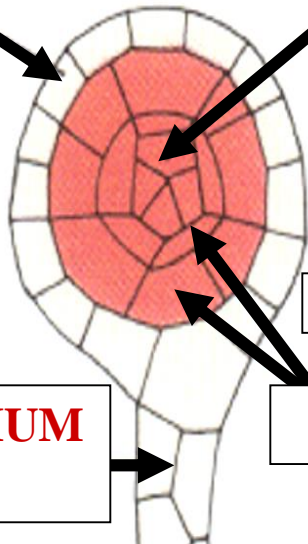
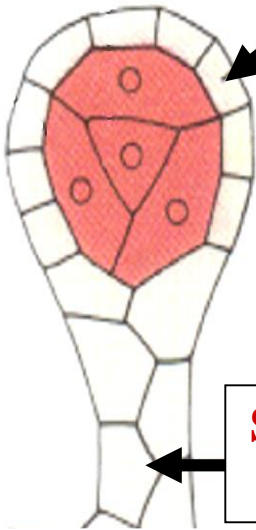
CELL INITIAL



SPORANGIUM WALL

SPOROCYTES

SMALL SIZE



ANNULUS

THIN WALL

STOMIUM

FEW SPORES

SPORANGIUM STALK

TAPETUM

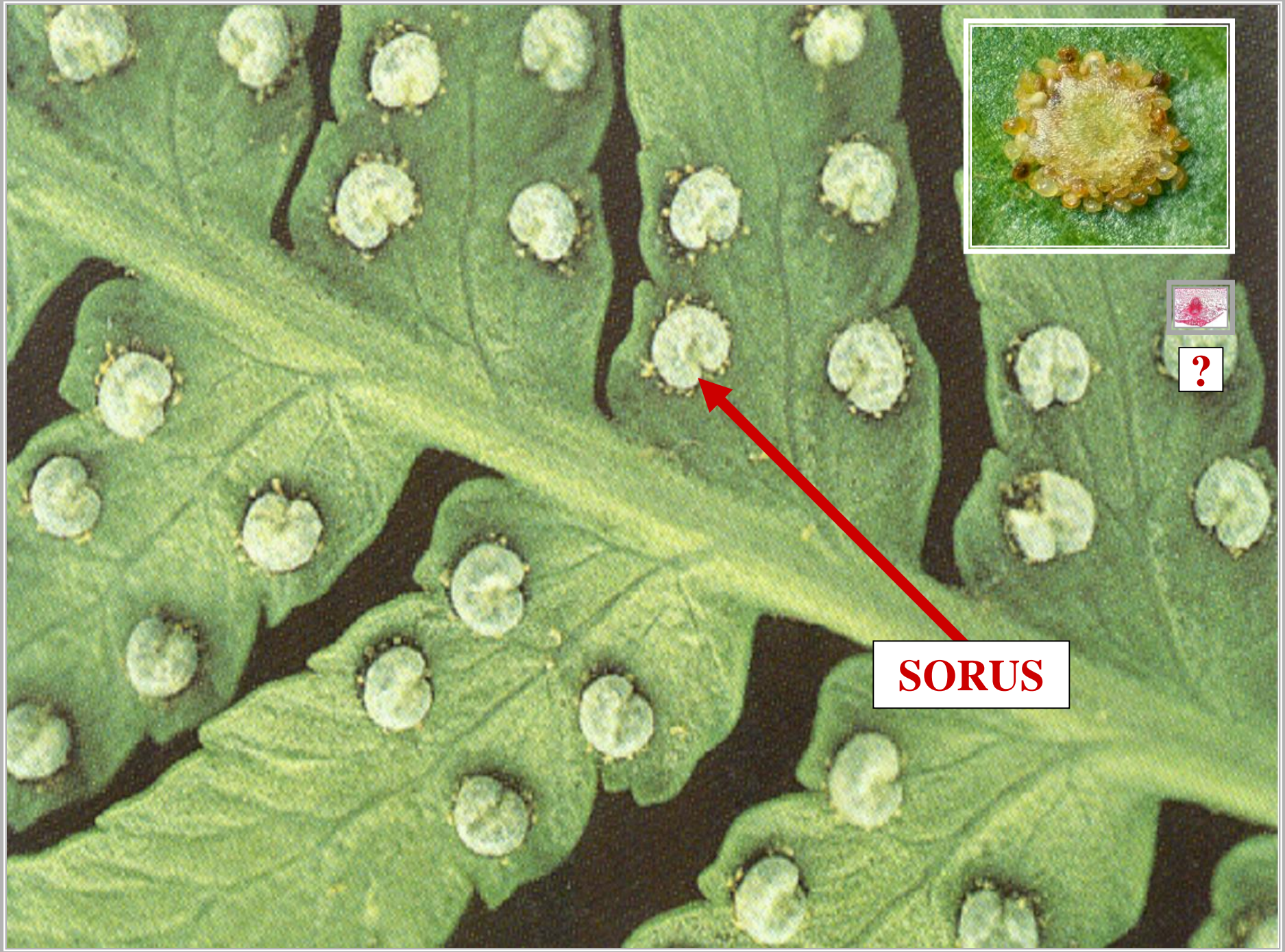
STALK

LEPTOSPORANGIUM

L.S.



SPORANGIUM POSITION



?

SORUS



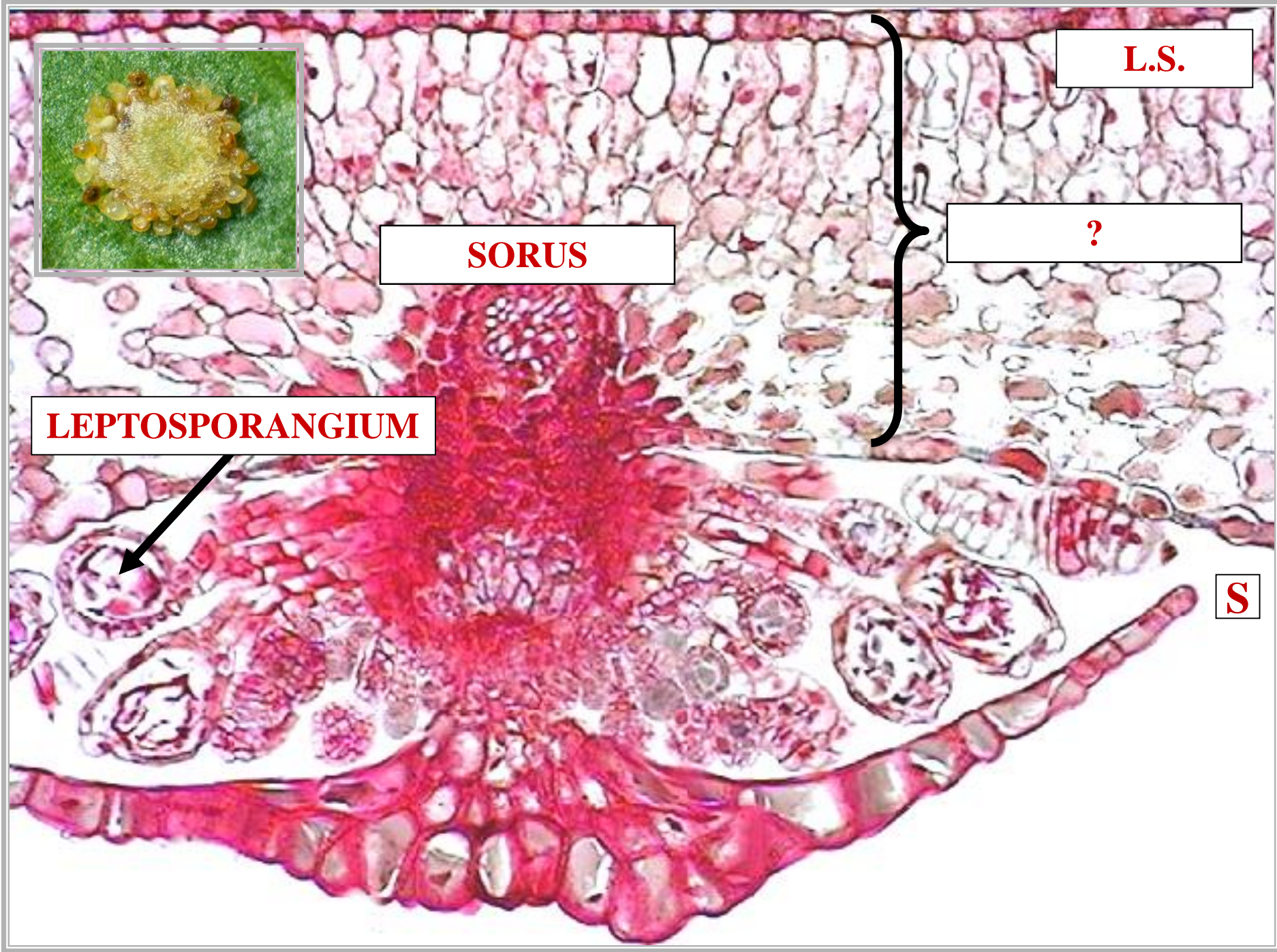
SORUS

L.S.

?

LEPTOSPORANGIUM

S





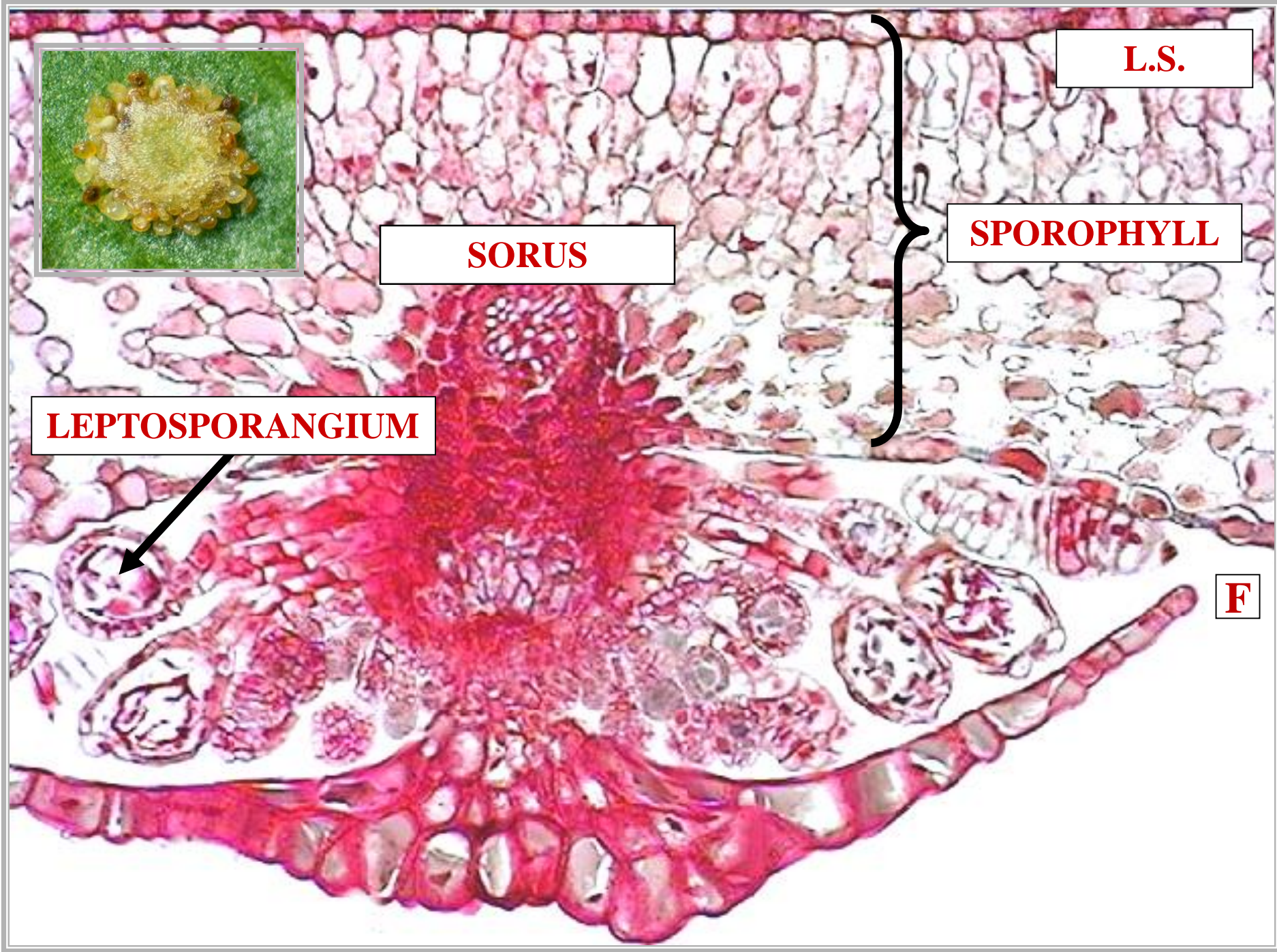
SORUS

L.S.

SPOROPHYLL

LEPTOSPORANGIUM

F





SORUS

L.S.

FOLIAR

LEPTOSPORANGIUM

A

