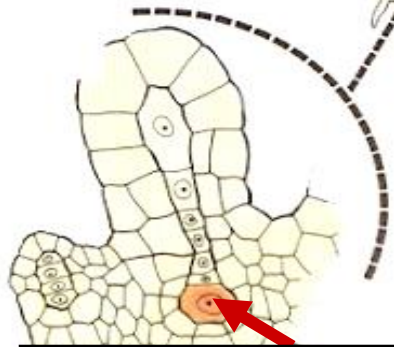
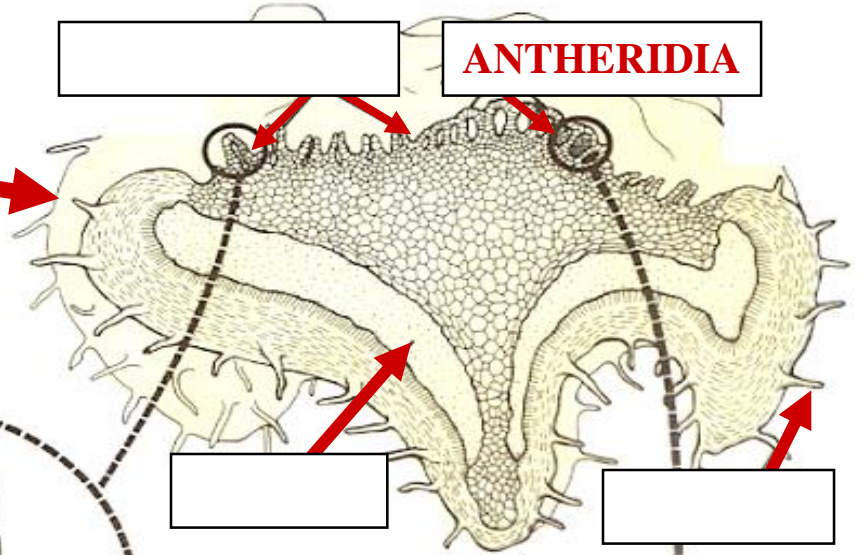
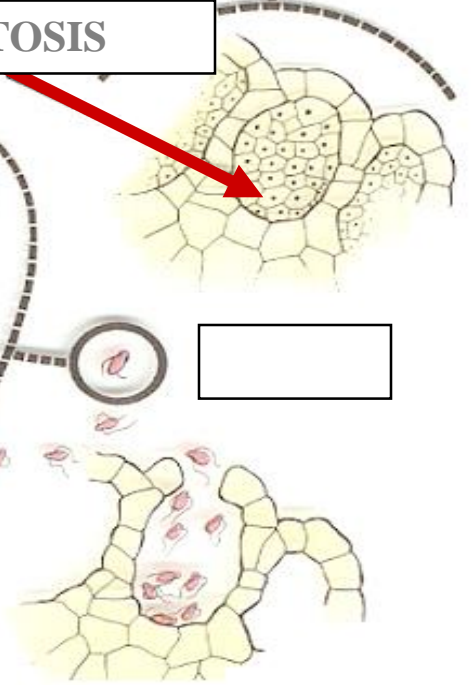
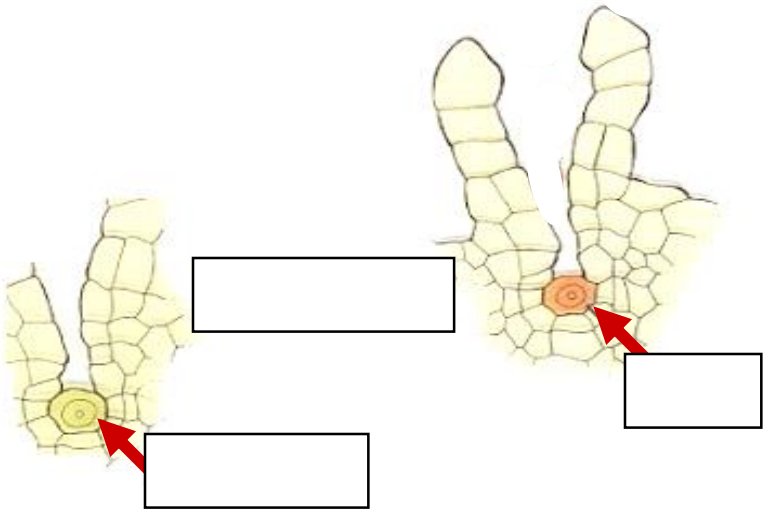
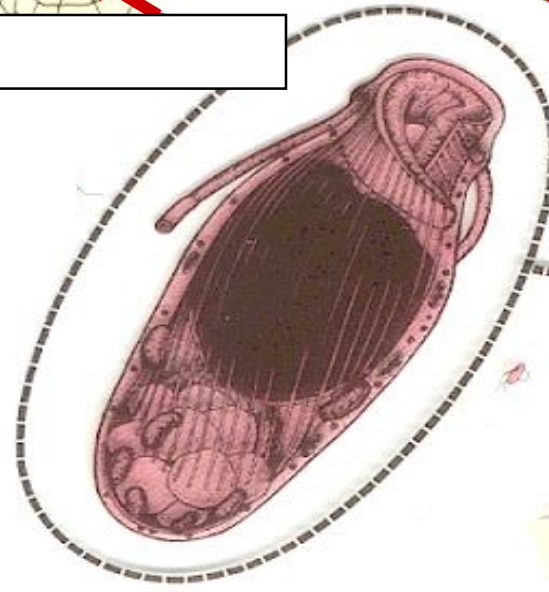


# GAMETOPHYTE

ANTHERIDIA

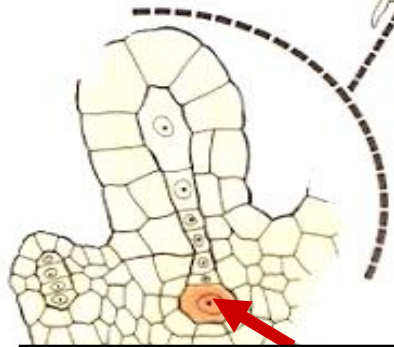


MITOSIS



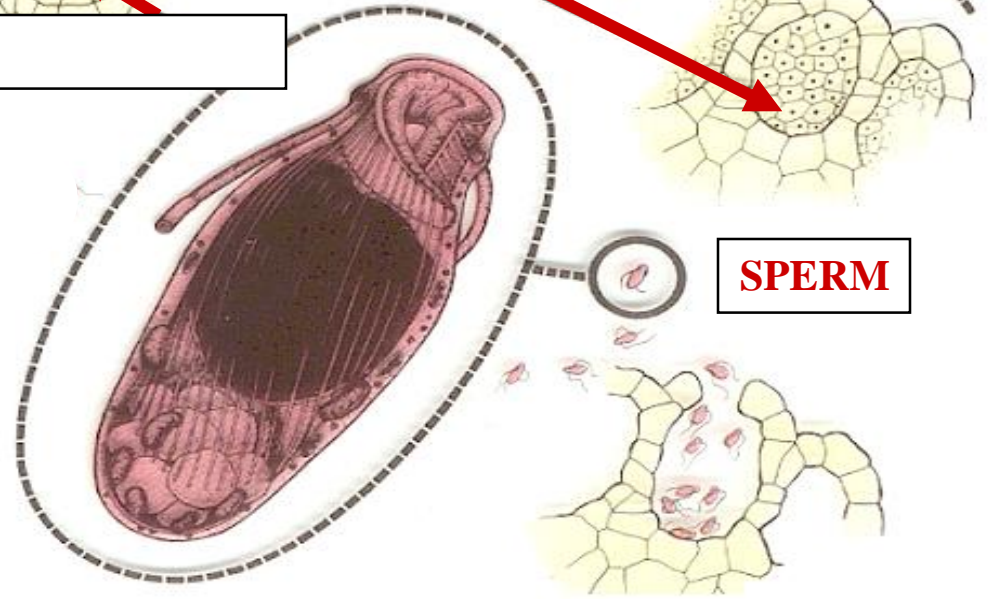
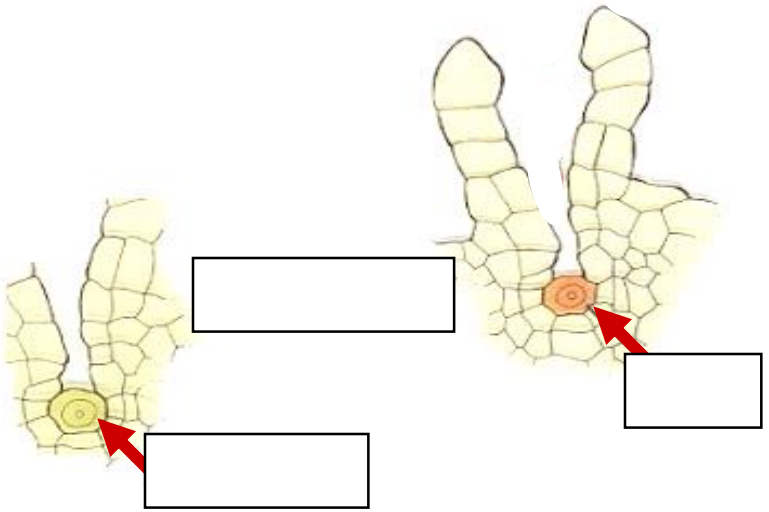
# GAMETOPHYTE

ANTHERIDIA



SPERM

SPERM



# GAMETOPHYTE

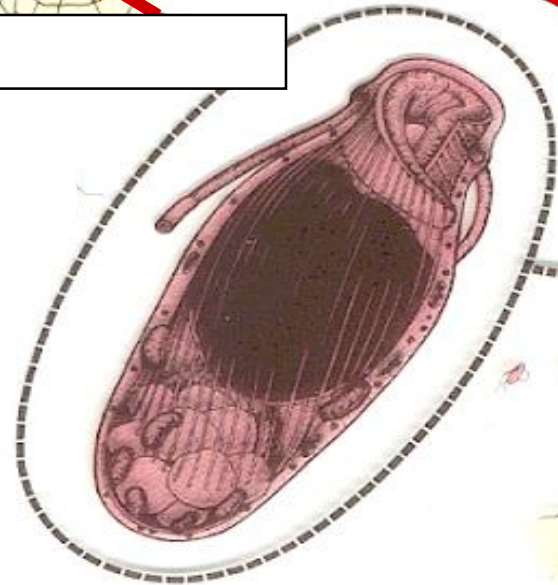
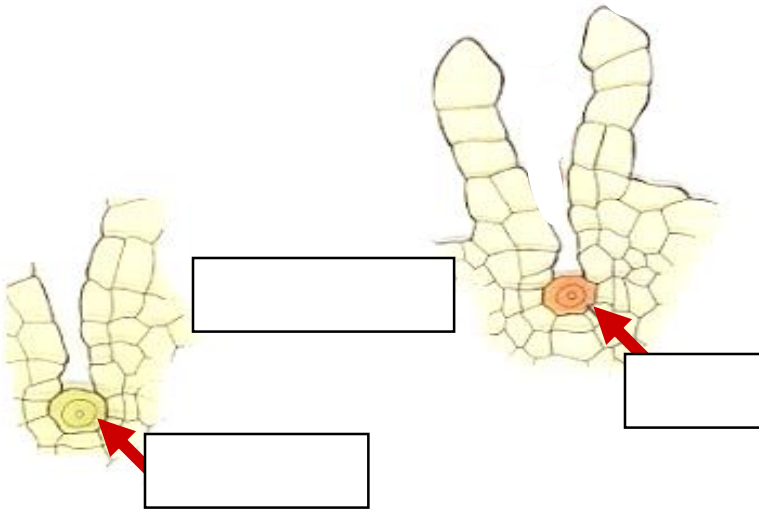
ANTHERIDIA



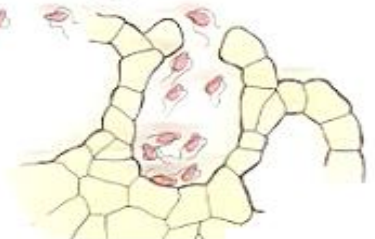
[Empty box]

[Empty box]

1N



SPERM





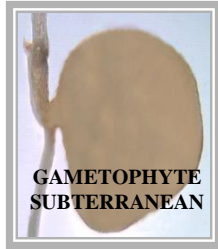
# GAMETOPHYTE

ARCHEGONIA

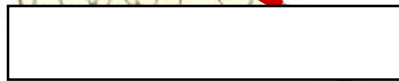
ANTHERIDIA



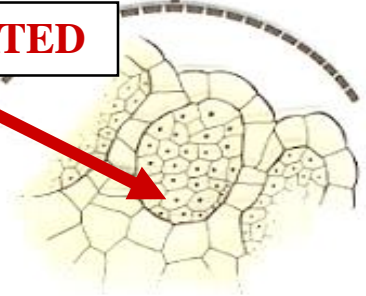
GAMETOPHYTE  
EPITERRANEAN



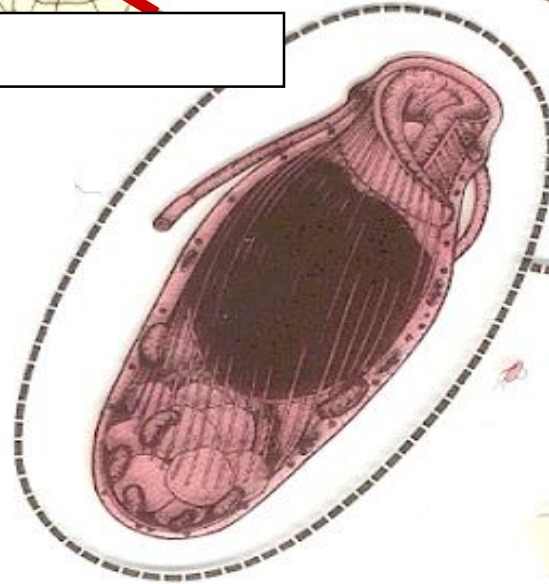
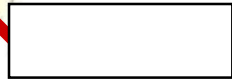
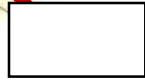
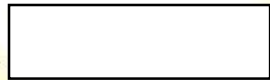
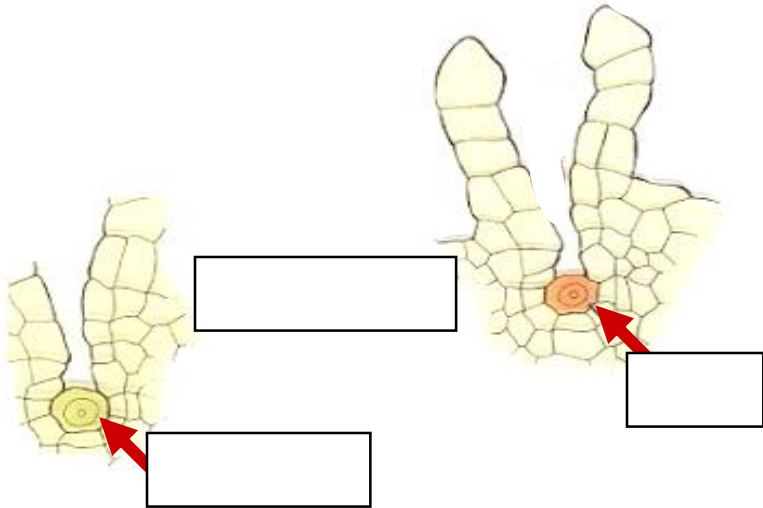
GAMETOPHYTE  
SUBTERRANEAN



BIFLAGELLATED



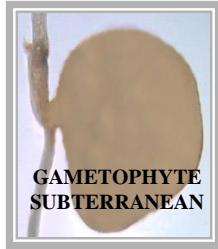
SPERM



# GAMETOPHYTE

ARCHEGONIA

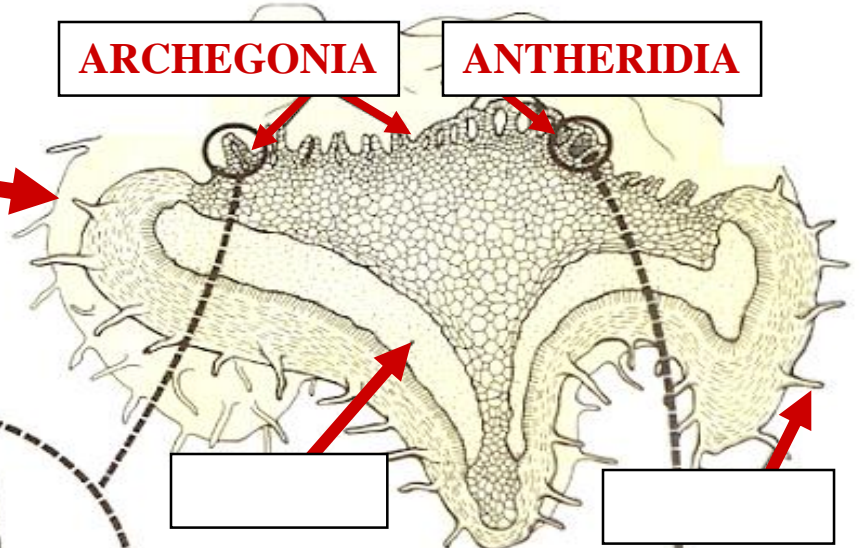
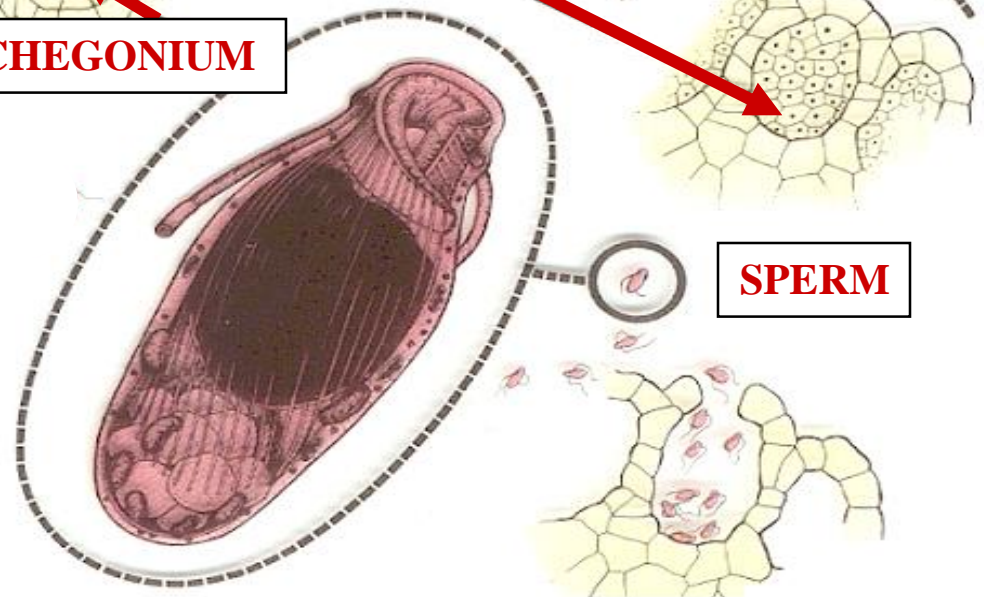
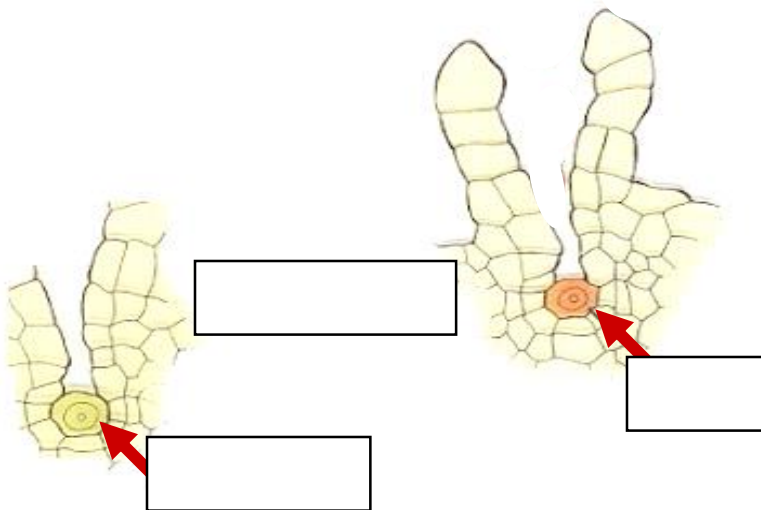
ANTHERIDIA



ARCHEGONIUM

BIFLAGELLATED

SPERM



# GAMETOPHYTE

ARCHEGONIA

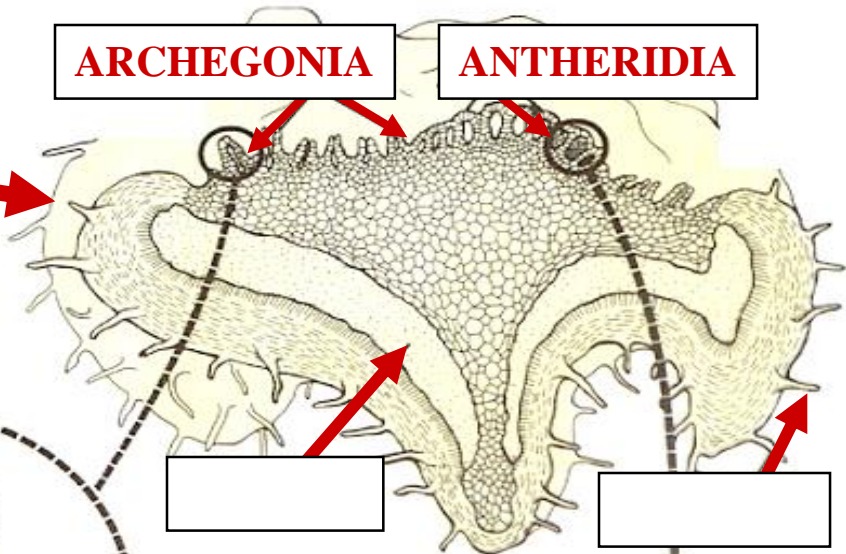
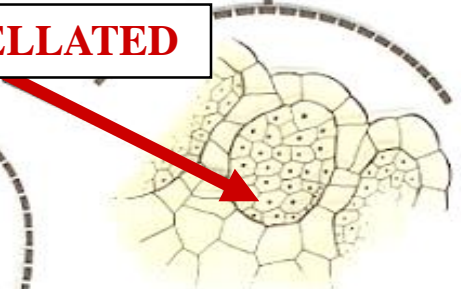
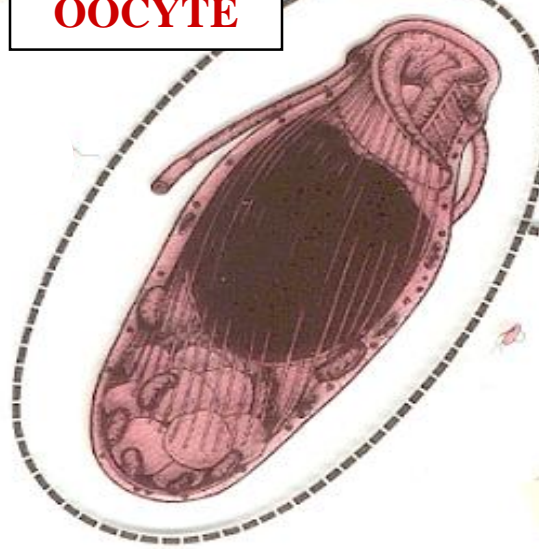
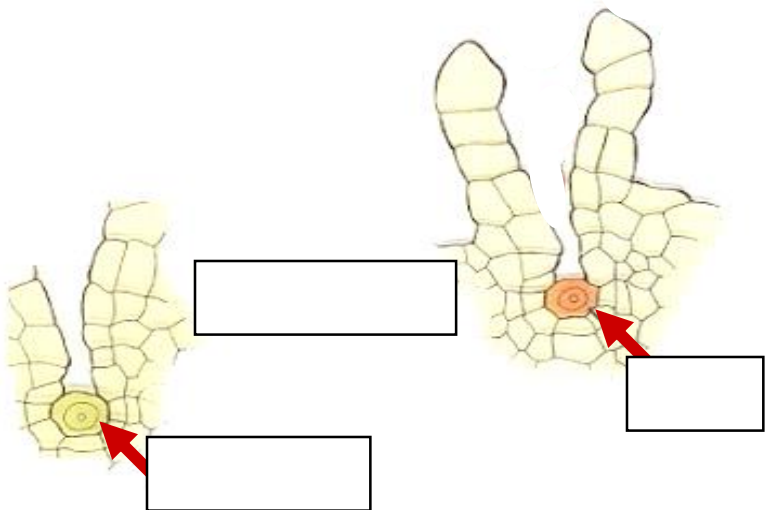
ANTHERIDIA



BIFLAGELLATED

OOCYTE

SPERM

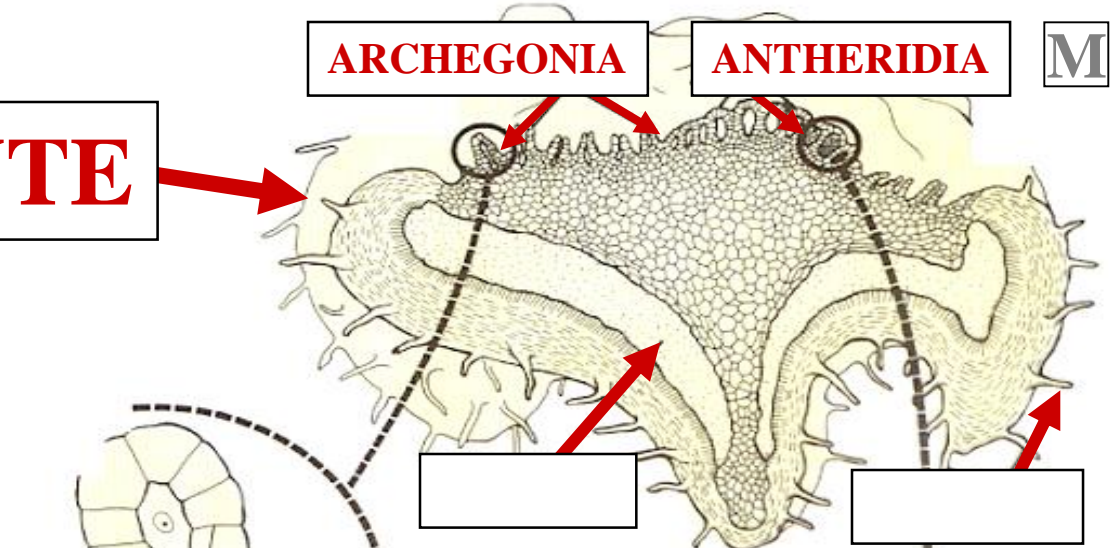
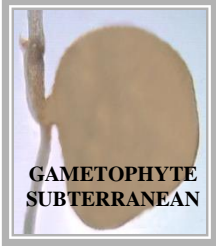


# GAMETOPHYTE

ARCHEGONIA

ANTHERIDIA

M



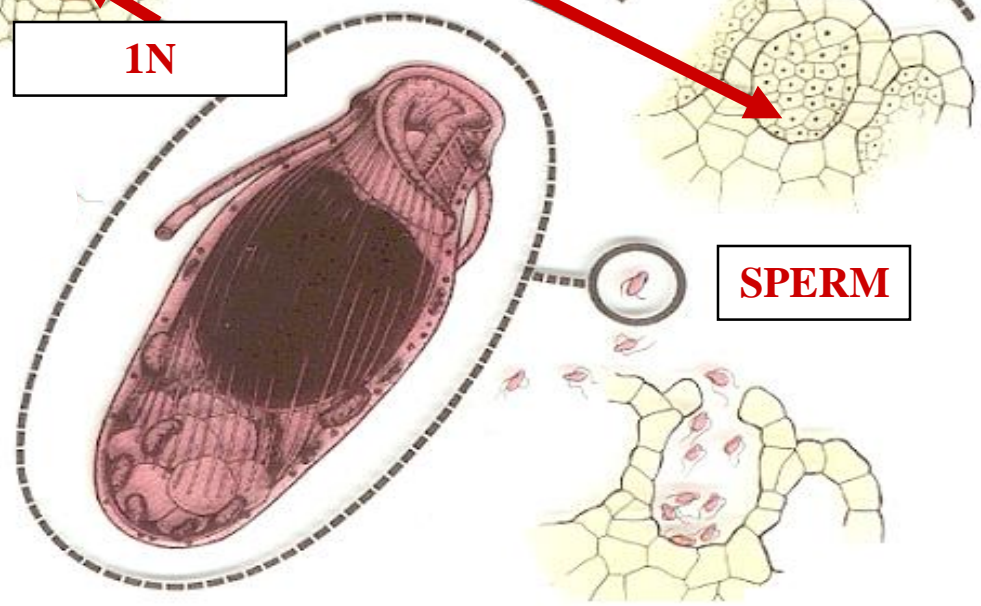
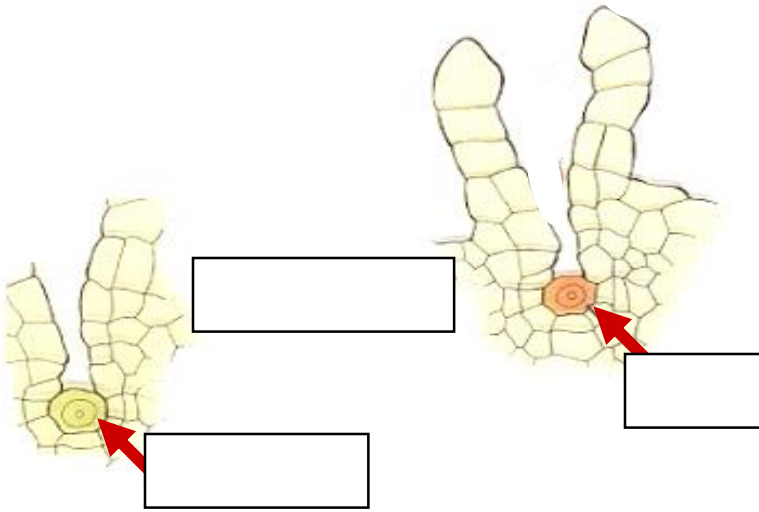
[Empty box]

[Empty box]

BIFLAGELLATED

1N

SPERM





# GAMETOPHYTE

ARCHEGONIA

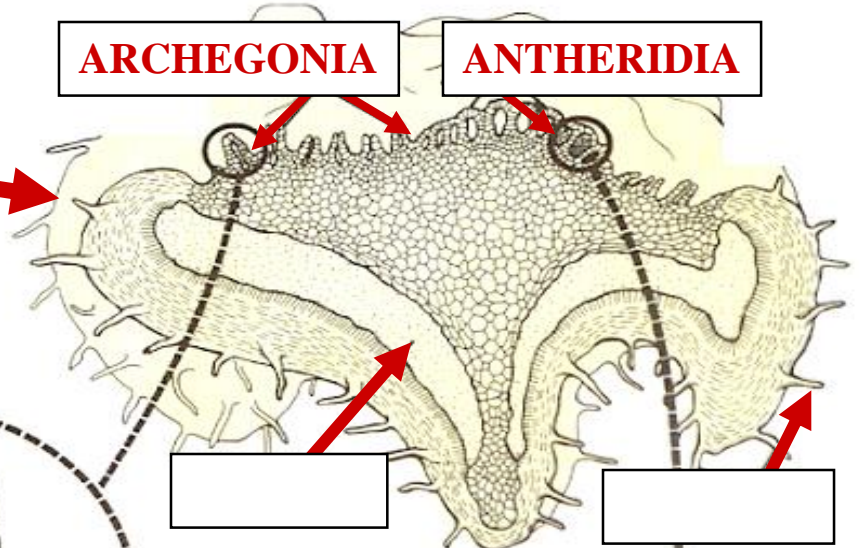
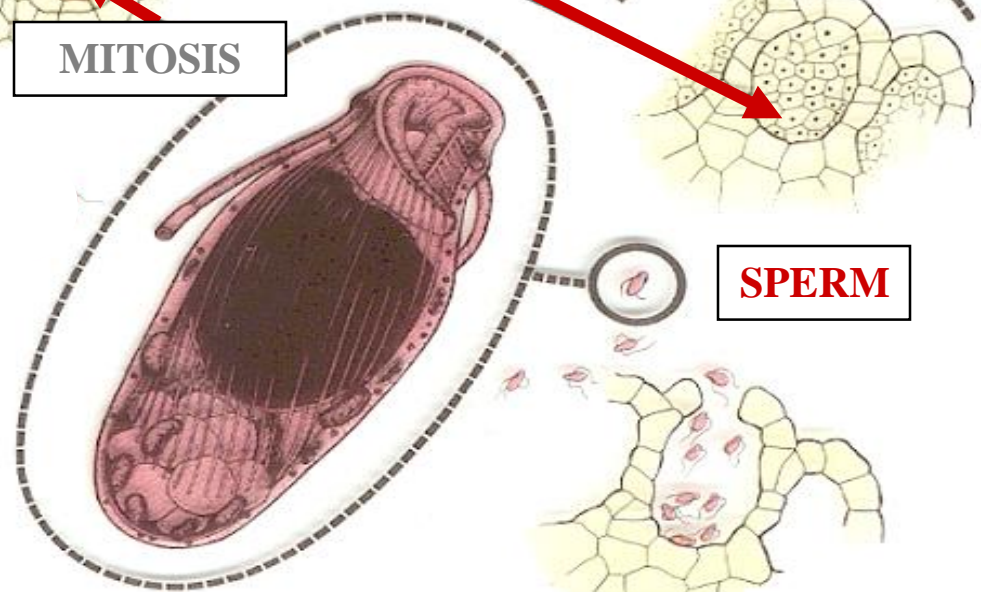
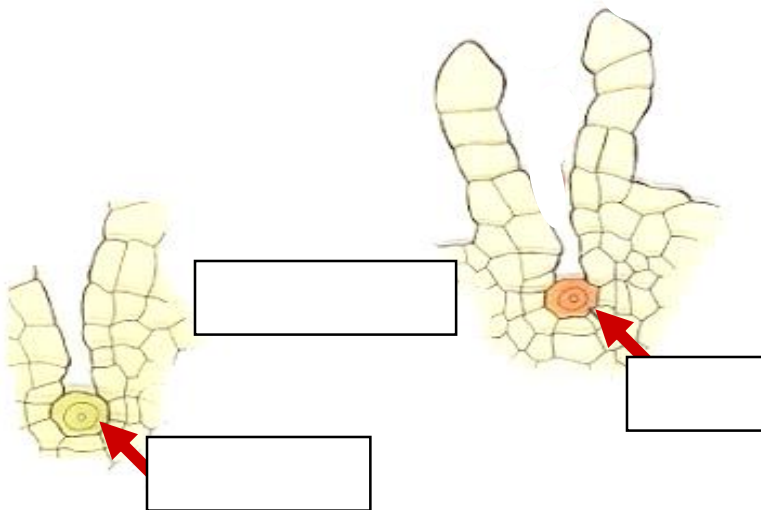
ANTHERIDIA



BIFLAGELLATED

MITOSIS

SPERM



# GAMETOPHYTE

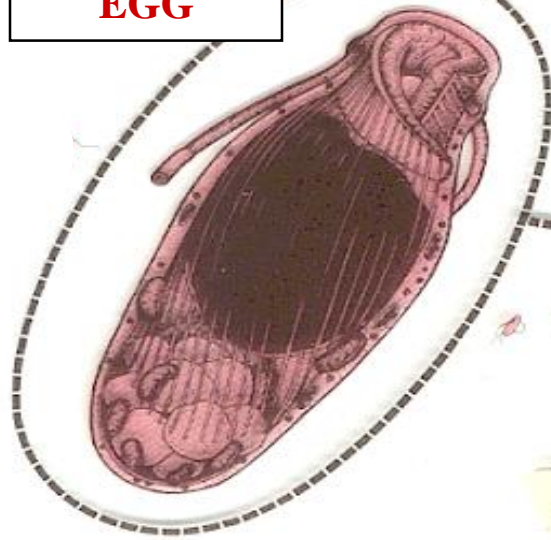
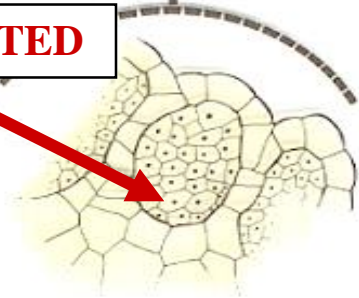
ARCHEGONIA

ANTHERIDIA

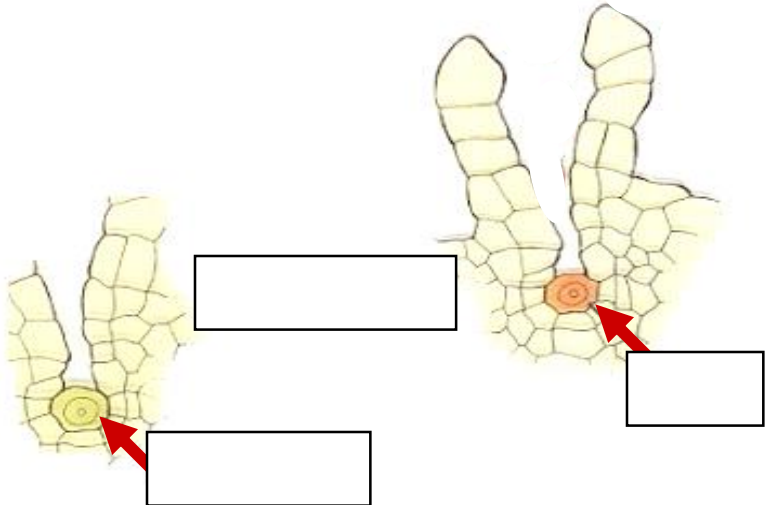


BIFLAGELLATED

EGG



SPERM

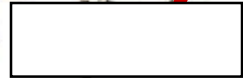
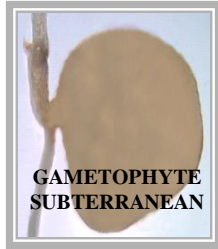


# GAMETOPHYTE

ARCHEGONIA

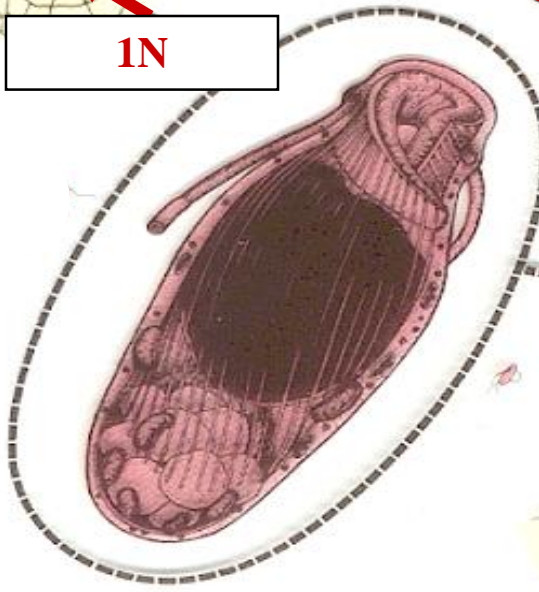
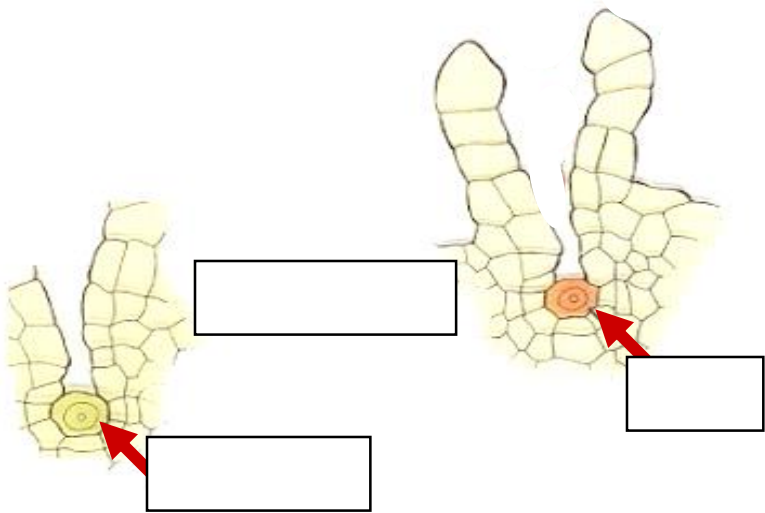
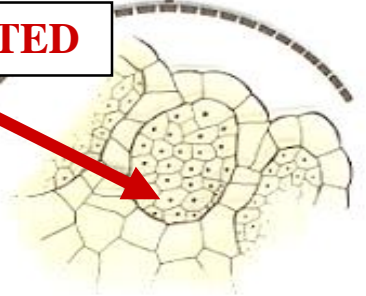
ANTHERIDIA

+  
E  
S



BIFLAGELLATED

1N



SPERM



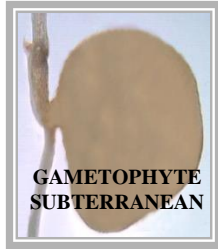
# GAMETOPHYTE

ARCHEGONIA

ANTHERIDIA



GAMETOPHYTE  
EPITERRANEAN

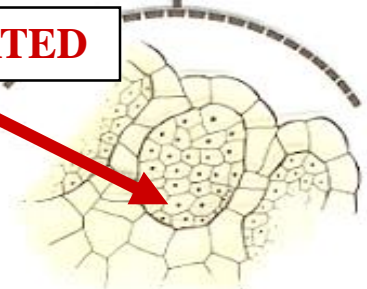


GAMETOPHYTE  
SUBTERRANEAN

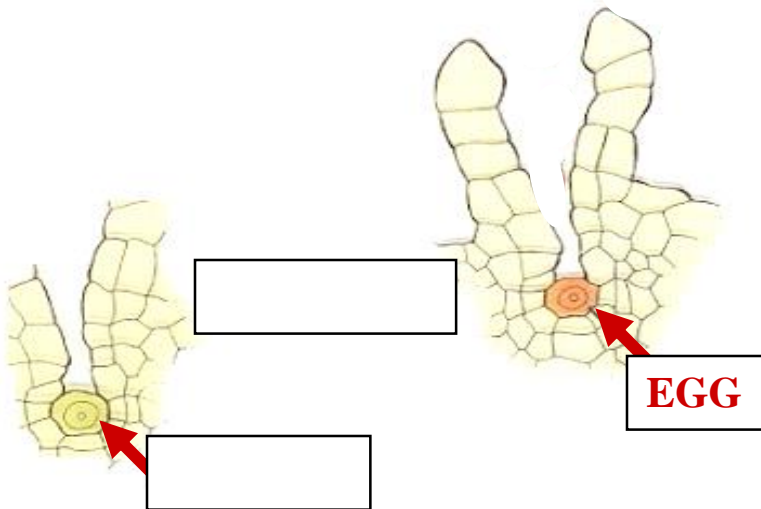


EGG

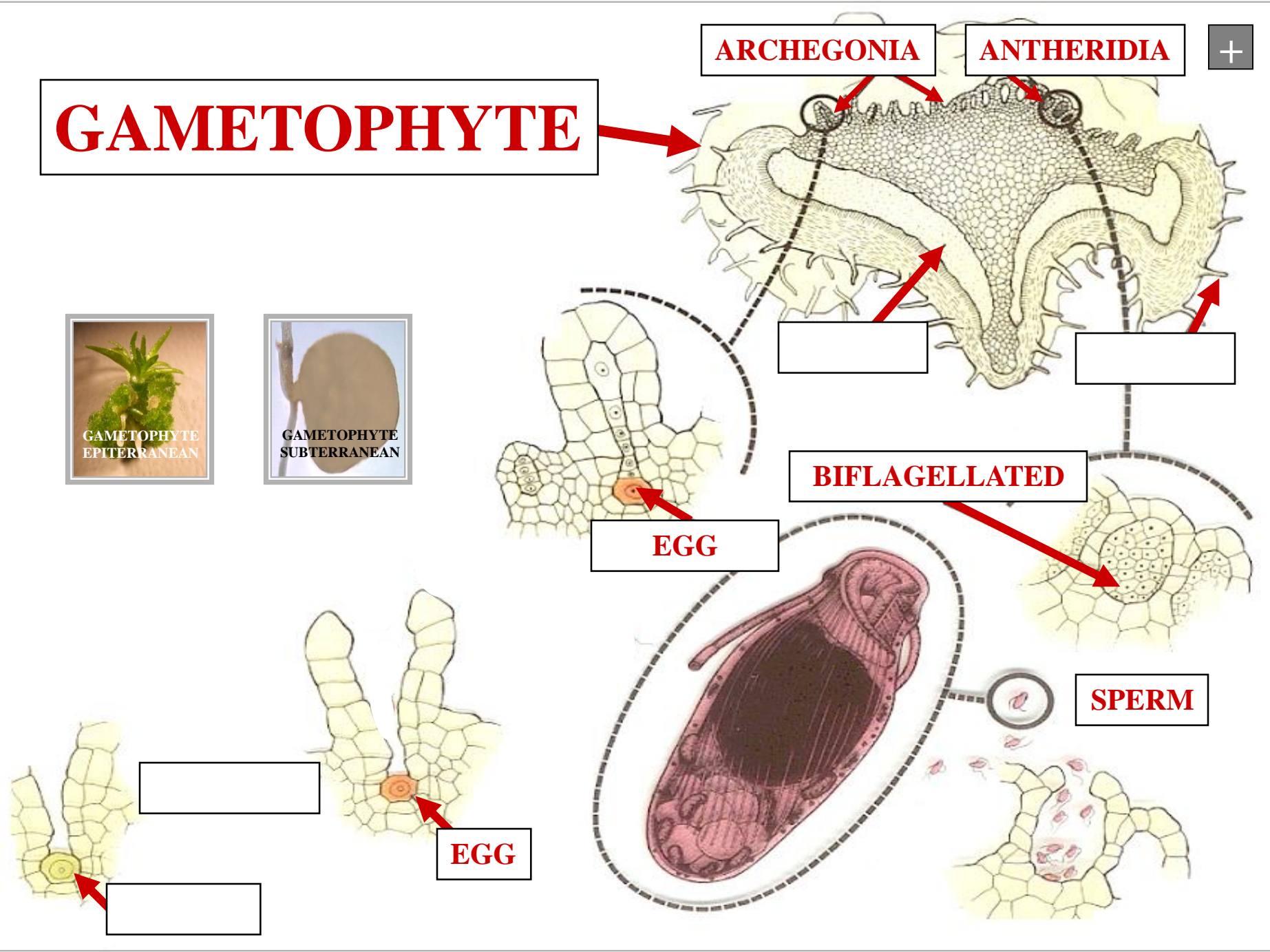
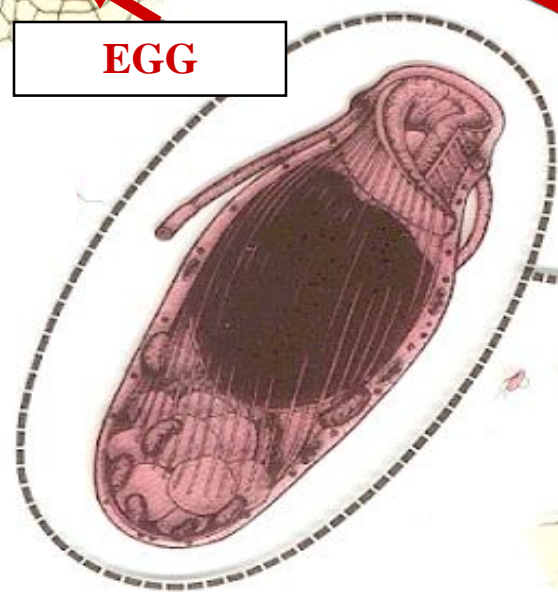
BIFLAGELLATED



SPERM



EGG



# GAMETOPHYTE

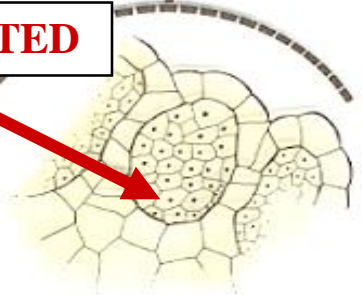
ARCHEGONIA

ANTHERIDIA

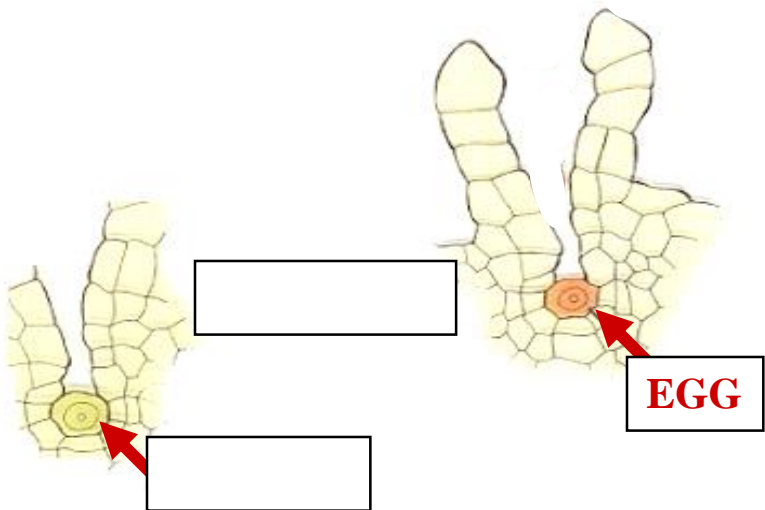


EGG

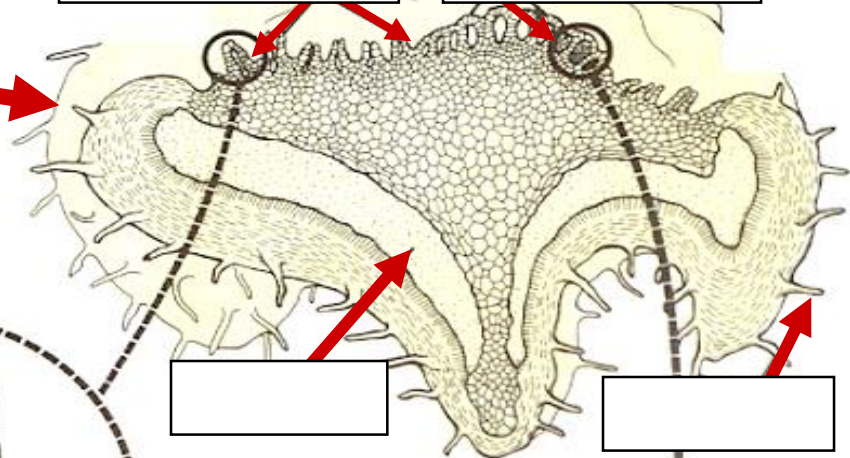
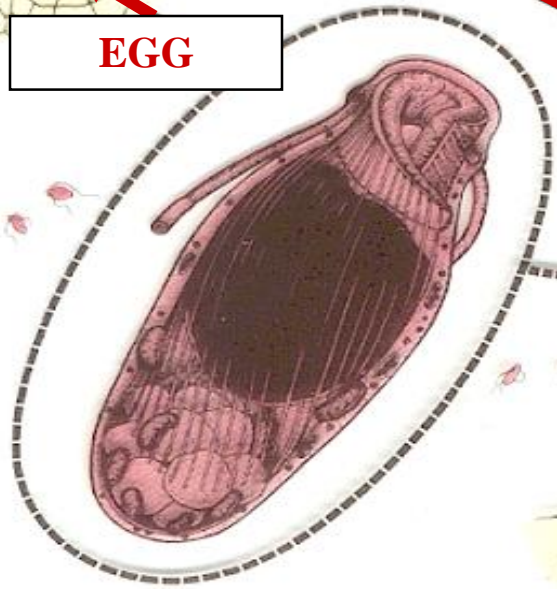
BIFLAGELLATED



SPERM



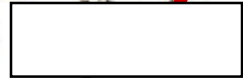
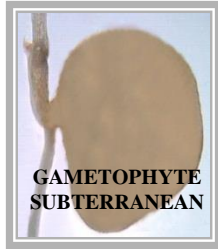
EGG



# GAMETOPHYTE

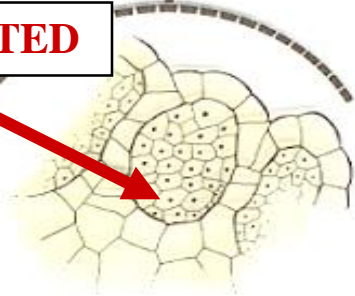
ARCHEGONIA

ANTHERIDIA

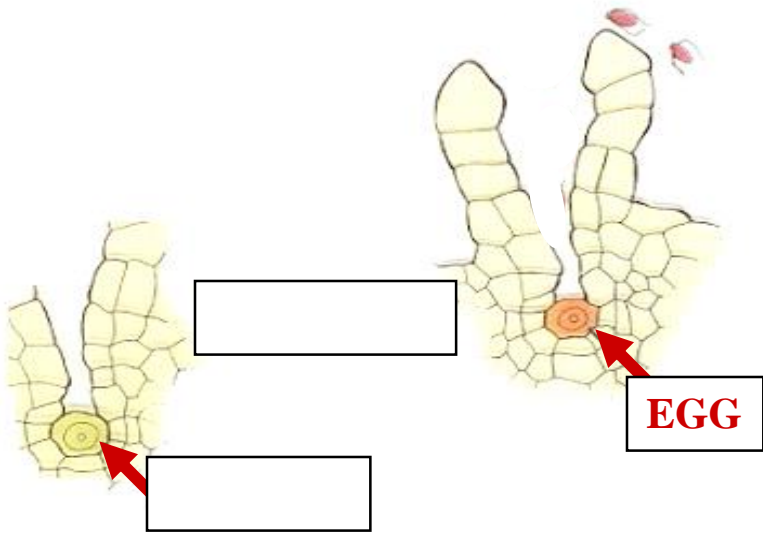


BIFLAGELLATED

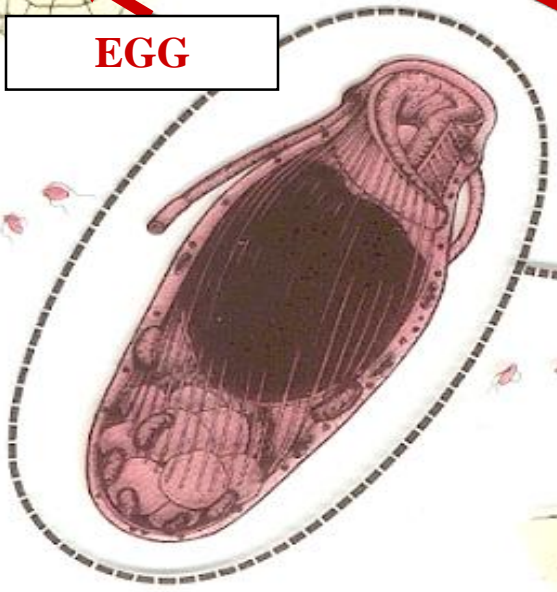
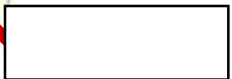
EGG



SPERM



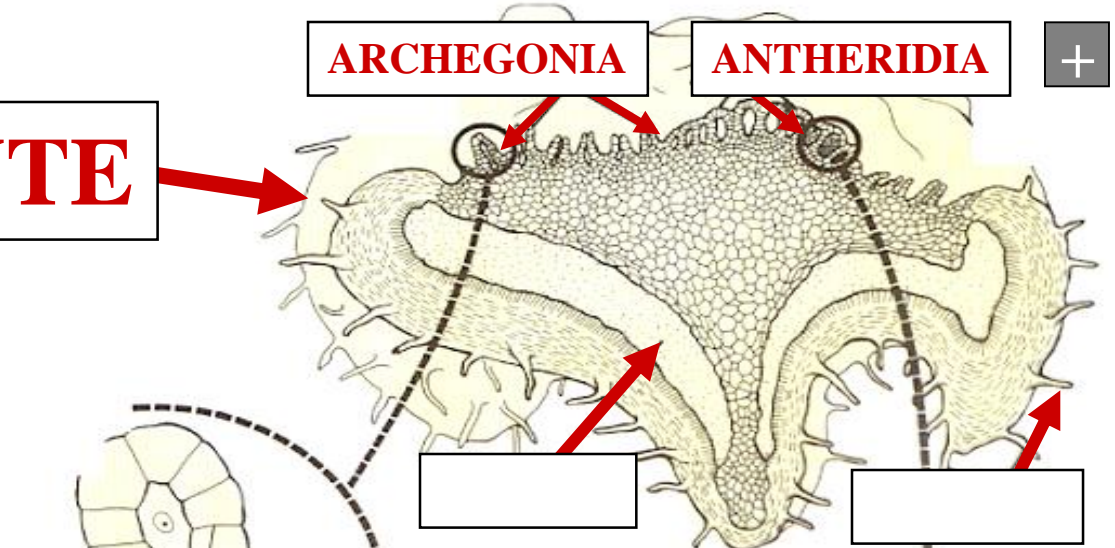
EGG



# GAMETOPHYTE

ARCHEGONIA

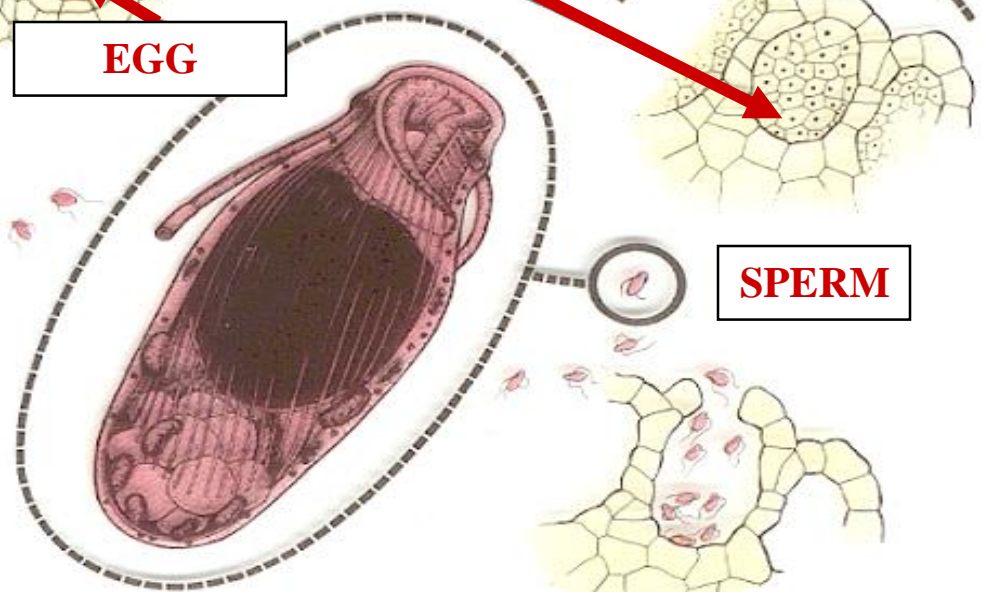
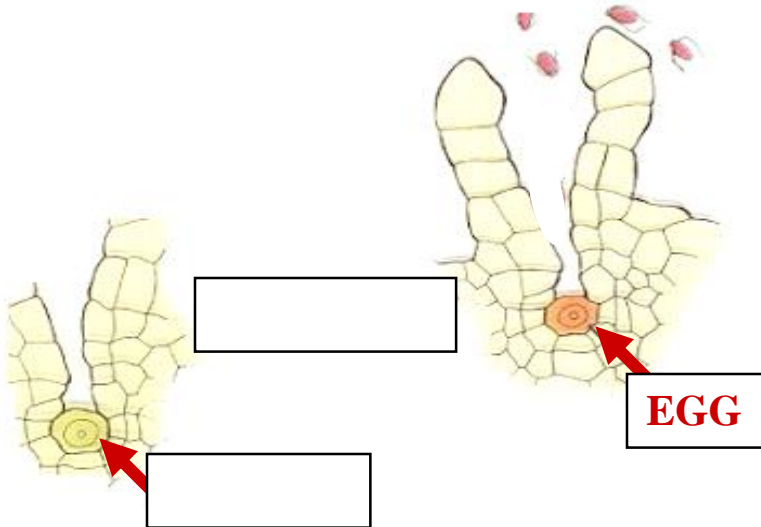
ANTHERIDIA



BIFLAGELLATED

EGG

SPERM



# GAMETOPHYTE

ARCHEGONIA

ANTHERIDIA



GAMETOPHYTE  
EPITERRANEAN

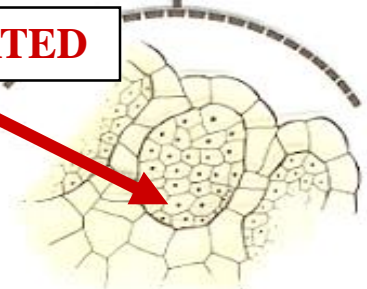


GAMETOPHYTE  
SUBTERRANEAN

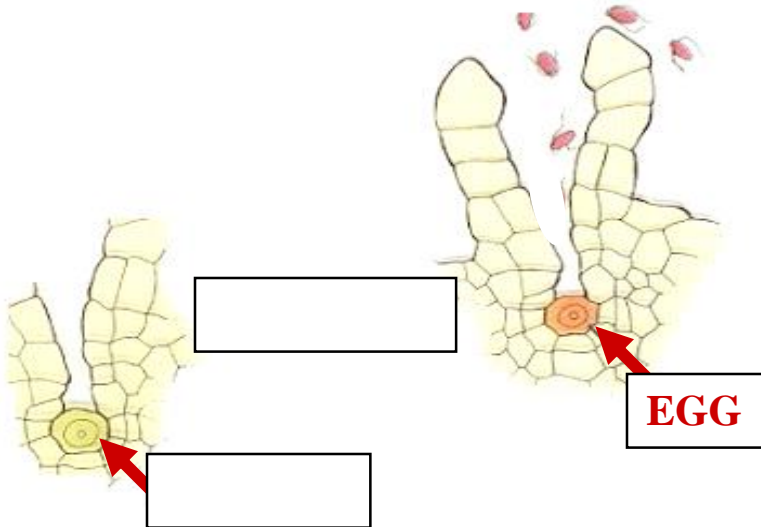


EGG

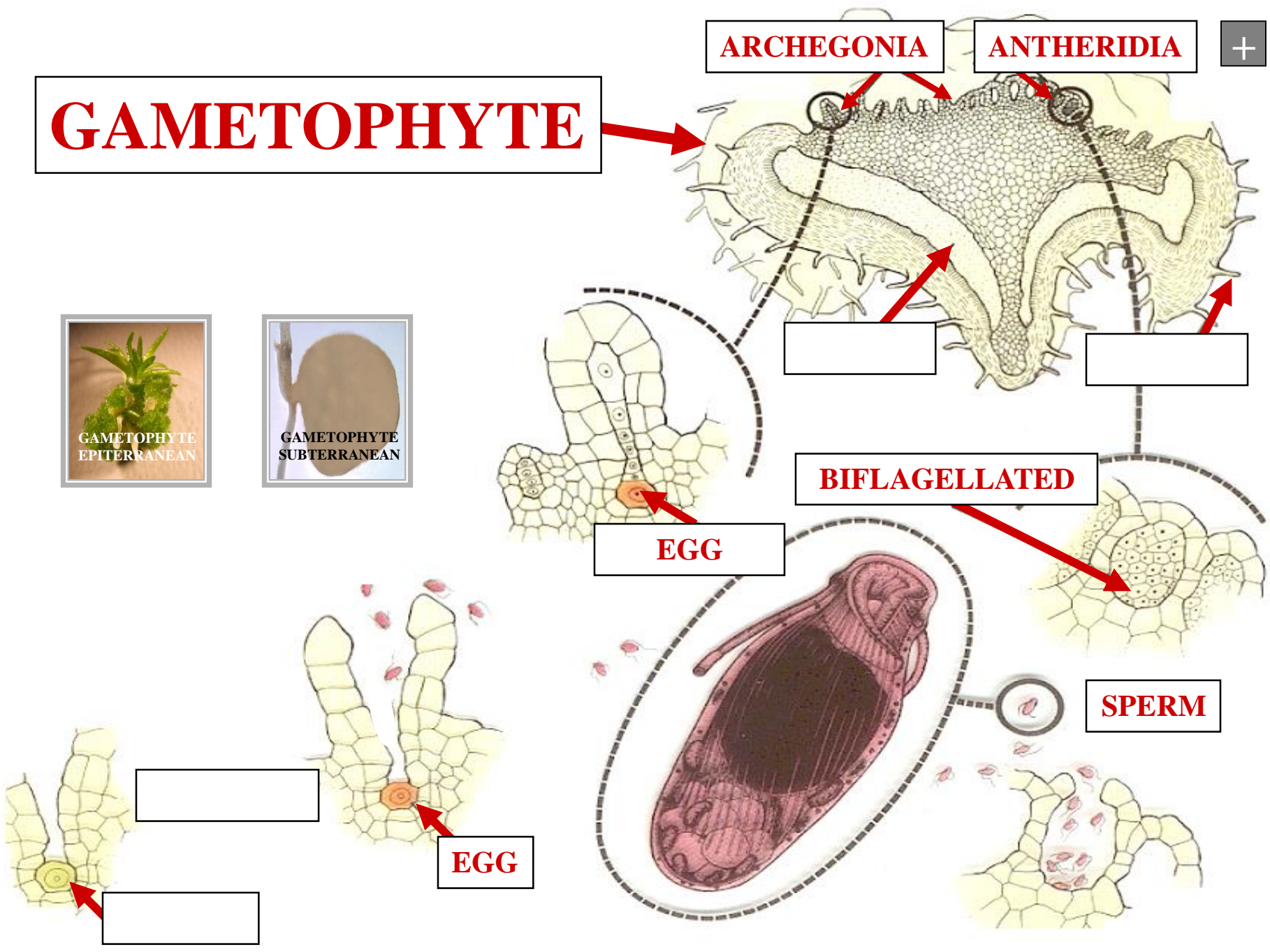
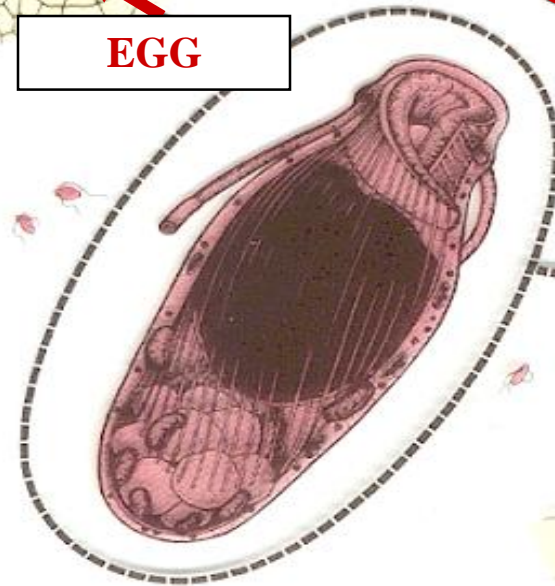
BIFLAGELLATED



SPERM



EGG





# GAMETOPHYTE

ARCHEGONIA

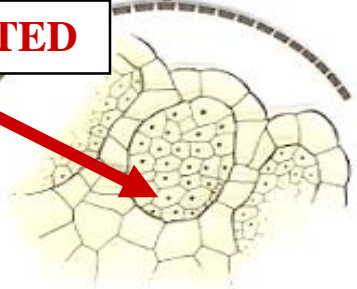
ANTHERIDIA

S

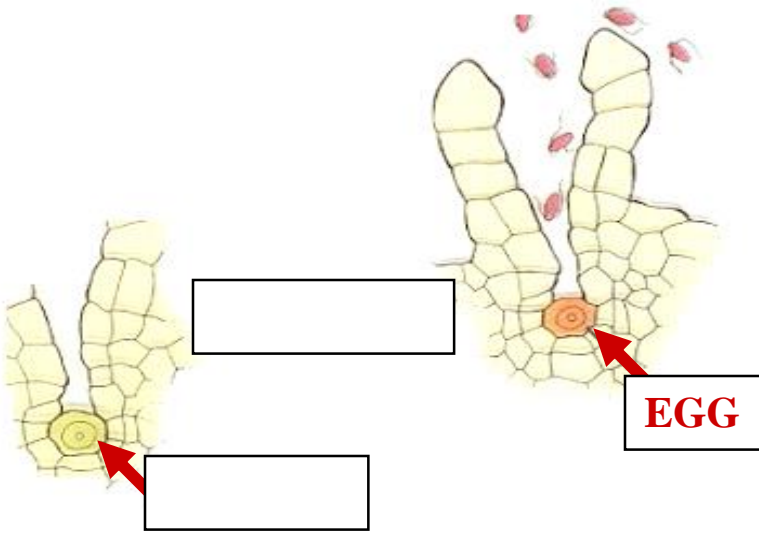
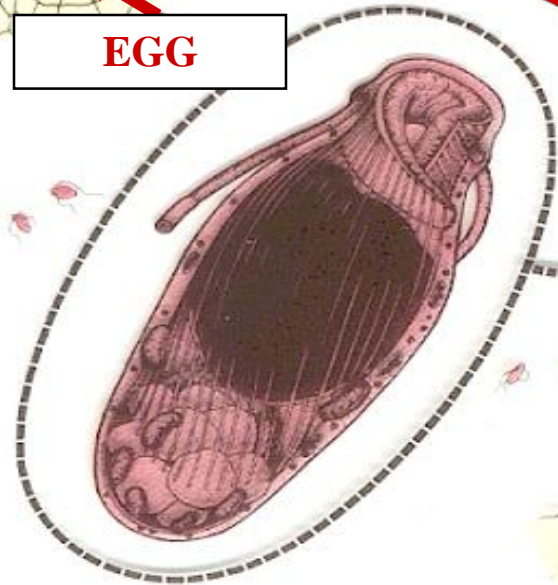


BIFLAGELLATED

EGG



SPERM



# GAMETOPHYTE

ARCHEGONIA

ANTHERIDIA



GAMETOPHYTE  
EPITERRANEAN

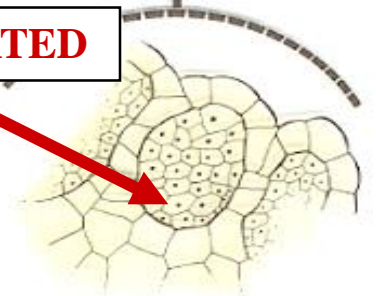


GAMETOPHYTE  
SUBTERRANEAN

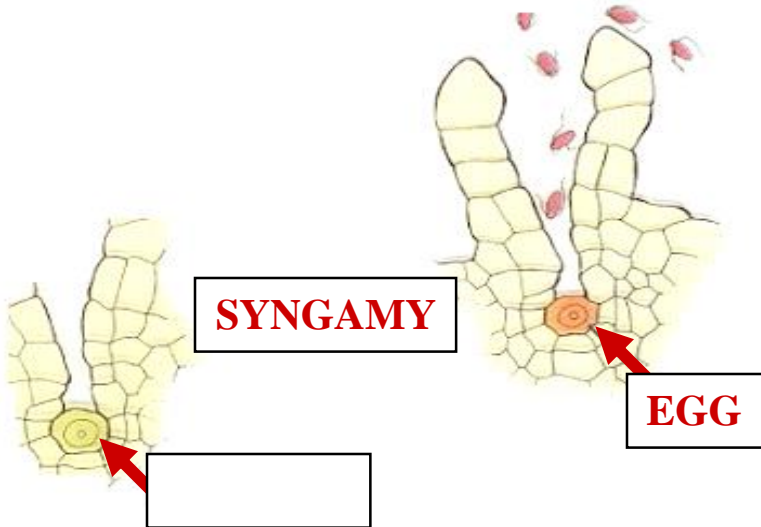


EGG

BIFLAGELLATED

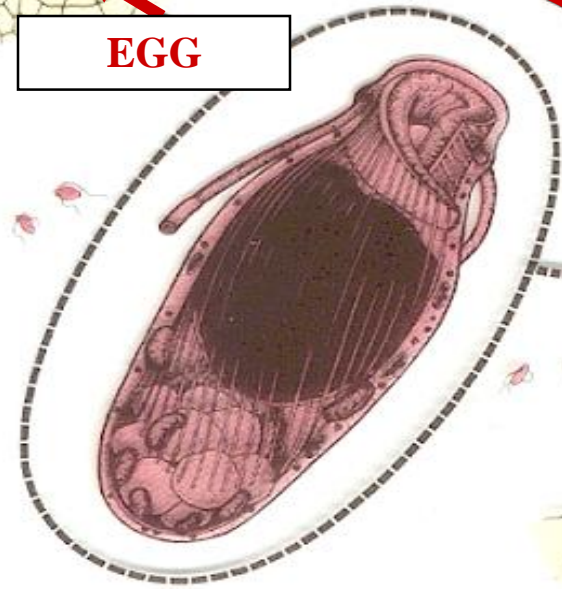


SPERM



SYNGAMY

EGG

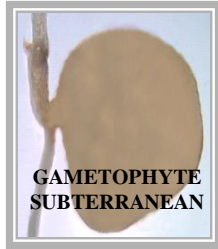


# GAMETOPHYTE

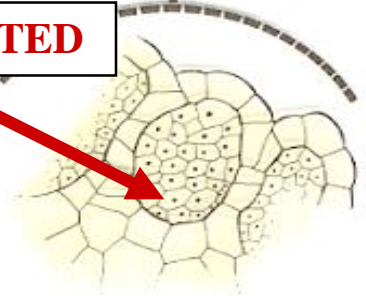
ARCHEGONIA

ANTHERIDIA

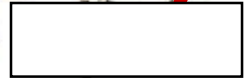
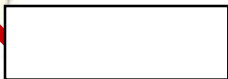
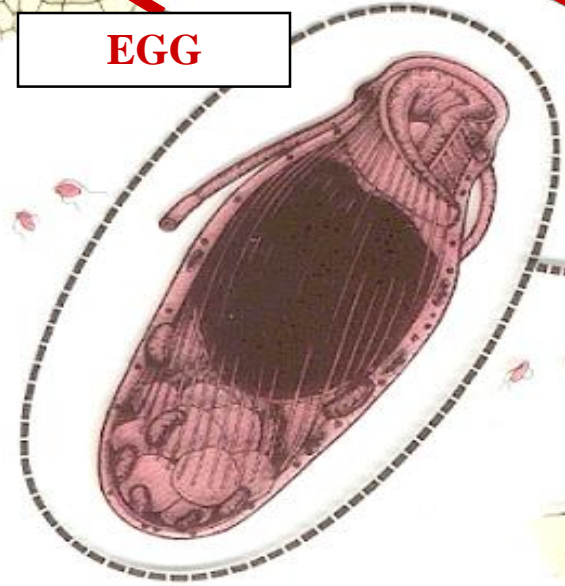
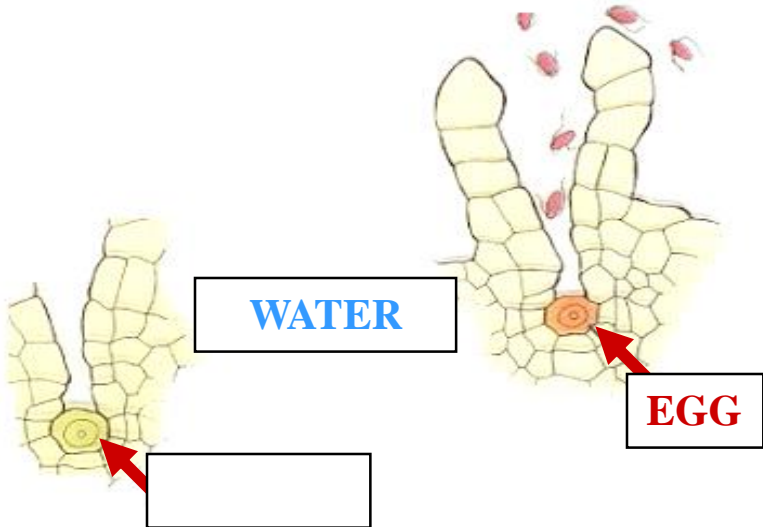
Z



BIFLAGELLATED



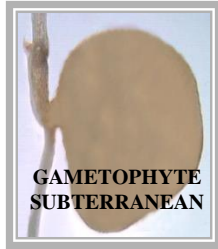
SPERM



# GAMETOPHYTE

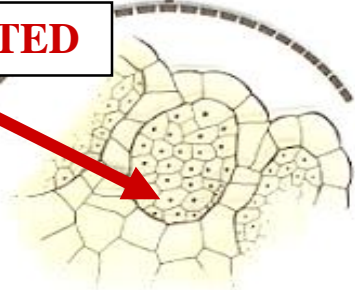
ARCHEGONIA

ANTHERIDIA

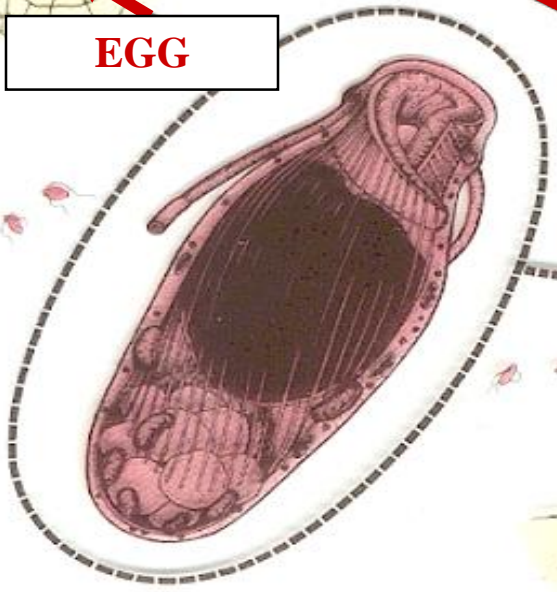
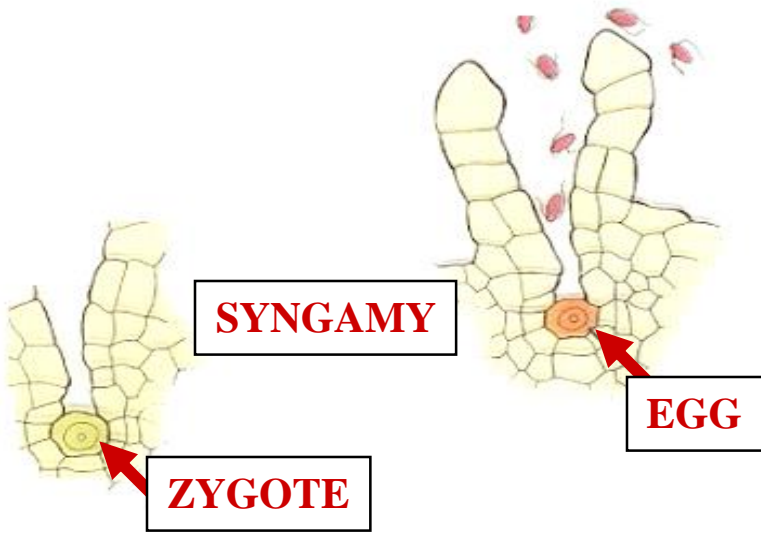


BIFLAGELLATED

EGG



SPERM

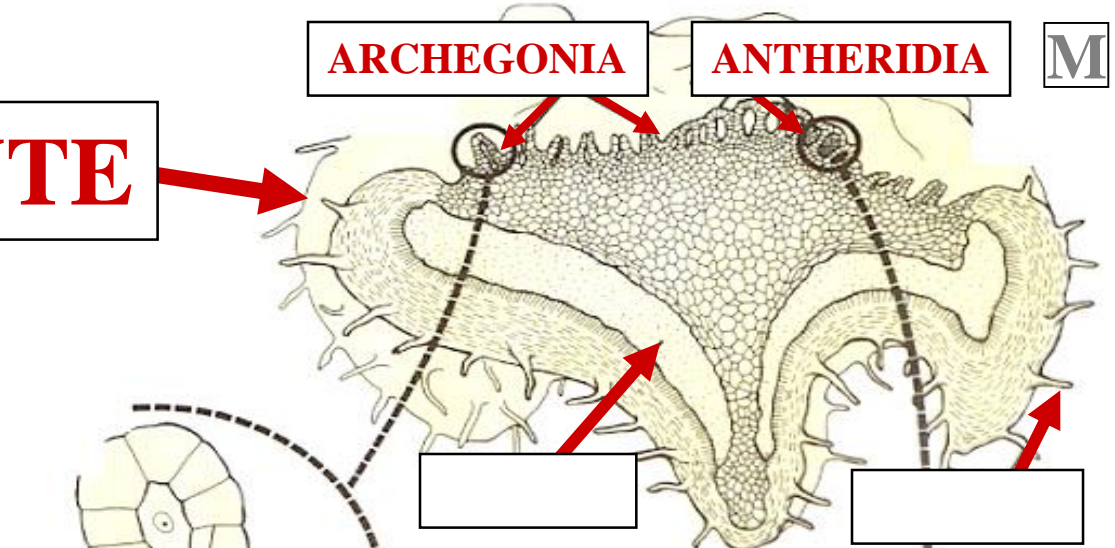
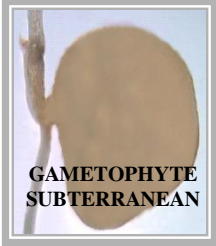


# GAMETOPHYTE

ARCHEGONIA

ANTHERIDIA

M



BIFLAGELLATED

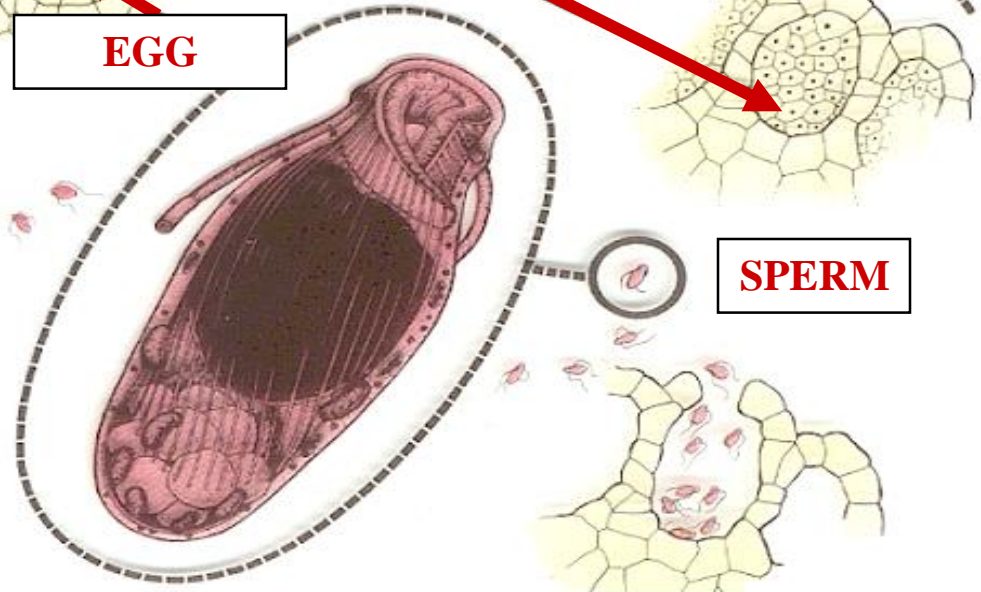
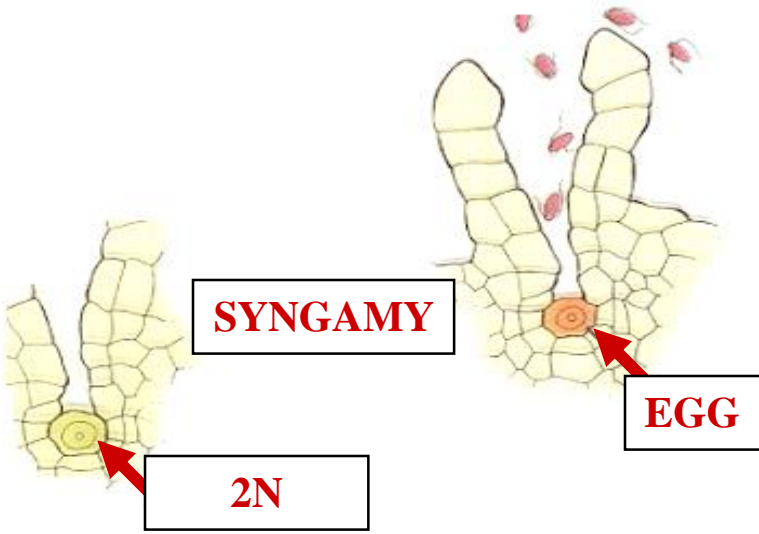
EGG

SPERM

SYNGAMY

EGG

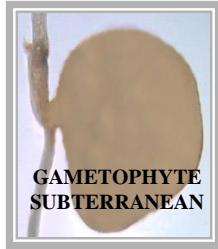
2N



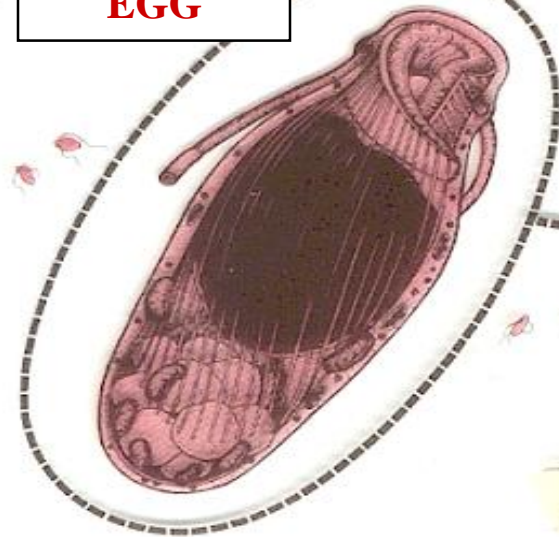
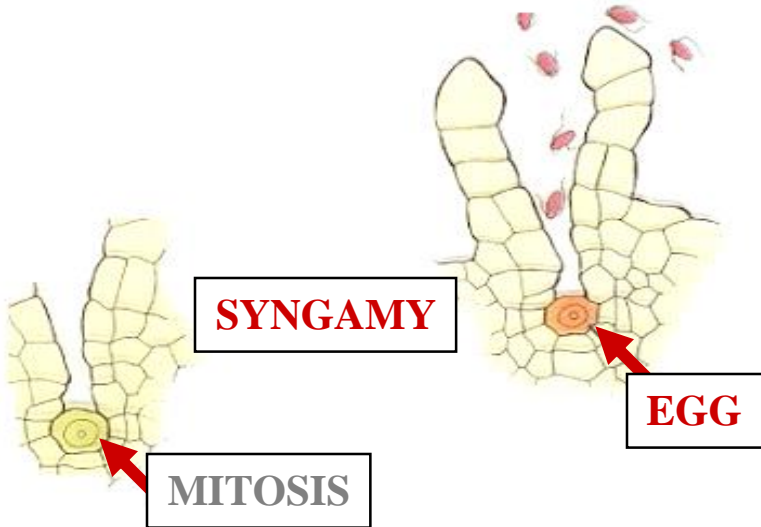
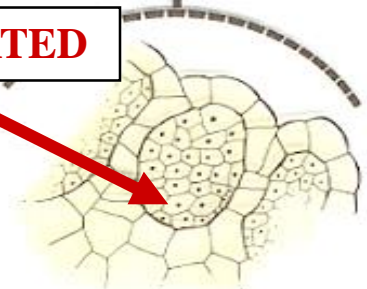
# GAMETOPHYTE

ARCHEGONIA

ANTHERIDIA

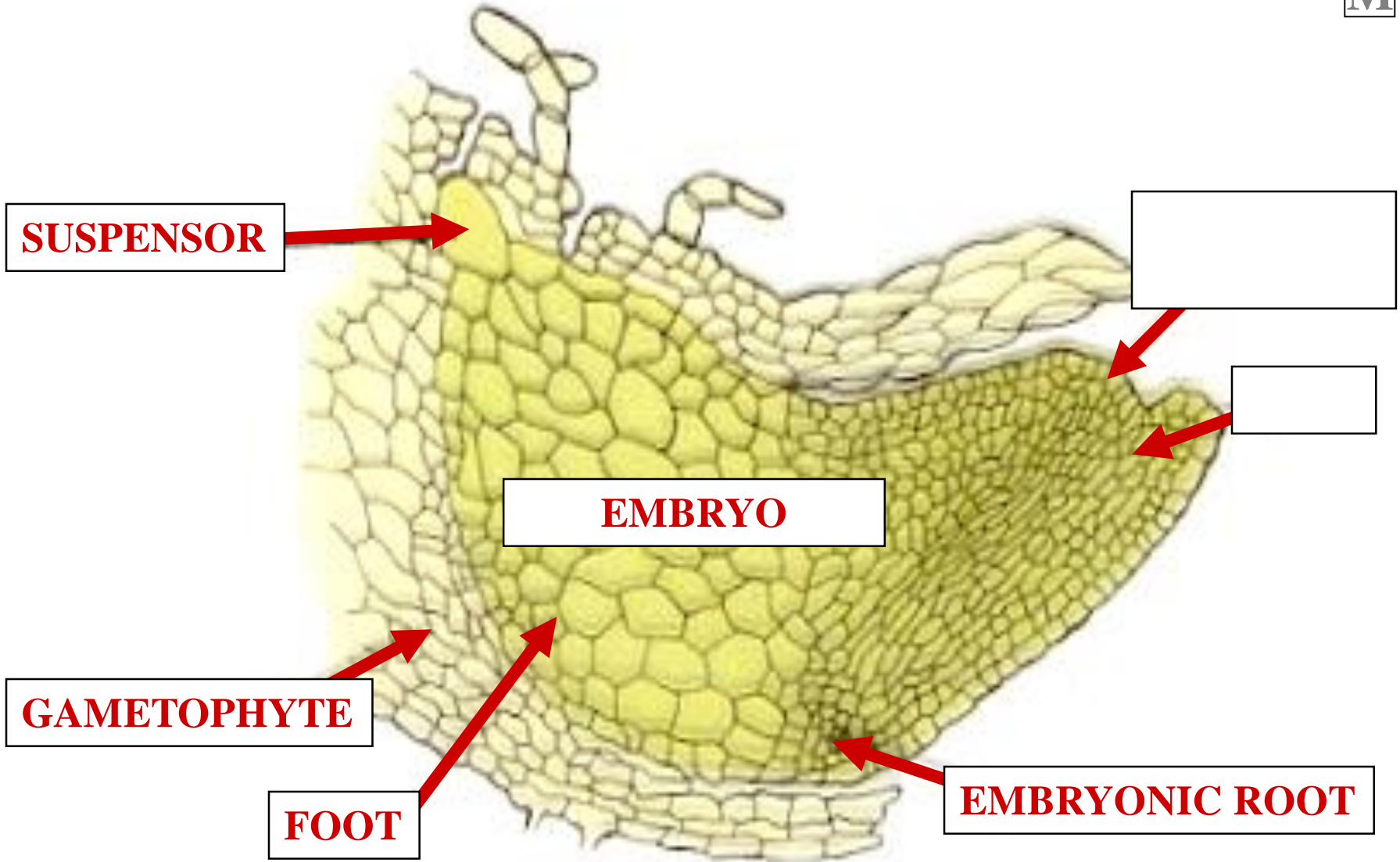


BIFLAGELLATED



EGG

SPERM



**SUSPENSOR**

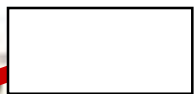
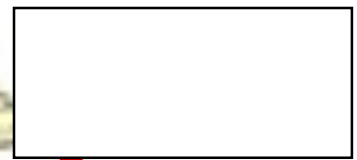
**EMBRYO**

**GAMETOPHYTE**

**FOOT**

**EMBRYONIC ROOT**

**SUSPENSOR**



**MITOSIS**

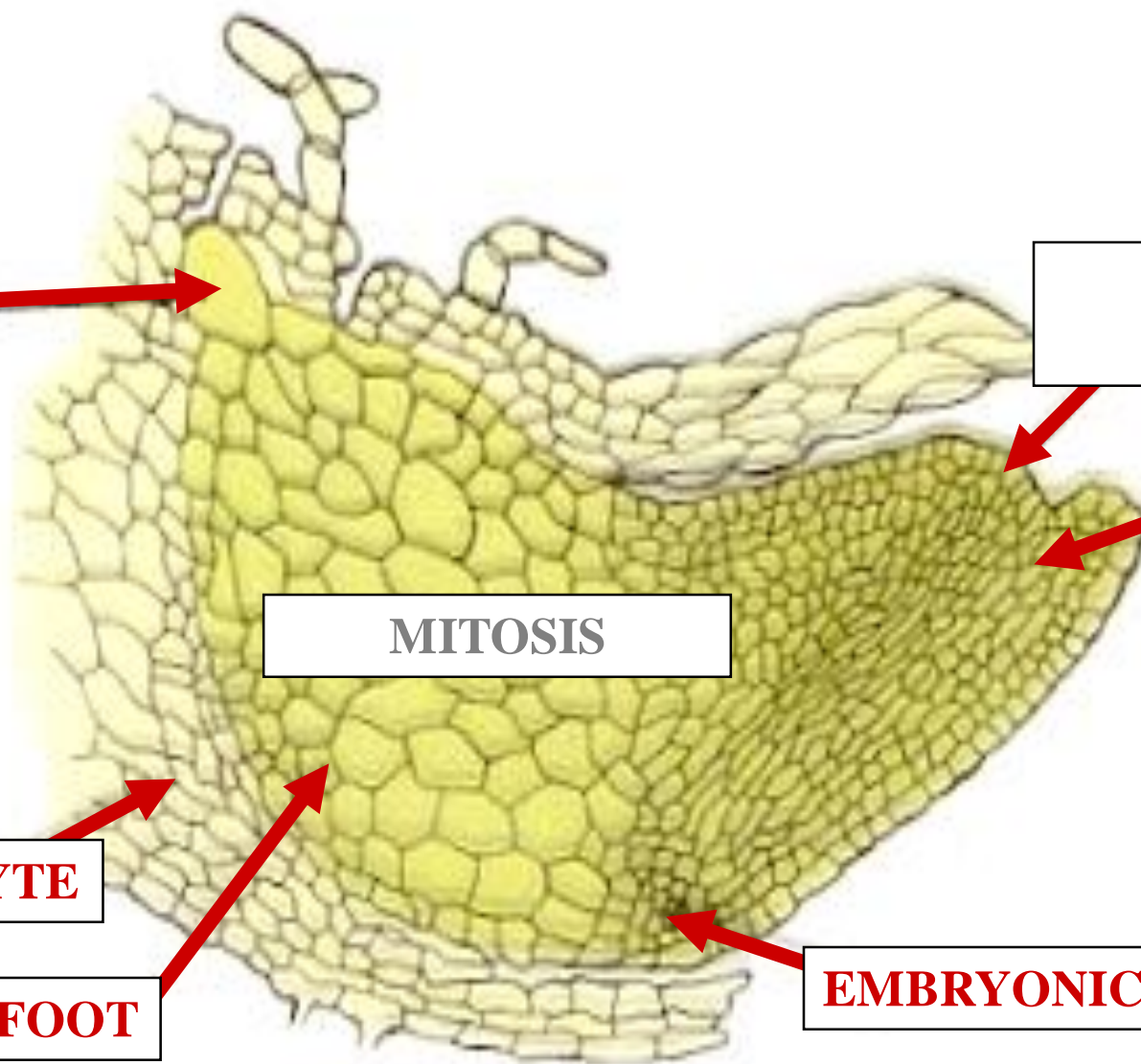
**GAMETOPHYTE**



**FOOT**



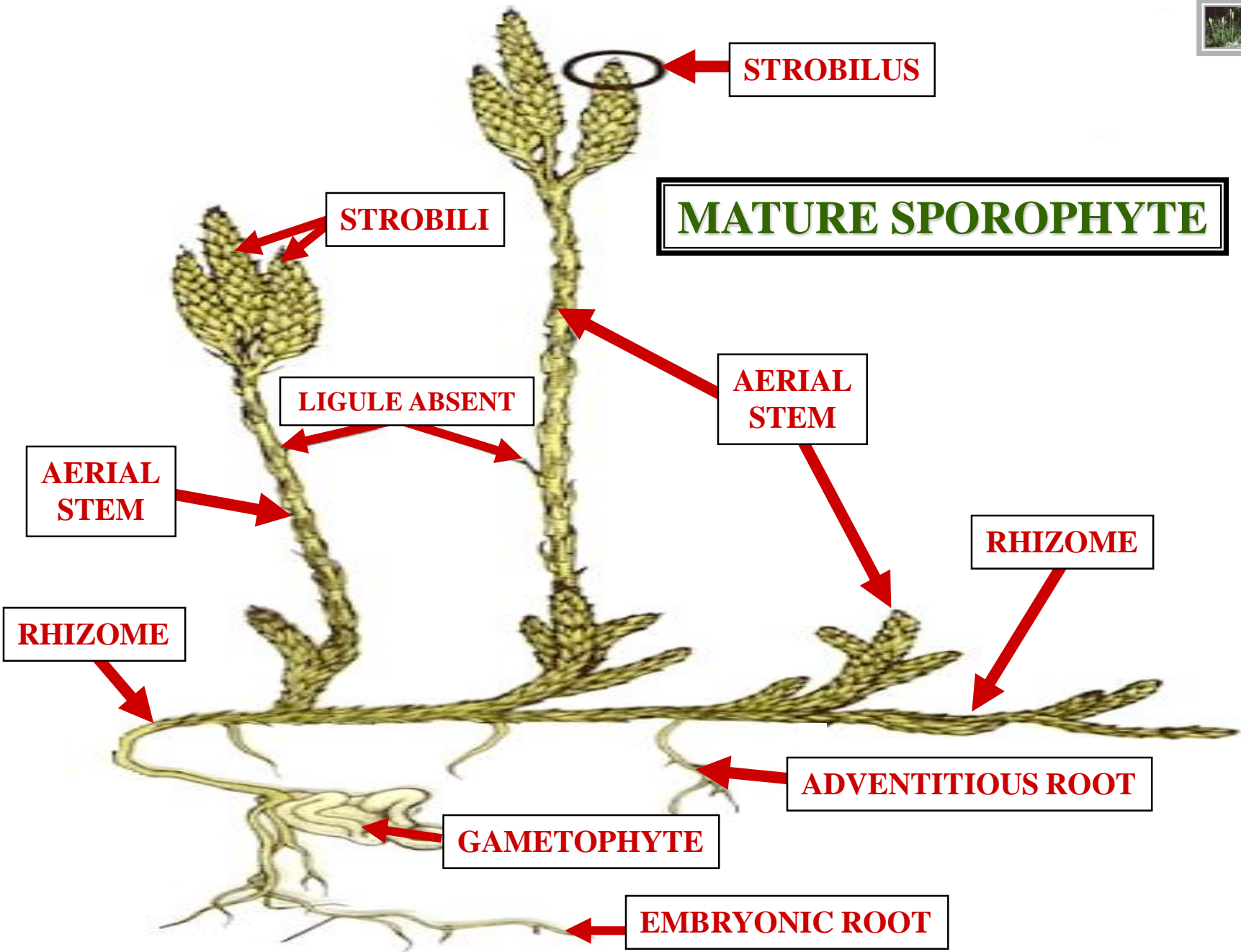
**EMBRYONIC ROOT**







# MATURE SPOROPHYTE



# *LYCOPODIUM*





# LYCOPODIOPHYTA CLASSIFICATION

**ALABAMA  
ORDER**

**SELAGINALES**

**ALABAMA  
ORDER**



# COMMON NAME

# SPIKE-MOSSES

S



# SPIKE



# SPIKE



STROBILUS  
SPIKE

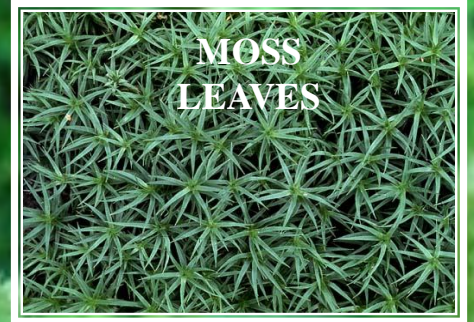


# MOSS



STROBILUS  
SPIKE

# MOSS



SM

SUPERFICIAL  
MOSS-LIKE  
MORPHOLOGY

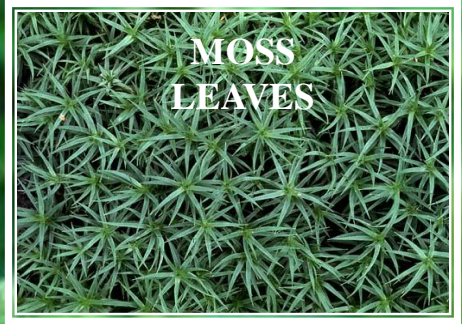


# SPIKE-MOSSES

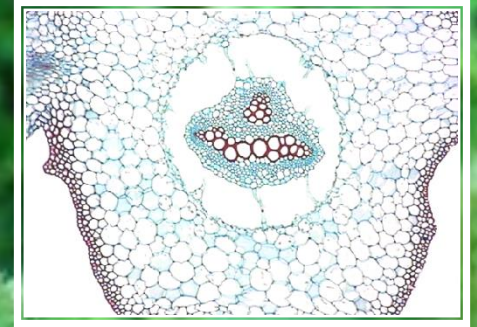
MOSS  
LEAVES

XP

STROBILUS  
SPIKE



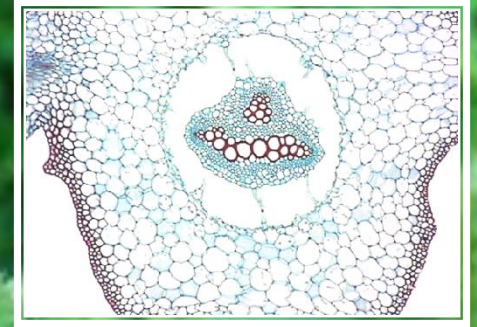
# SPIKE-MOSSES



VT

# XYLEM & PHLOEM

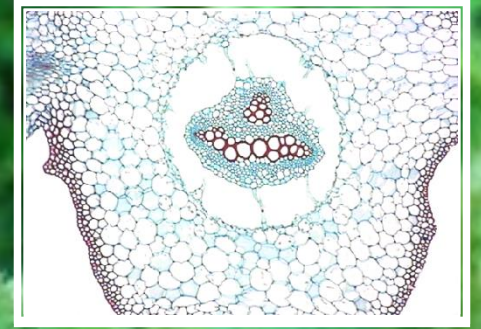
# SPIKE-MOSSES



T

# VASCULAR TISSUE

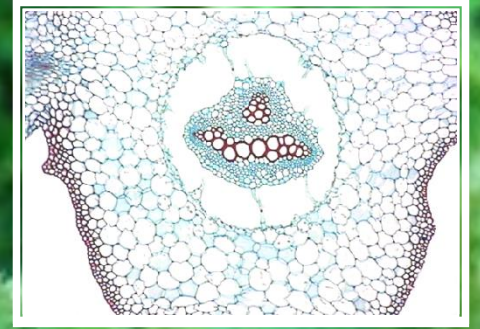
# SPIKE-MOSSES



N

# SPIKE-MOSSES TRACHEOPHYTES

# SPIKE-MOSSES



^

**SPIKE-MOSSES  
NOT A TRUE MOSS**



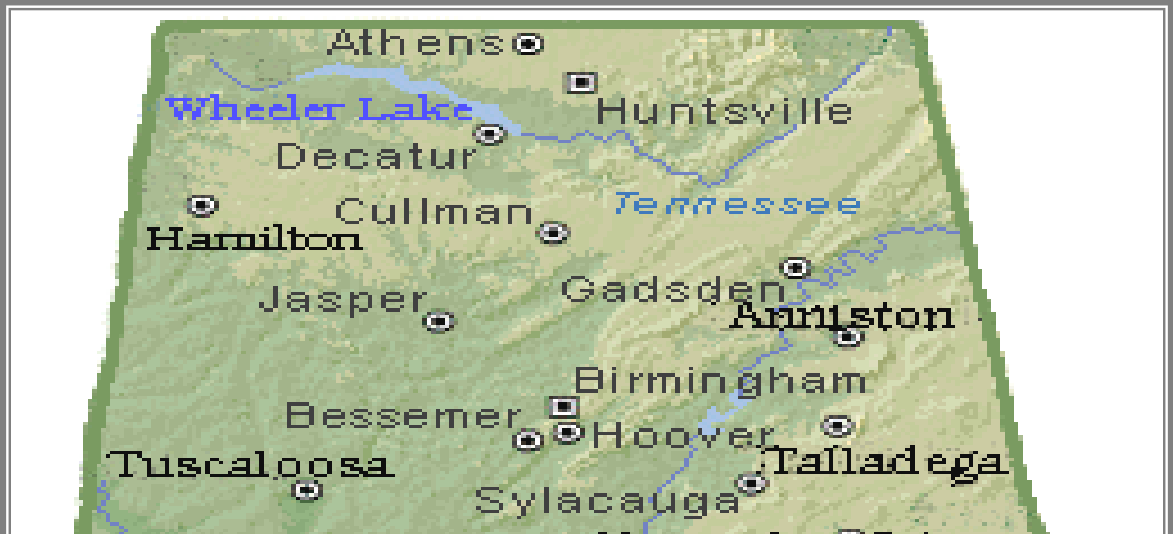
# DIVERSITY





**~750 SPECIES**

**EARTH**



**~4 SPECIES**





# REPRESENTATIVE GENUS

S

?





***SELAGINELLA***



# HABITAT



# ALABAMA FOREST

# TEMPERATE DESERTS







*S. LEPIDOPHYLLA*





*S. LEPIDOPHYLLA*





*S. LEPIDOPHYLLA*





*S. LEPIDOPHYLLA*





**RESURRECTION PLANT**





*S. LEPIDOPHYLLA*

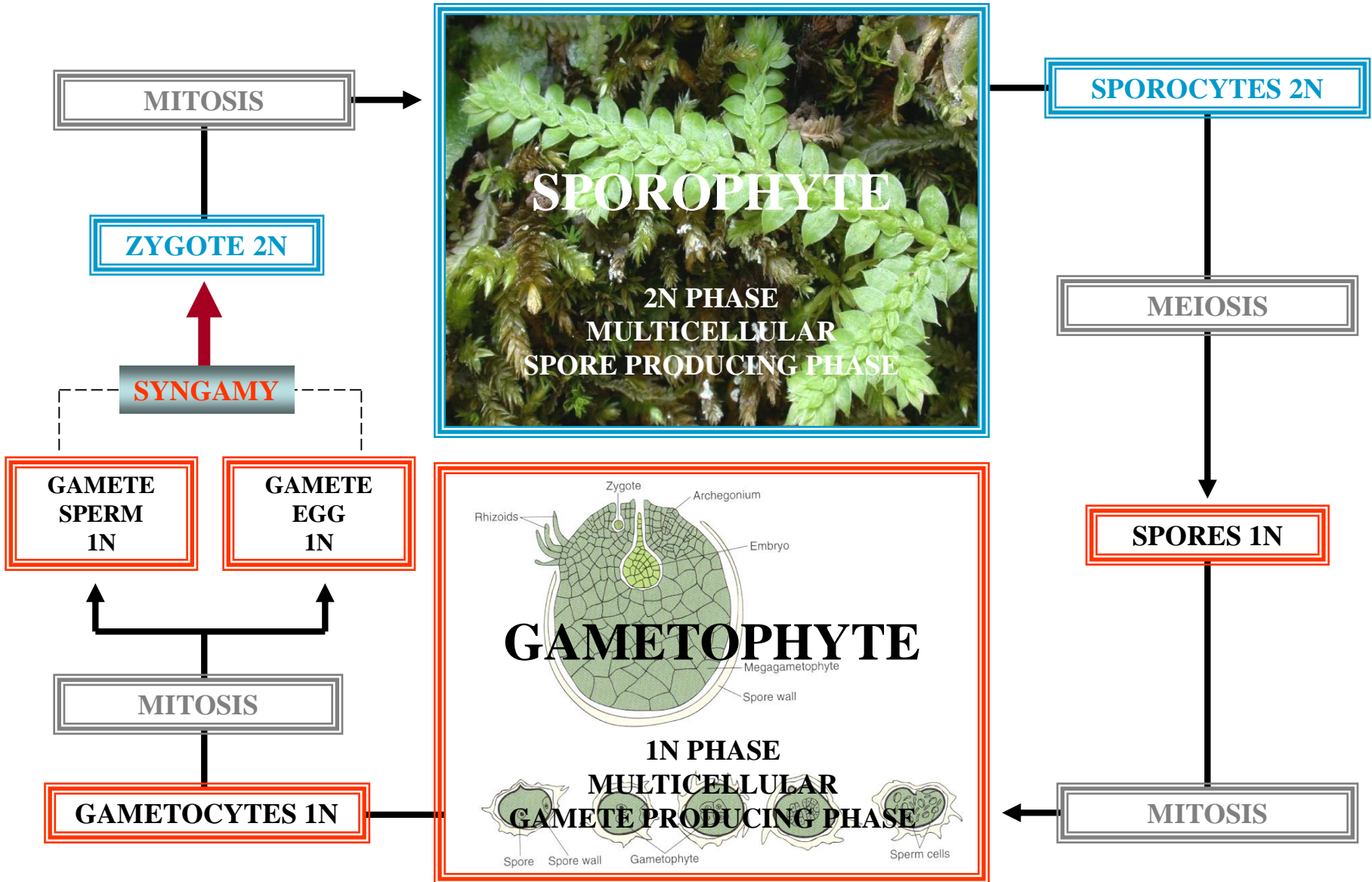




# GENERAL CHARACTERS

# SELAGINALLES

## LIFE CYCLE



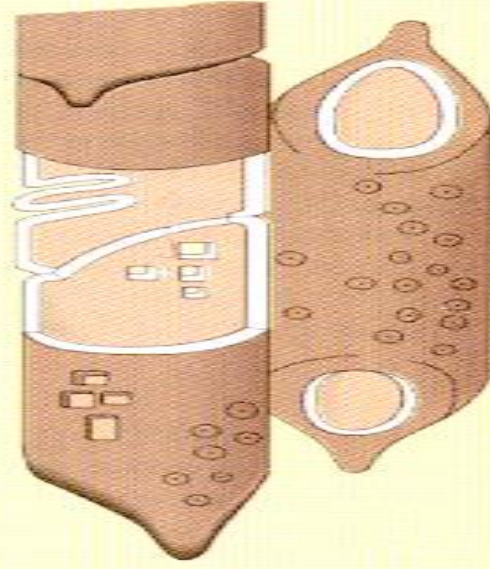
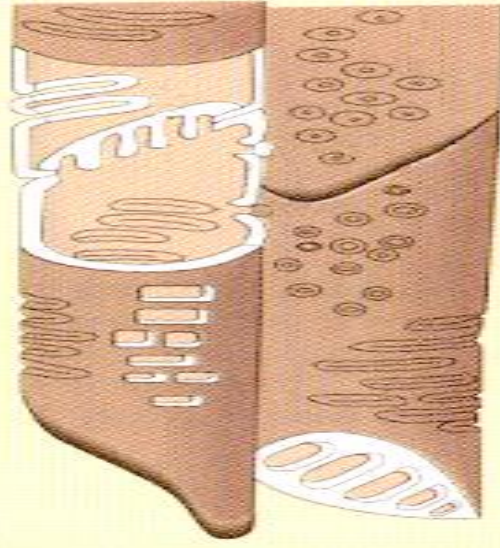
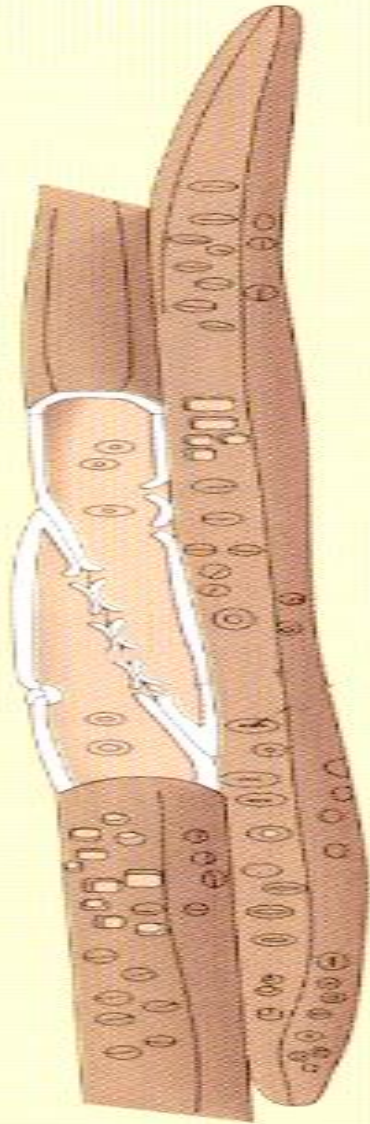




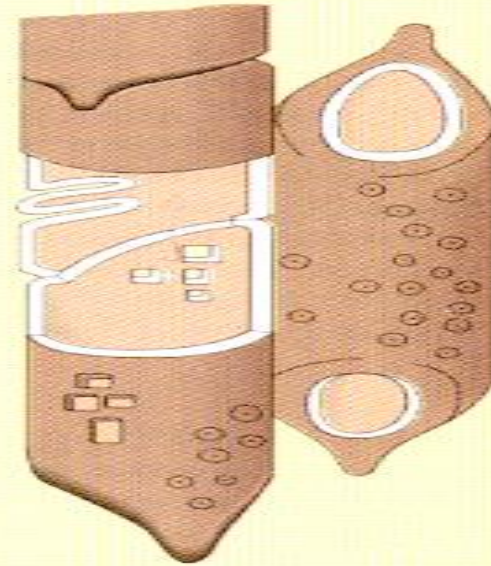
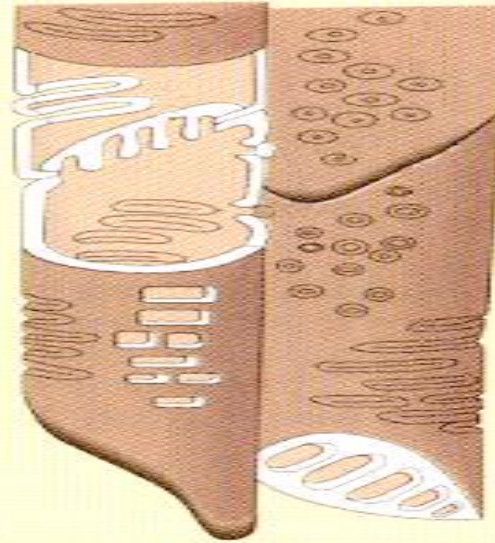
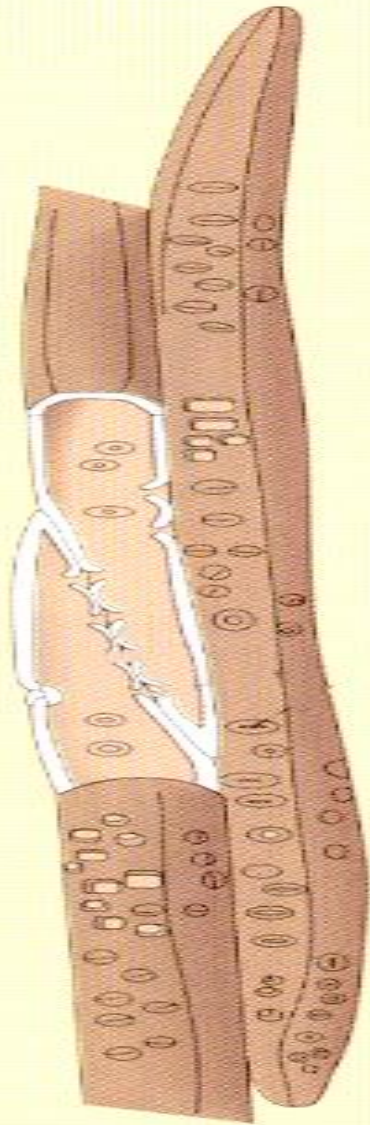
# SPOROPHYTE CHARACTERS



# XYLEM



**XYLEM CELLS**



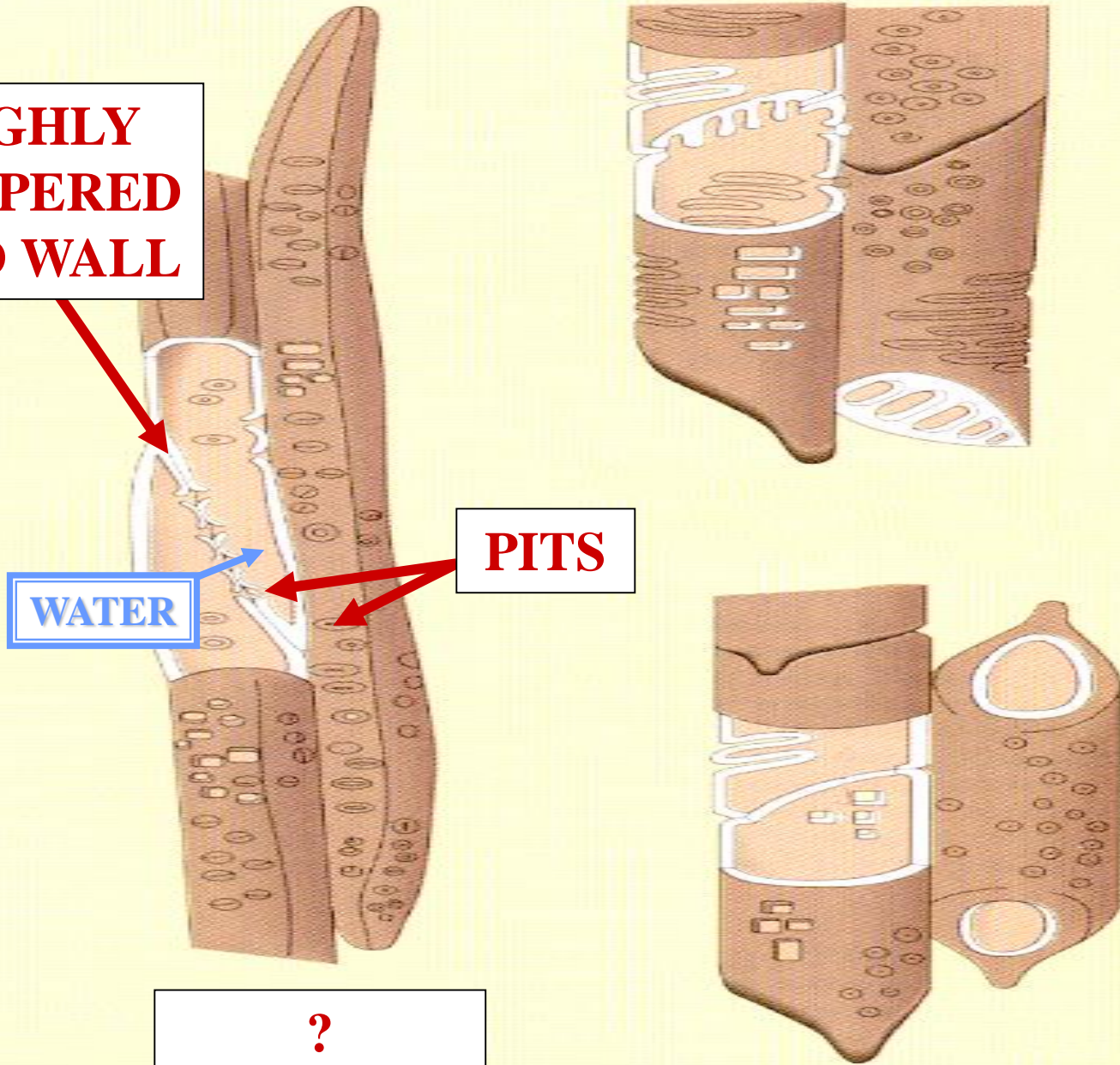
**TRACHEARY ELEMENTS**

**HIGHLY  
TAPPED  
END WALL**

**WATER**

**PITS**

**?**

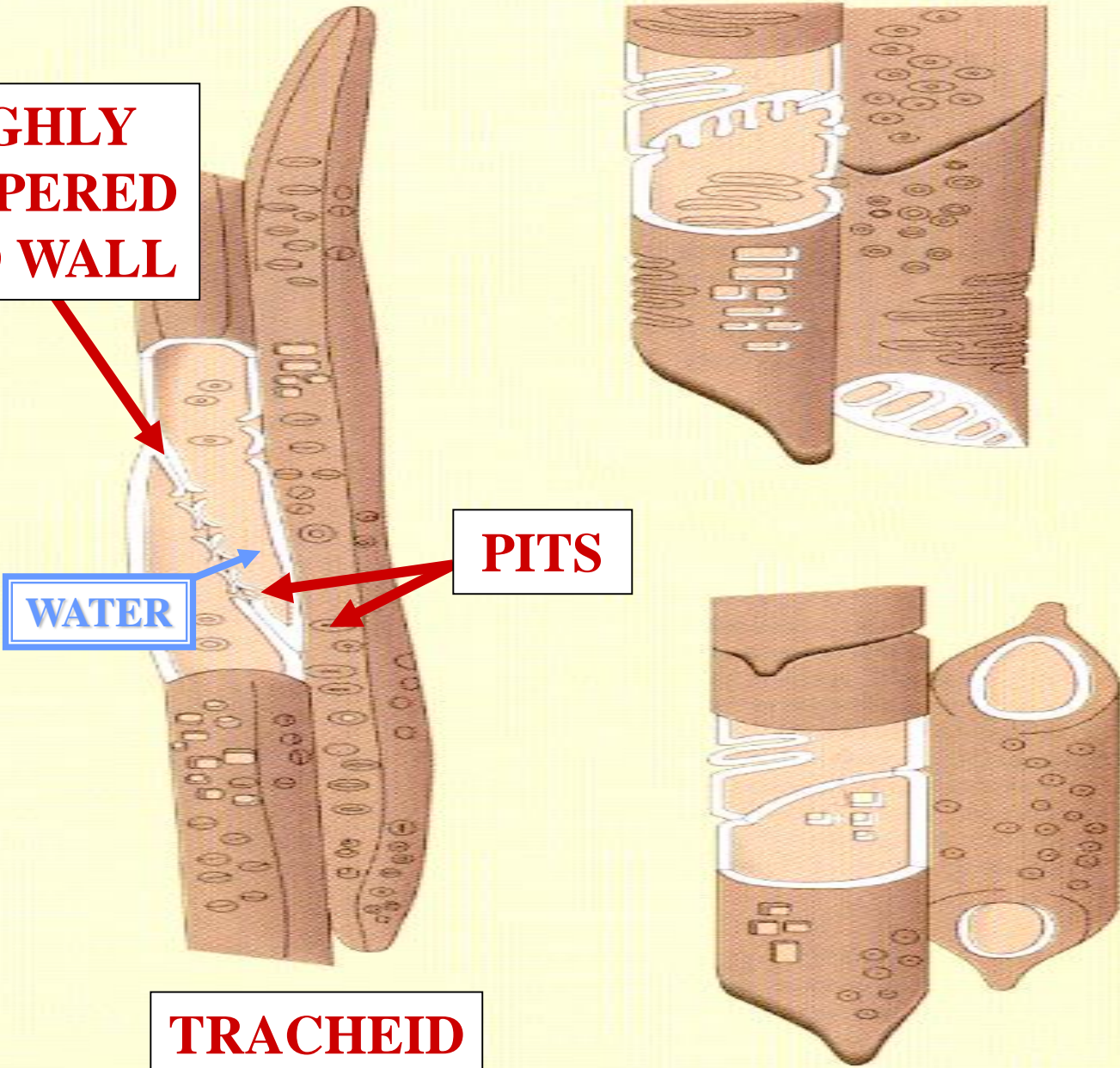


**HIGHLY  
TAPPED  
END WALL**

**WATER**

**PITS**

**TRACHEID**



VM

**HIGHLY  
TAPPED  
END WALL**

**LESS  
TAPPED  
END WALL**

?

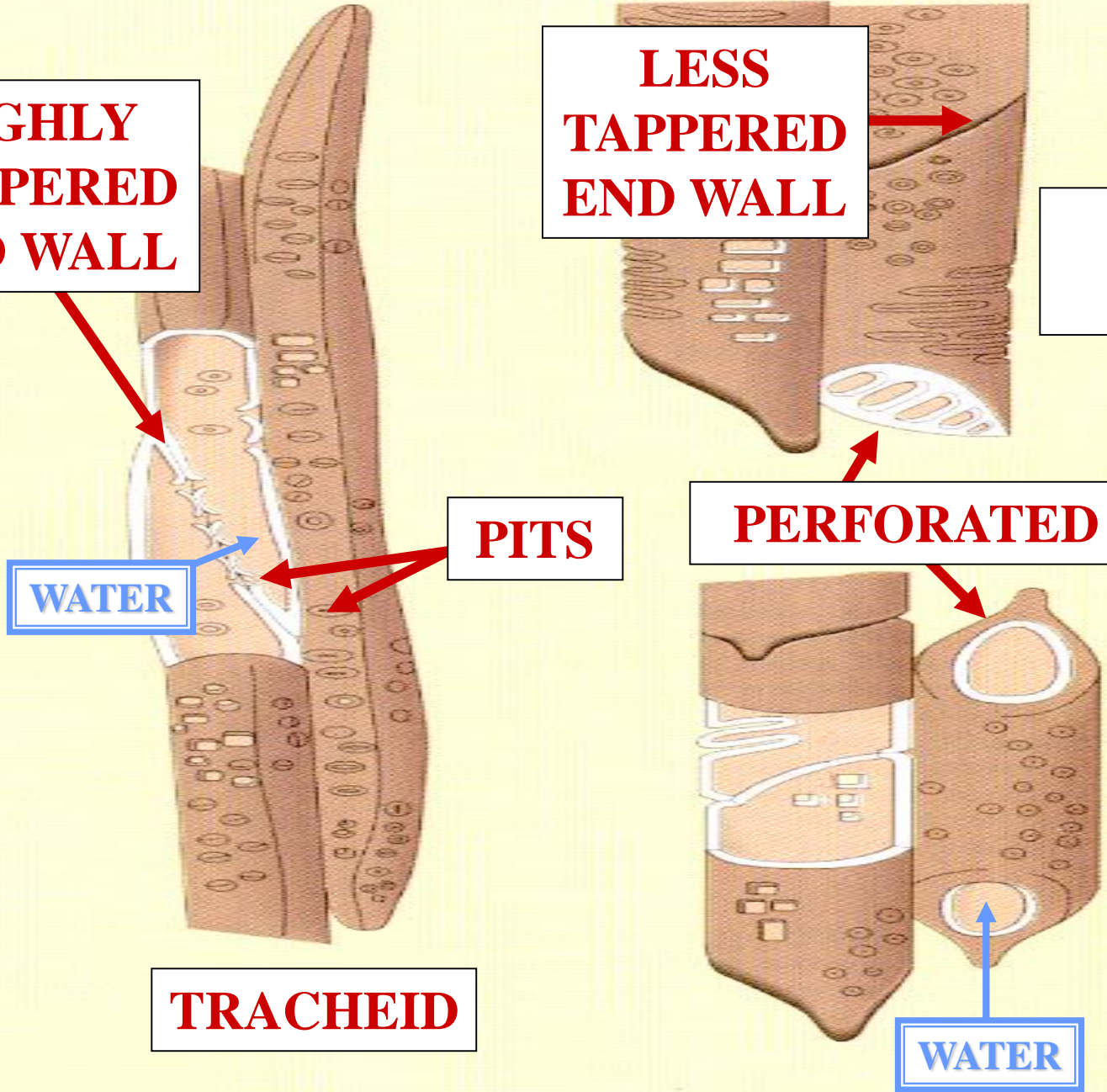
**WATER**

**PITS**

**PERFORATED PLATE**

**TRACHEID**

**WATER**





**T&V**

**HIGHLY  
TAPERED  
END WALL**

**LESS  
TAPERED  
END WALL**

**VESSEL  
MEMBER**

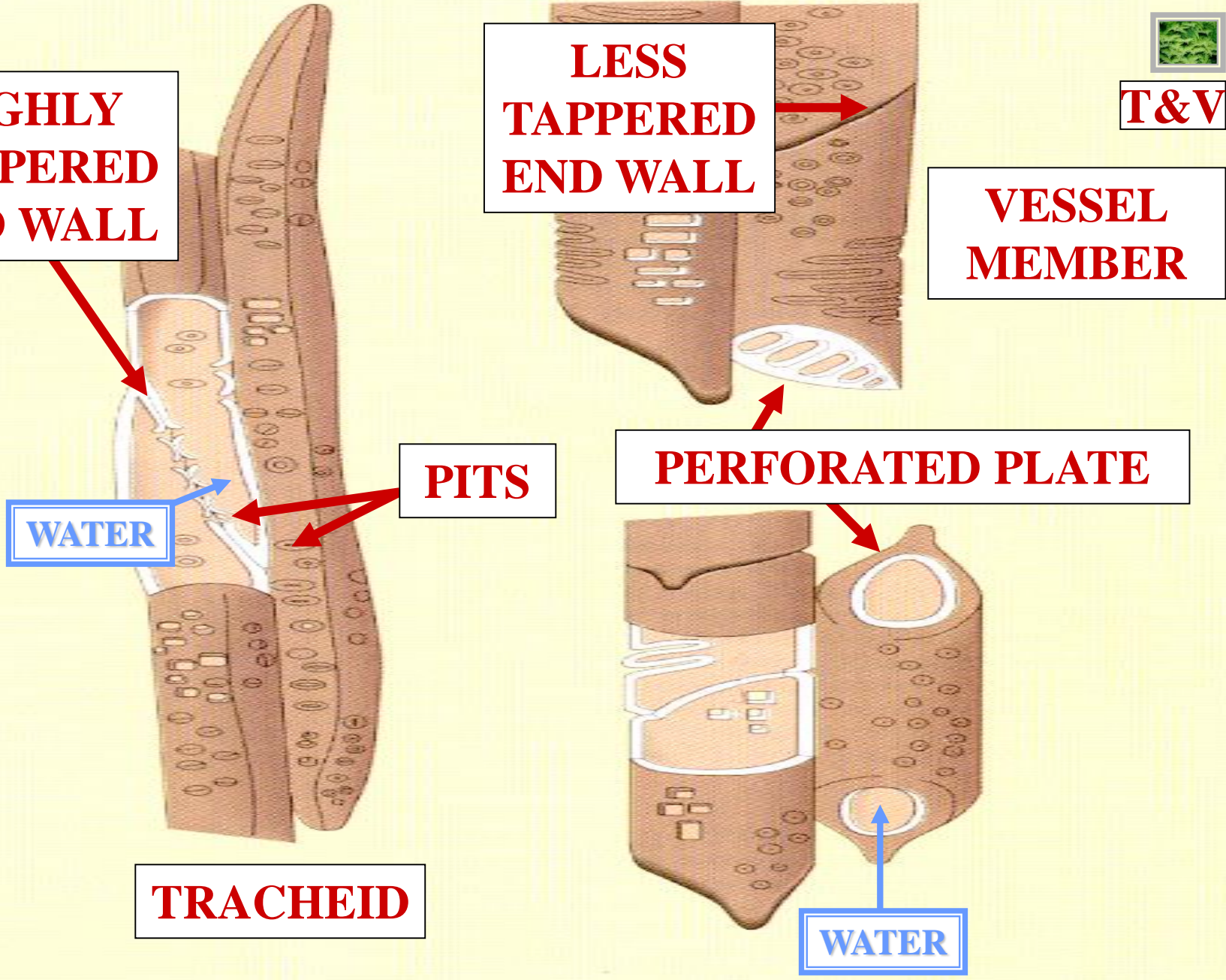
**WATER**

**PITS**

**PERFORATED PLATE**

**TRACHEID**

**WATER**







**TRACHEIDS  
&  
VESSEL MEMBERS**

***SELAGINELLA***



**STEM**



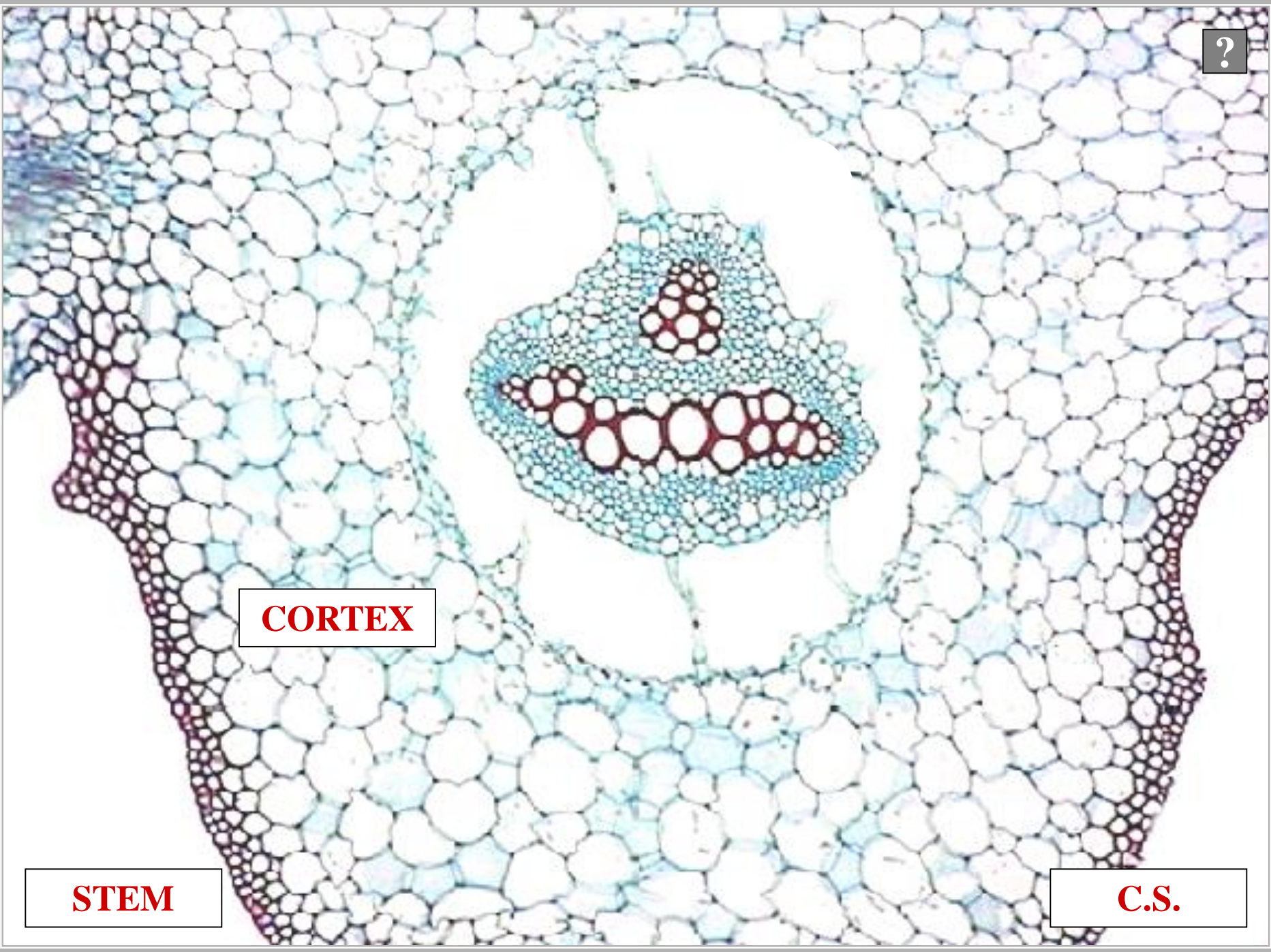
# STEM ANATOMY

?

**CORTEX**

**STEM**

**C.S.**



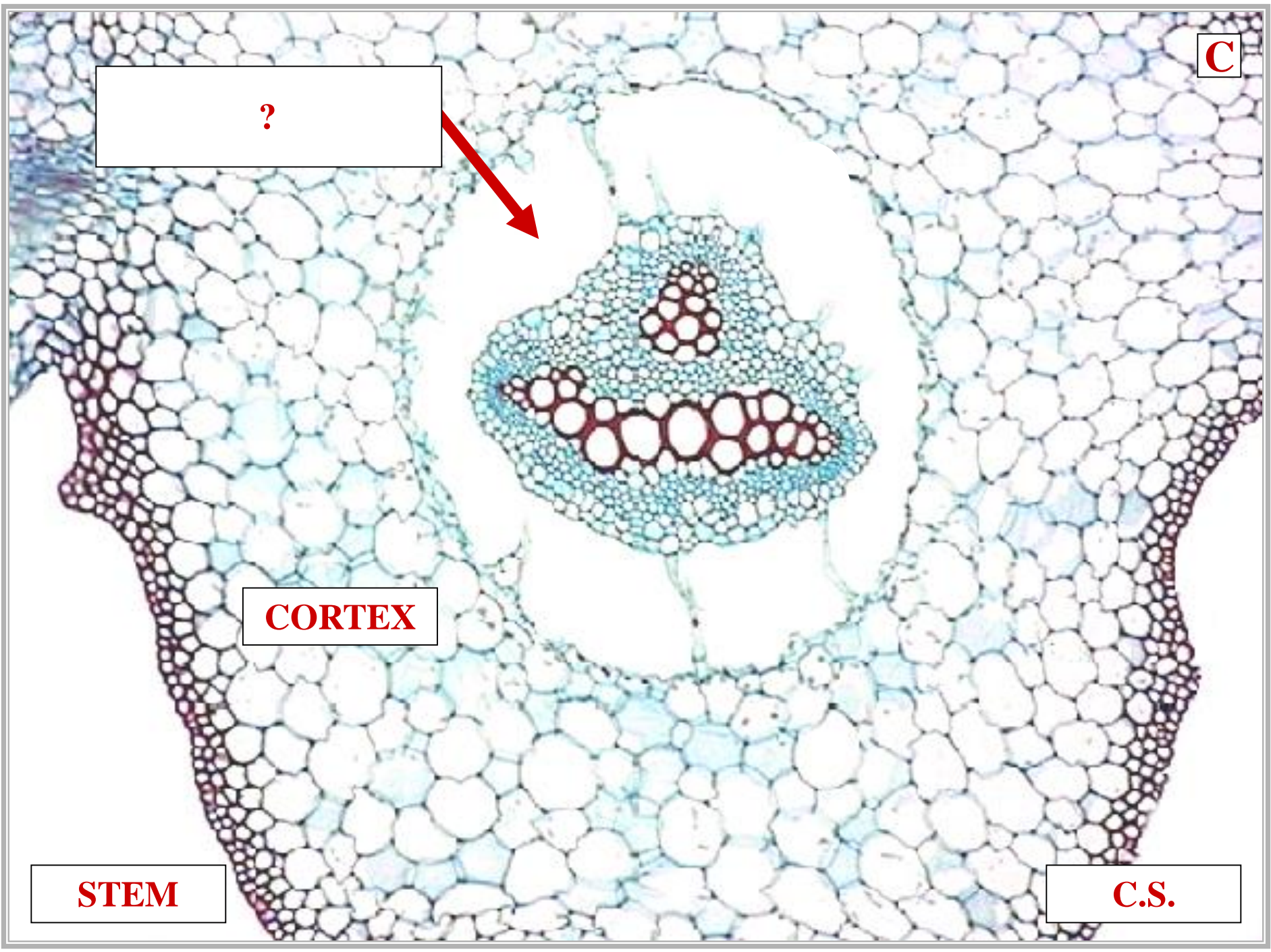
**C**

**?**

**CORTEX**

**STEM**

**C.S.**



?

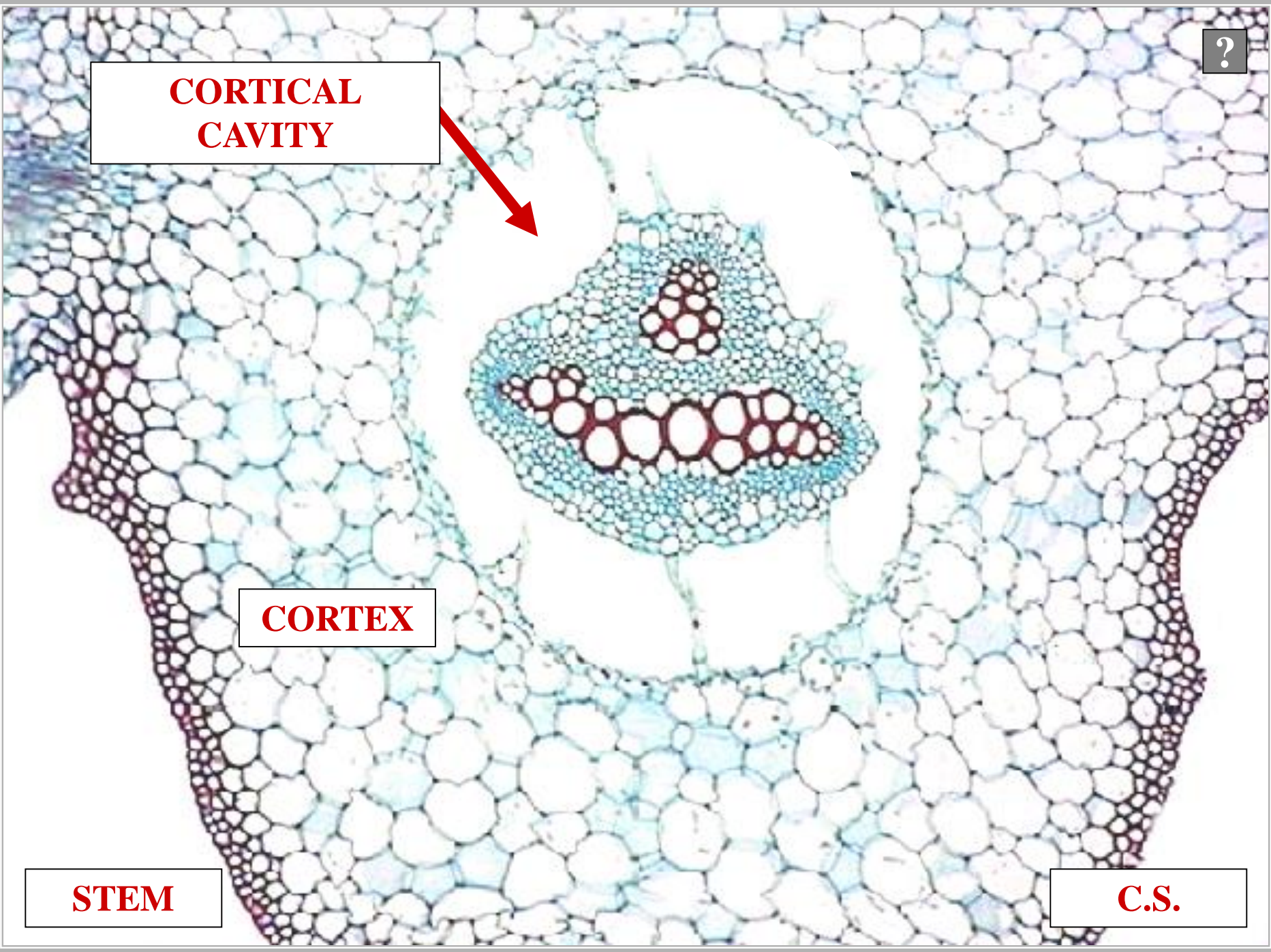
**CORTICAL  
CAVITY**



**CORTEX**

**STEM**

**C.S.**



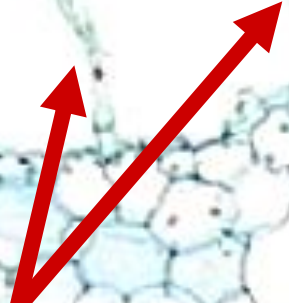
**T**

**CORTICAL  
CAVITY**



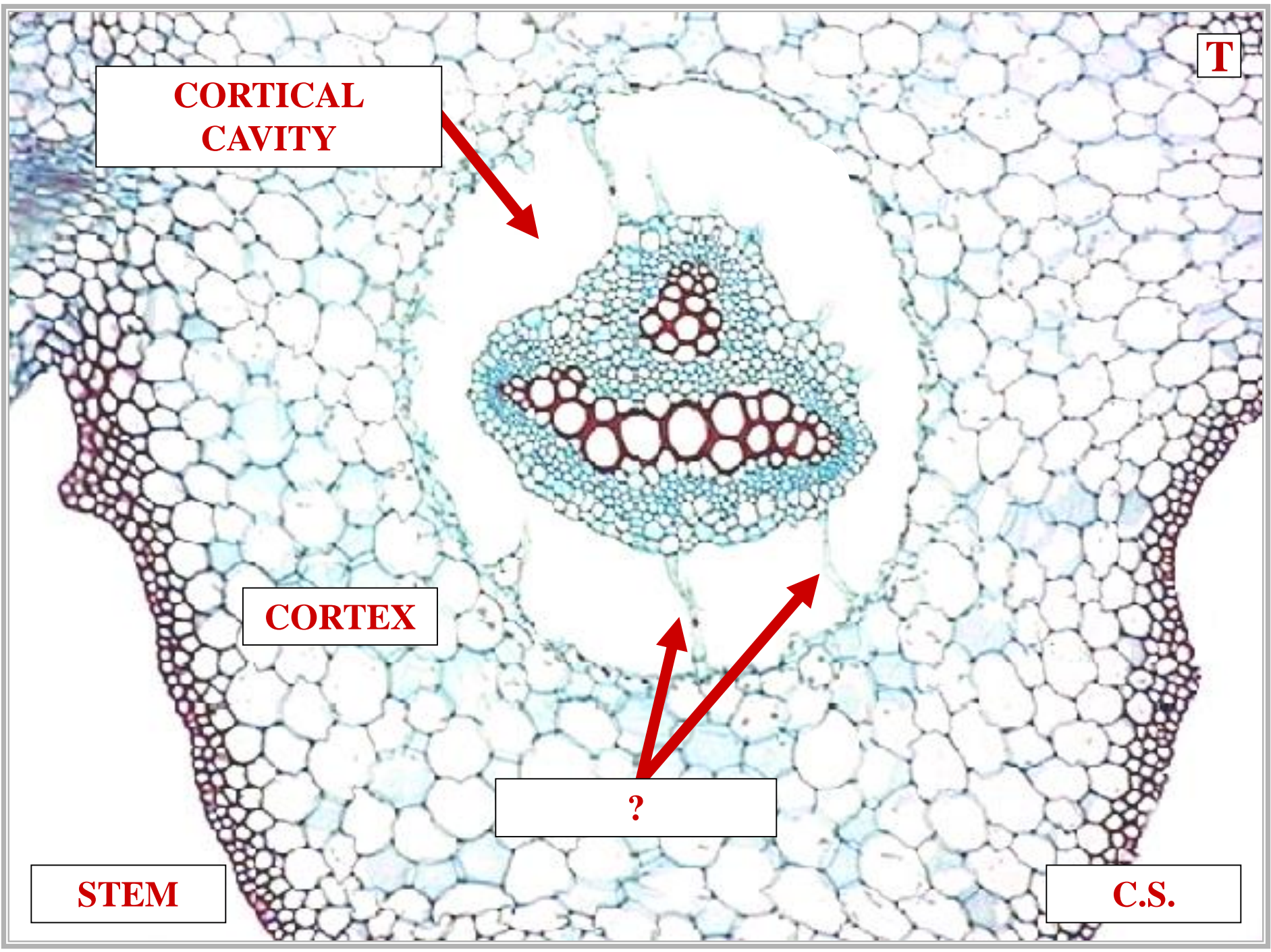
**CORTEX**

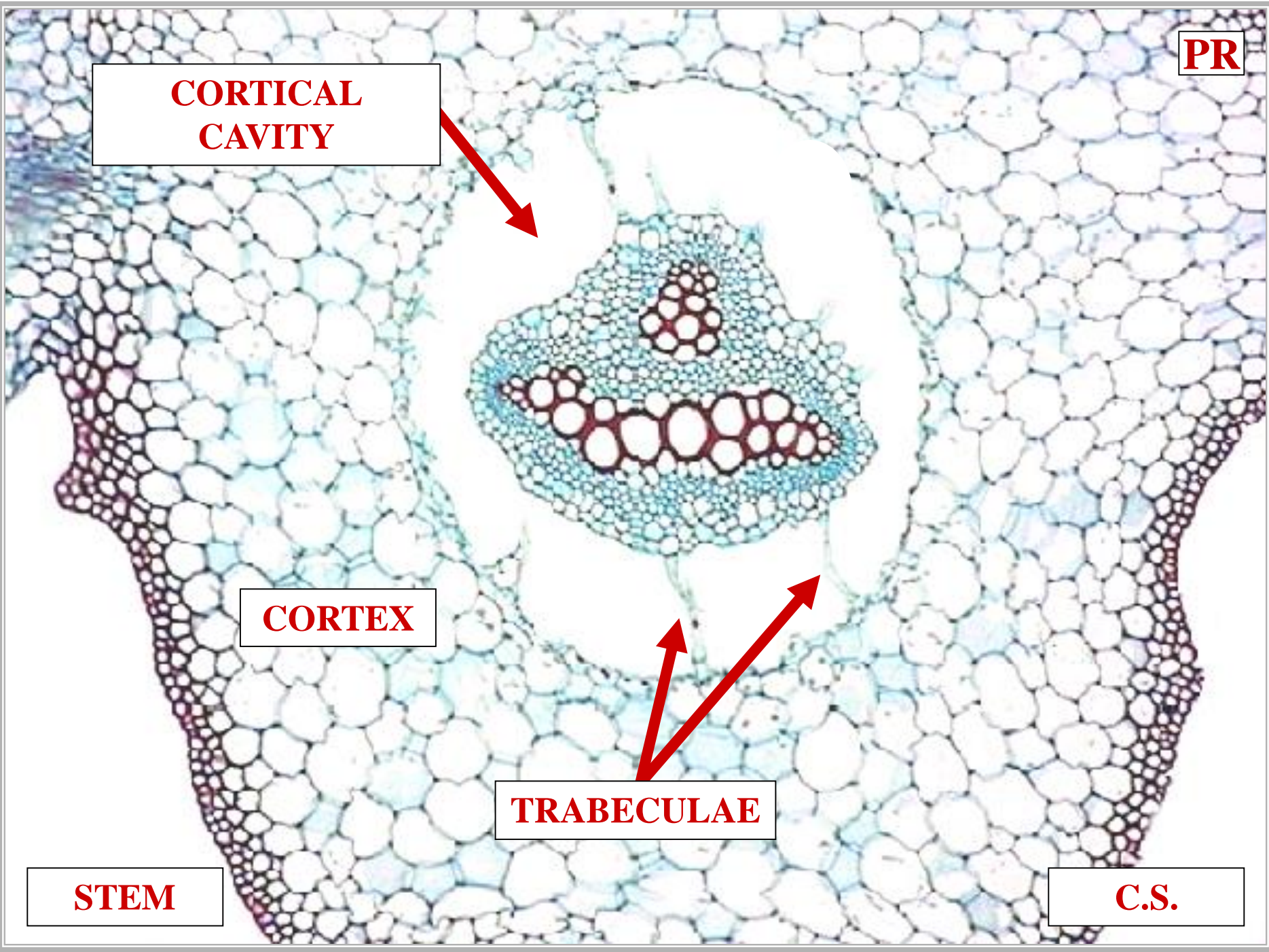
**?**



**STEM**

**C.S.**





**PR**

**CORTICAL  
CAVITY**

**CORTEX**

**TRABECULAE**

**STEM**

**C.S.**



**CORTICAL  
CAVITY  
PRESENT**

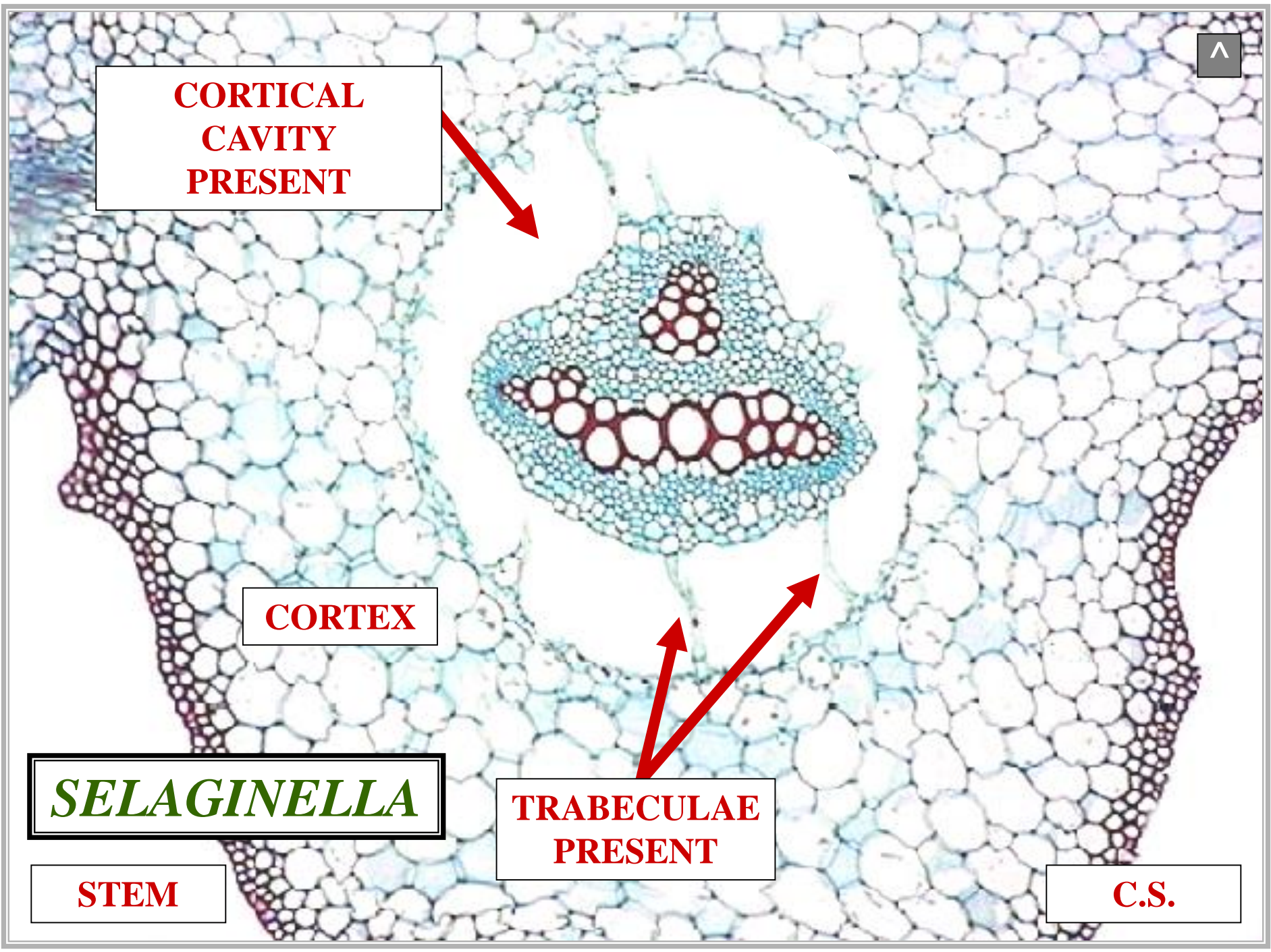
**CORTEX**

***SELAGINELLA***

**STEM**

**TRABECULAE  
PRESENT**

**C.S.**

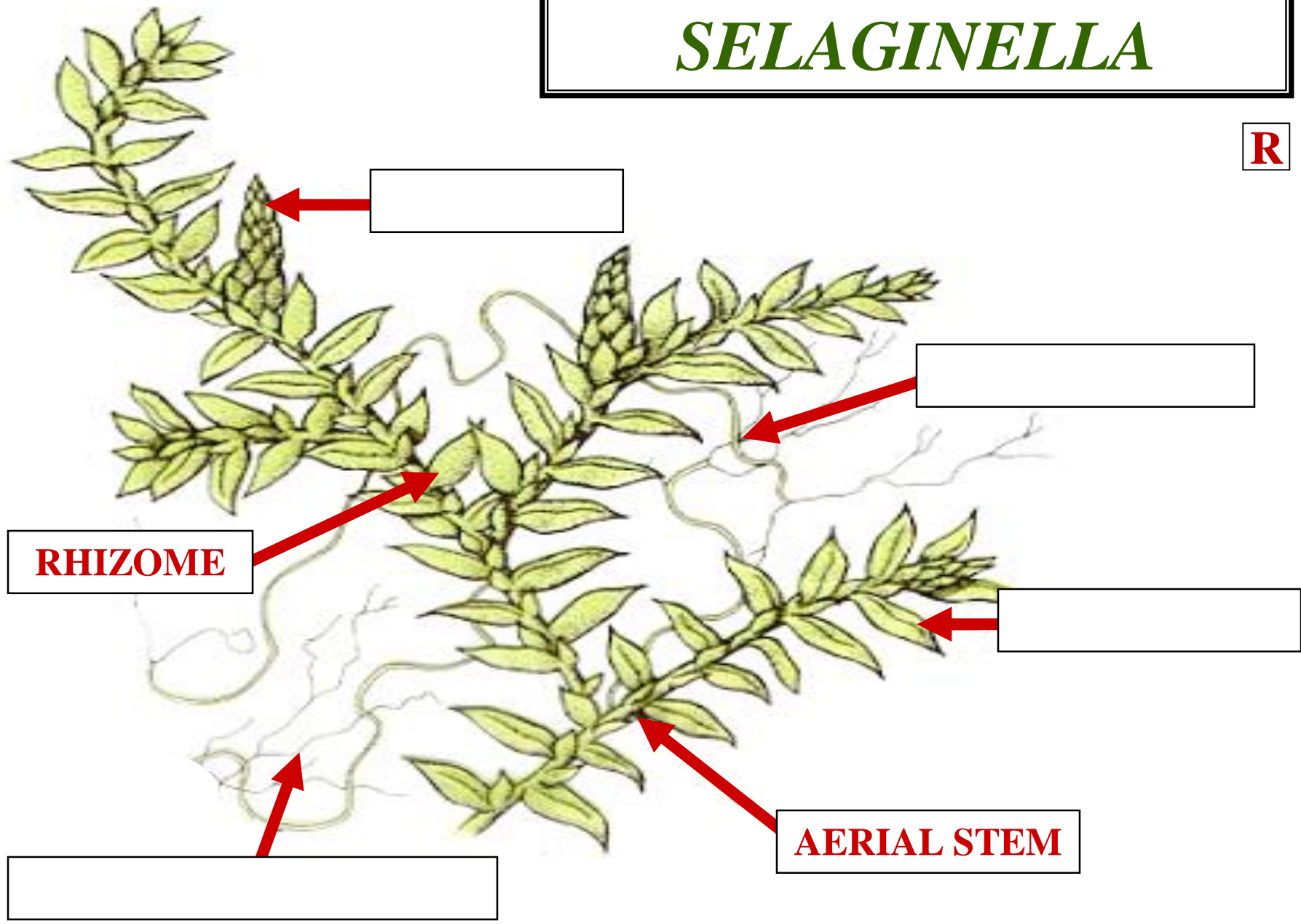




# **RHIZOME**

# *SELAGINELLA*

R



**RHIZOME**

**AERIAL STEM**

[Empty box]

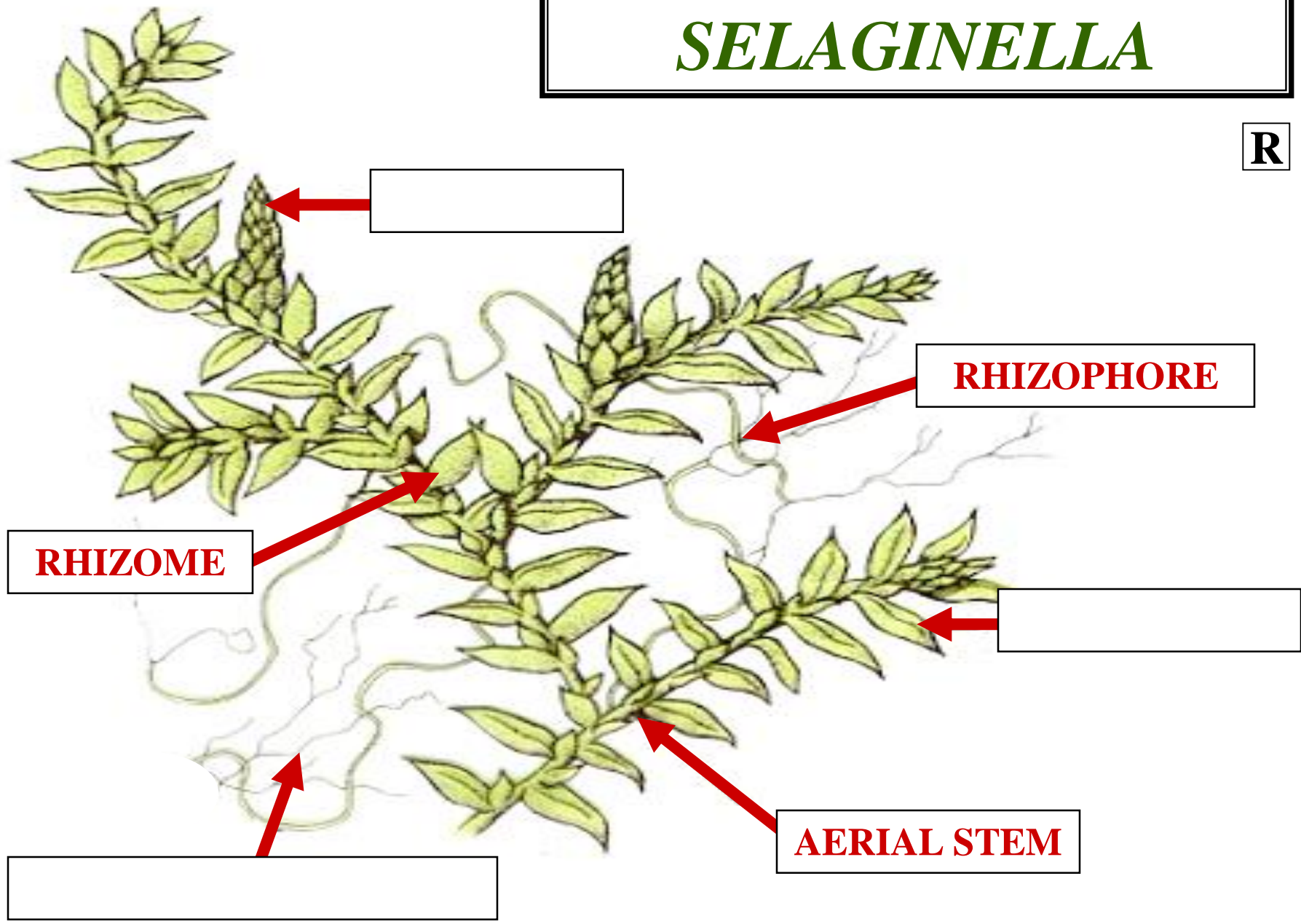
[Empty box]

[Empty box]

[Empty box]

# *SELAGINELLA*

R



**RHIZOPHORE**

**RHIZOME**

**AERIAL STEM**

[Empty box]

[Empty box]

[Empty box]

**RHIZOPHORE**



***SELAGINELLA***  
**RHIZOPHORE**

**POSITIVELY GEOTROPIC  
STEM**

***SELAGINELLA***  
**RHIZOPHORE**



***SELAGINELLA***

**RHIZOPHORE**

**POSITIVELY GEOTROPIC  
STEM**

**---**

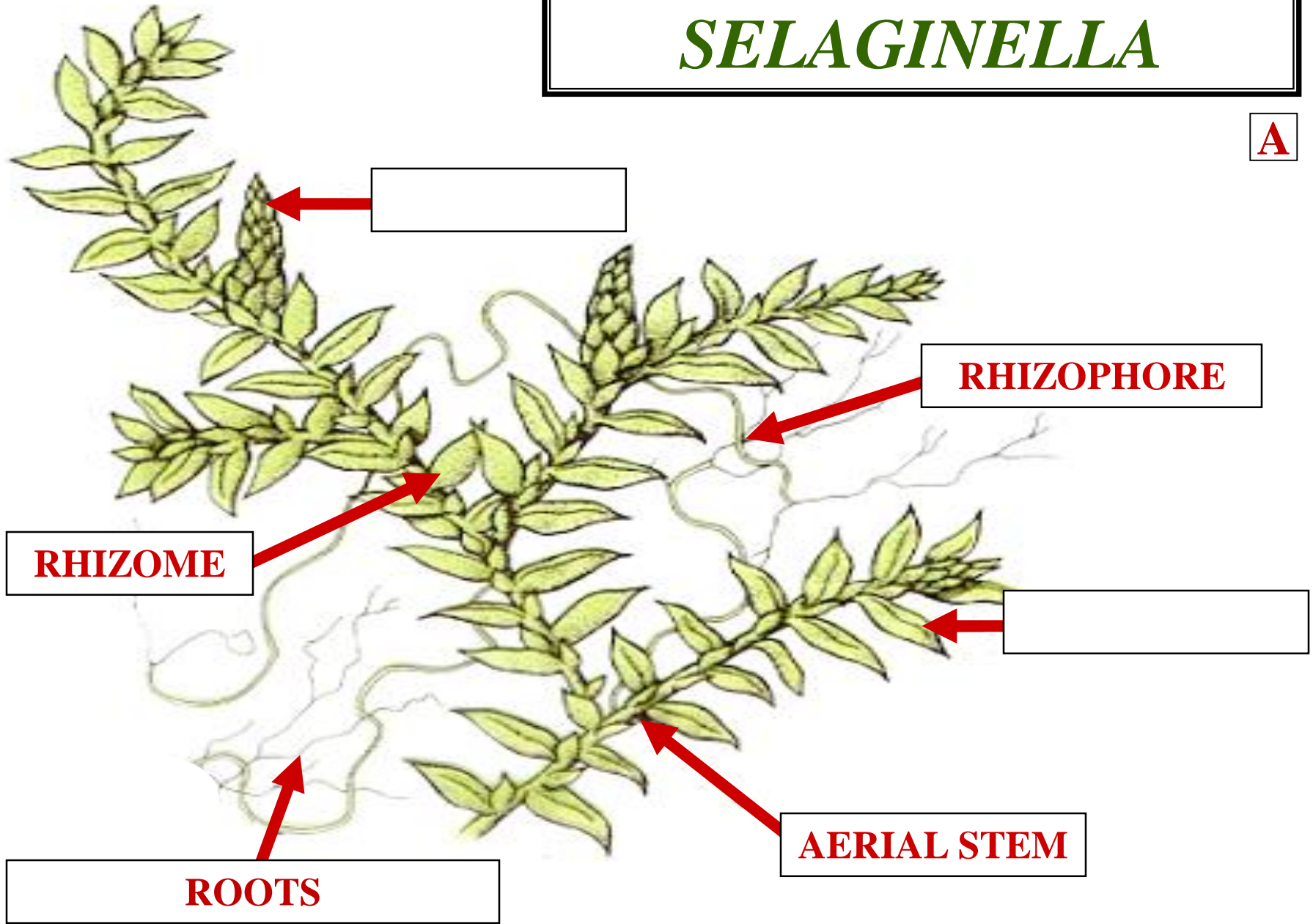
**DERIVES ADVENTITIOUS  
ROOTS**

***SELAGINELLA***

**RHIZOPHORE**

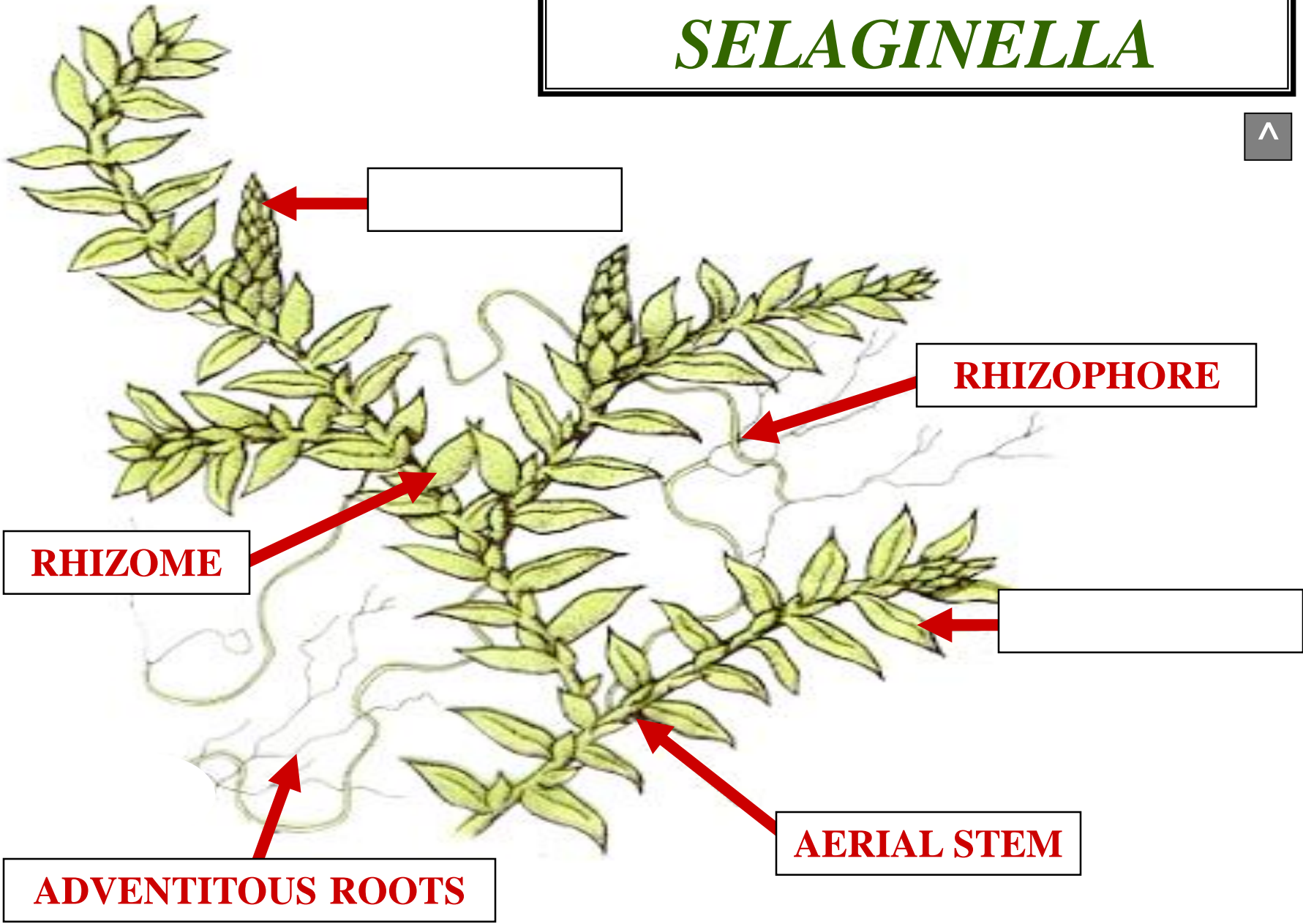
# *SELAGINELLA*

A





# *SELAGINELLA*



**RHIZOME**

**RHIZOPHORE**

**ADVENTITIOUS ROOTS**

**AERIAL STEM**



**LEAF**



# LEAF MORPHOLOGY



***SELAGINELLA***

***SELAGINELLA***

**MICROPHYLL**





**LARGE LEAF**

***SELAGINELLA***

**MICROPHYLL**



**LARGE LEAF**

**SMALL LEAF**

***SELAGINELLA***

**MICROPHYLL**



**LARGE LEAF**



**SMALL LEAF**

***SELAGINELLA***

**ANISOPHYLLOUS**



LIGULE

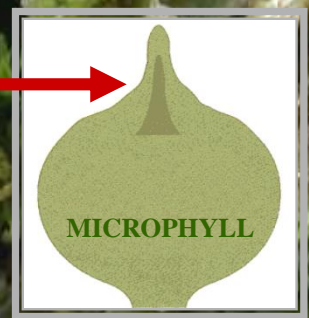


MICROPHYLL

***SELAGINELLA***

**ANISOPHYLLOUS**

**LIGULE PRESENT**



***SELAGINELLA***

**ANISOPHYLLOUS**

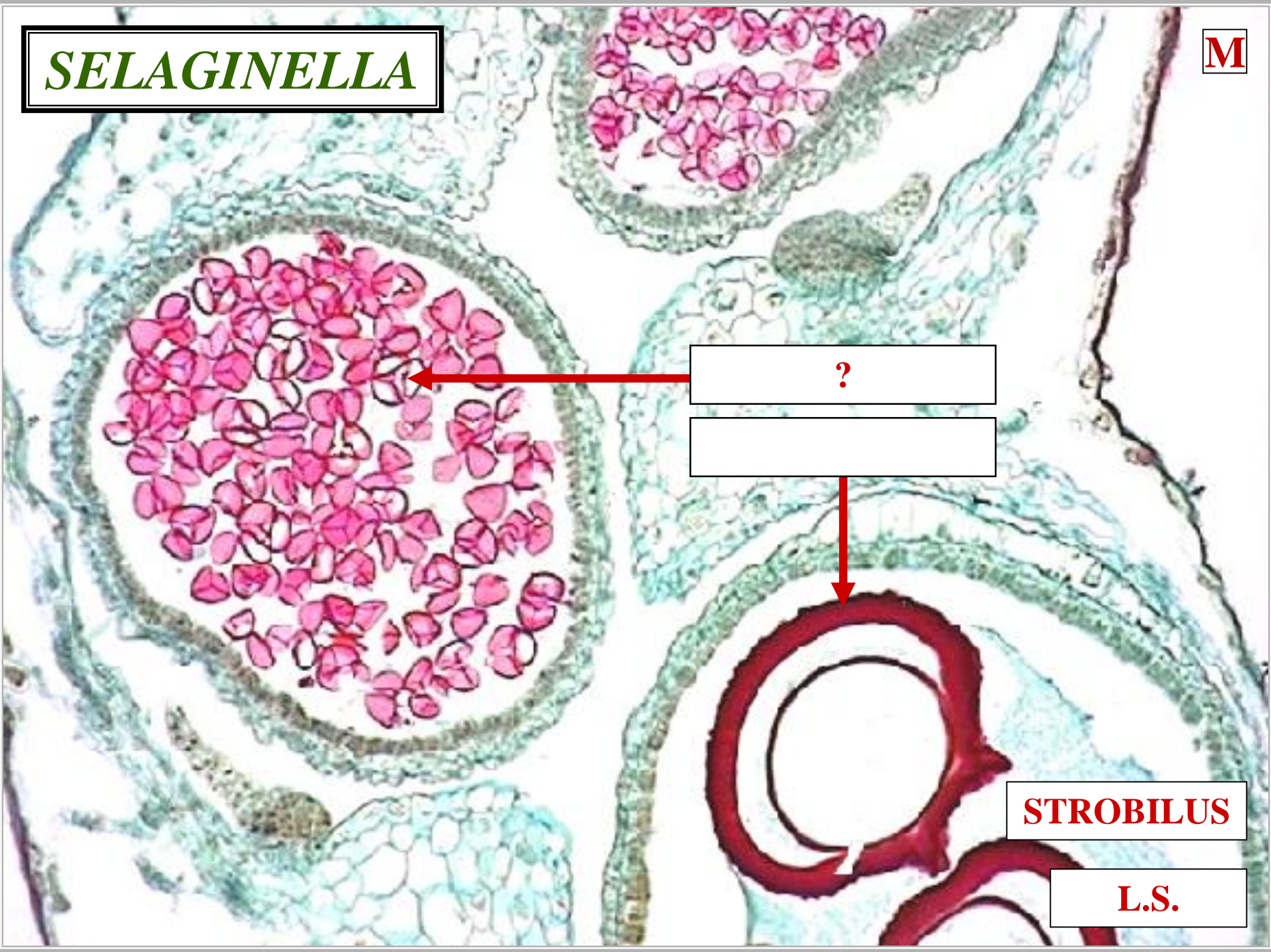
**LIGULE PRESENT**



# SPORE HABIT

***SELAGINELLA***

**M**



?

**STROBILUS**

**L.S.**

# *SELAGINELLA*

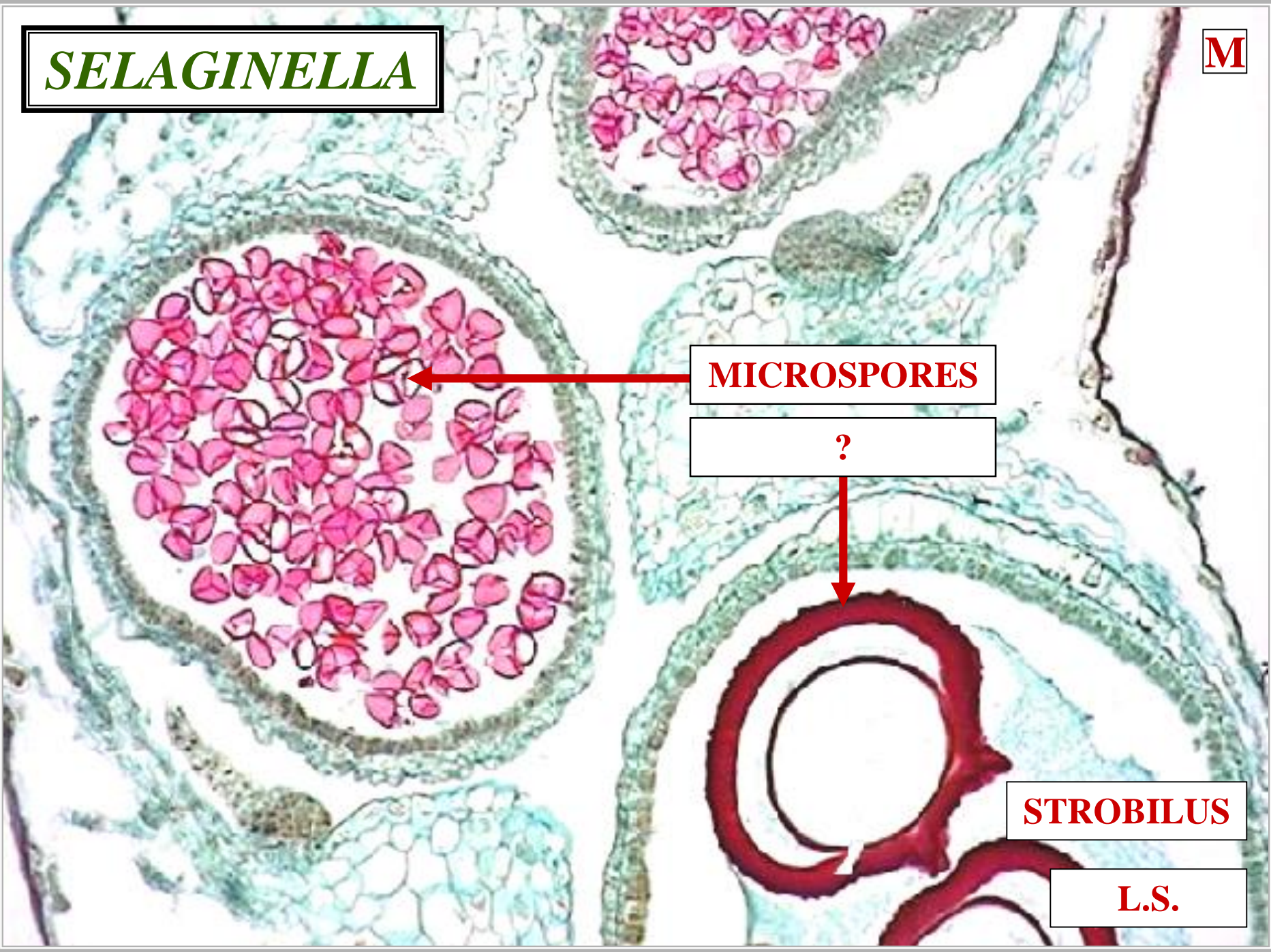
M

MICROSPORES

?

STROBILUS

L.S.



# *SELAGINELLA*

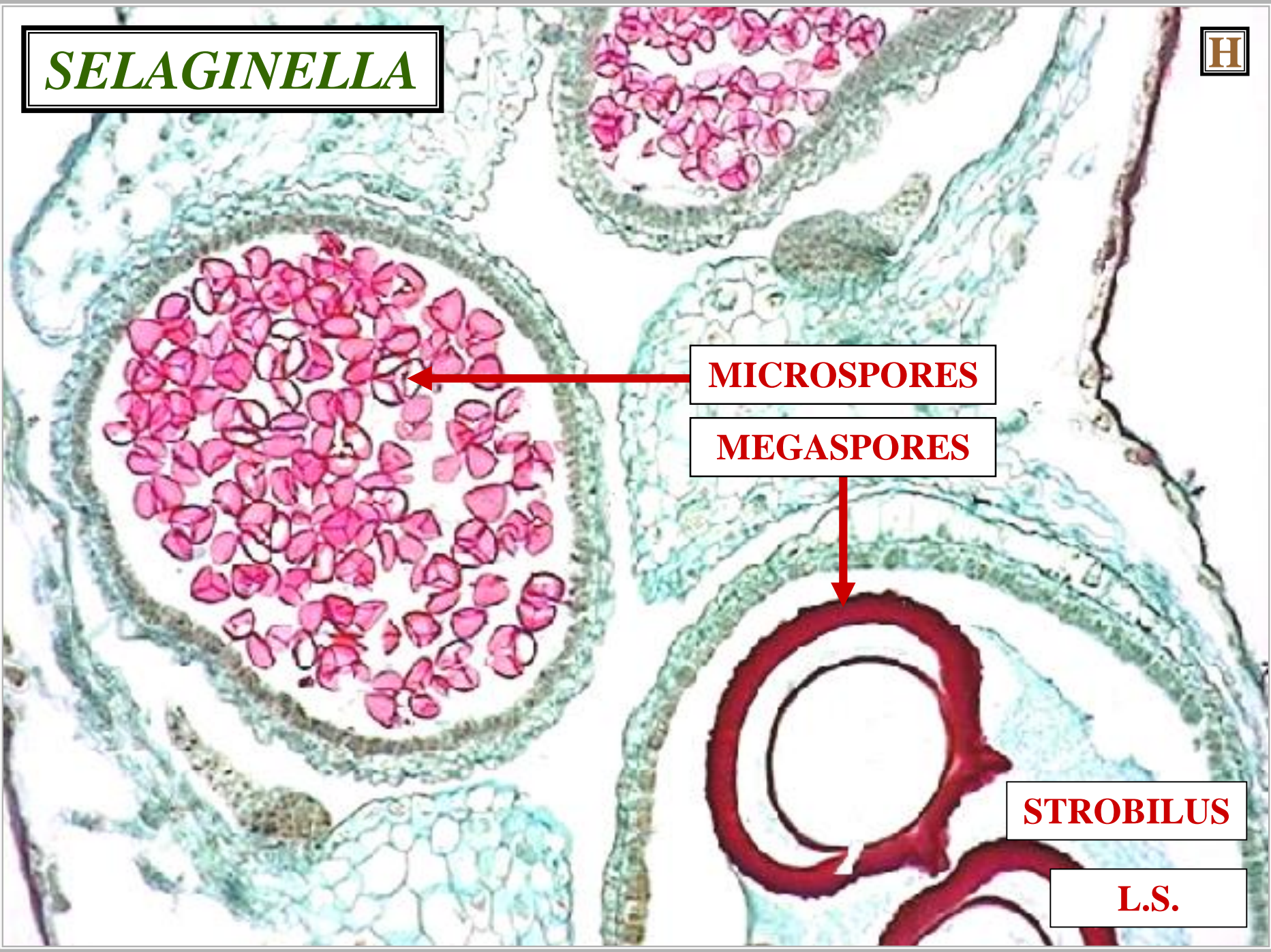
H

MICROSPORES

MEGASPORES

STROBILUS

L.S.



# *SELAGINELLA*



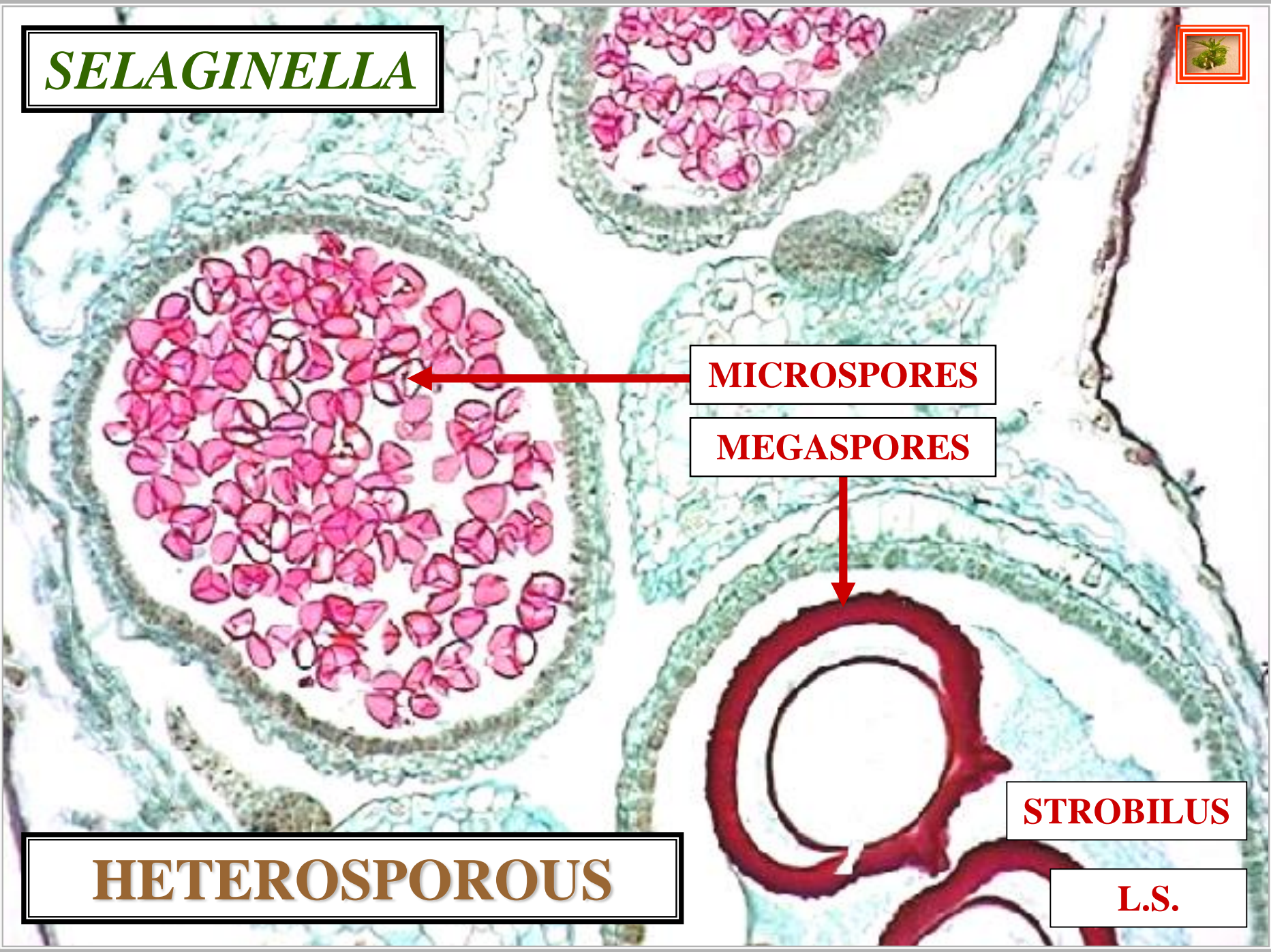
**MICROSPORES**

**MEGASPORES**

**STROBILUS**

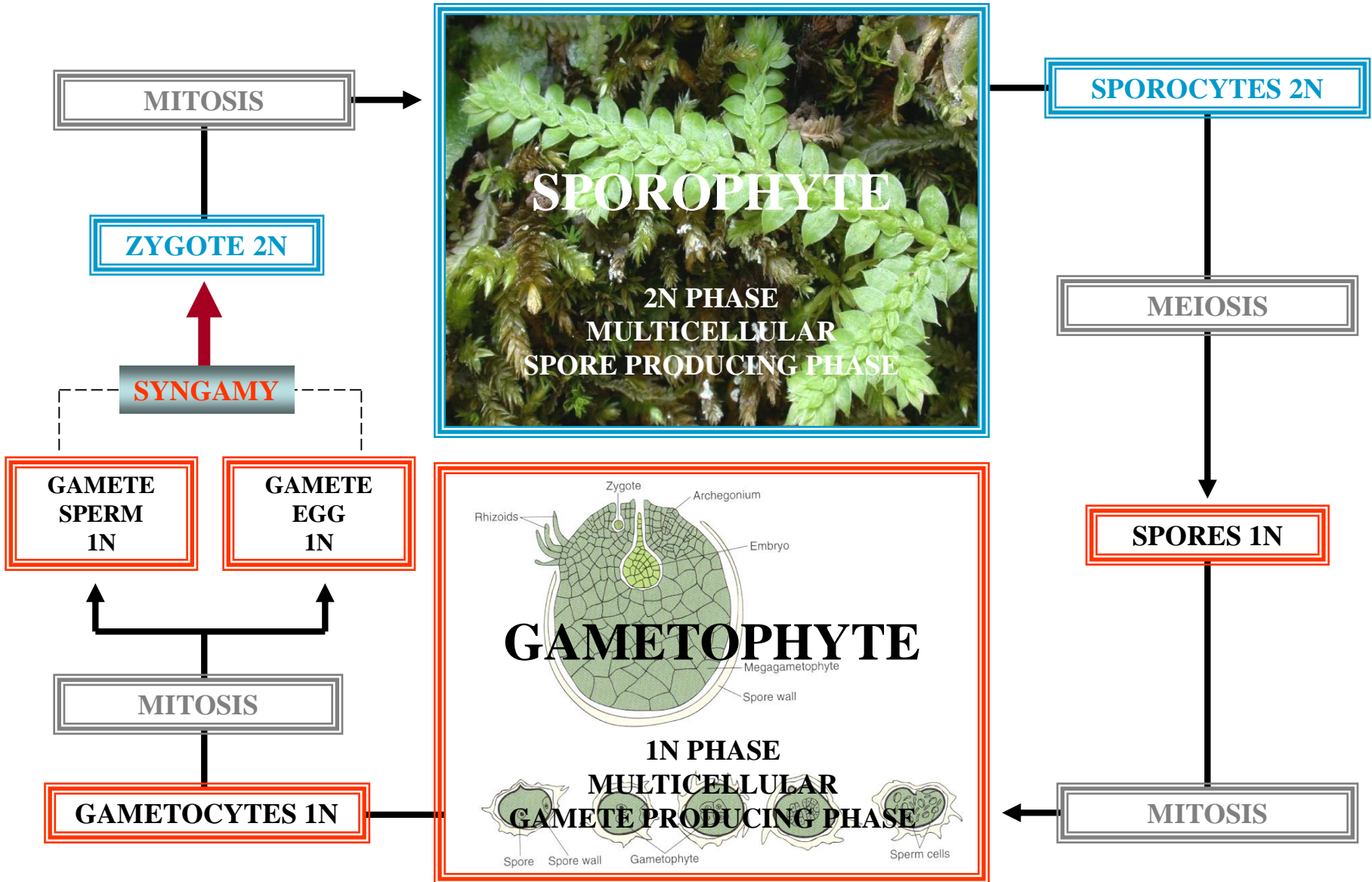
**HETEROSPOROUS**

**L.S.**



# SELAGINALLES

## LIFE CYCLE







# GAMETOPHYTE CHARACTERS

# *SELAGINELLA*



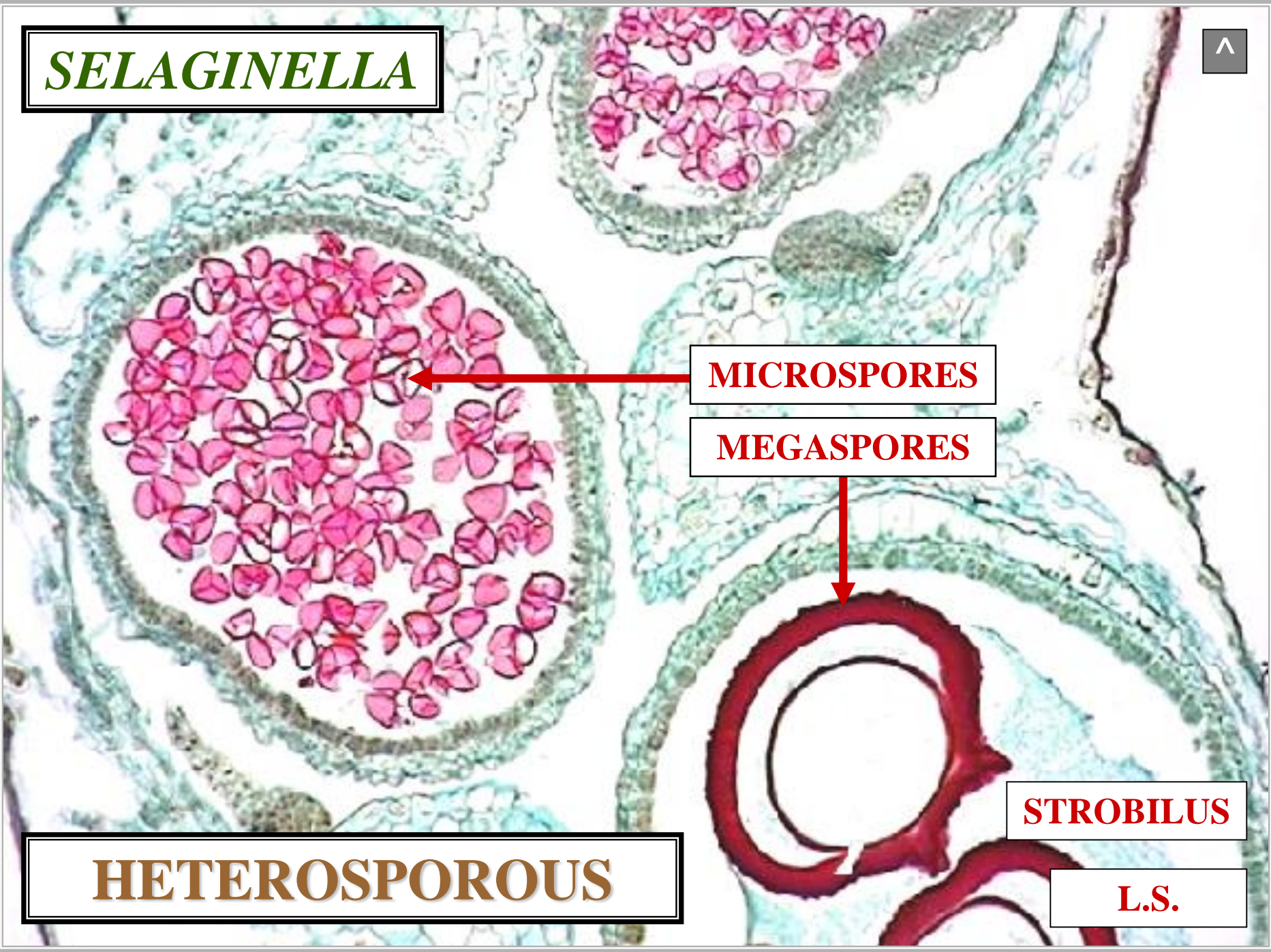
**MICROSPORES**

**MEGASPORES**

**STROBILUS**

**HETEROSPOROUS**

**L.S.**

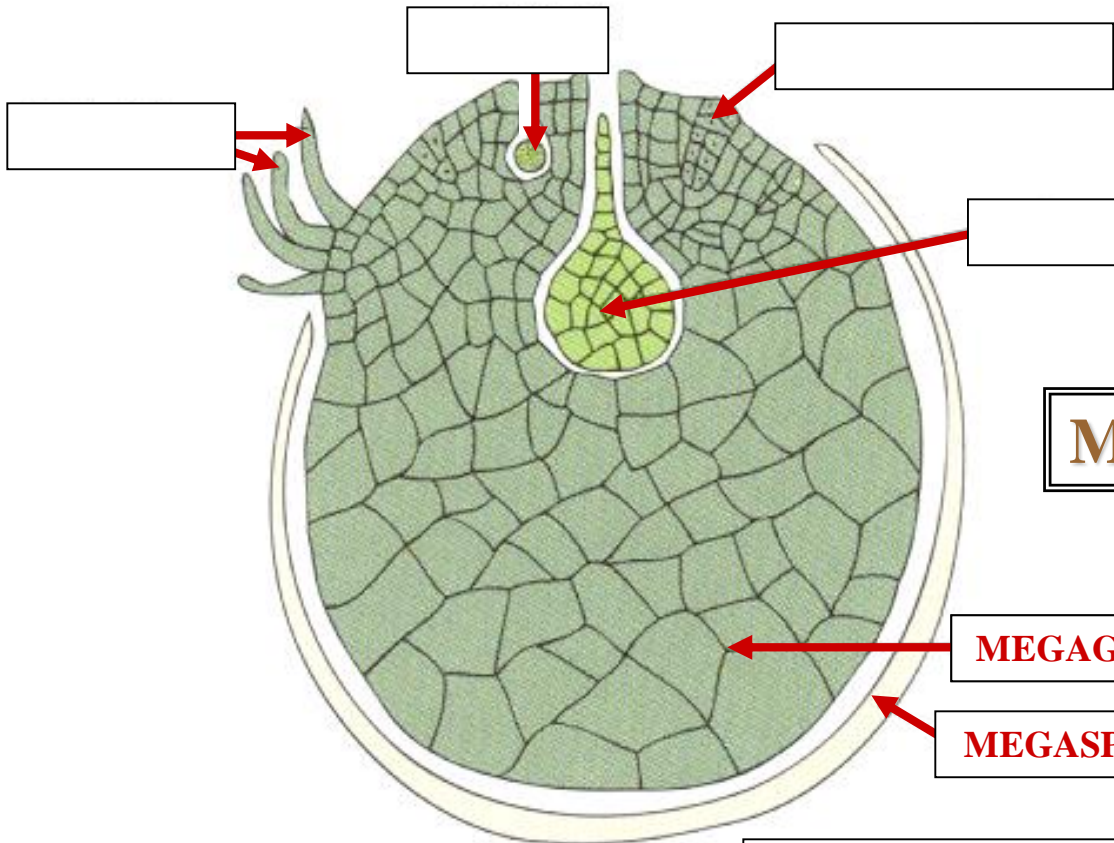




# ENDOSPORIC GAMETOPHYTE

# *SELAGINELLA*

EN



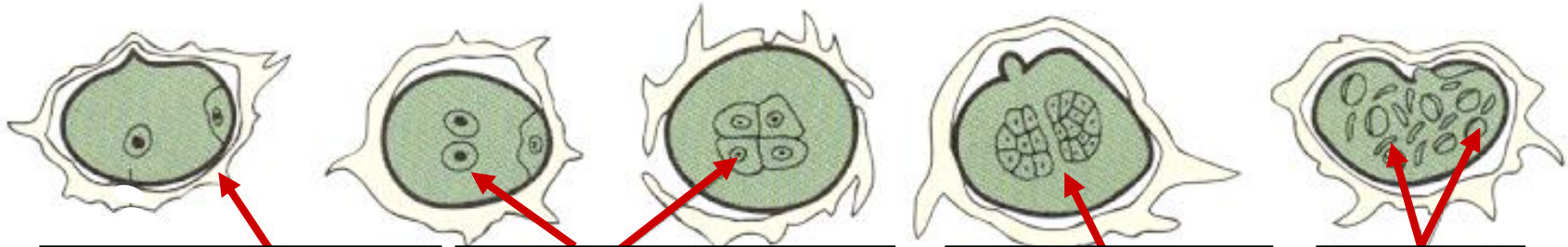
**MEGASPORE**

**MEGAGAMETOPHYTE**

**MEGASPORE WALL**

**MICROSPORE**

**GAMETOPHYTE**



**MICROSPORE WALL**

**MICROGAMETOPHYTE**

[Empty box]

[Empty box]