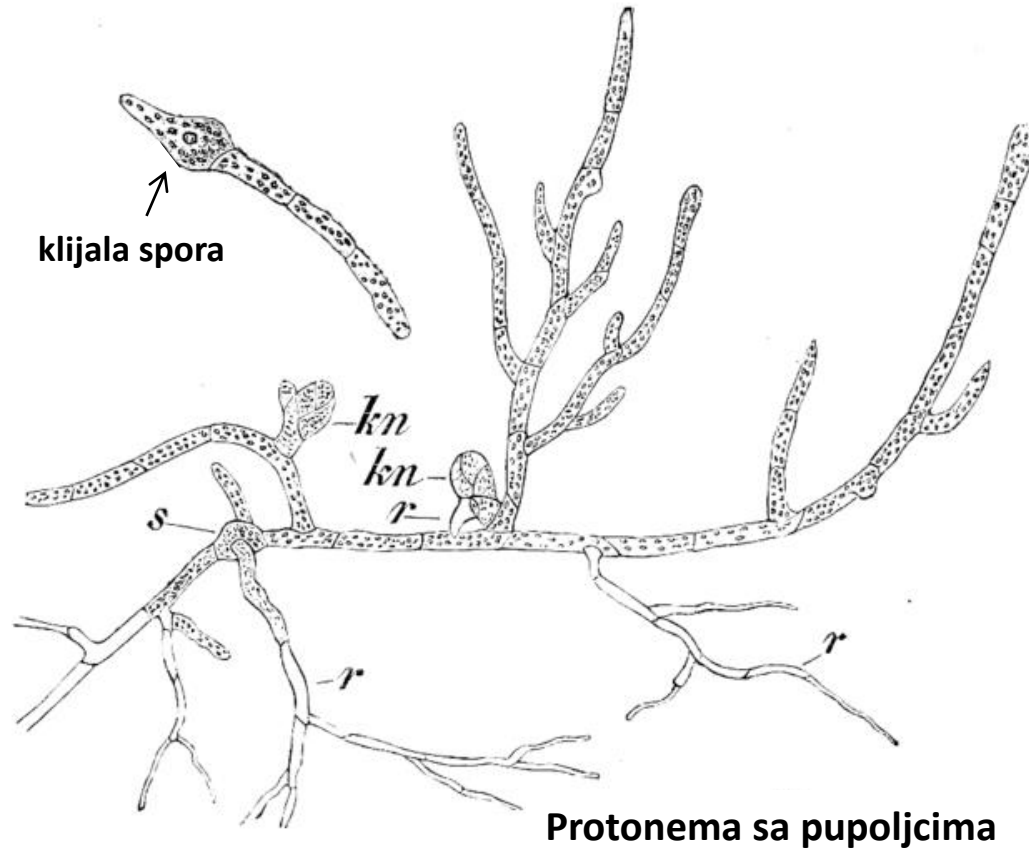


MAHOVINE

- Dominacija gametofit generacije
- Protonema, sporogon, kolumela...
- Talusoidne, listolike
- Rizoid= korjenčić (jednoćelijski, višećelijski), kauloid= stabaoce, filoid= listovi
- Epidermis, kutikula, stome
- Leptoide, hadroide ... (izostaju iz rizoida!)

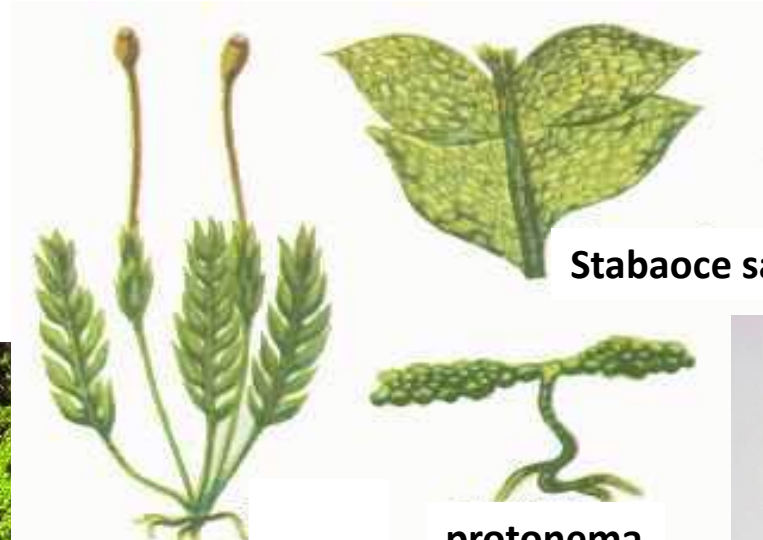
Protomena *Funaria hydrometrica*



S- spora, kn- pupoljak, r- rizoid

Primarna, sekundarna protonema

Protonematične mahovine



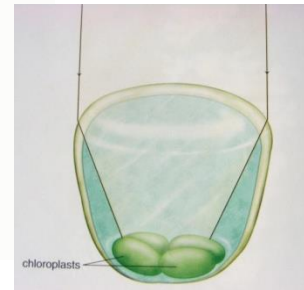
Gametofit
sa sporogonom



Stabaoce sa listovima

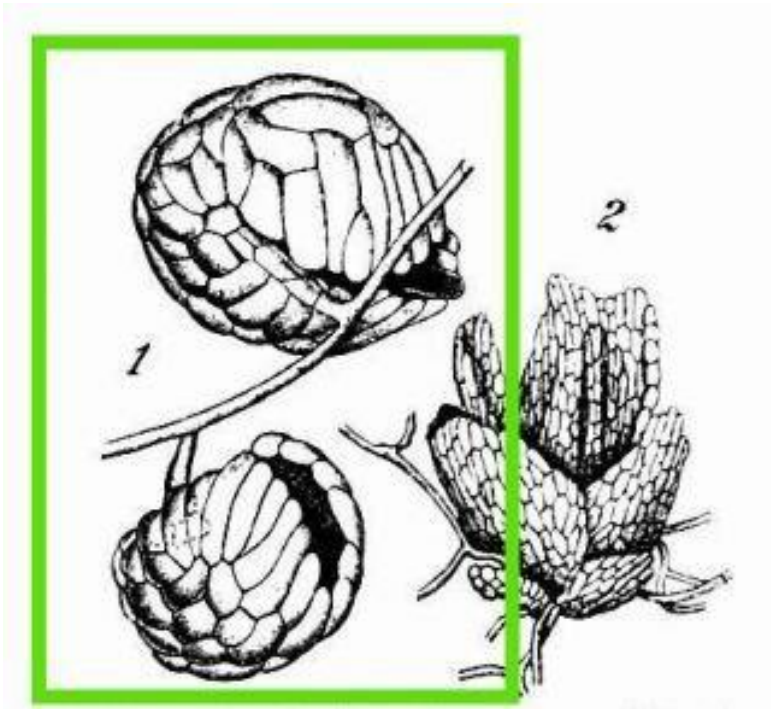


protonema



hloroplasti

Schistostegia pennata



1- *Buxbaumia aphylla*- protonema sa dva muška gametofita

2- *B. indusiata*- protonema da dva ženska gametofita



Buxbaumia aphylla- sporofit

Klasifikacija

- Anthocerotidae



- Bryidae



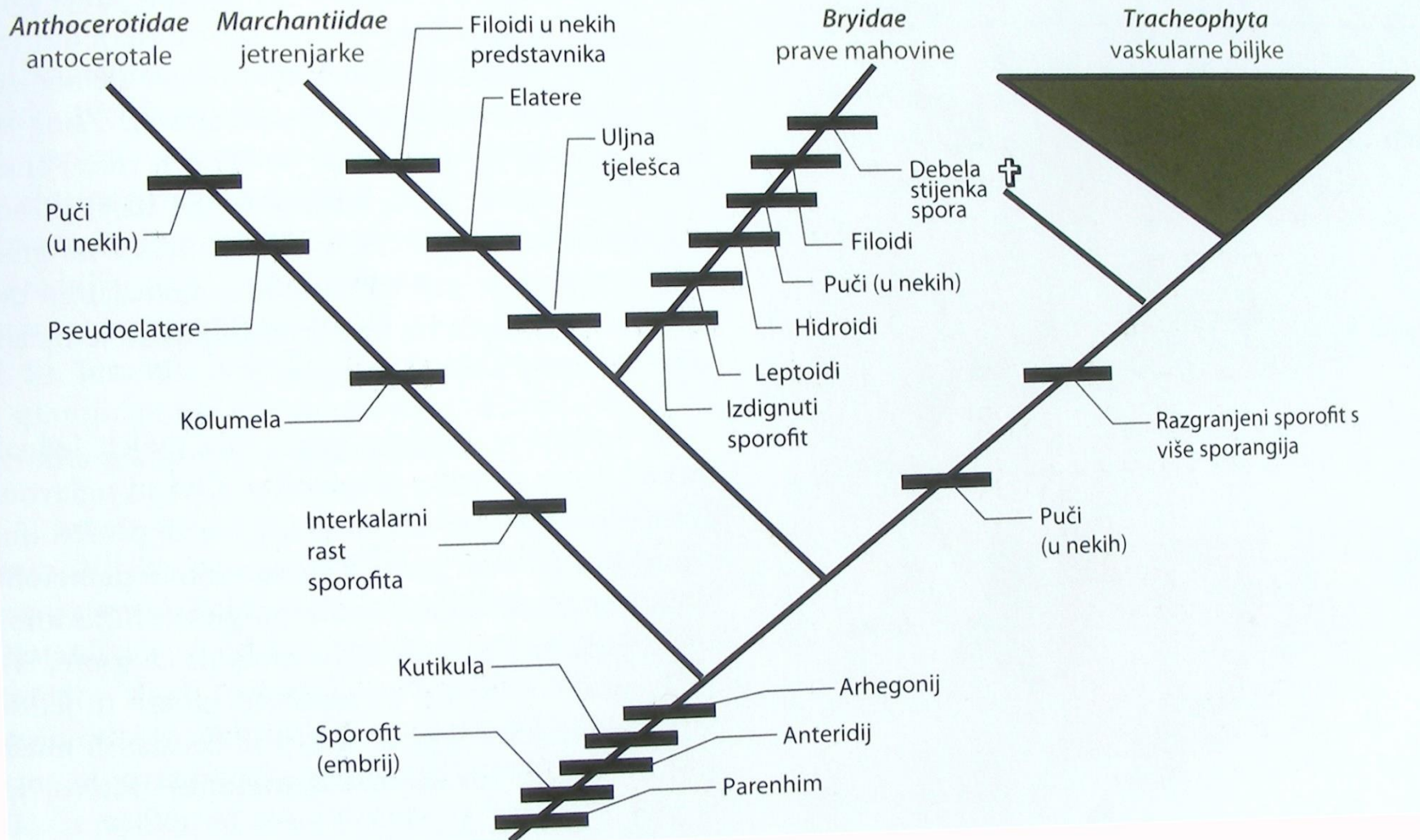
- Marchantiidae



razred *Equisetopsida* (*Embriophyta*, kopnene biljke)

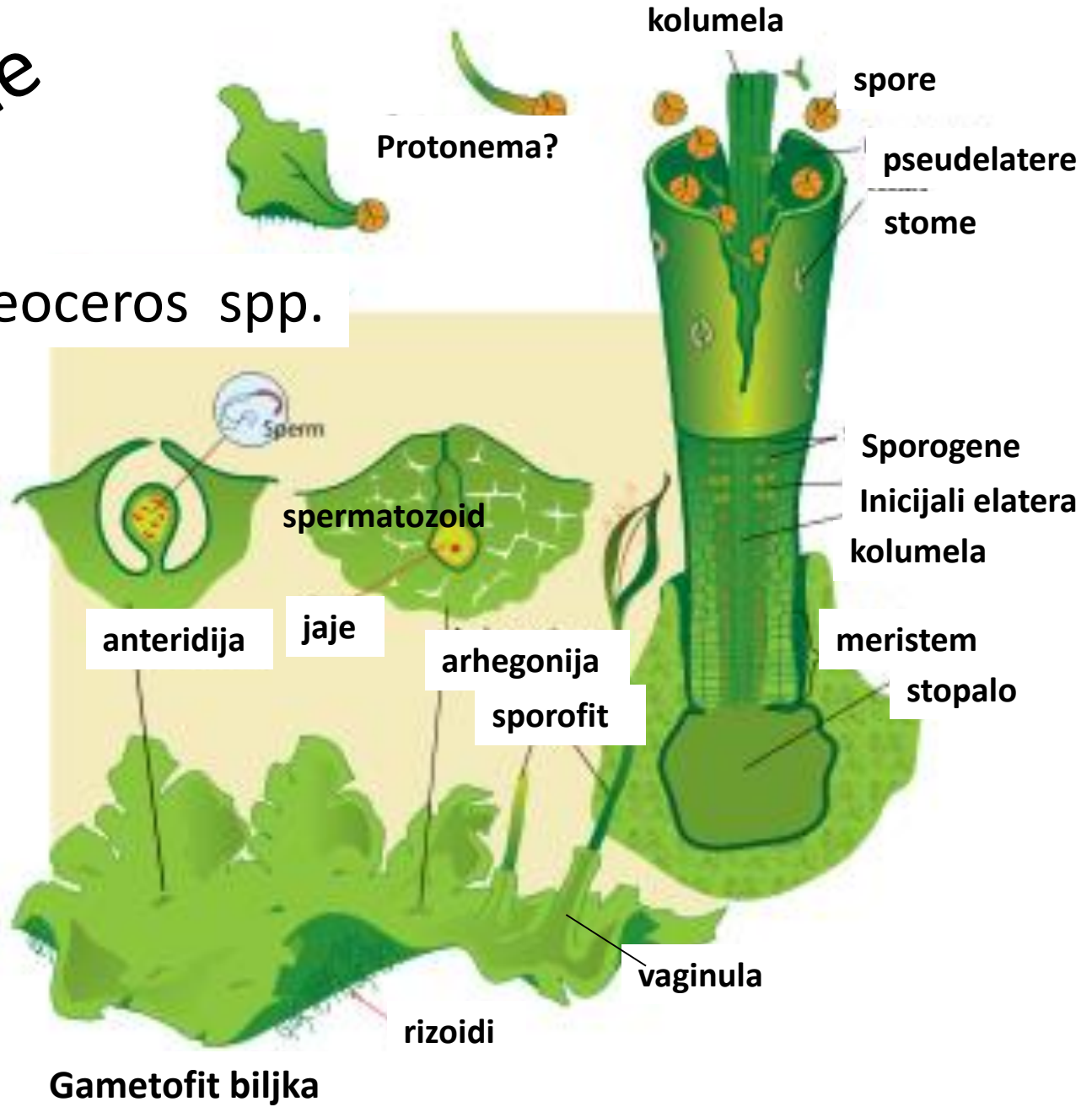
Monosporangiophyta (*Bryophyta* s. l.)
mahovine, biljke bez provodnog sustava, s jednim sporangijem

Polysporangiophyta
biljke s provodnim sustavom i više sporangija



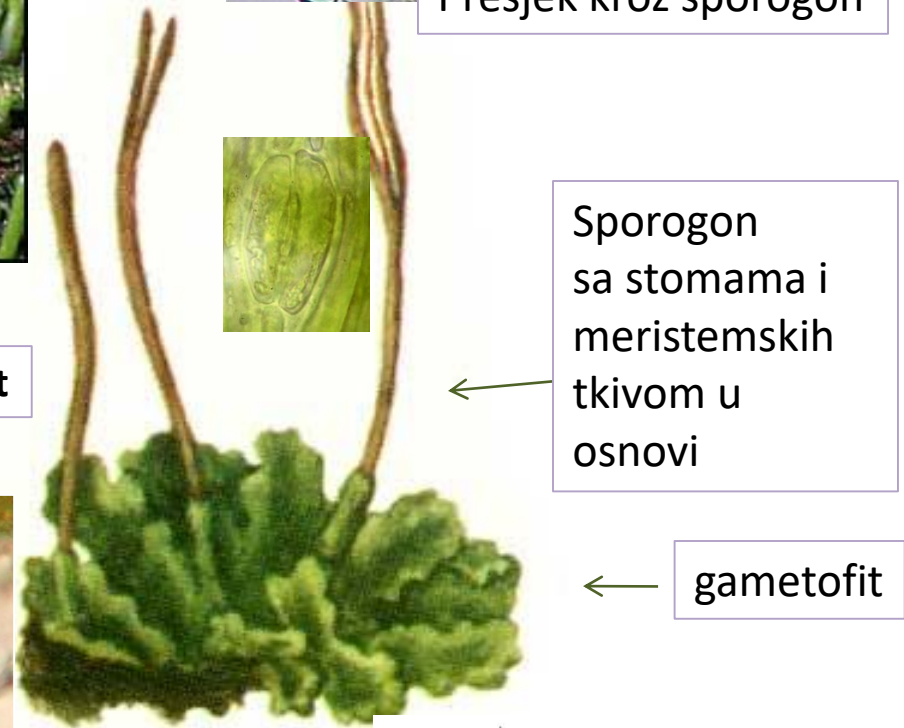
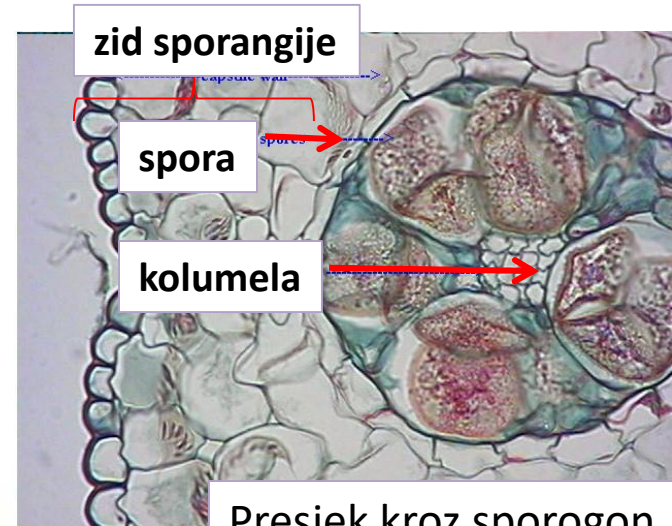
Anthocerotidae

Phaeoceros spp.

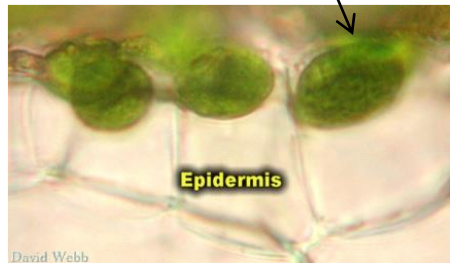




Phaeoceros publiculosus
 Notothyladaceae
 Anthocerotales



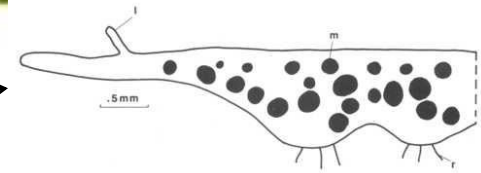
Krupni hloroplast



Epidermis

David Webb

Mucilagene šupljine sa Nostoc spp. ili drugom cijanobakterijom





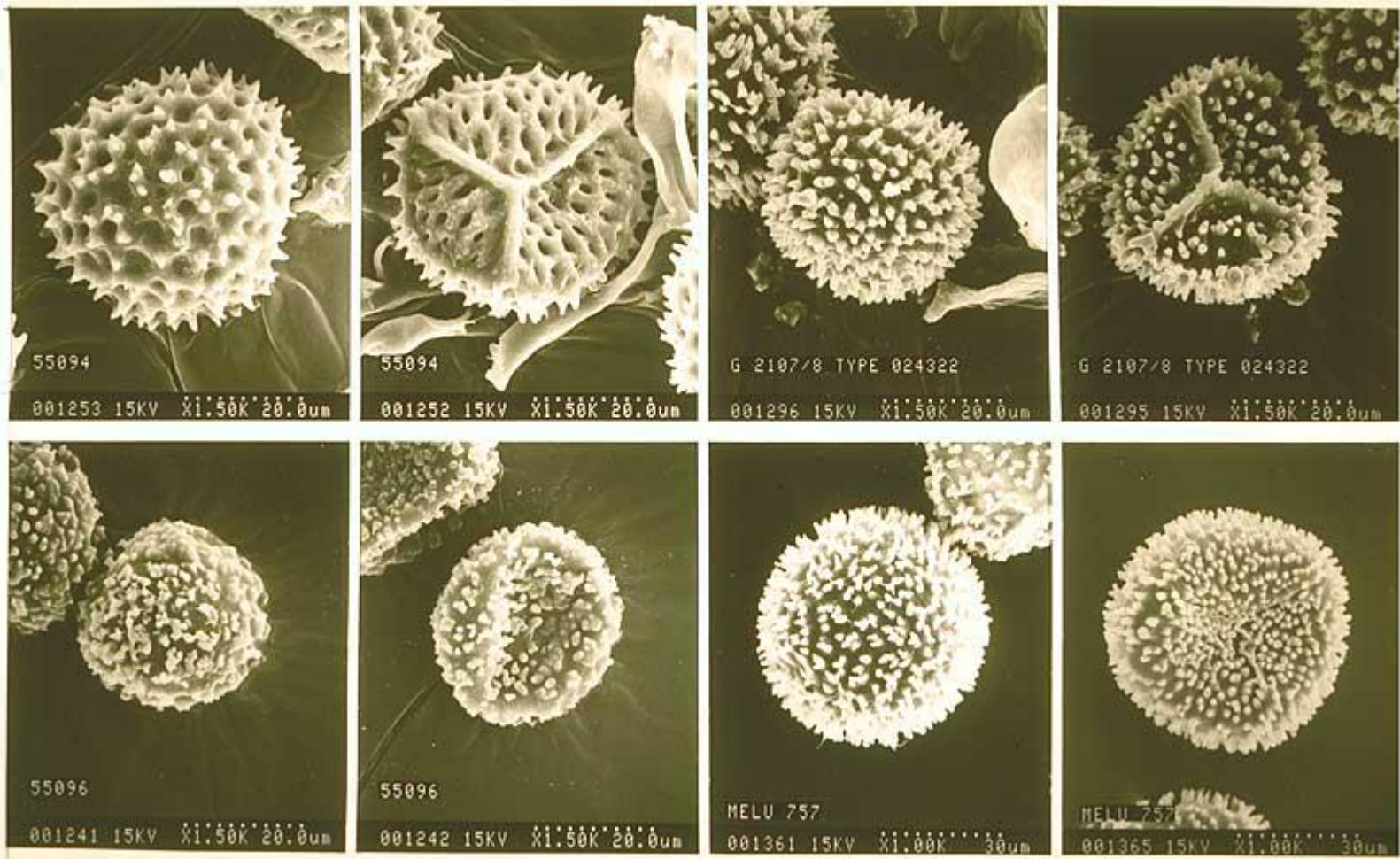
Leiosporoceros sp.
Leiosporocerotaceae
Anthocerotales

Tip spora,
simbiontski
Nostoc



Anthoceros sp.
Anthocerotaceae
Anthocerotales

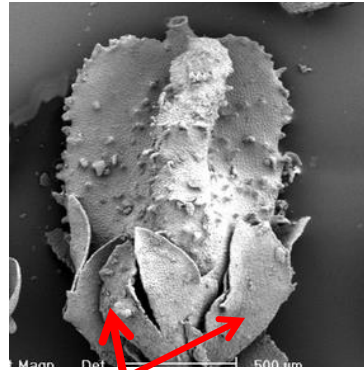
Tipovi spora kod Anthocerotidae



Marchantiidae



gametofori



„Perijant“ koji obavija sporogon

Talusna forma



amfigastrije

Forma sa listovima

- o. Marchantiales
- o. Sphaerocarpaceales
- o. Metzgeriales
- o. Jungermanniales

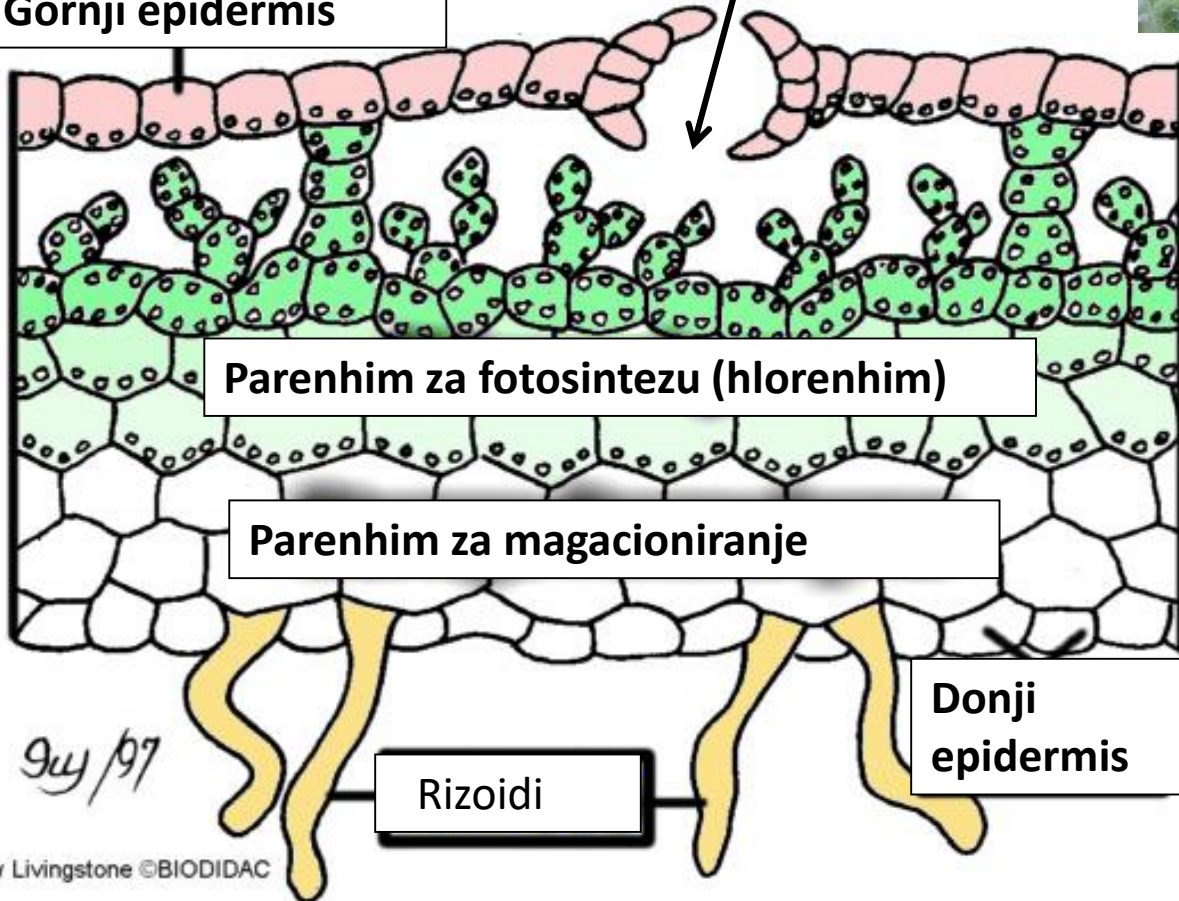
Red. Marchantiales



Marchantia polymorpha

Vazdušne komore
pneumatode

Gornji epidermis



Parenhim za fotosintezu (hlorenhim)

Parenhim za magacioniranje

Donji
epidermis

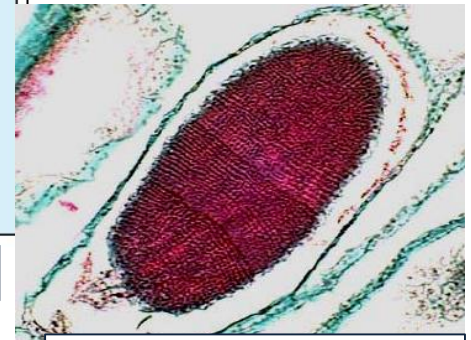
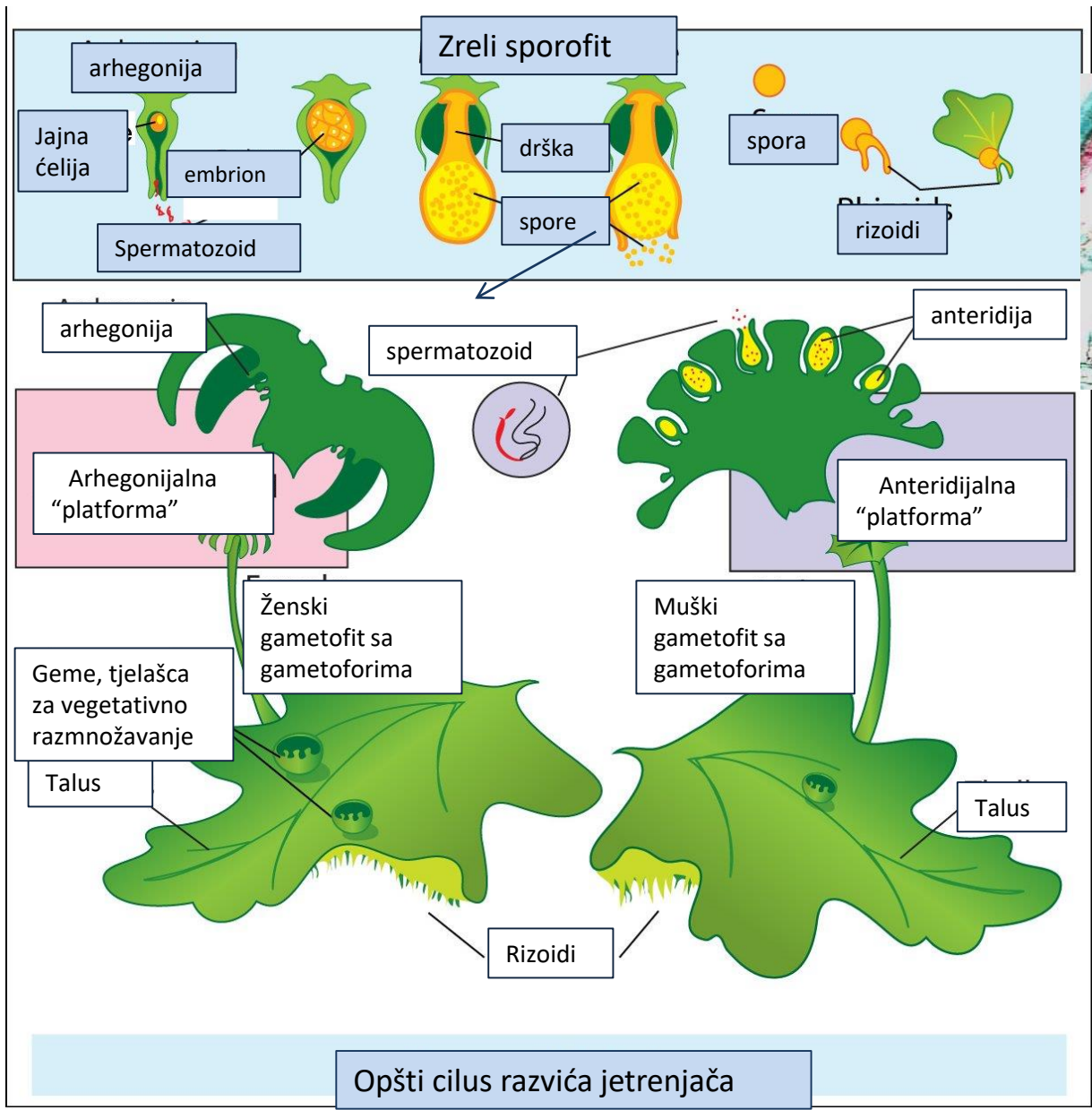
Rizoidi

Višeslojna talusoidna forma!

9/4/97

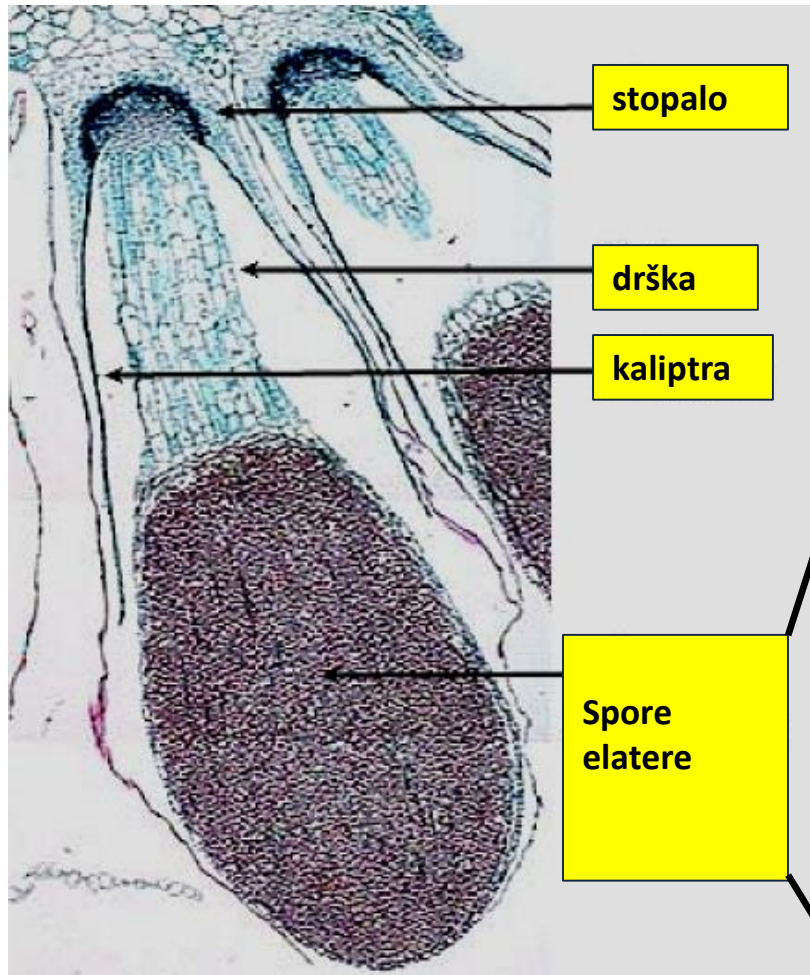


Presjek kroz arhegoniju-
histološki preparat

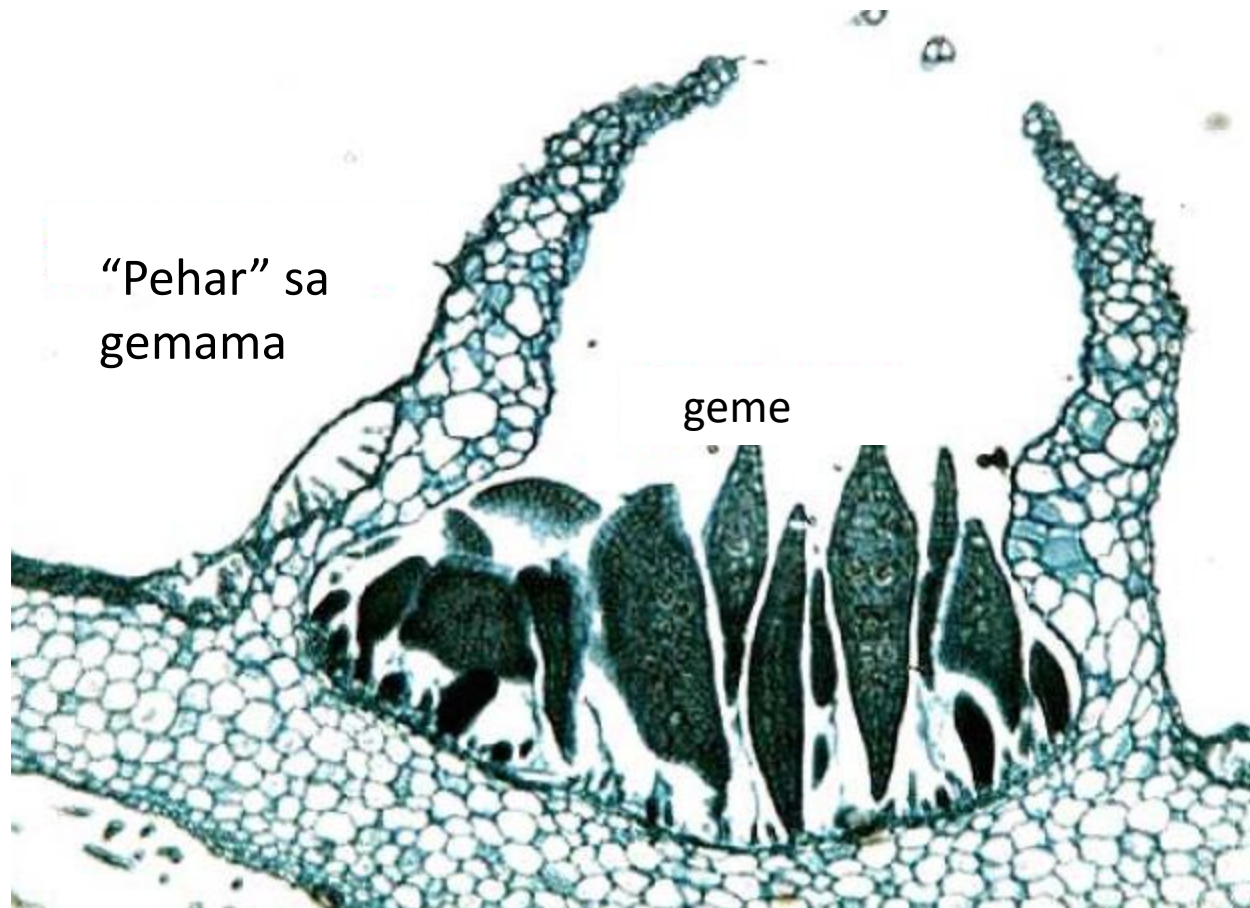


Presjek kroz anteridiju-
histološki preparat

Zreli sporofit



Vegetativno razmnožavanje ...



Predstavnici

Fam. Ricciaceae

(pneumatoda nema ili su zakrčljajle, sporogon nema ovoj)



Riccia sp.

Fam. Marchantiaceae

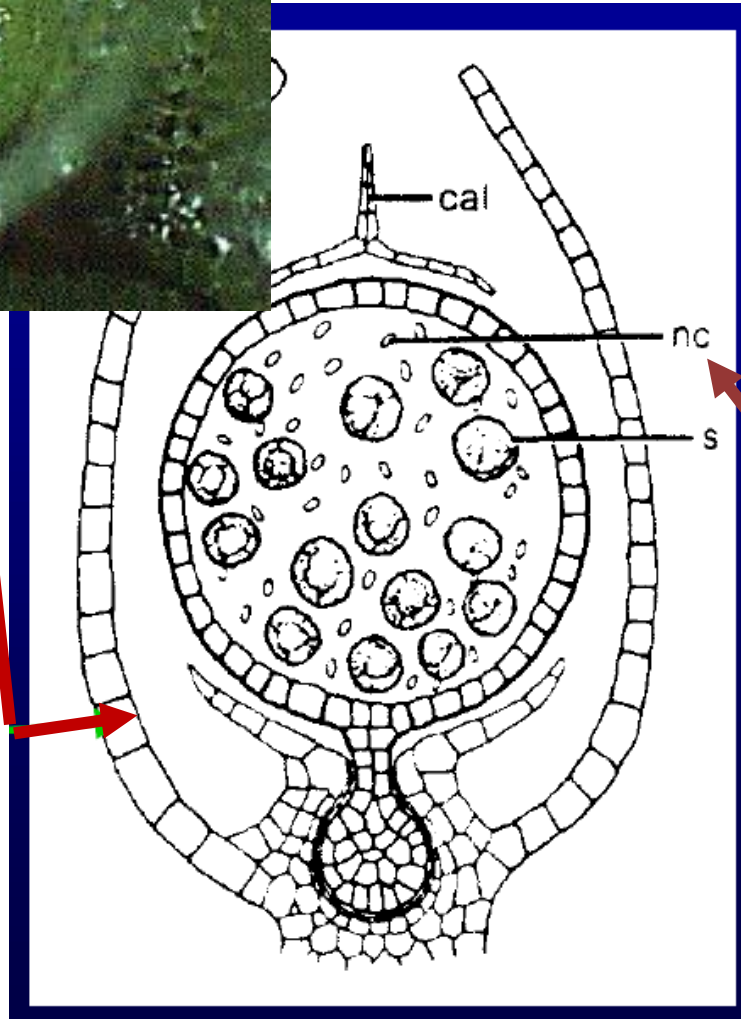
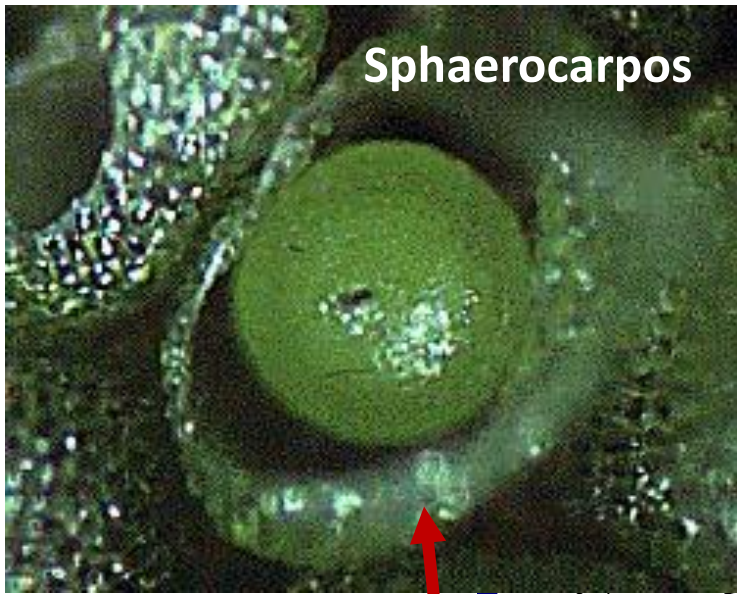
(pneumatode postoje, sporogon obično sa ovojem)



Preissia quadrata

Sphaerocarpos

Red. Sphaerocarpaceae (flašolike jetrenjače)



Reproduktivne
strukture
zatvorene u
flašolikom
involukrumu

Elatere nedostaju,
ali prisutne “ćelije
pomagačice” (nc)

Centralni dio talusa je
višeslojan, a bočni
segmenti jednoslojni!

cal- kaliptra, nc- ćelija pomagačica, s- spora

Red. Jungermanniales

Forme sa listovima

Listovi dvoredni,
prisutne amfigastrije

„Perijant” prisutan,
sporogon uglavnom
na dršci

Elatere prisutne

Frullania sp.



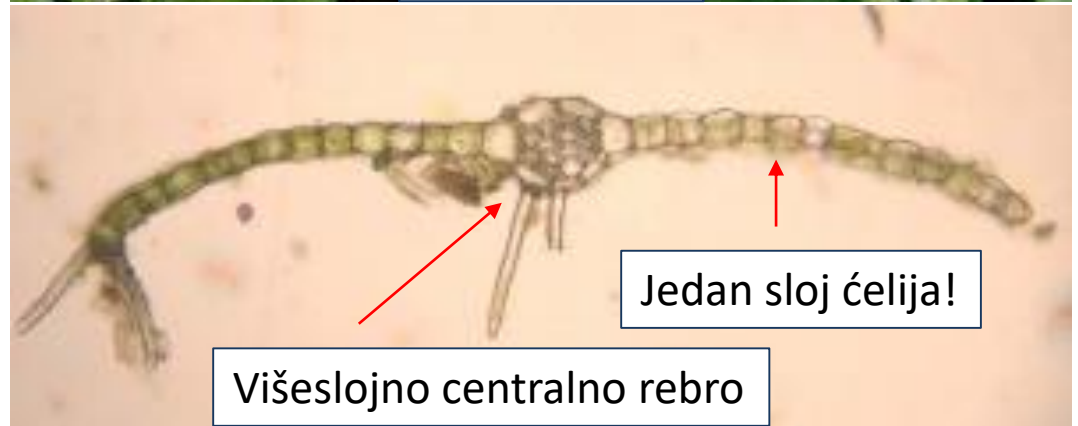
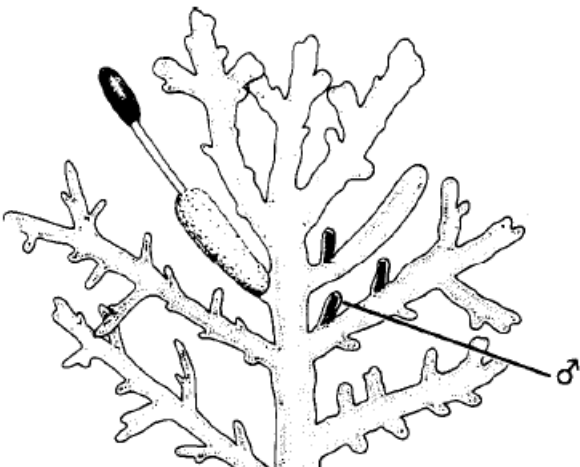
Scapania sp.



Porella sp.

Red. Metzgeriales

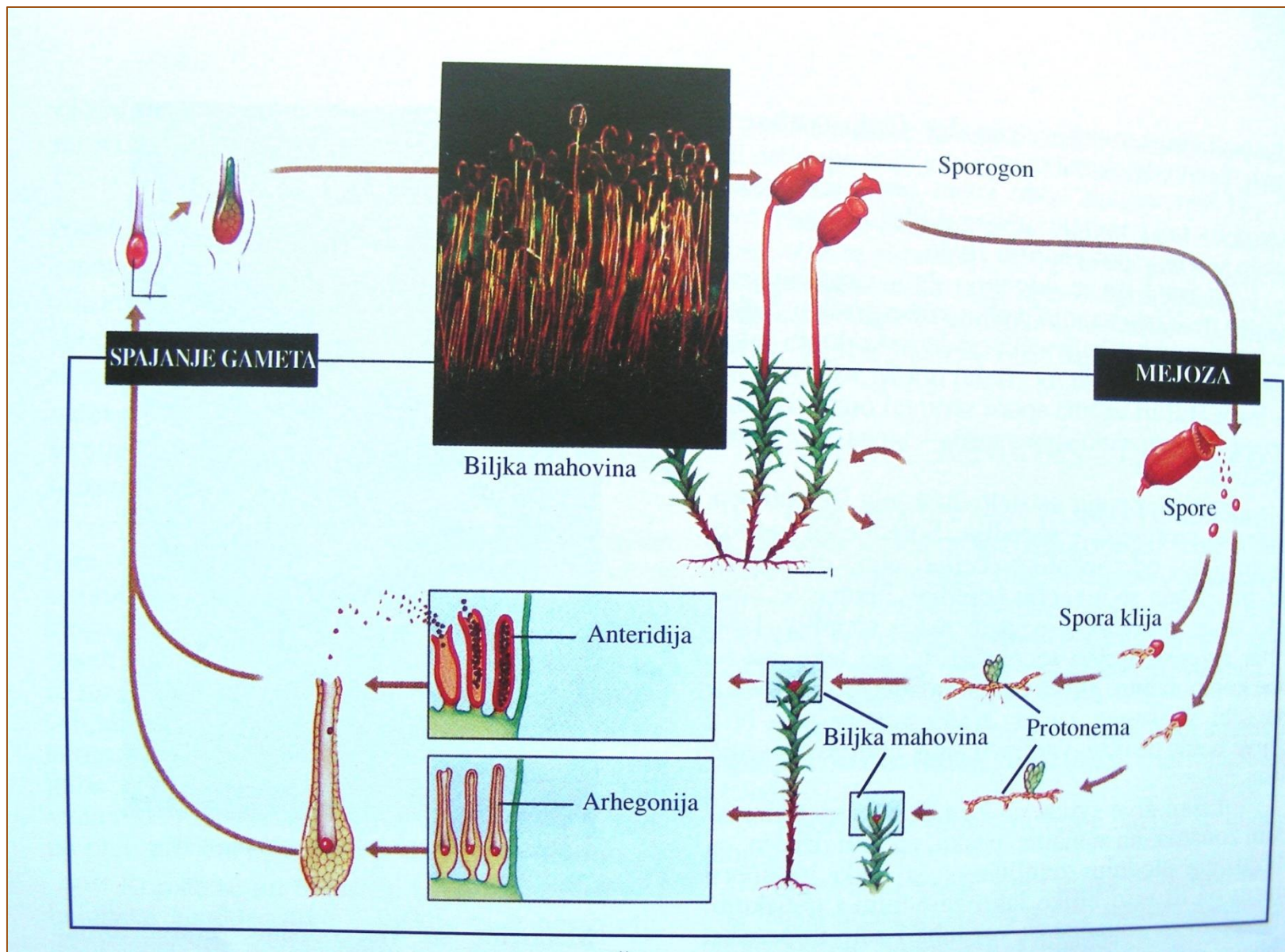
- Talusoidna forma
- „Perijant” prisutan, sporogon uvijek na dršci.
- Uglavnom dvodome (izuzetak Riccardia)



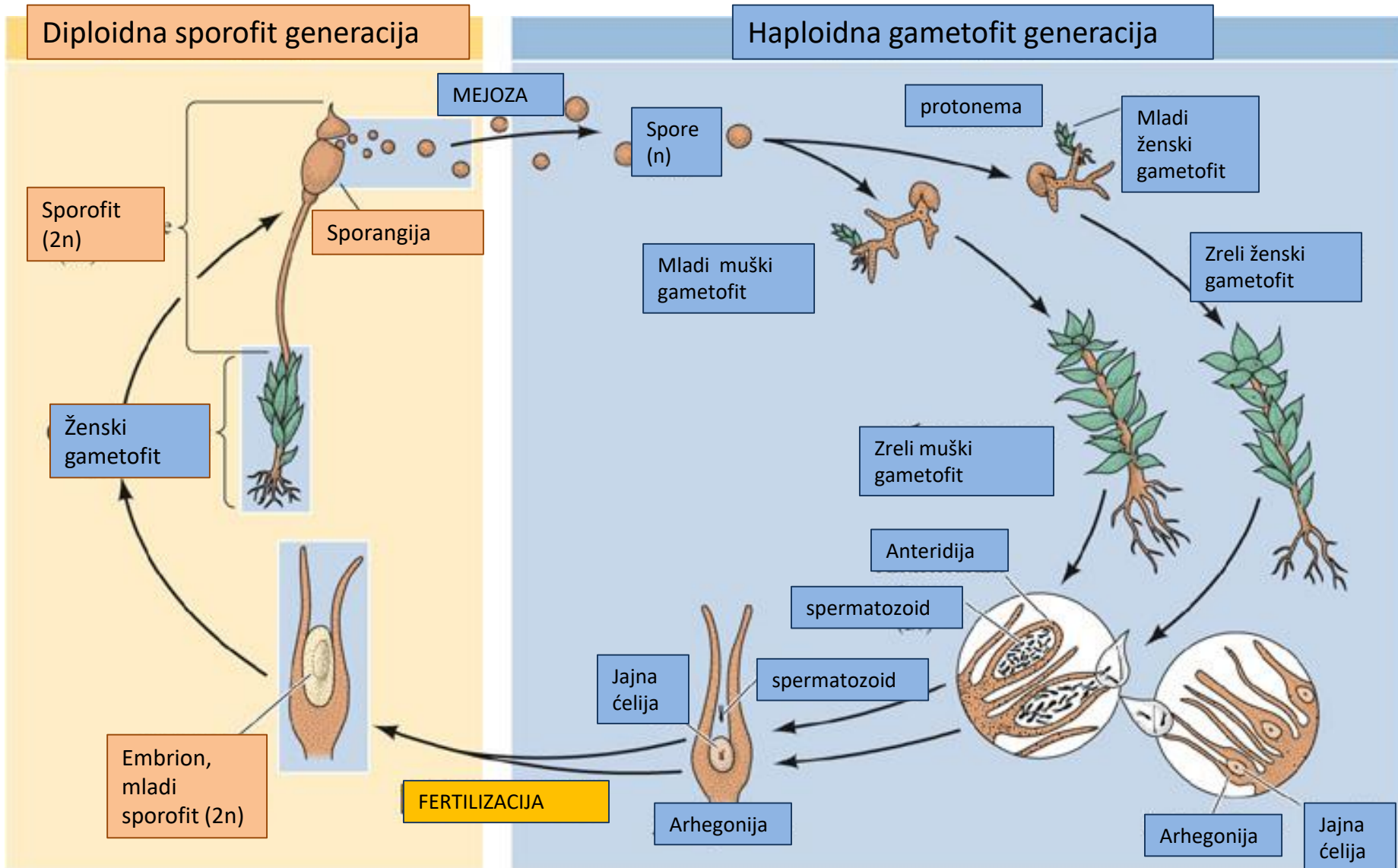
Bryidae

- O. Sphagnales
- O. Andraeales
- O. Polytrichales
- O. Buxmaumiales
- O. Dicranales
- O. Pottiales
- O. Bryales
- O. Hypnales.....

Opšti ciklus razvića pravih mahovina- Bryidae

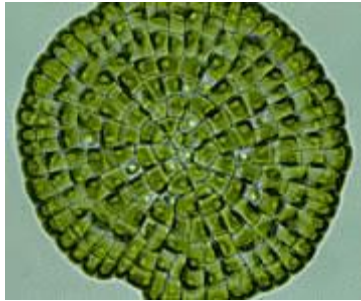


Opšti ciklus razvića pravih mahovina- Bryidae



- Sphagnales- sfagnumske mahovine

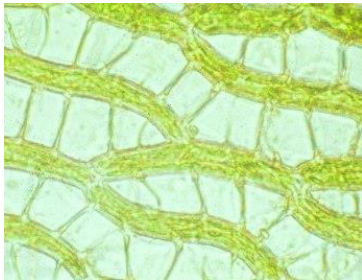
Protonema nije končasta, nego pločasta i liči algi Coelema.



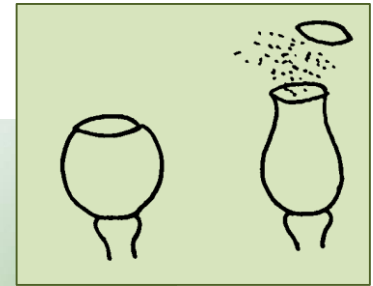
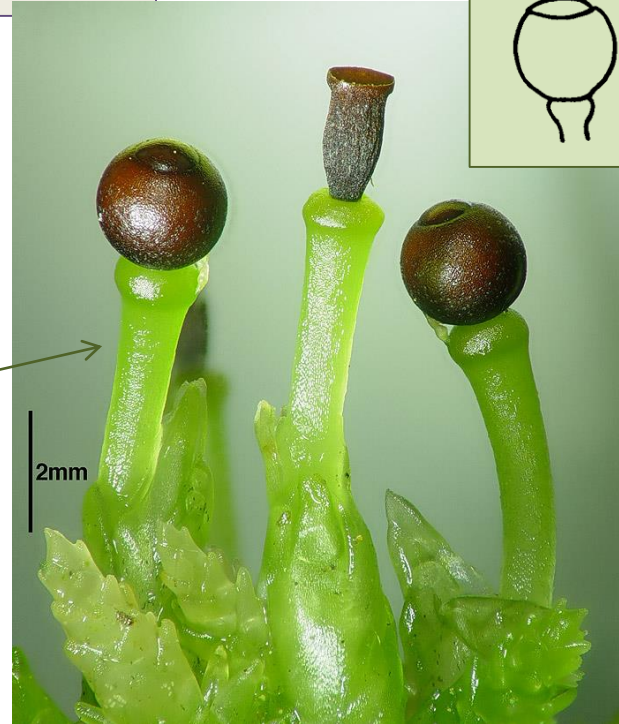
Pseudopodijum (n)

Gametofit nema rizoida!!!

Hidrocite ...



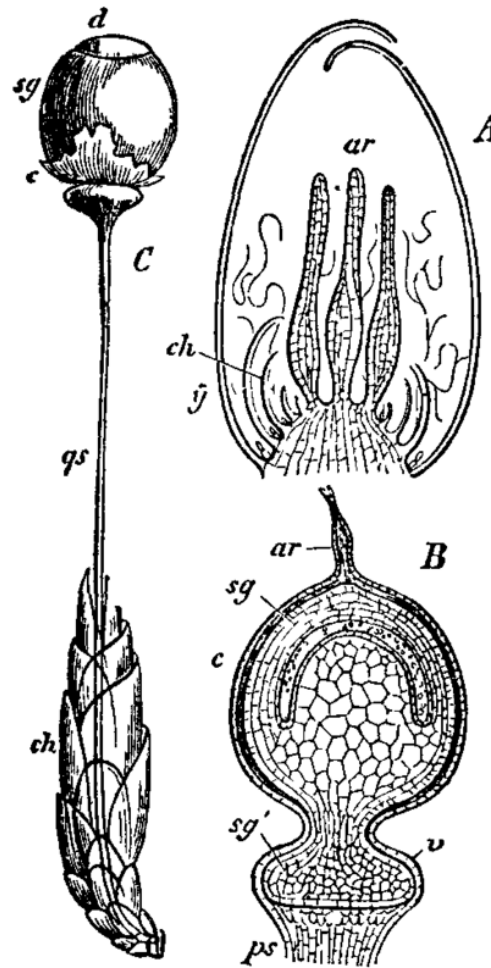
Sporogon nema dršku već se nalazi na nožici - pseudopodiji, koja je dio gametofita.



Spora nastaje od amfitecijuma!!!
Kod svih ostalih mahovina vodi porijeklo od endotecijuma.

Kaliptra je veoma kratkotrajna, peristom ne postoji, a spore se oslobađaju pucanjem čaure!!!

C- zrela sporangija *Sphagnum squarrosum* izdignuta na pseudopodijumu (qs), obavijenim listovima (ch); c- vaginula; sg.- kapsula d- operkulum.



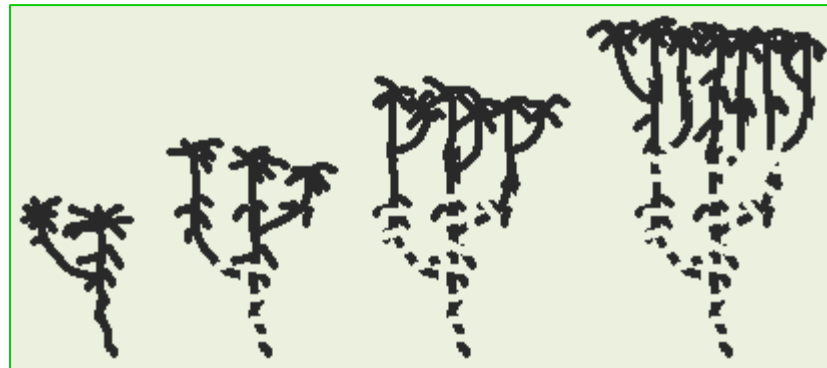
A- presjek kroz arhegoniju
Ch- **perihecijalni listovi**
Ar- arhegonija
Y- gornji listovi

B- presjek kroz vršni dio sporogona sa arhegonijom
ps- pseudopodium
c- calyptra;
ar- vrat arhegonije
sg'- stopalo
sg- kapsula

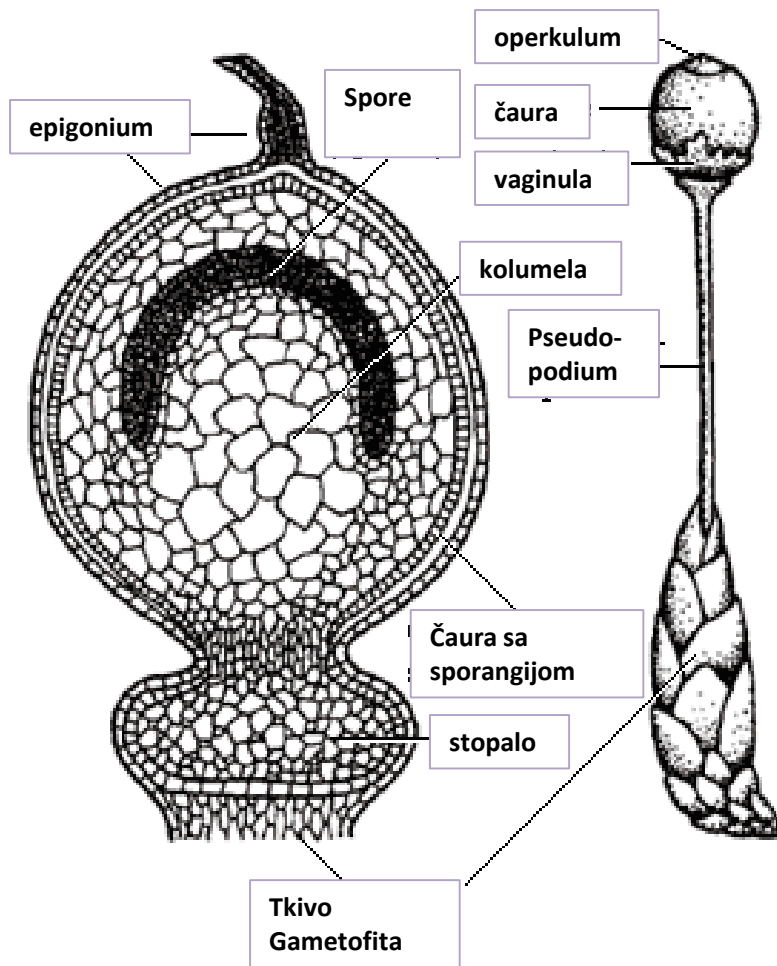
Perigonijalni listovi

- Gornji listovi koji obavijaju anteridiju

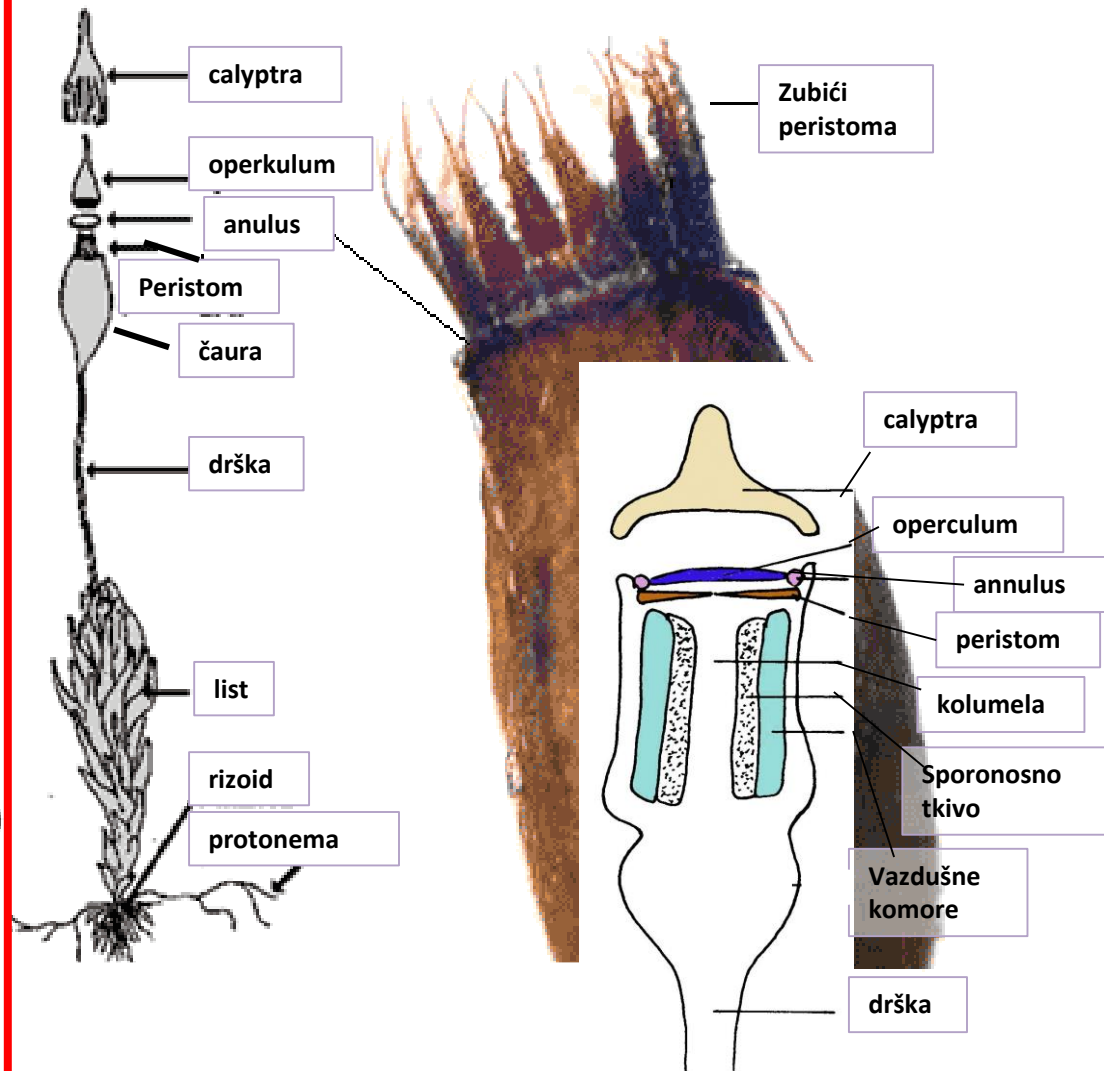
Rast Sphagnuma



Izgled sporofita kod sfagnumskih mahovina i Polytrichuma

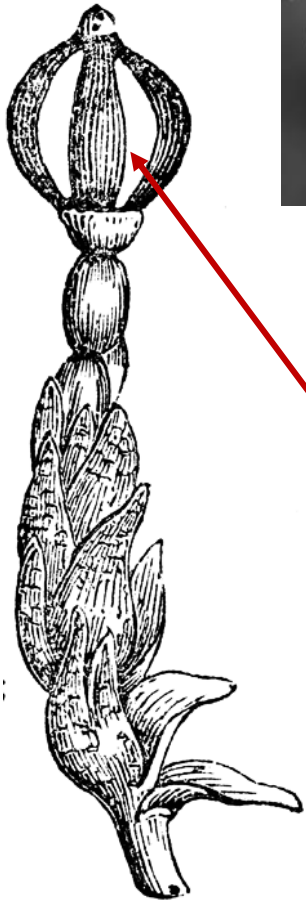


Sfagnumska mahovina

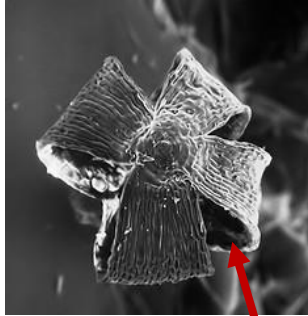


Polytrichum sp.

O. Andreales



Andreaea rupestris



- Spora nastaju od endotecijuma, kao i kod svih ostalih pravih mahovina.
- Čelije protoneme su uglavnom dvoredne!!! Kod ostalih mahovima su jednoredne. U nepovoljnim uslovima prelazi u stanje mirovanja.
- Kaliptra kratkotrajna.
- Operkuluma nema, čaura se otvara uzdužno!!!