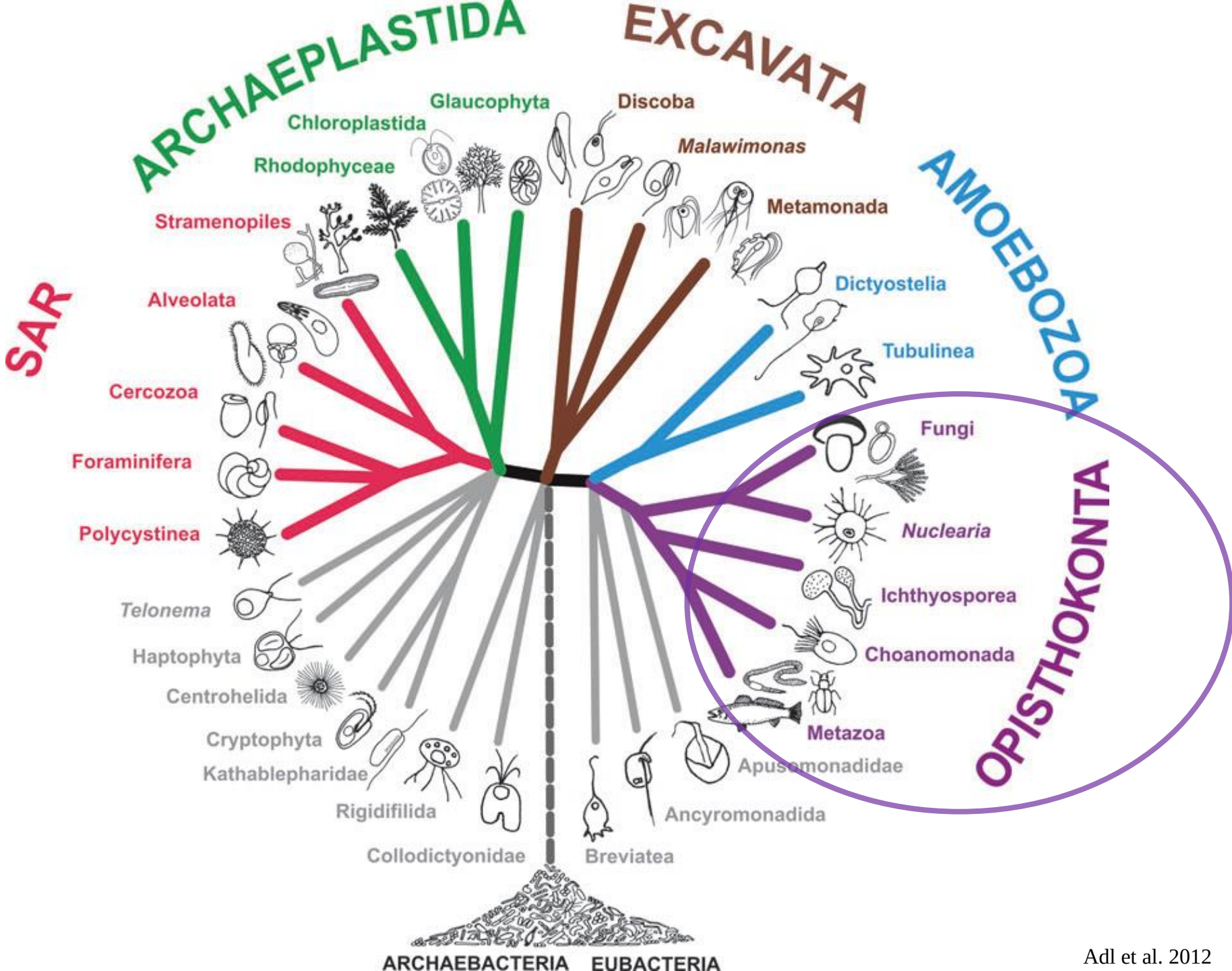
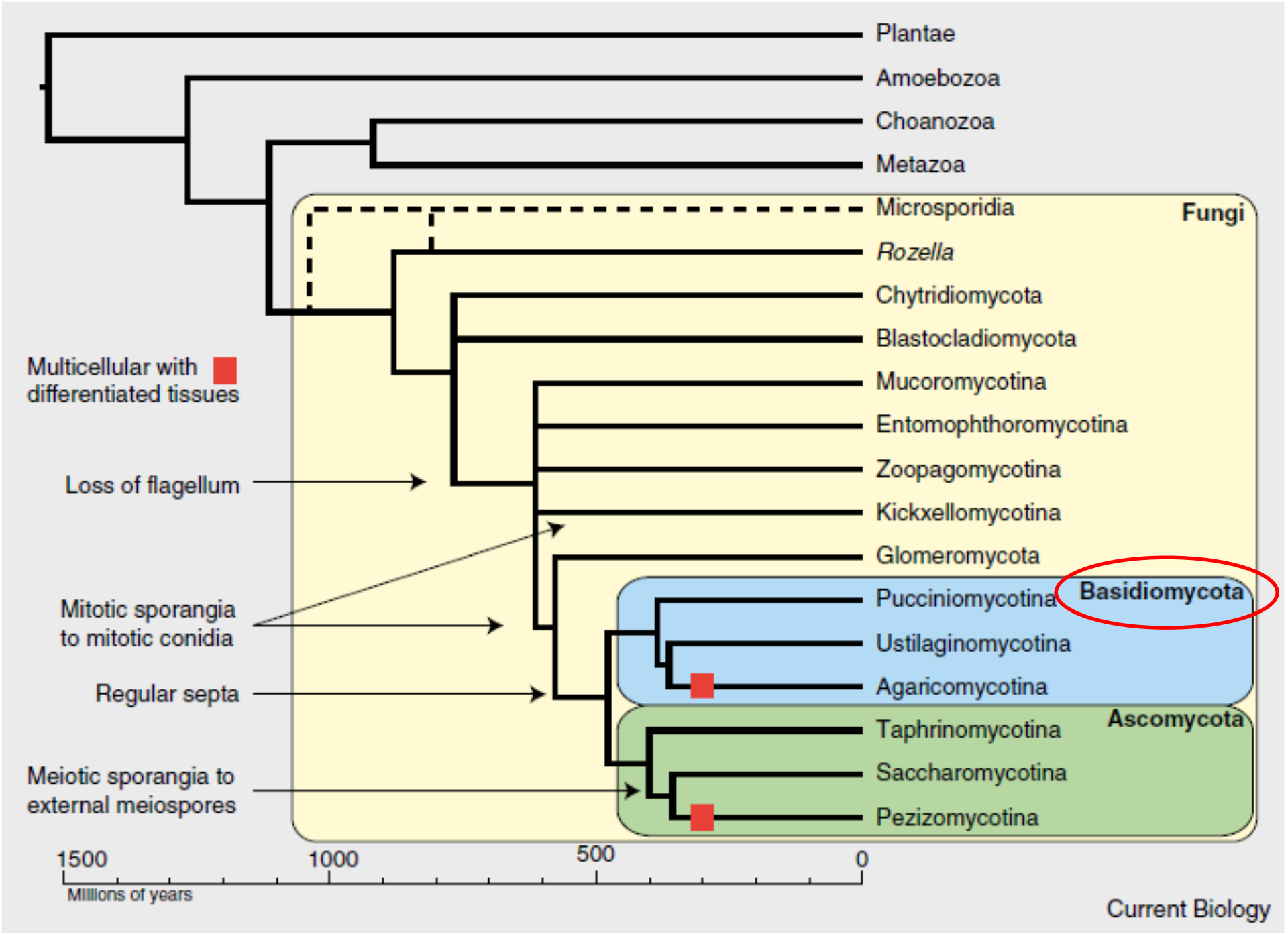
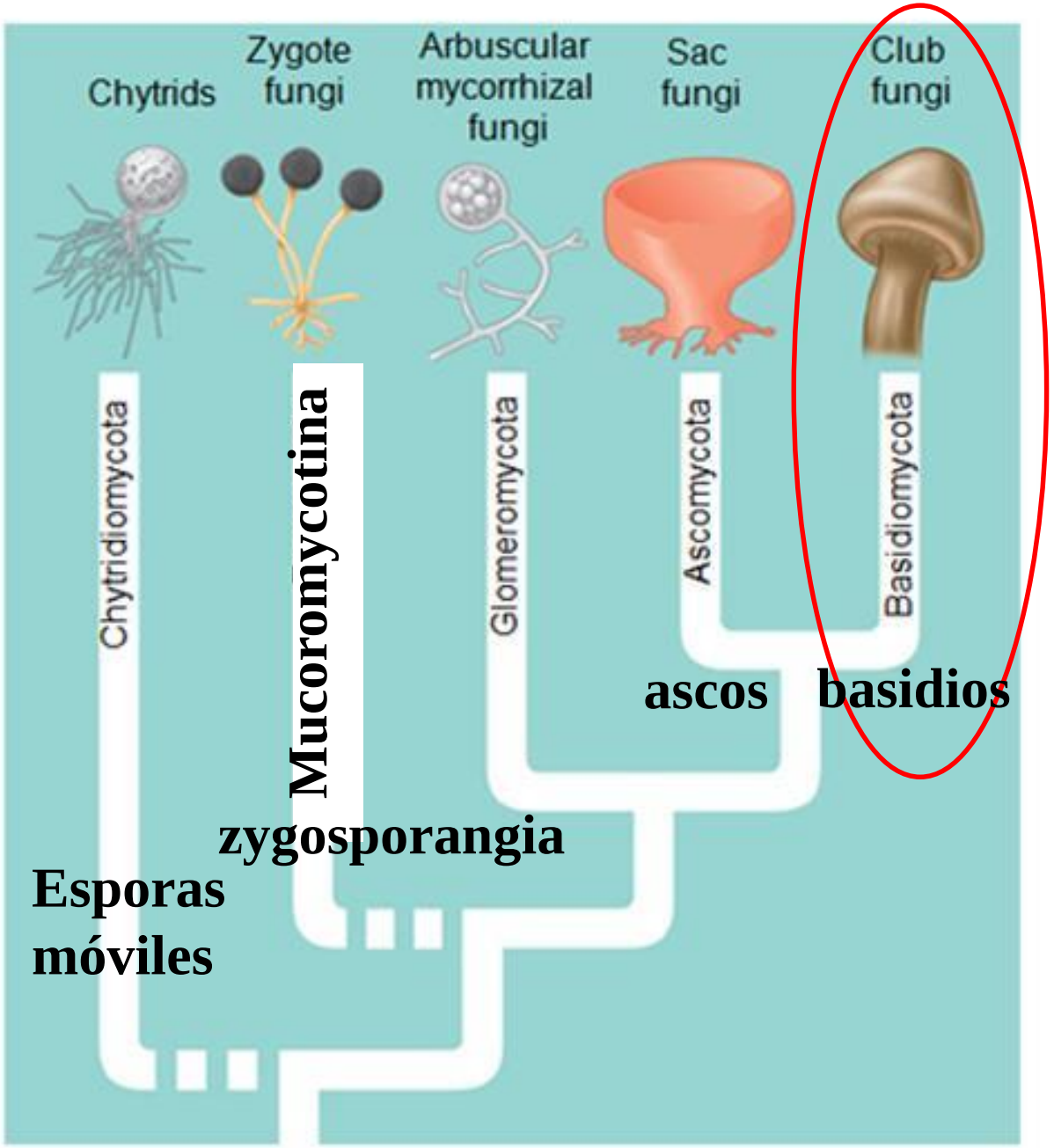

Basidiomycota

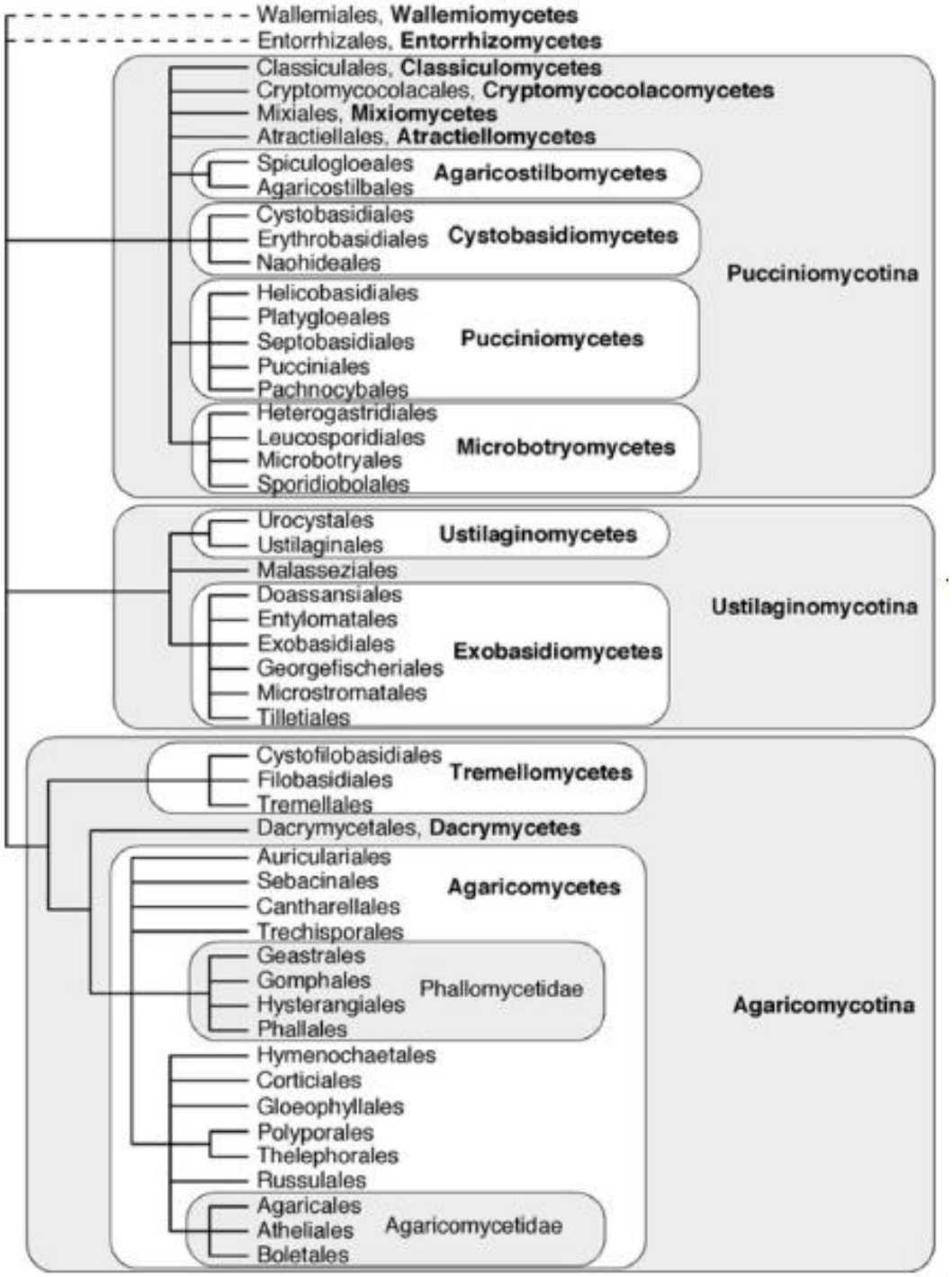


Adl et al. 2012


Plantae
Amoebozoa
Choanozoa
Metazoa
Microsporidia
Fungi
Rozella
Chytridiomycota
Blastocladiomycota
Mucoromycotina
Entomophthoromycotina
Zoopagomycotina
Kickxellomycotina
Glomeromycota
Basidiomycota
Pucciniomycotina
Ustilaginomycotina
Agaricomycotina
Ascomycota
Taphrinomycotina
Saccharomycotina
Pezizomycotina
Multicellular with differentiated tissues
Loss of flagellum
Mitotic sporangia to mitotic conidia
Regular septa
Meiotic sporangia to external meiospores
1500
1000
500
0
Millions of years
Current Biology



Basidiomycota

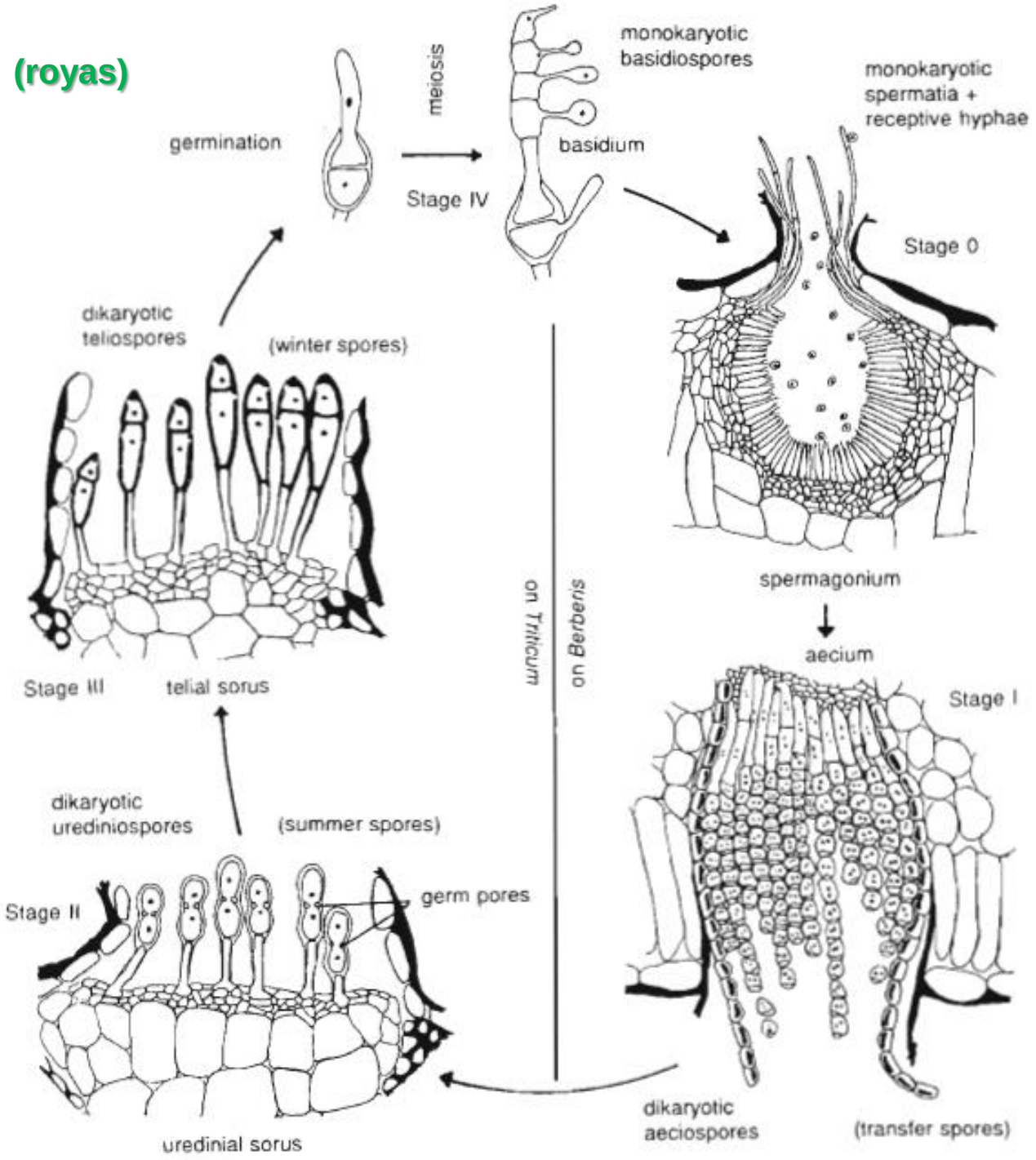


Pucciniomycotina

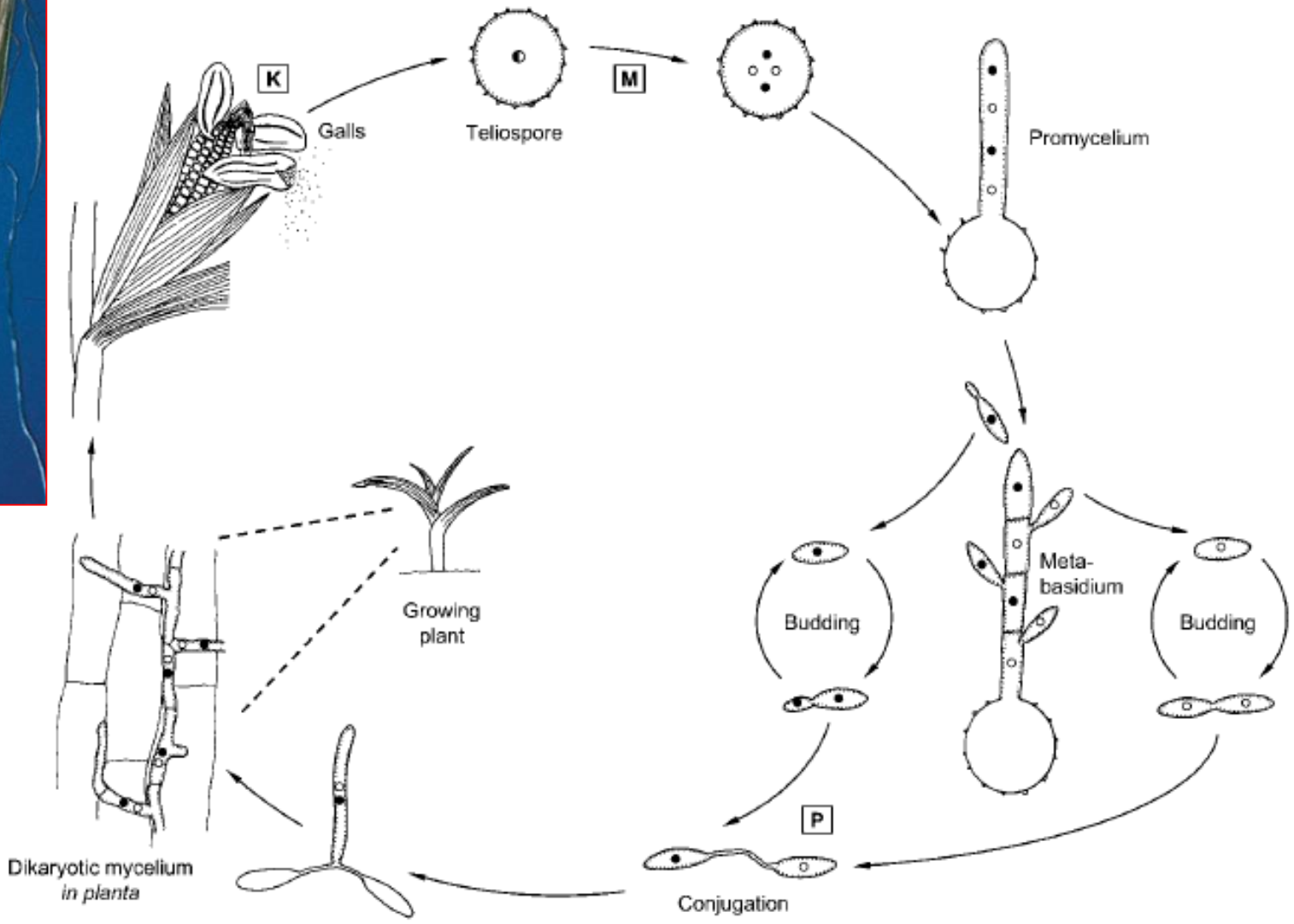
Ustilaginomycotina

Agaricomycotina

Pucciniomycotina (royas)

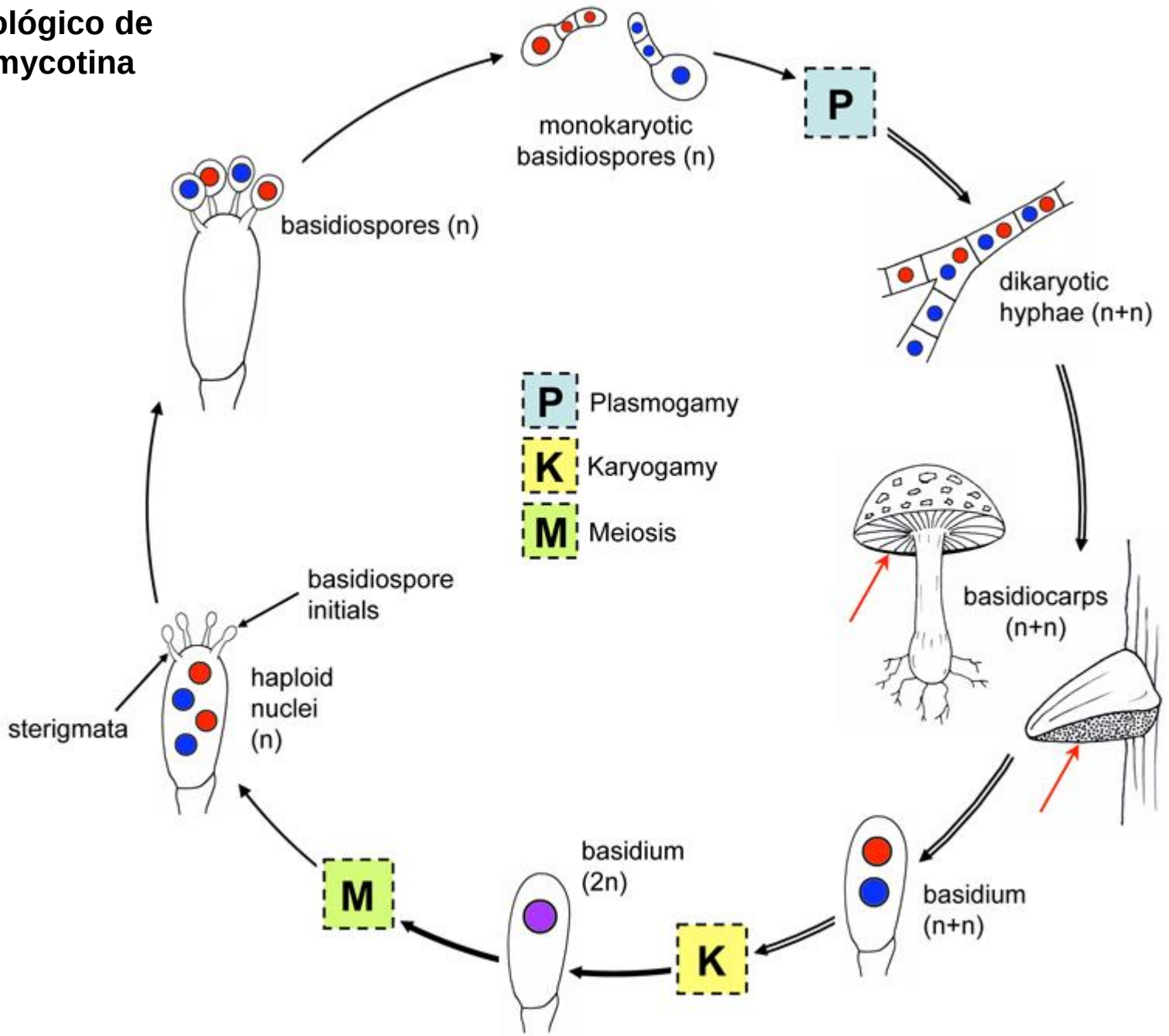


Ustilaginomycotina (carbones)



Agaricomycotina

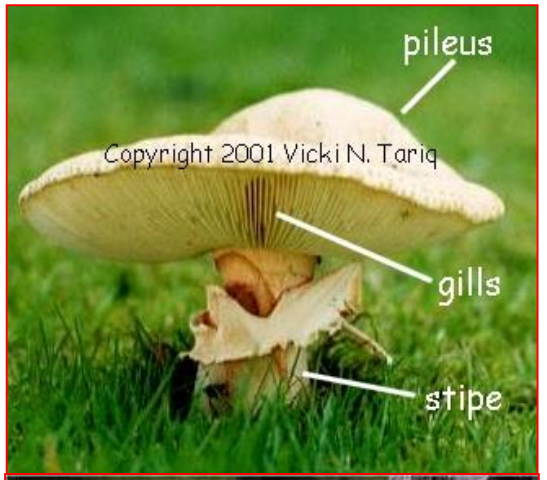
Ciclo biológico de Agaricomycotina



Agaricomycotina

Tipos de basidiomas

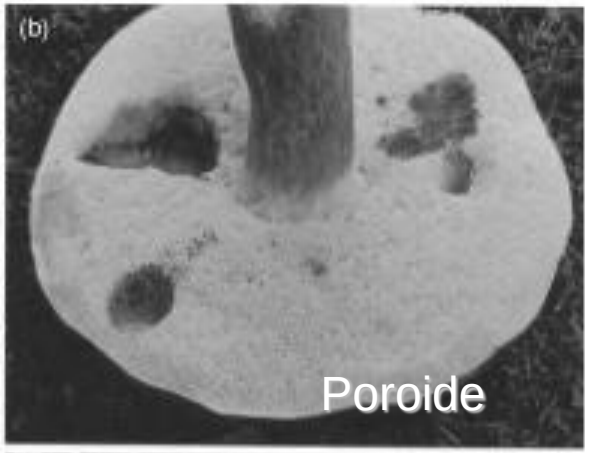
- Agaricoide (hongos de sombrero)
- En repisa (hongos de la madera)
- Ramarioide
- Gelatinoso
- Gasteroide (hongo polvera)

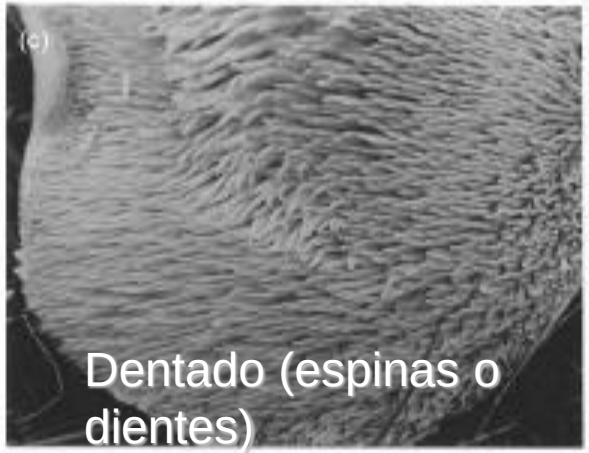


Agaricomycotina

Superficies himeniales

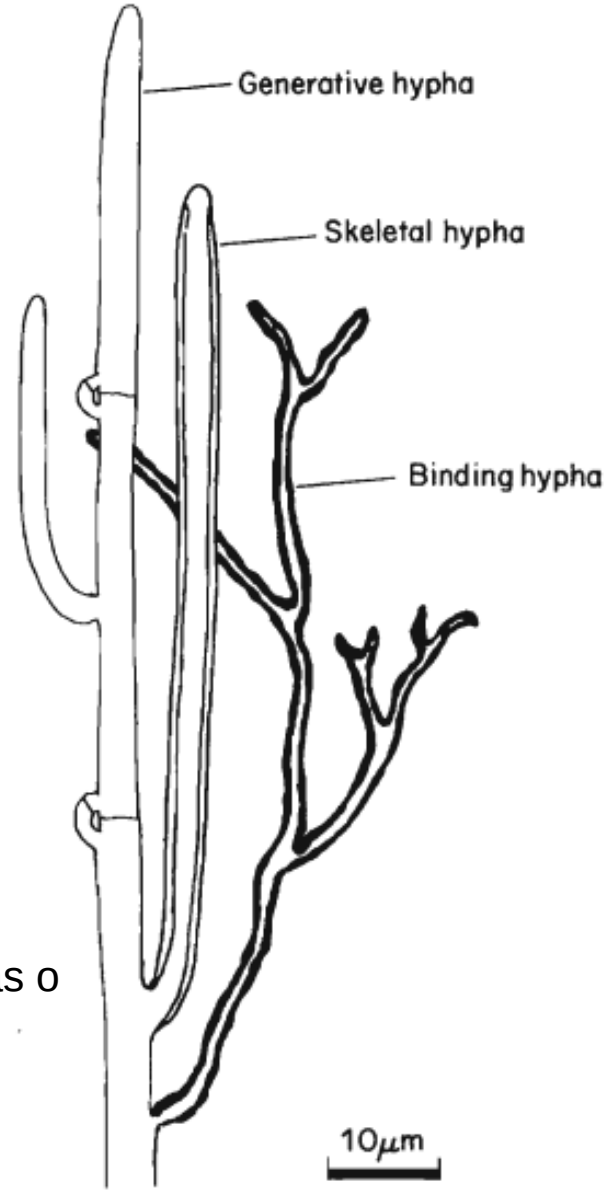
- Lamelar
- Poroide
- Dentado
- Clavado
- Liso
- Gasteroide





Sistema hifal *importante en la taxonomía…*

- **Hifas generativas**: producen basidios y otros tipos de células formando el himenio.
- **Hifas esqueletales**: no o poco ramificadas. Paredes gruesas, lumen angosto. Forman red hifal rígida.
- **Hifas ligadoras**: muy ramificadas. Permiten la unión entre todas.

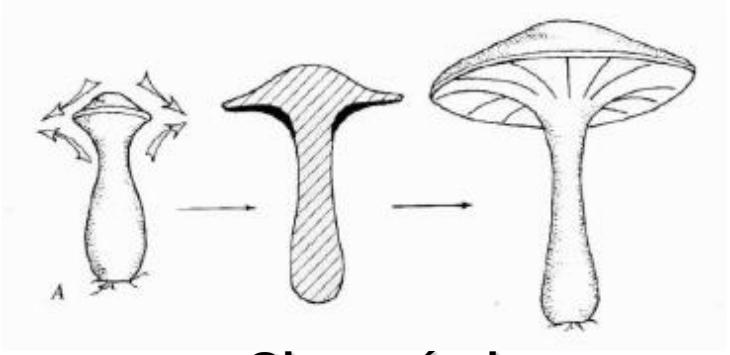


Monomítico: basidioma formado sólo por hifas generativas. Agaricoides.

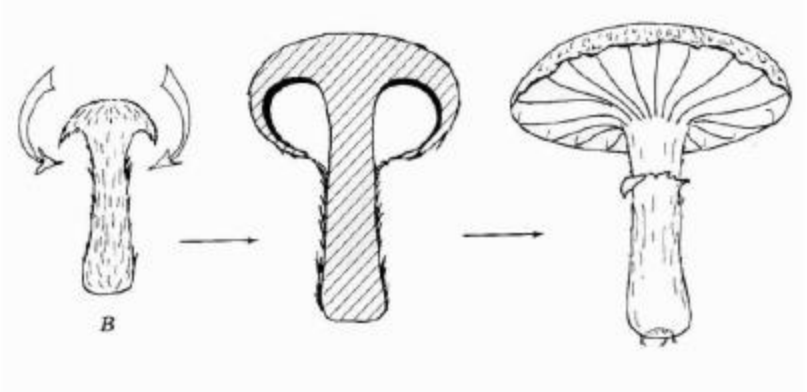
Dimítico: basidiomas con hifas generativas y ligadoras o generativas y esqueletales. Poliporoides.

Trimítico: basidiomas con los 3 tipos de hifas.

Desarrollo del Basidioma

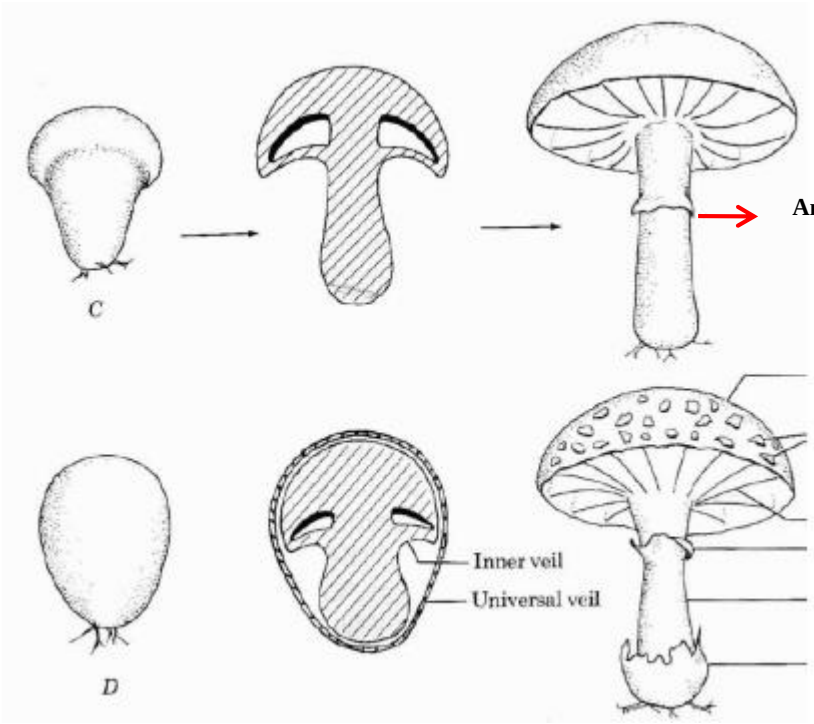


Gimnocárpico



Pseudoangiocárpico

Desarrollo del Basidioma



Anillo (velo himenial)

píleo

Escamas (velo universal)

laminillas

Anillo (velo himenial)

estípite

Volva (velo universal)

Hemiangiocárpico

Descarga de las esporas activa: *Balitospora*

Descripción macroscópica y microscópica

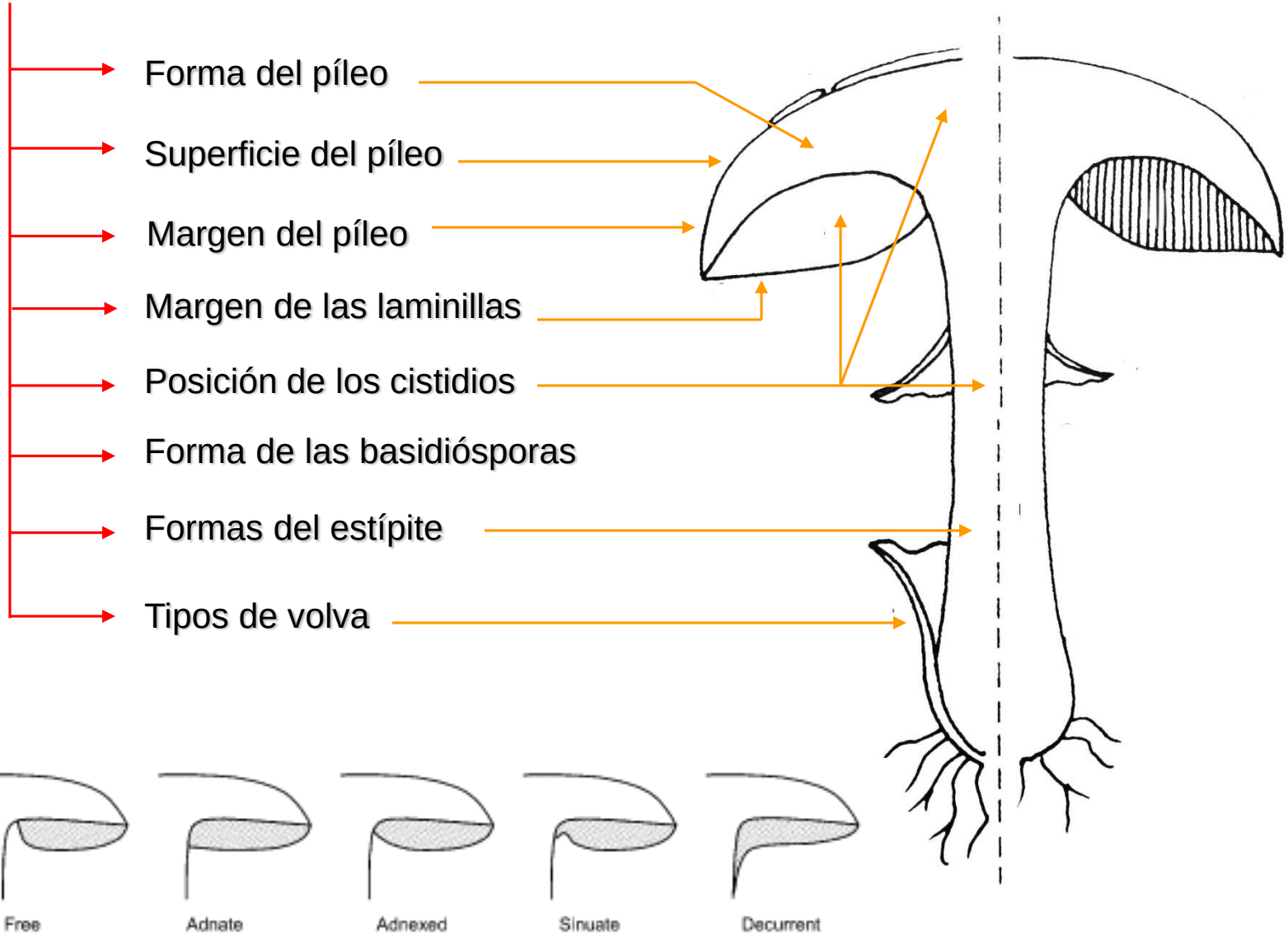
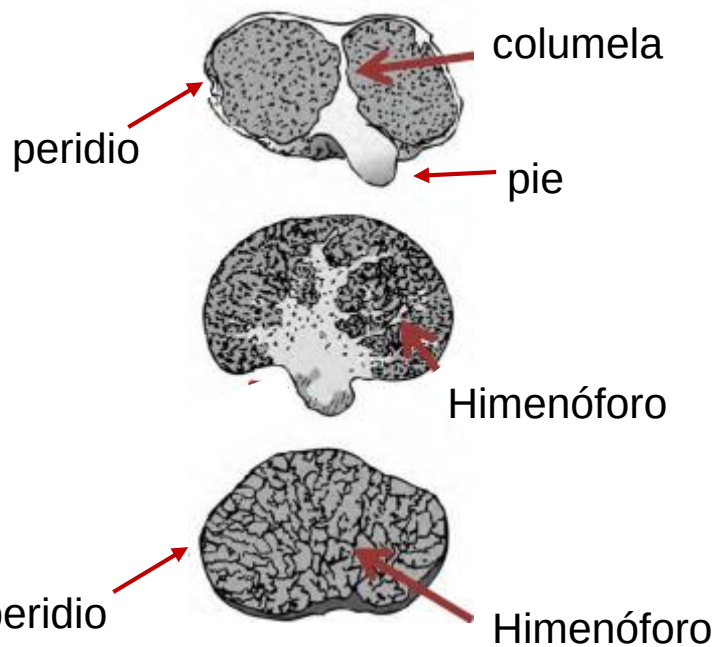


Fig 19.8 Modes of gill attachment to the stipe, and their terminology

Desarrollo del Basidioma

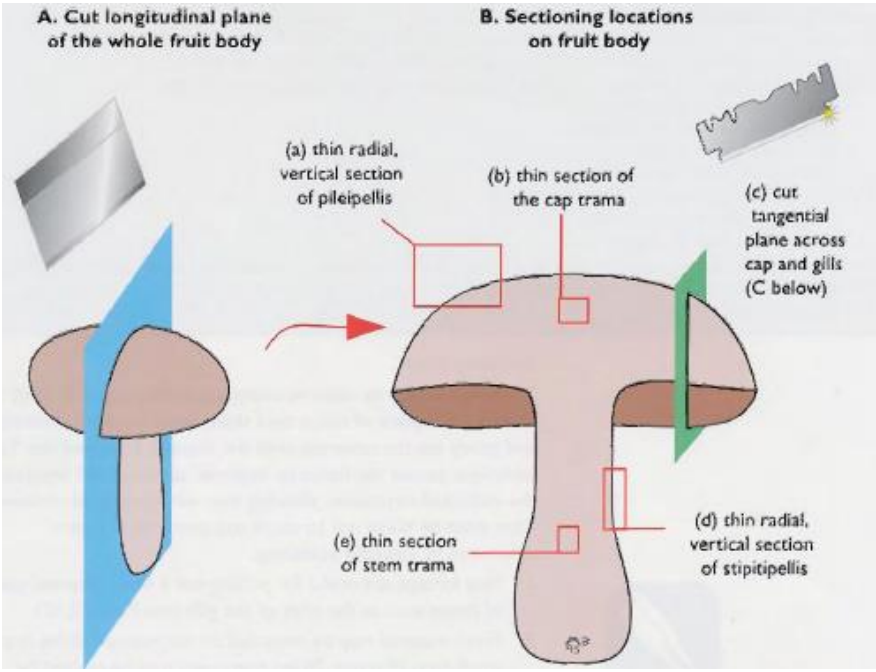


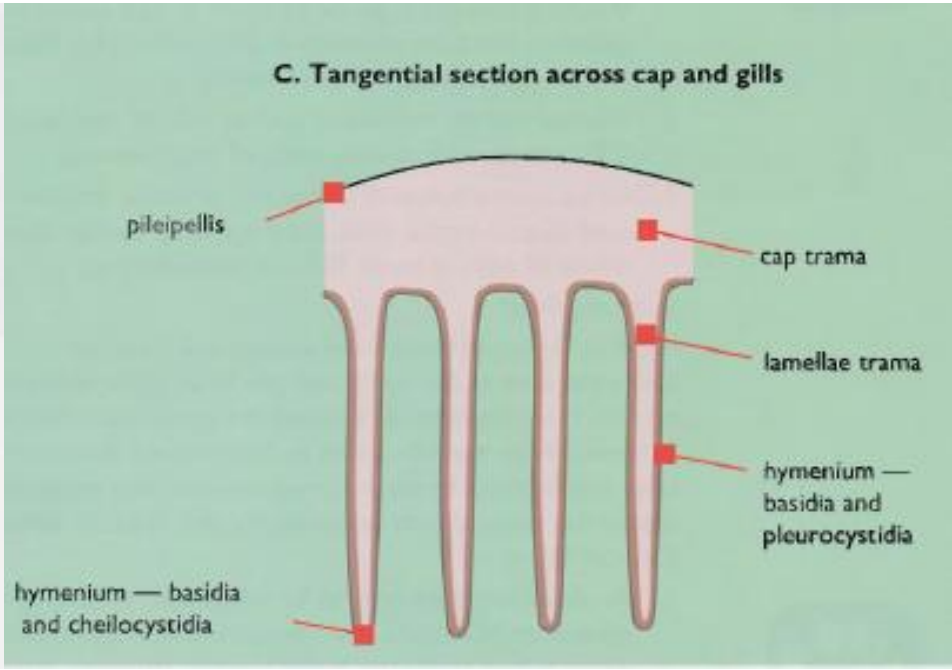
Angiocárpico

Descarga de las esporas pasiva: *Estatimóspora*

Trama himenoforal

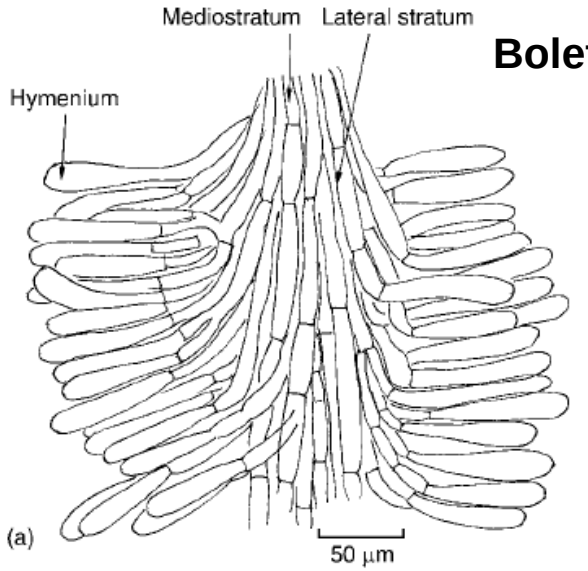
Grupo de hifas que corre desde el borde del píleo hasta la punta de la laminilla, poro o espina.





Tipo **Boletoide**: capa central de hifas (mediostratum) y estrato lateral que se curva formando el himenio (trama divergente). Subhimenio también presente de hifas entrelazadas.

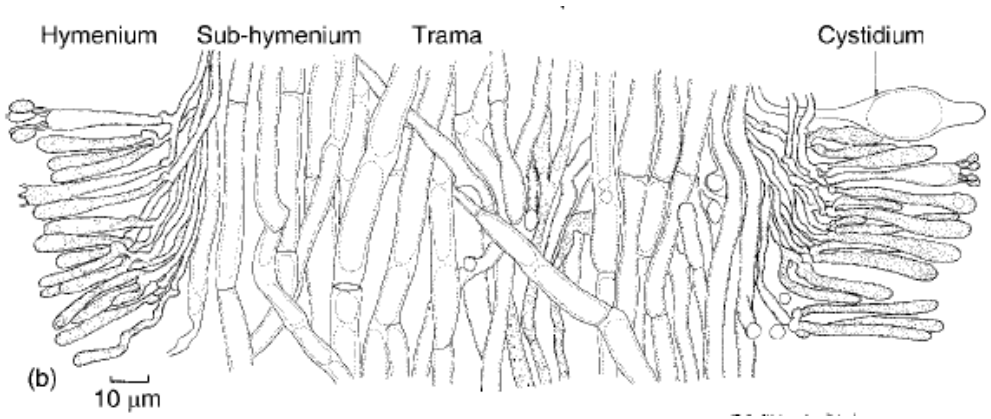
Boletoide



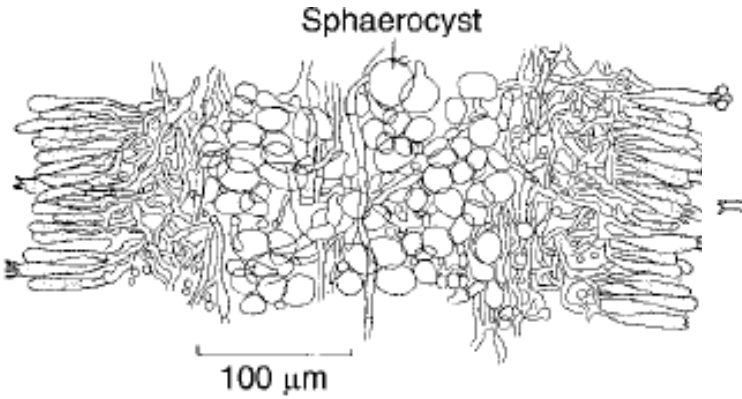
Trama himenoforal

Grupo de hifas que corre desde el borde del píleo hasta la punta de la laminilla, poro o espina.

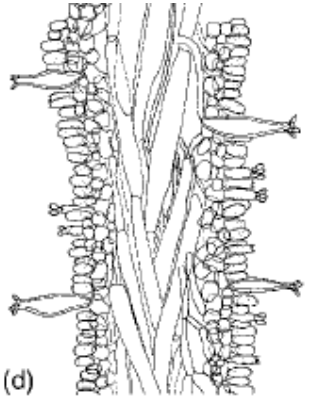
Tipo **Agaricoide**: incluye coprinoides, rusuloides, agaricoides, pluteoides y amanitoides. Laminilla diferenciada en una trama central, un subhimenio e himenio (b).



Rusuloide



Amanitoide

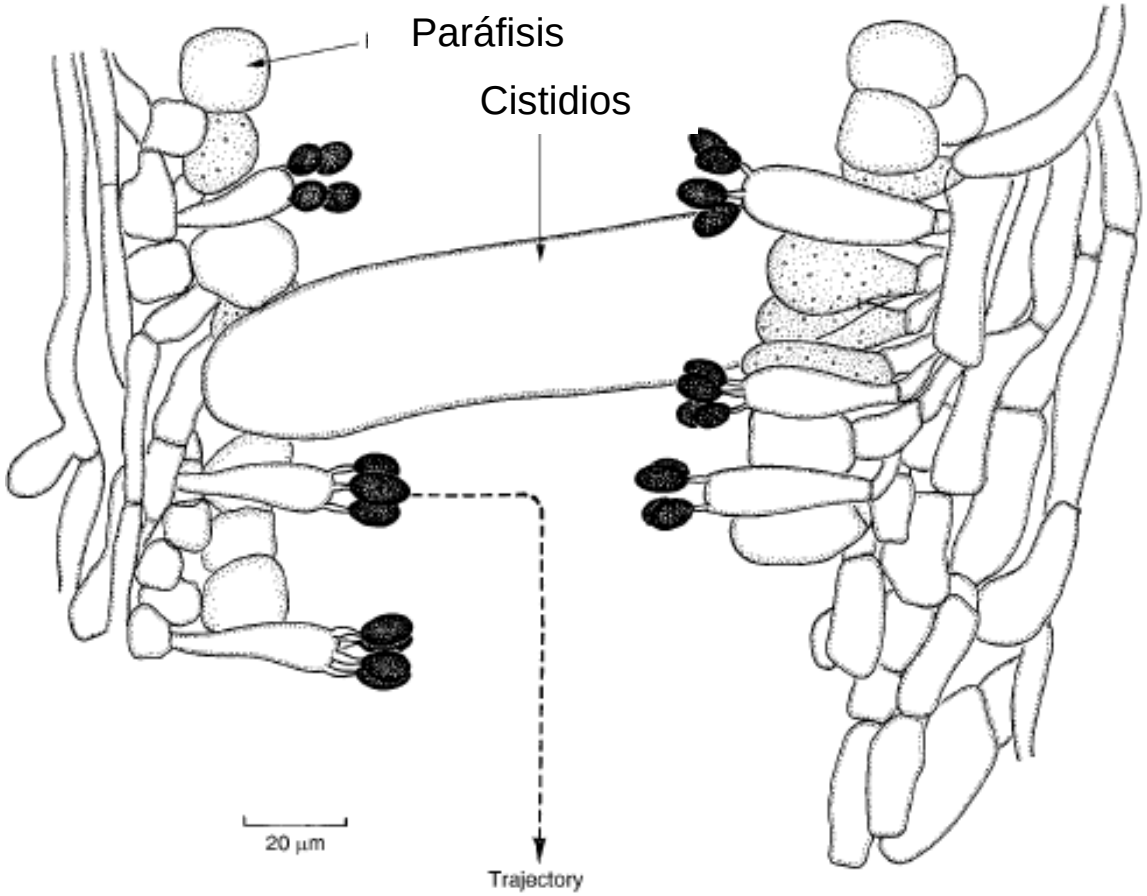


Pluteoide

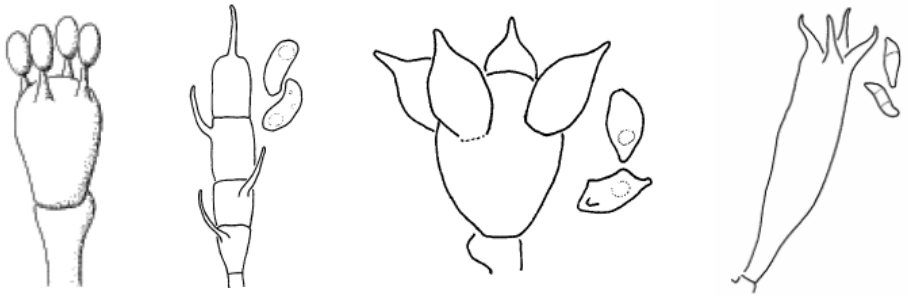
Himenio

Sobre la trama hifal → Subhimenio (células cortas) → **Himenio**

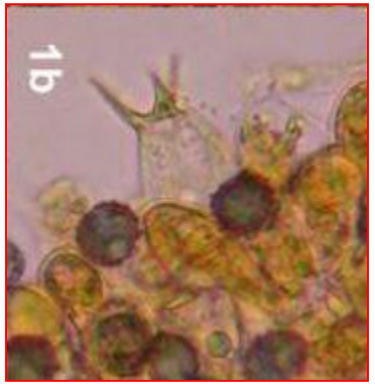
- Basidios
- Basidiolas (basidios en desarrollo)
- Cistidios
- Cistidiolas
- Paráfisis

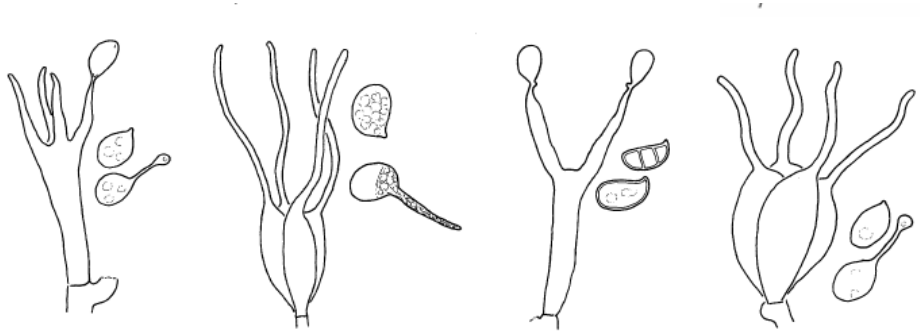


Tipos de Basidios



Basidio septado transversalmente



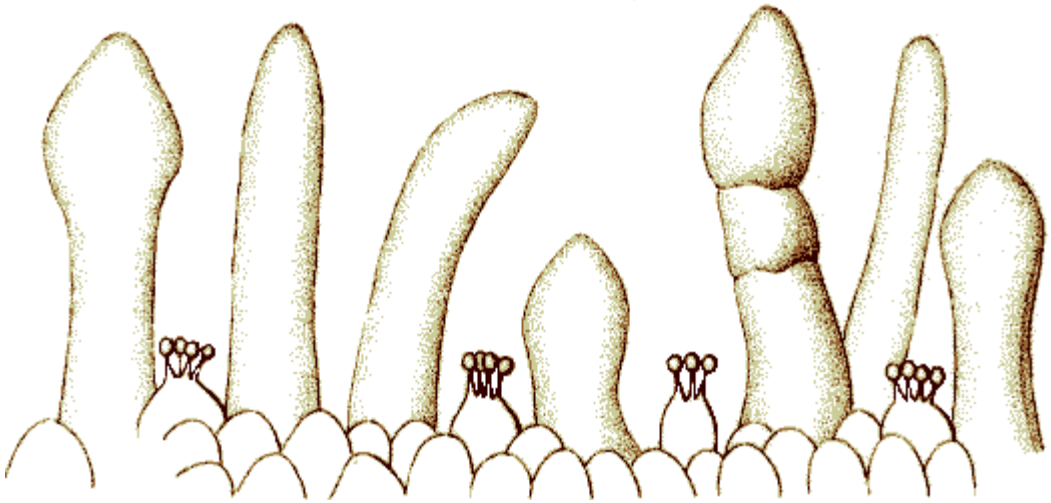


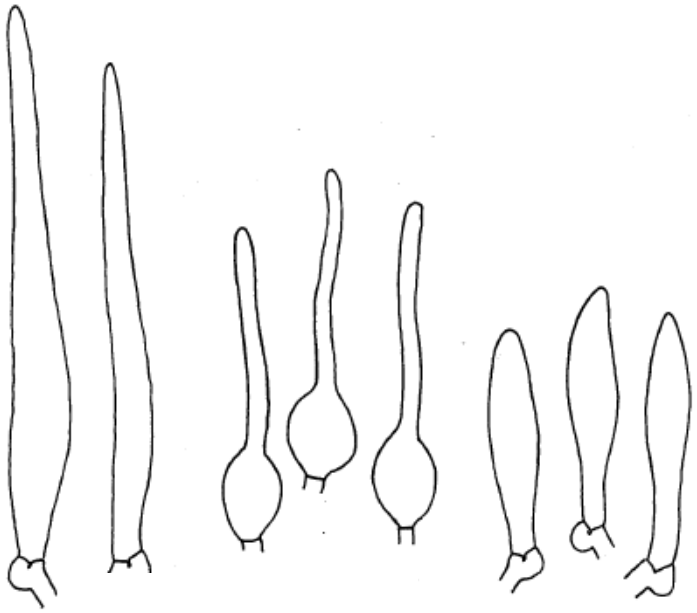
Basidio septado longitudinalmente

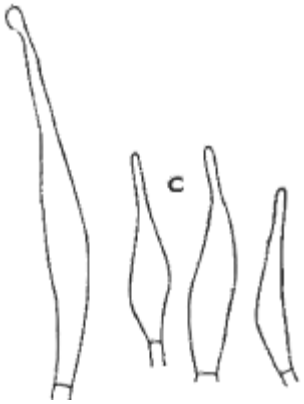
Basidio en diapasón

Basidio septado longitudinalmente

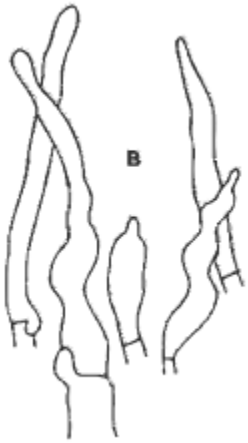
Tipos de Cistidios



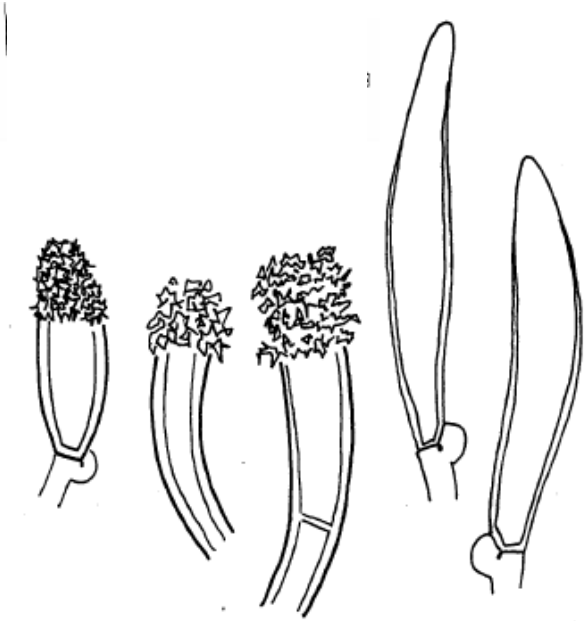




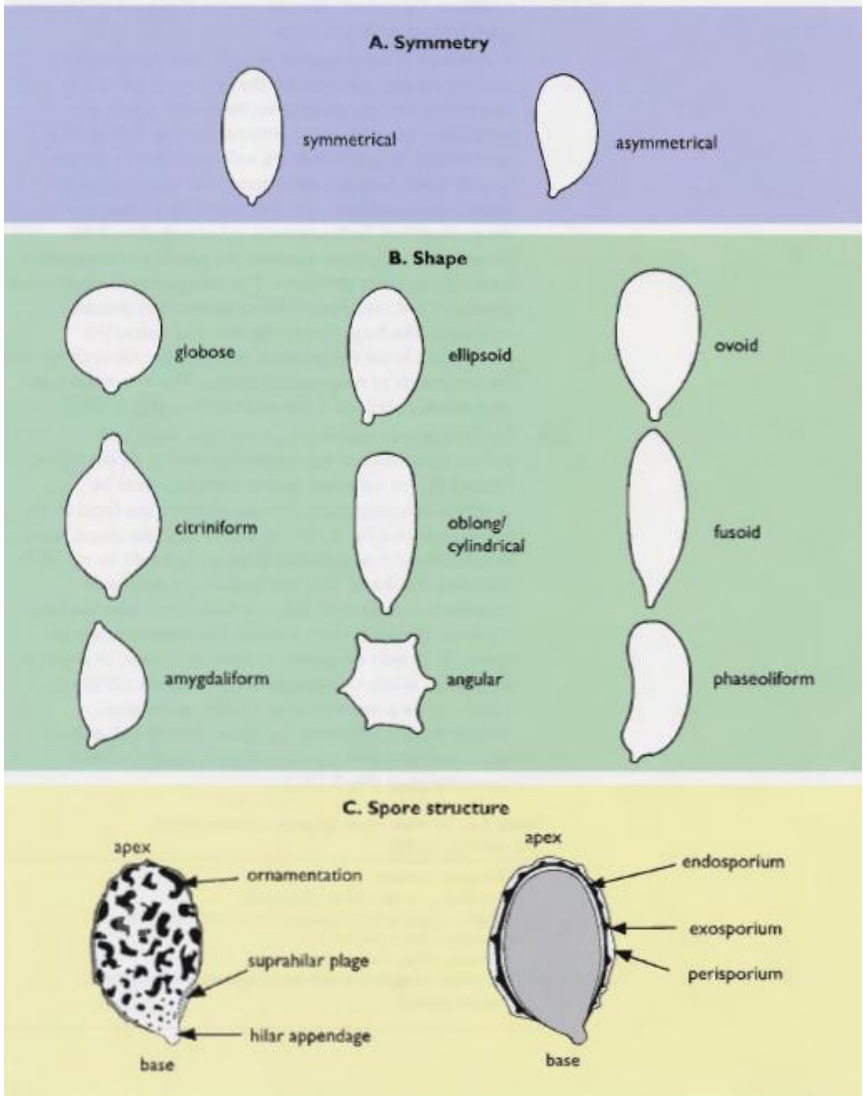
Caulocistidio (pie)

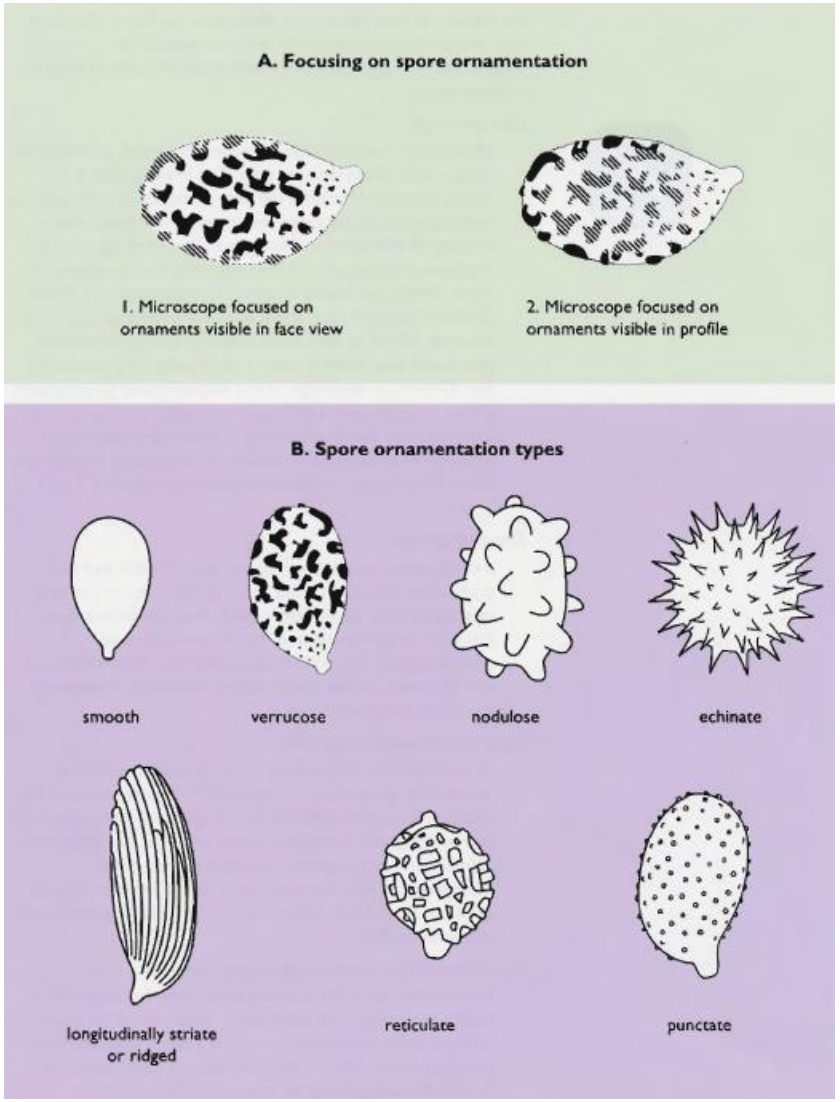


Cheilocistidio (márgen de la laminilla)



Esporas


A. Symmetry
symmetrical
asymmetrical
B. Shape
globose
ellipsoid
ovoid
citriniform
oblong/
cylindrical
fusoid
amygdaliform
angular
phaseoliform
C. Spore structure
apex
ornamentation
suprahilar plage
hilar appendage
base
apex
endosporium
exosporium
perisporium
base


A. Focusing on spore ornamentation
1. Microscope focused on ornaments visible in face view
2. Microscope focused on ornaments visible in profile
B. Spore ornamentation types
smooth
verrucose
nodulose
echinate
longitudinally striate or ridged
reticulate
punctate

Importancia

Comestibles: miles potencialmente comestibles, 40 especies cultivadas.


Agaricus bisporus

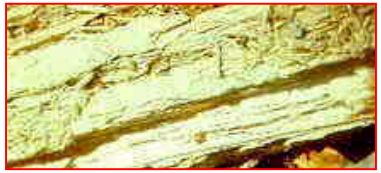

Pleurotus

Saprófitos Descomponedores de madera (celulosa, hemicelulosa y lignina).

Pudrición

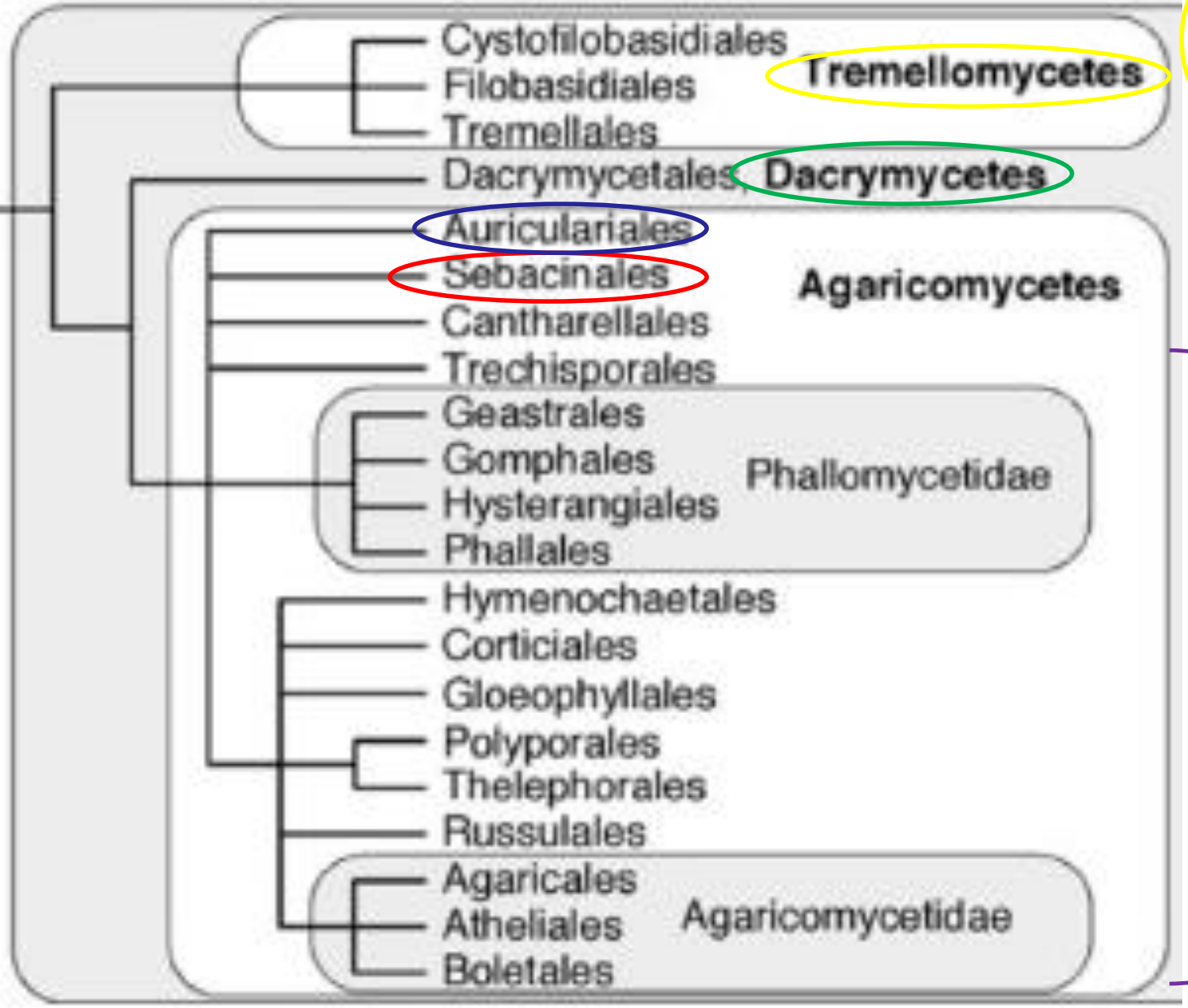

Castaña

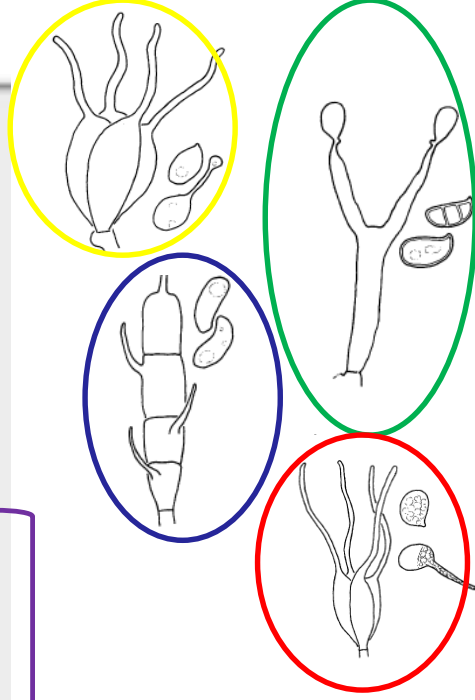
enzimas celulasa y hemicelulosa

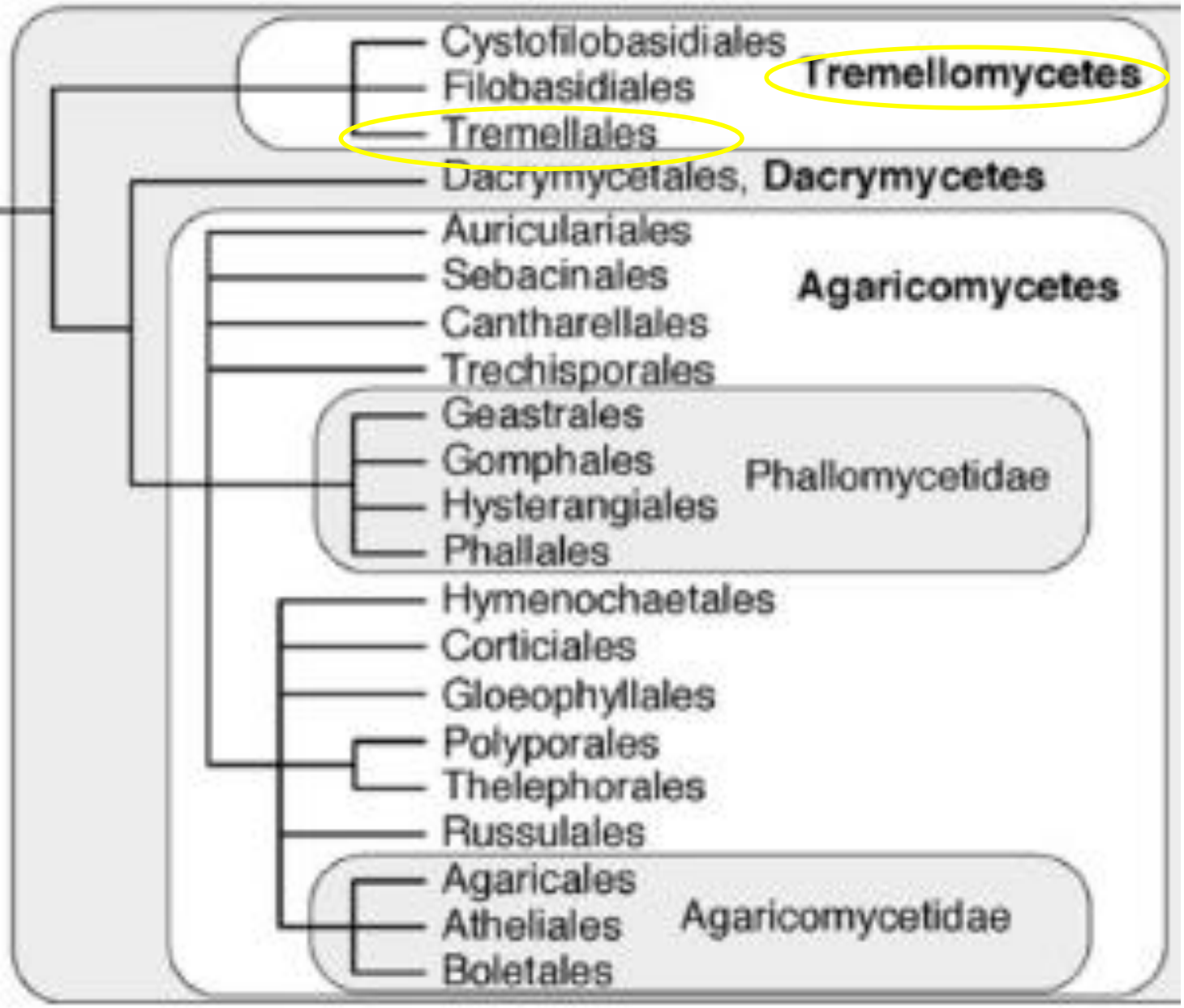

Blanca

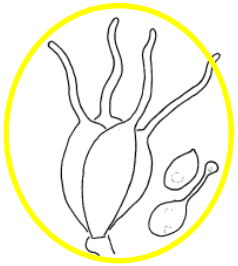
enzimas celulasa y lignasa

Micorrícicos


Cystofilobasidiales
Filobasidiales
Tremellales
Tremellomycetes
Dacrymycetales
Dacrymycetes
Auriculariales
Sebacinales
Agaricomycetes
Cantharellales
Trechisporales
Geastrales
Gomphales
Hysterangiales
Phallales
Phallomycetidae
Hymenochaetales
Corticiales
Gloeophyllales
Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae

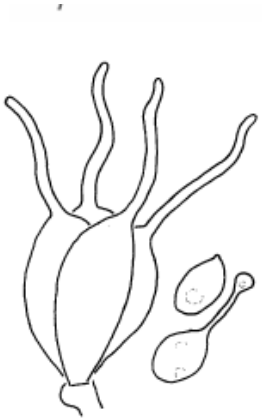



Cystofilobasidiales
Filobasidiales
Tremellales
Tremellomycetes
Dacrymycetales, Dacrymycetes
Auriculariales
Sebacinales
Agaricomycetes
Cantharellales
Trechisporales
Geastrales
Gomphales
Hysterangiales
Phallales
Phallomycetidae
Hymenochaetales
Corticiales
Gloeophyllales
Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae



Tremellomycetes
Tremellales

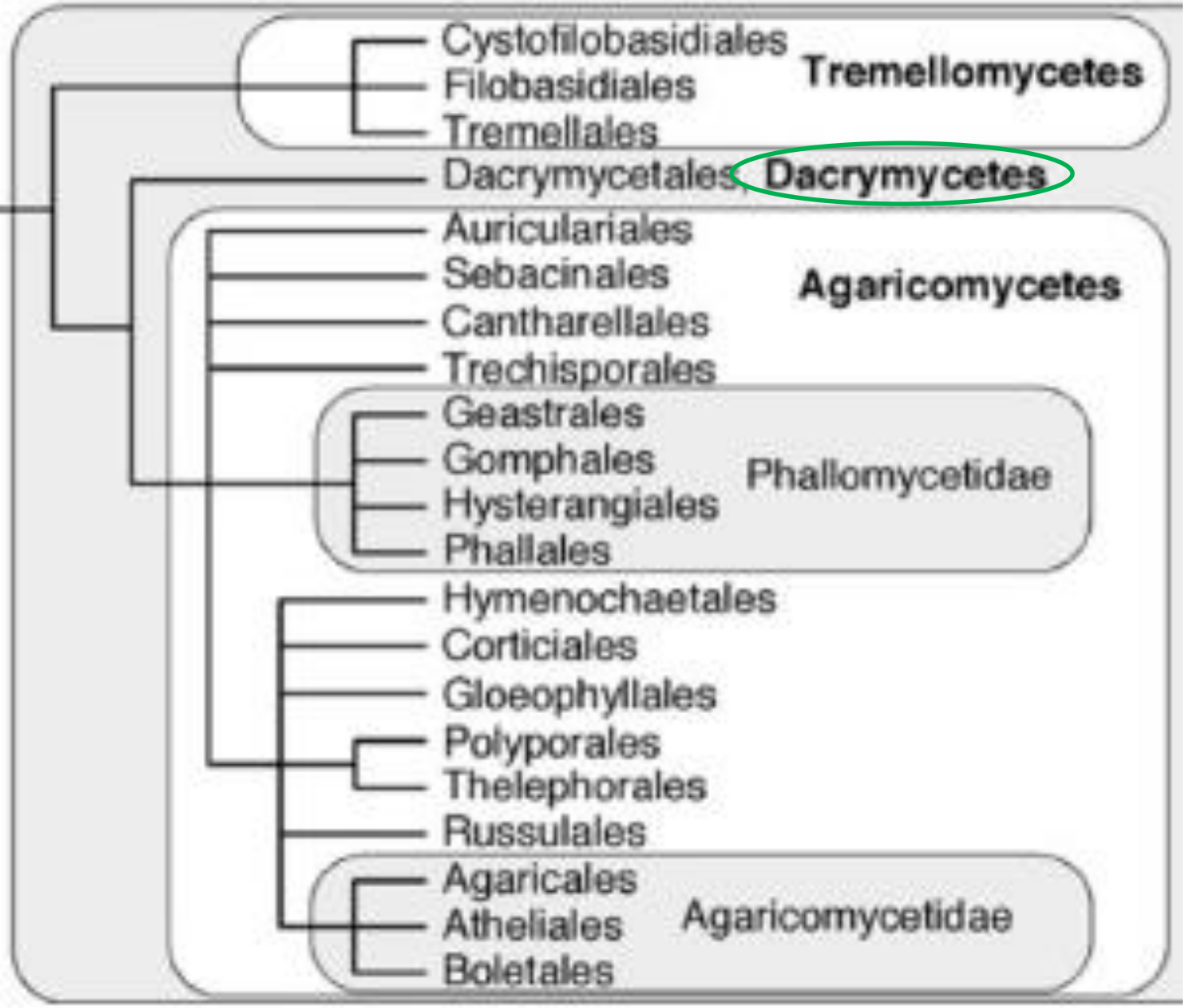
Estado levaduroide haploide

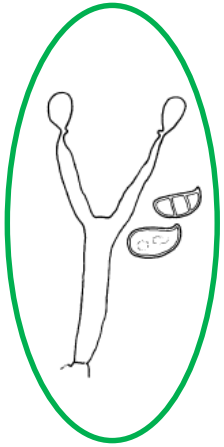


Basidio tabicado longitudinalmente

Hifas dicarióticas con doliporo septado y partentesoma cupulado

Crecen sobre madera, saprofíticos (no degradan madera). Micoparásitos


Cystofilobasidiales
Filobasidiales
Tremellales
Tremellomycetes
Dacrymycetales
Dacrymycetes
Auriculariales
Sebacinales
Cantharellales
Trechisporales
Agaricomycetes
Geastrales
Gomphales
Hysterangiales
Phallales
Phallomycetidae
Hymenochaetales
Corticiales
Gloeophyllales
Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae

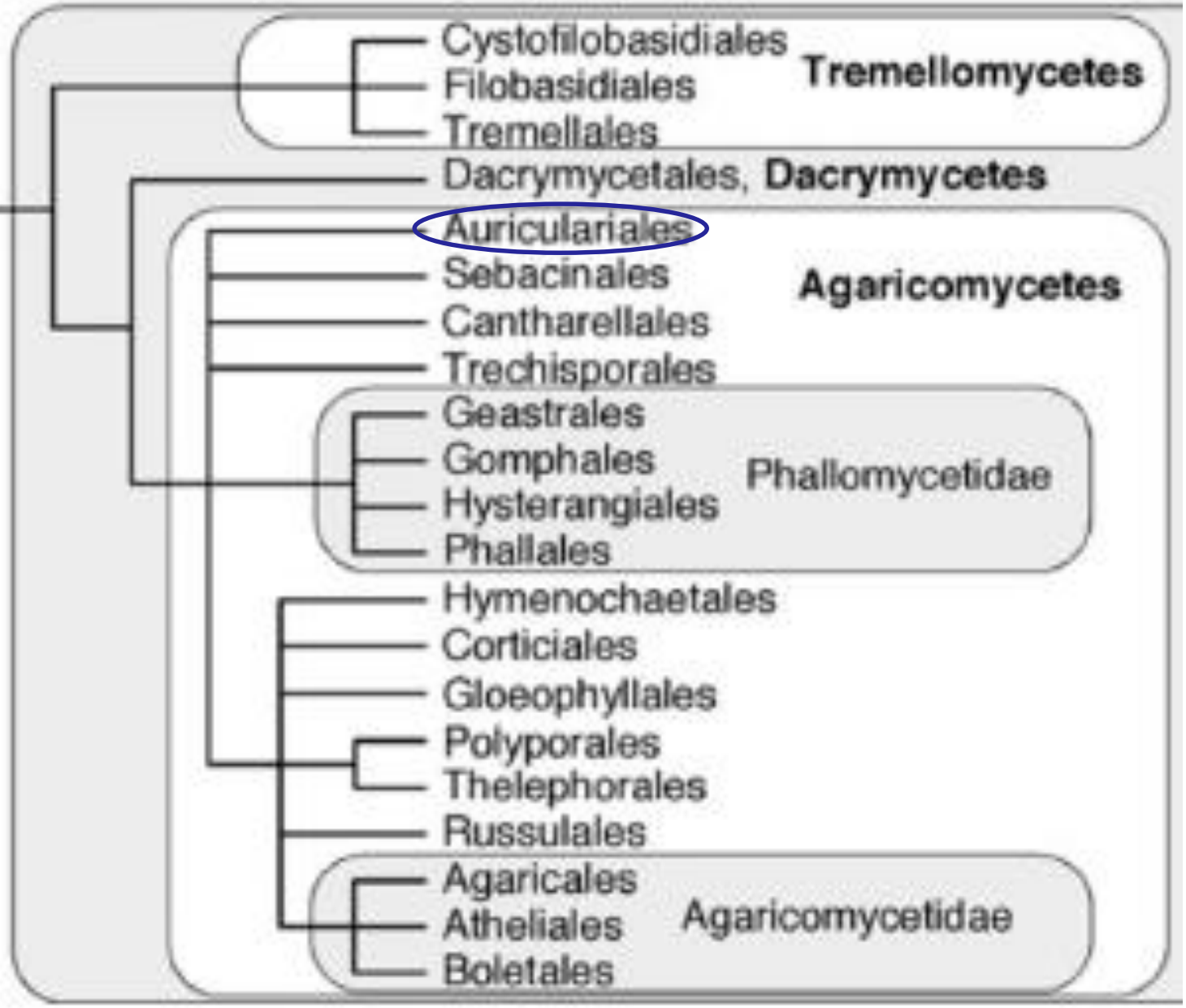


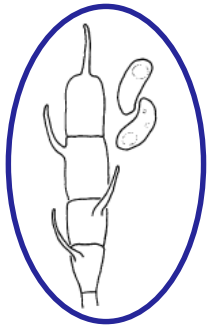
Dacrymycetes
Dacrymycetales

Basidio bifurcado (en diapasón)

Basidiomas gelatinosos, amarillos, anaranjados por carotenoides

Crecen sobre madera, saprofíticos (degradan madera pudrición marrón). Micoparásitos


Cystofilobasidiales
Filobasidiales
Tremellales
Tremellomycetes
Dacrymycetales,
Dacrymycetes
Auriculariales
Sebacinales
Cantharellales
Trechisporales
Agaricomycetes
Geastrales
Gomphales
Hysterangiales
Phallales
Phallomycetidae
Hymenochaetales
Corticiales
Gloeophyllales
Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae



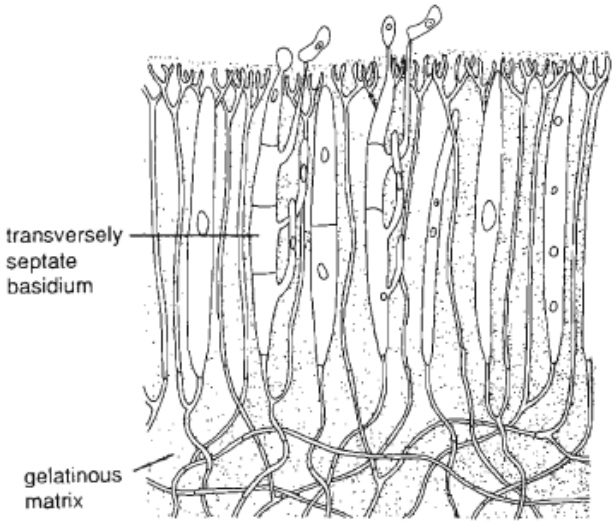
Agaricomycetes
Auriculariales


Auricularia auricula-judae, Judasohr © www.mykonet.ch

Basidiomas gelatinosos

Himenio sobre la superficie del basidioma

Basidios tabicados transversalmente

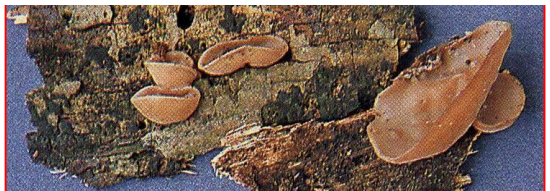


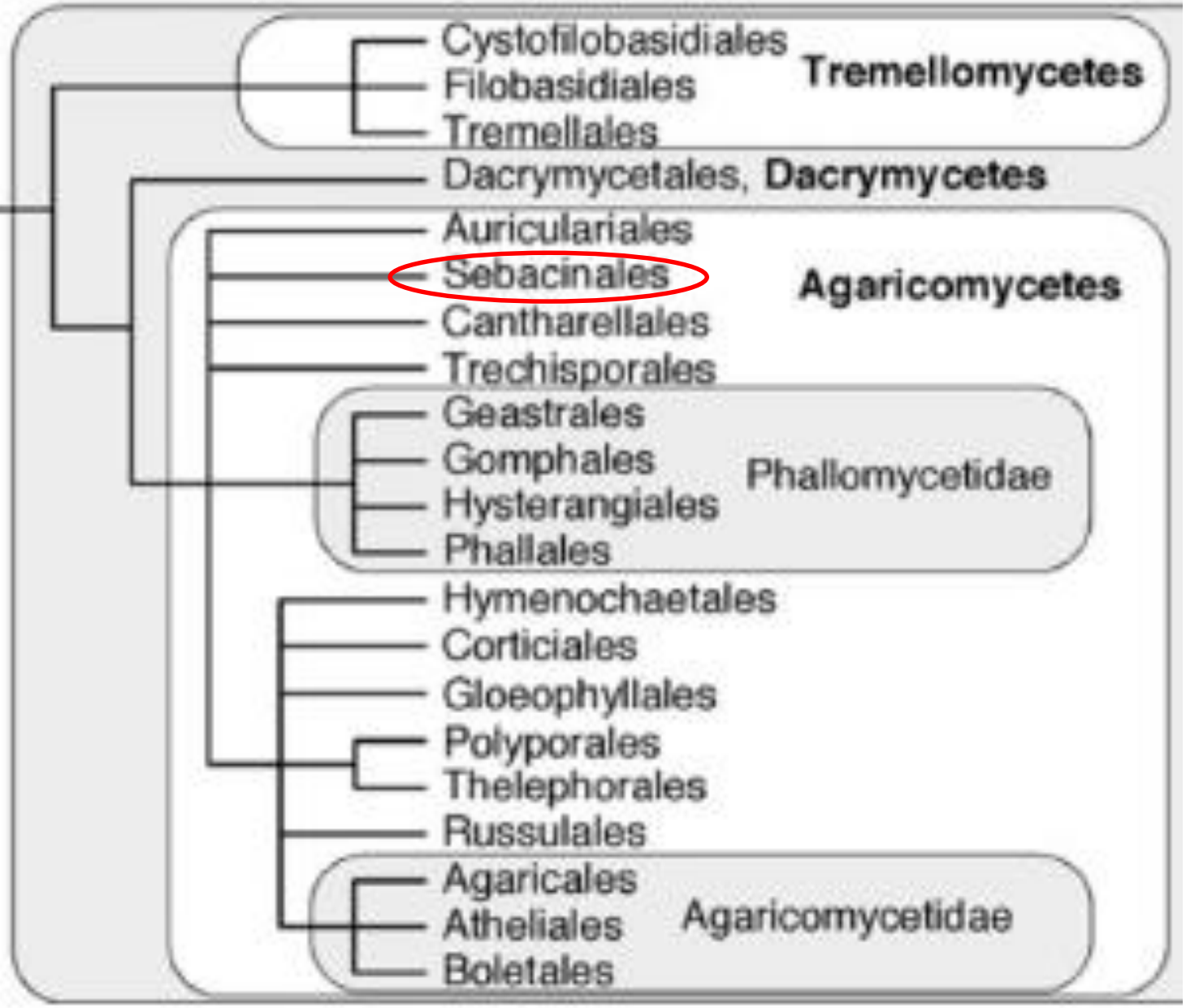
v.s. hymenium

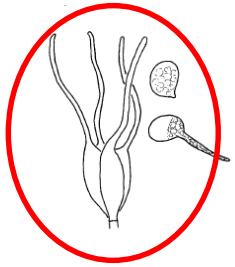

ear-like basidioma

B: ***Auricularia***

Crecen sobre madera, saprofíticos




Cystofilobasidiales
Filobasidiales
Tremellales
Tremellomycetes
Dacrymycetales,
Dacrymycetes
Auriculariales
Sebacinales
Cantharellales
Trechisporales
Agaricomycetes
Geastrales
Gomphales
Hysterangiales
Phallales
Phallomycetidae
Hymenochaetales
Corticiales
Gloeophyllales
Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae

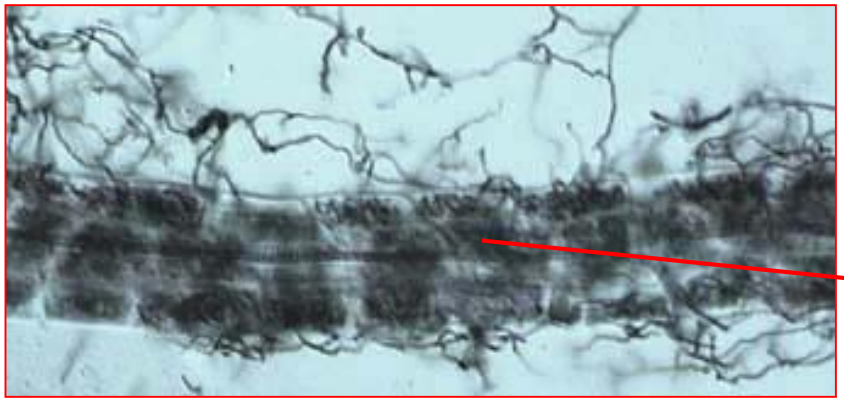


Agaricomycetes
Sebacinales

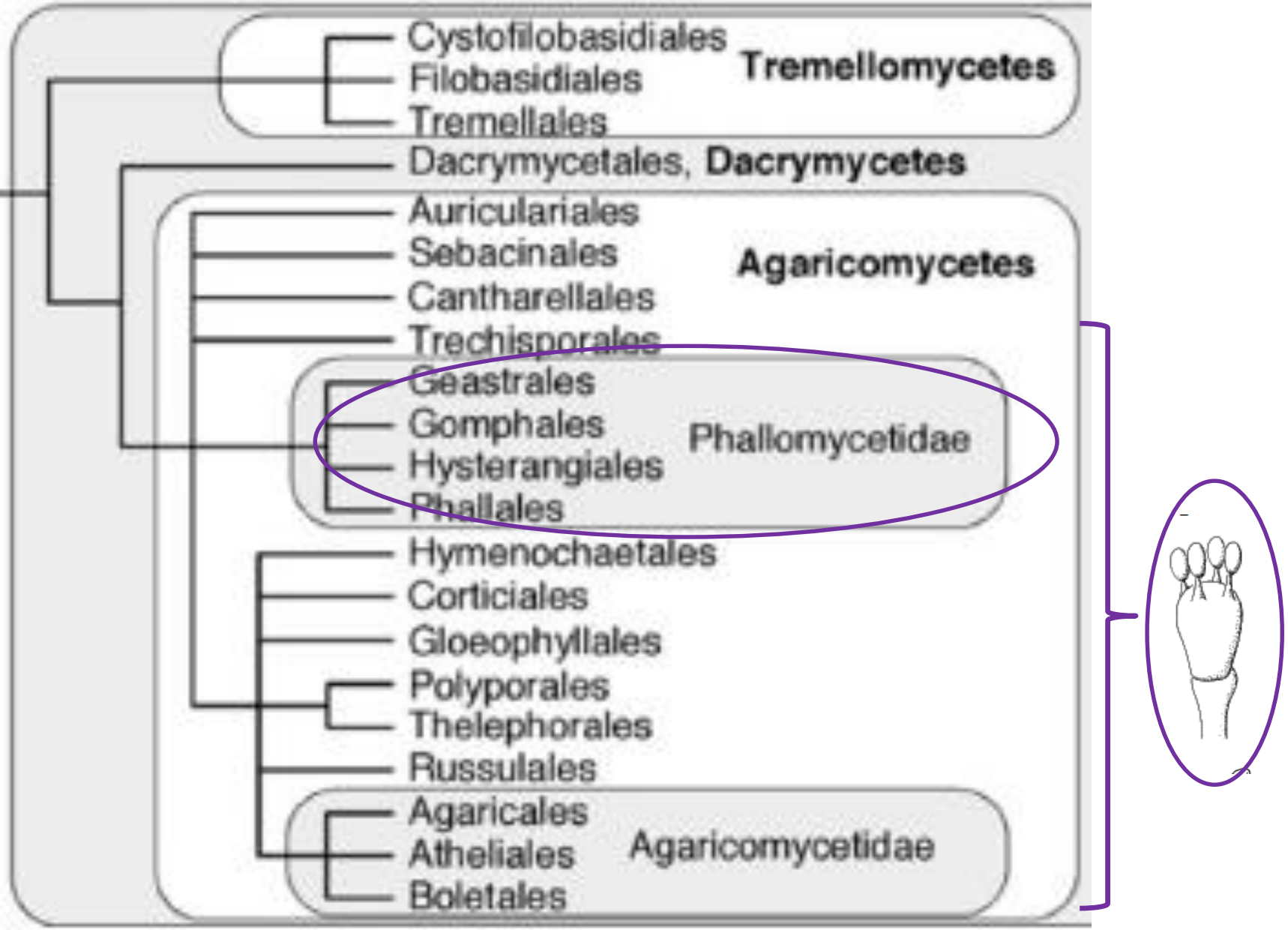
Basidios tabicados longitudinalmente

Saprófitos (Materia orgánica, suelo)

Micorrícicos (micorrizas ericoides)



Rulos hifales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Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae

Agaricomycetes

Phallomycetidae

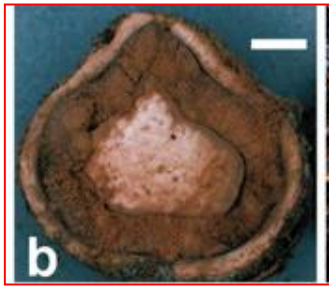
Geastrales, Gomphales, Hysterangiales, Phallales

Basidioma

hipógeos

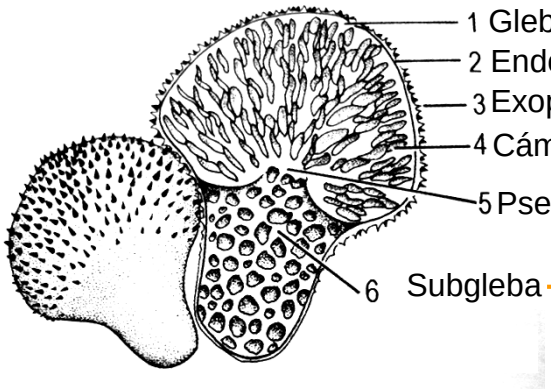
Hysterangium sp.

Mesophellia castanea



Gallacea scleroderma

gasteroides



Himenio: **Gleba** (masa de esporas y hebras de capilicio)

Peridio: pared (exo-endo-peridio)

Phallomycetidae…

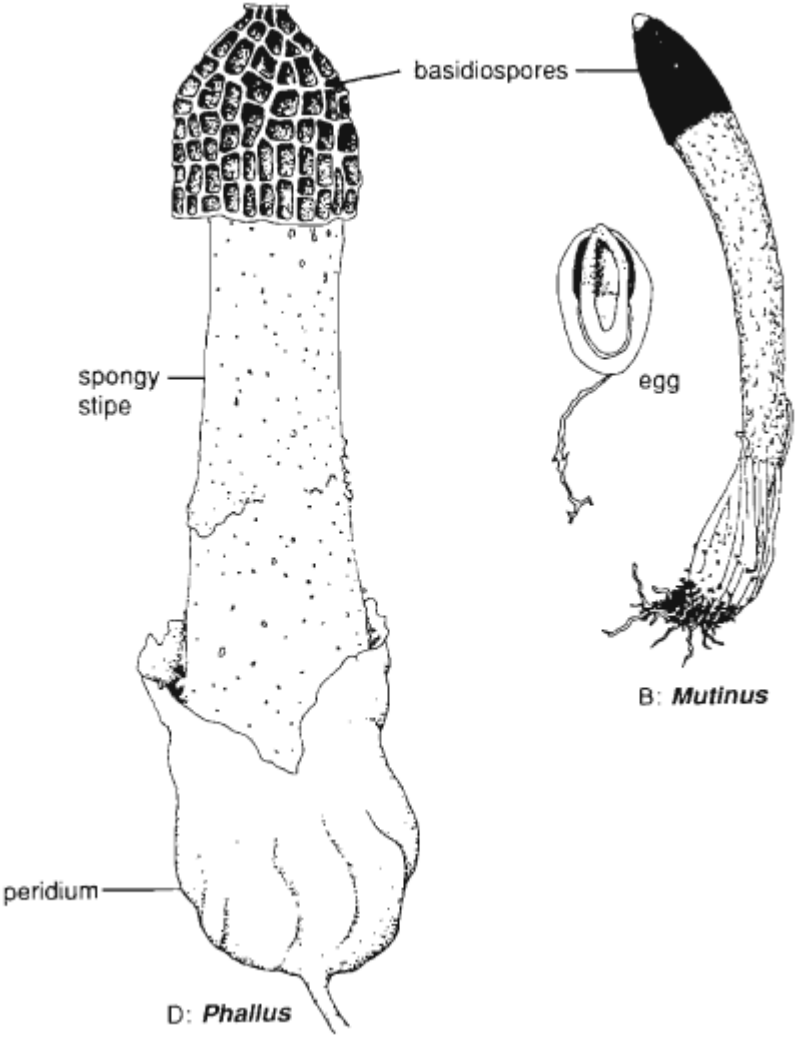
Basidioma

gasteroides

“Estrella de tierra”
Gleba pulverulenta

Phallomycetidae…

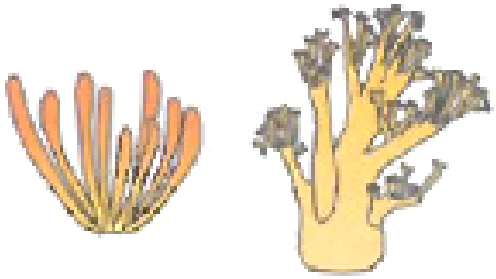
…gasteroides



"Cuernos hediondos" **Gleba mucosa**

Phallomycetidae…

Basidioma



coraloides

Phallomycetidae…

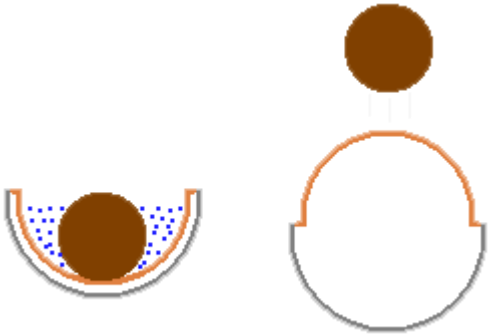
Dispersión de esporas

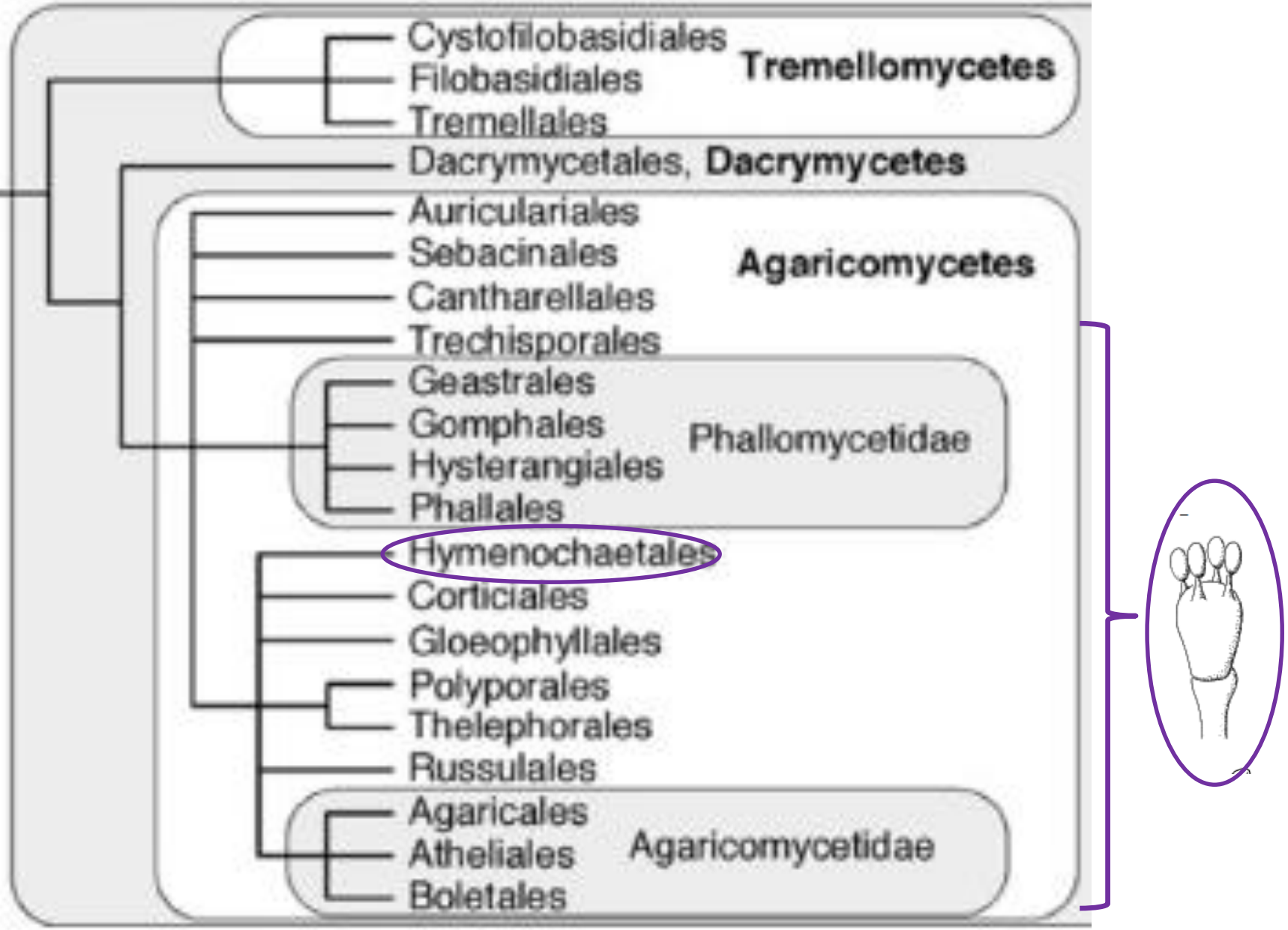
Mecánica (golpes, lluvia)

Hombre, animales

Especializada: Activa

Sphaerobolus




Cystofilobasidiales
Filobasidiales
Tremellales
Tremellomycetes
Dacrymycetales,
Dacrymycetes
Auriculariales
Sebacinales
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Gomphales
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Hymenochaetales
Corticiales
Gloeophyllales
Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae

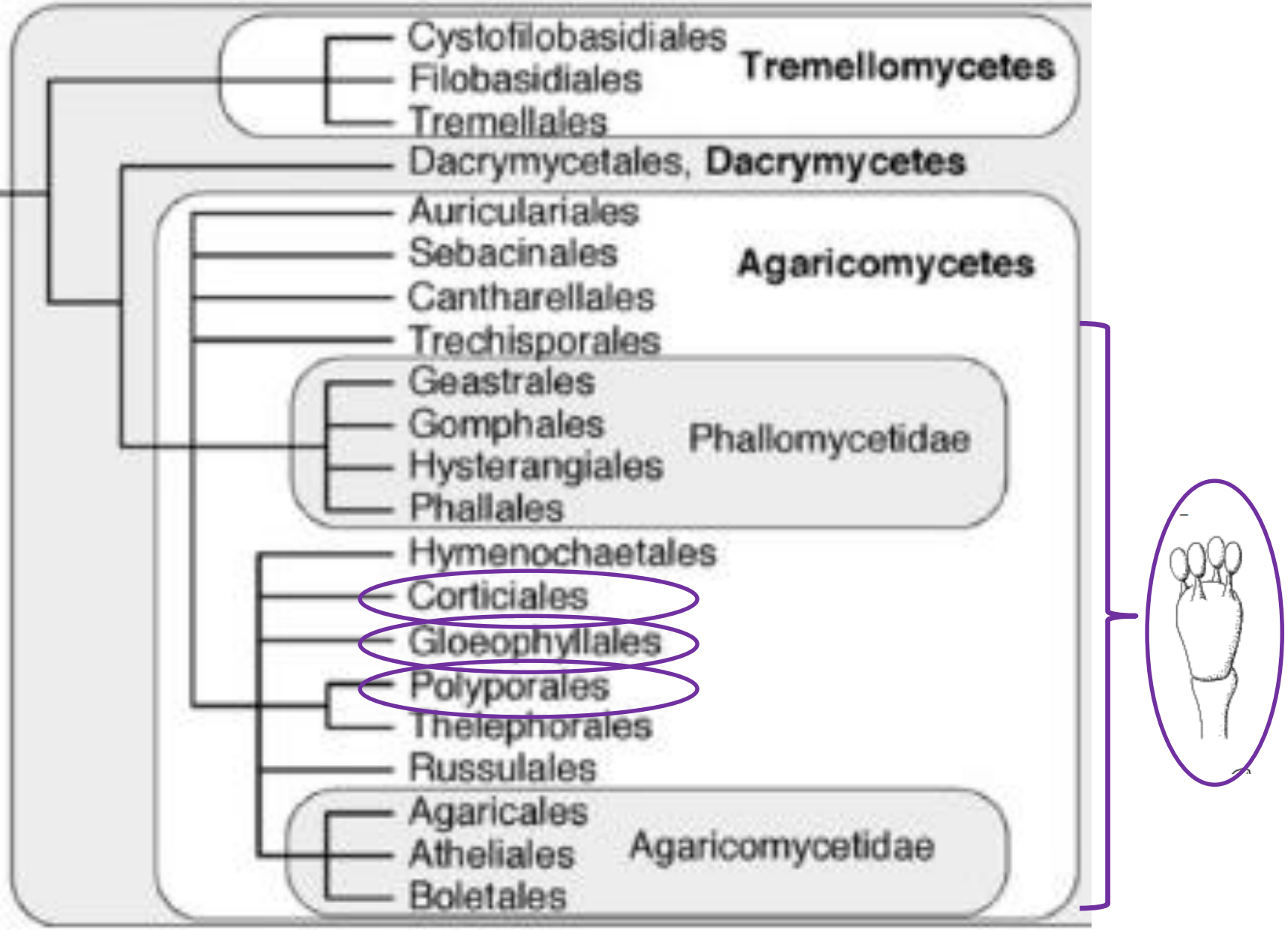
Agaricomycetes
Hymenochaetales

Phellinus Basidioma
Demidiado a ungulado

Inonotus Basidioma
Demidiado - resupinado

Himenóforo poroide

Saprófitos, parásitos (degradadores de la madera del árbol vivo en pie)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Filobasidiales
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Tremellomycetes
Dacrymycetales,
Dacrymycetes
Auriculariales
Sebacinales
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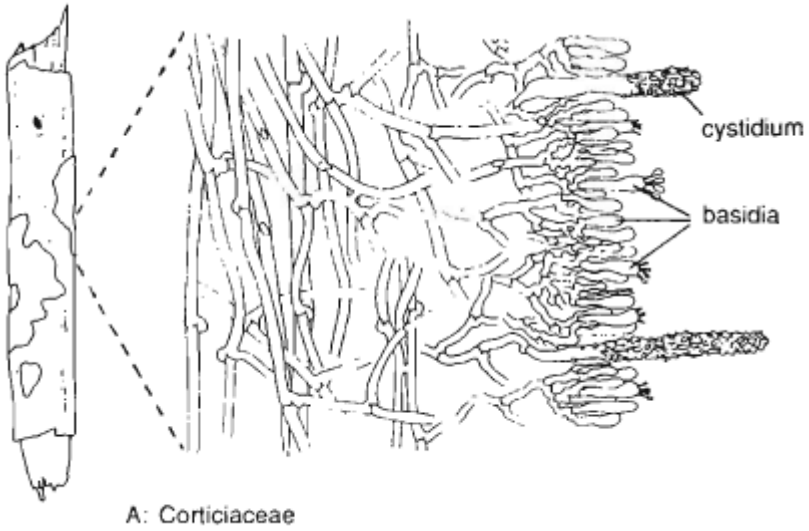
Geastrales
Gomphales
Hysterangiales
Phallales
Phallomycetidae
Hymenochaetales
Corticiales
Gloeophyllales
Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae

Corticiales

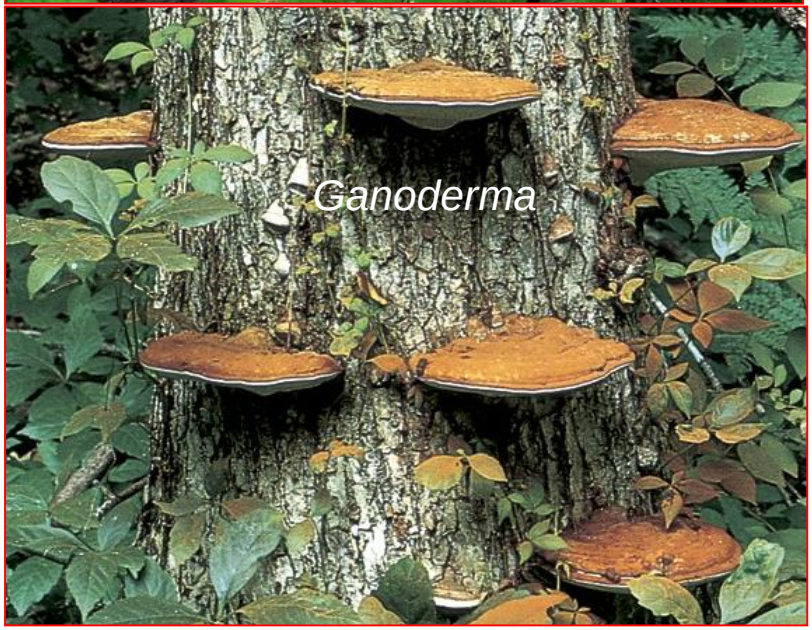
Himenóforo liso

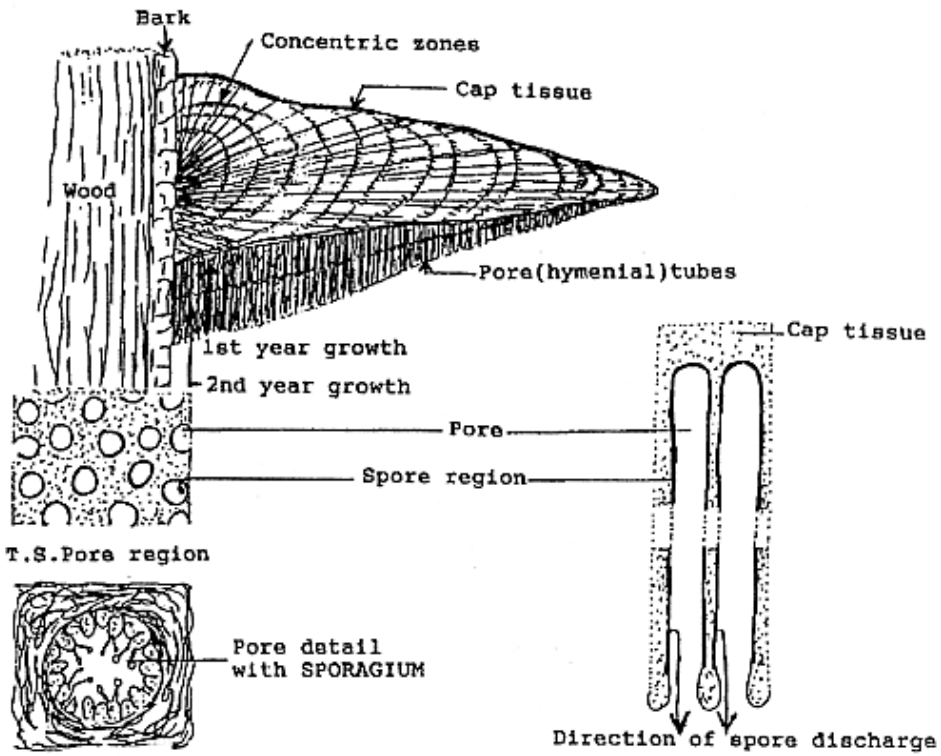


A: Corticiaceae

Saprófitos: principalmente degradadores de la madera

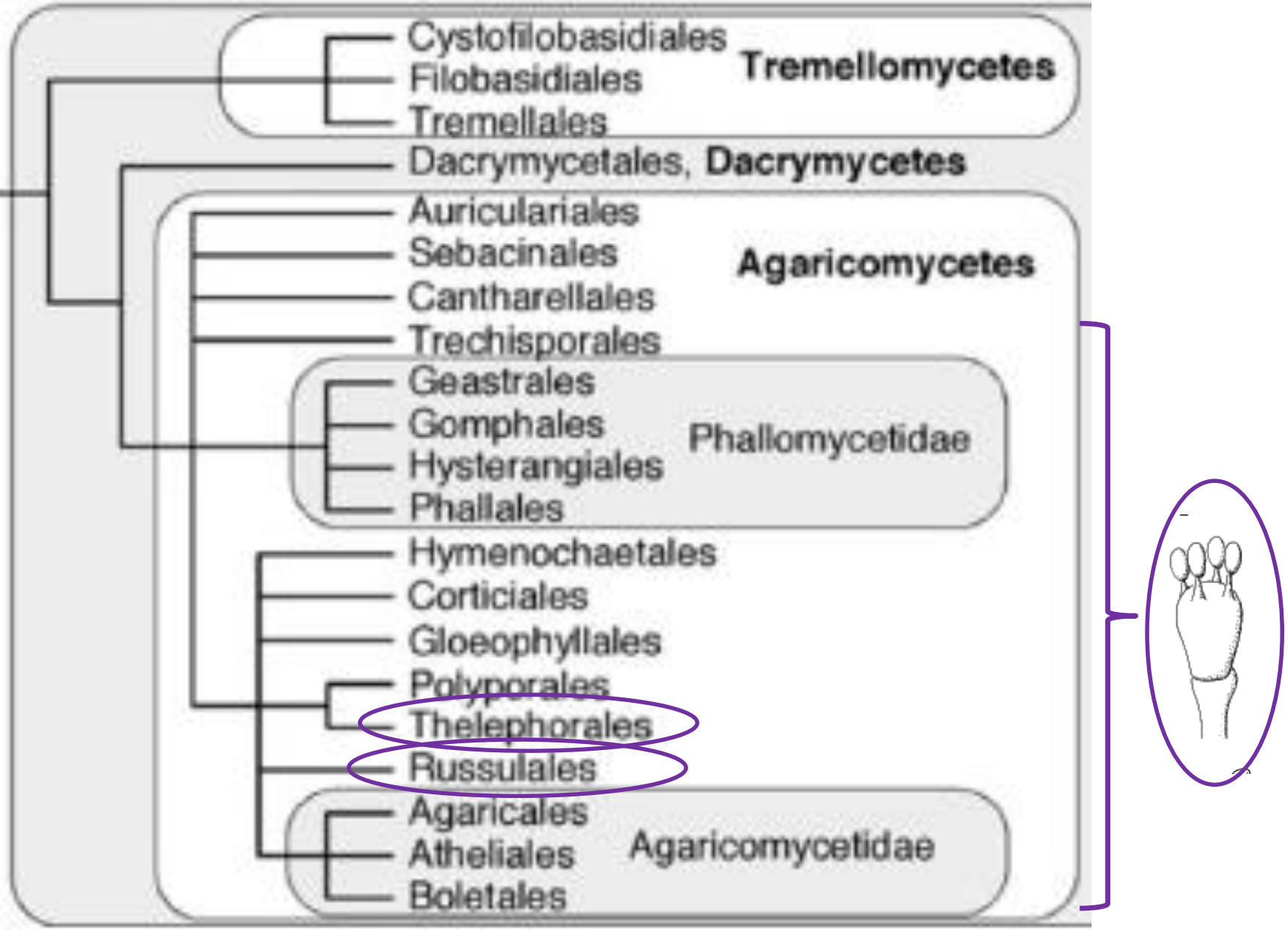
Gloephyllales y Polyporales





Himenóforo poroide

Saprófitos – parásitos (degradadores de la madera del árbol vivo en pie)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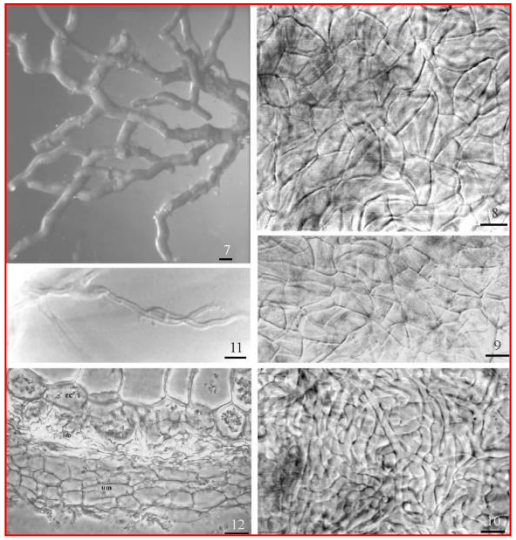
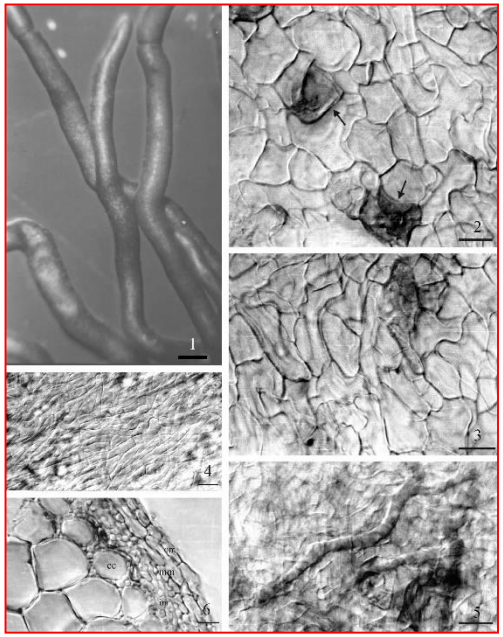
Polyporales
Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae

Thelephorales

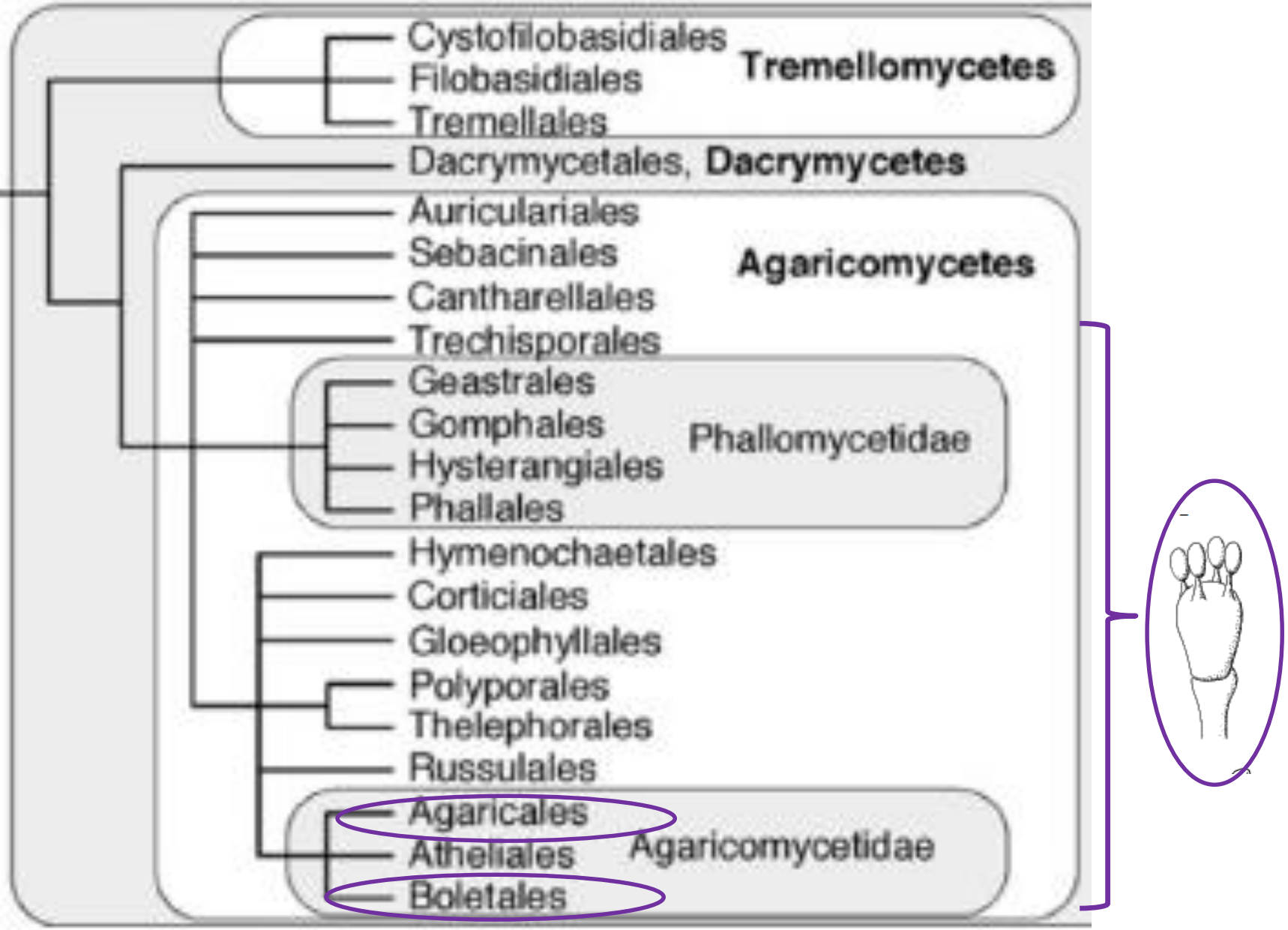
Ectomicorrícico

Russulales





Ectomicorrícicos
Saprófitos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Thelephorales
Russulales
Agaricales
Atheliales
Boletales
Agaricomycetidae

Agaricomycetidae
Agaricales, Boletales

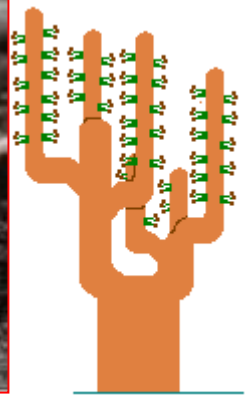
Agaricales hongos de laminillas


Amanita phalloides

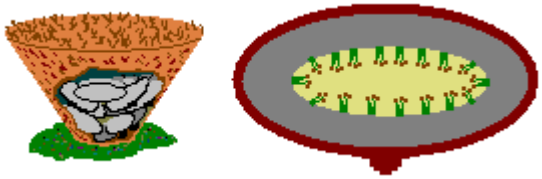

Amanita muscaria

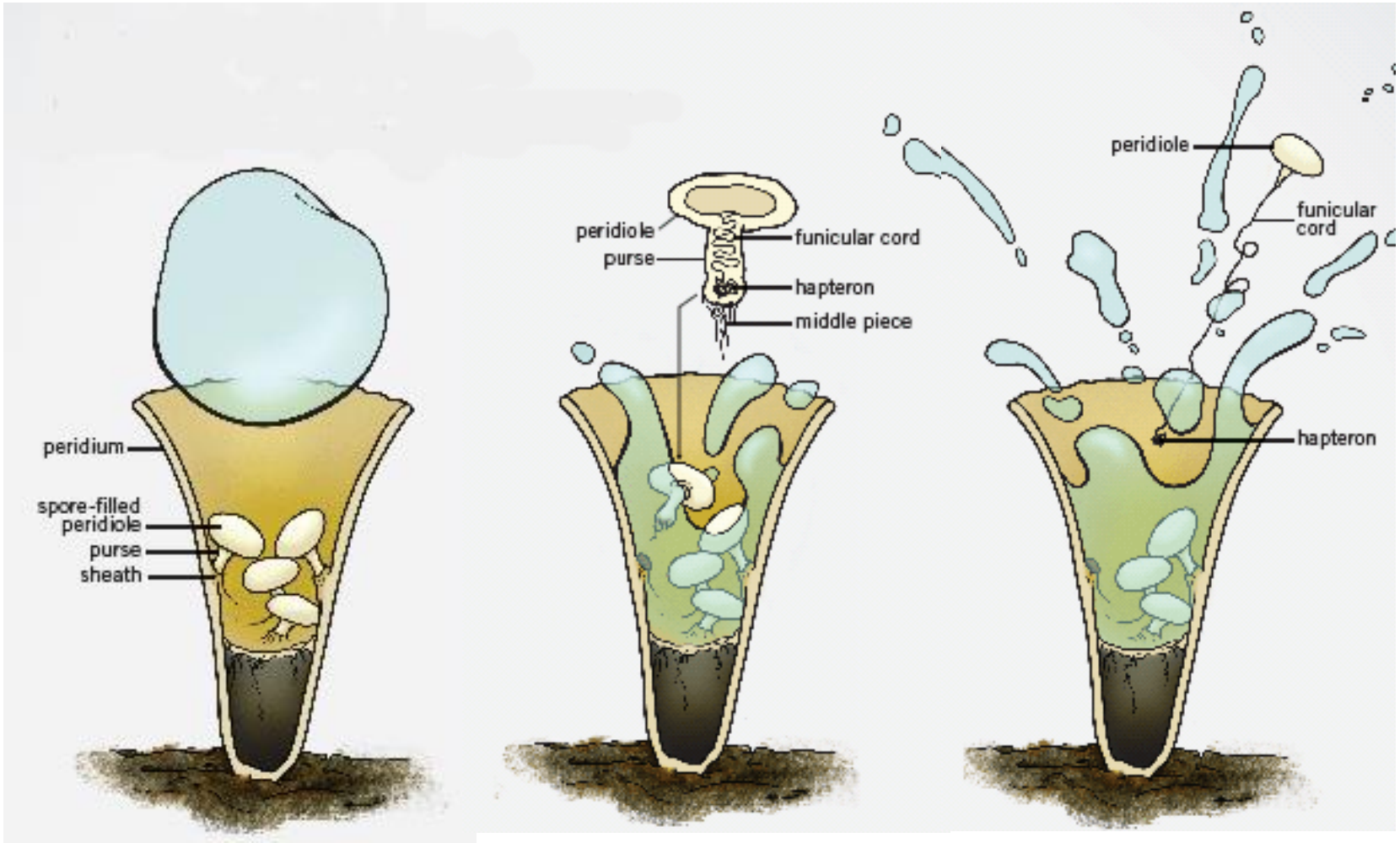
Agaricomycetidae
Agaricales, Boletales

Agaricales gasteroides, coralíneos



“Nido de pájaros” *Cyathus* **Gleba cerácea**




peridium
spore-filled peridiole
purse
sheath
peridiole
purse
funicular cord
hapteron
middle piece
peridiole
funicular cord
hapteron

Boletales hipógeos, gasteroides y hongos con poros

Saprófitos, ectomicorrícicos

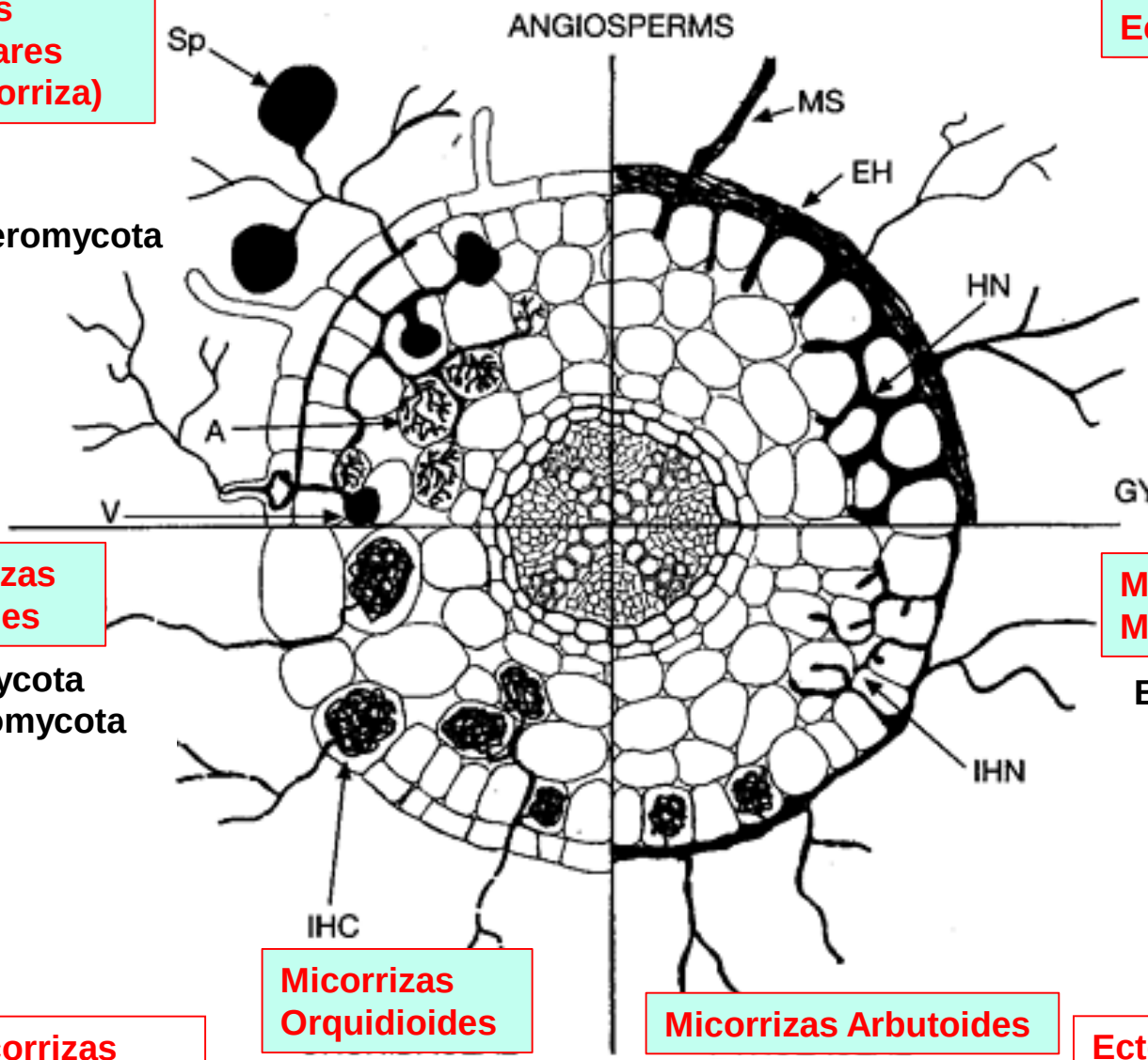
MICORRIZAS

Micorrizas Arbusculares (endomicorriza)

Glomeromycota

Ectomicorrizas

Basidiomycota
Ascomycota (algunos)



Micorrizas Ericoides

Ascomycota
Basidiomycota

Micorrizas Monotropoides

Basidiomycota

Endomicorrizas

Micorrizas Orquidioides

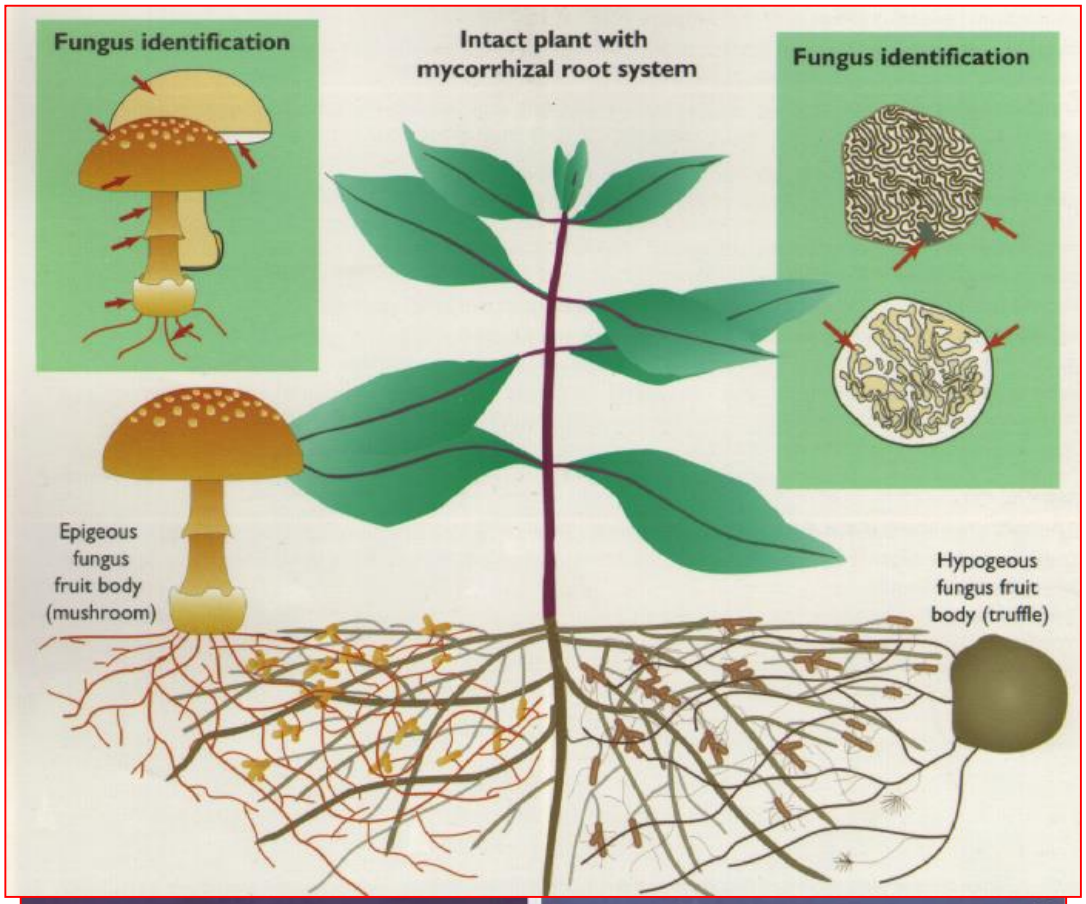
Basidiomycota

Micorrizas Arbutoides

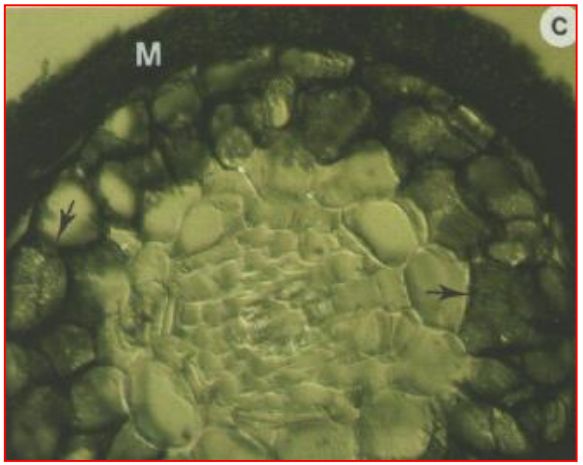
Basidiomycota

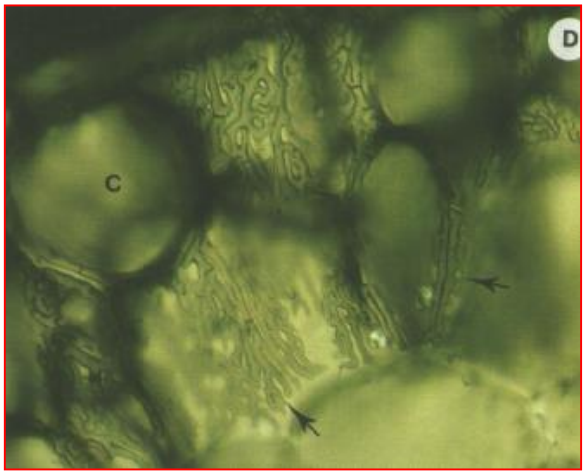
Ectendomicorrizas

Micorrícicos: ectomicorrícicos



Manto





Red de Hartig

Características de los grupos de hongos estudiados

	Phylum and Common Types	Asexual Reproduction	Sexual Reproduction	Other Key Characters
	Chytridiomycota (chytrids or chytridiomycetes) *Allomyces*	Flagellate, diploid zoospores produced by mitosis in zoosporangia	Flagellate, haploid gametes in some species	Haploid zoospores produced in resting sporangia; form haploid thallus
	Mucoromycotina Black bread mold.	Haploid spores produced in sporangia	Zygospores develop in zygosporangia	Important decomposers; some are insect parasites. Microsporidia are opportunistic pathogens that infect animals.
	Glomeromycota (glomeromycetes)	Large, multinucleate blastospores	Has not been observed	Form arbuscular mycorrhizae with plant roots
	Ascomycota (ascomycetes) Yeasts, powdery mildews, molds, morels, truffles	Conidia pinch off from conidiophores	Ascospores develop in asci	Have a dikaryotic stage; form important symbiotic relationships as lichens and mycorrhizae
	Basidiomycota (basidiomycetes or club fungi) Mushrooms, bracket fungi, puffballs, rusts, smuts	Uncommon	Basidiospores develop on club-shaped basidia	Have a dikaryotic stage; many form mycorrhizae with tree roots