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Bryophyte Phylogeny Poster

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BRYOPHYTE PHYLOGENY

Nonvascular Land Plants (Liverworts, Mosses, Hornworts) – Systematics and Characteristics

MARCHANTIOPHYTA

Liverworts

Thallose or foliose
Rhizoids + Oil bodies +
Perforated water-conducting cells
Mycorrhizal with endophytic Glomeromycota
Gametangia protective structures +
Gametangial ontogeny without apical cells
Blepharoplast: plastid and associated posterior
mitochondrion positioned at cell terminus
Zygote division transversal: epi- and hypobasal cells
Seta +
CAP without columella
Elaters (unicellular), Stomata –
ca. 5000 spp.
Lumularic acid

BRYOPHYTA

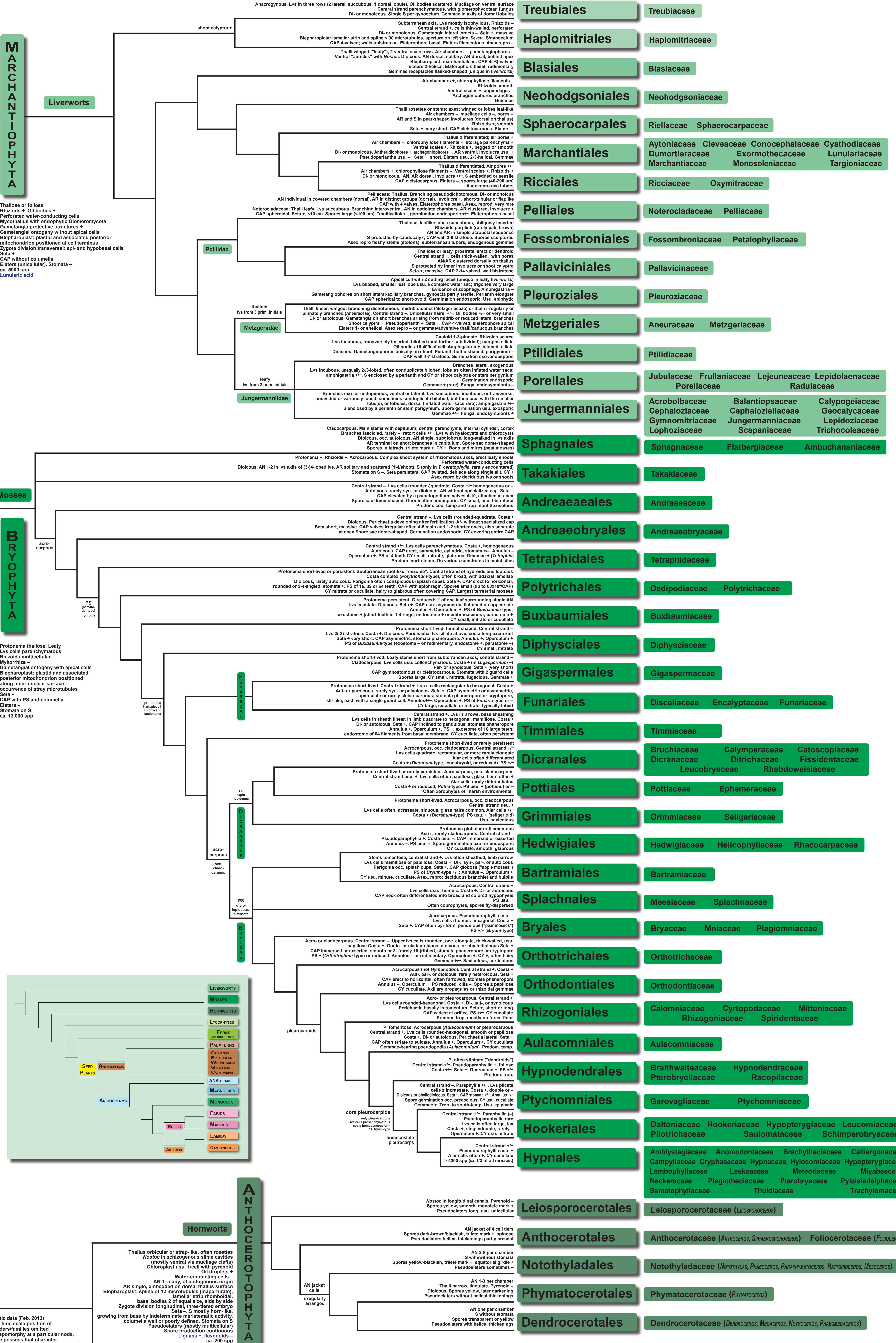
Mosses

Protonema thallose. Leafy
Lvs cells parenchymatous
Rhizoids multicellular
Mykorrhiza –
Gametangial ontogeny with apical cells
Blepharoplast: plastid and associated
posterior mitochondrion positioned
along inner nuclear surface;
occurrence of stray microtubules
Seta +
CAP with PS and columella
Elaters –
Stomata on S
ca. 13,000 spp.

ANTHOCEROTOPHYTA

Hornworts

Thallus orbicular or strap-like, often rosettes
Nostoc in schizogenously silice cavities
(mostly ventral via mucilage clefts)
Chloroplast usu. 1/cell with pyrenoid
Oil droplets +
Water-conducting cells –
AN 1-many, of endogenous origin
AR single, embedded on dorsal thallus surface
Blepharoplast: spine of 12 microtubules (naperulate),
lamellar strip rhomboidal,
basal bodies 2 of equal size, side by side
Zygote division longitudinal, three-tiered embryo
Seta – S mostly horn-like,
growing from base by indeterminate meristematic activity,
columella well or poorly defined, Stomata on S
Pseudolators (mostly multicellular)
Spore production continuous
Lignans +, flavonoids –
ca. 200 spp.



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• hypothetical tree based on molecular phylogenetic data (Feb. 2013)
• branch lengths deliberate, not expressing actual time scale position of
many characters on tree unclear; some minor orders/families omitted
• if a character is marked as being a potential synapomorphy at a particular node,
this does not mean that all members of that clade possess that character
• Phylogenetic References: Judd W et al. (2007); Simpson M (2010); Soltis DE et al. (2005);
Cox et al. (2010); Knapp (2010); Villarreal et al. (2010); Shaw et al. (2011)
• Characters from: Frey et al. (2009) and Goffinet/Shaw (2009); Lignone et al. (2012)
• Abbreviations: G gametophyte, S sporophyte, AR archegonium, AN anteridia,
CAP capsule, CY calyptra, PS peristome
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Vascular Plants see Tracheophyte and Angiosperm Phylogeny Posters