

Bryophytes

Paper-BOTP-101

Ron Kemprai
HGC, Haflong.

Scope of Coverage in BOTP 301

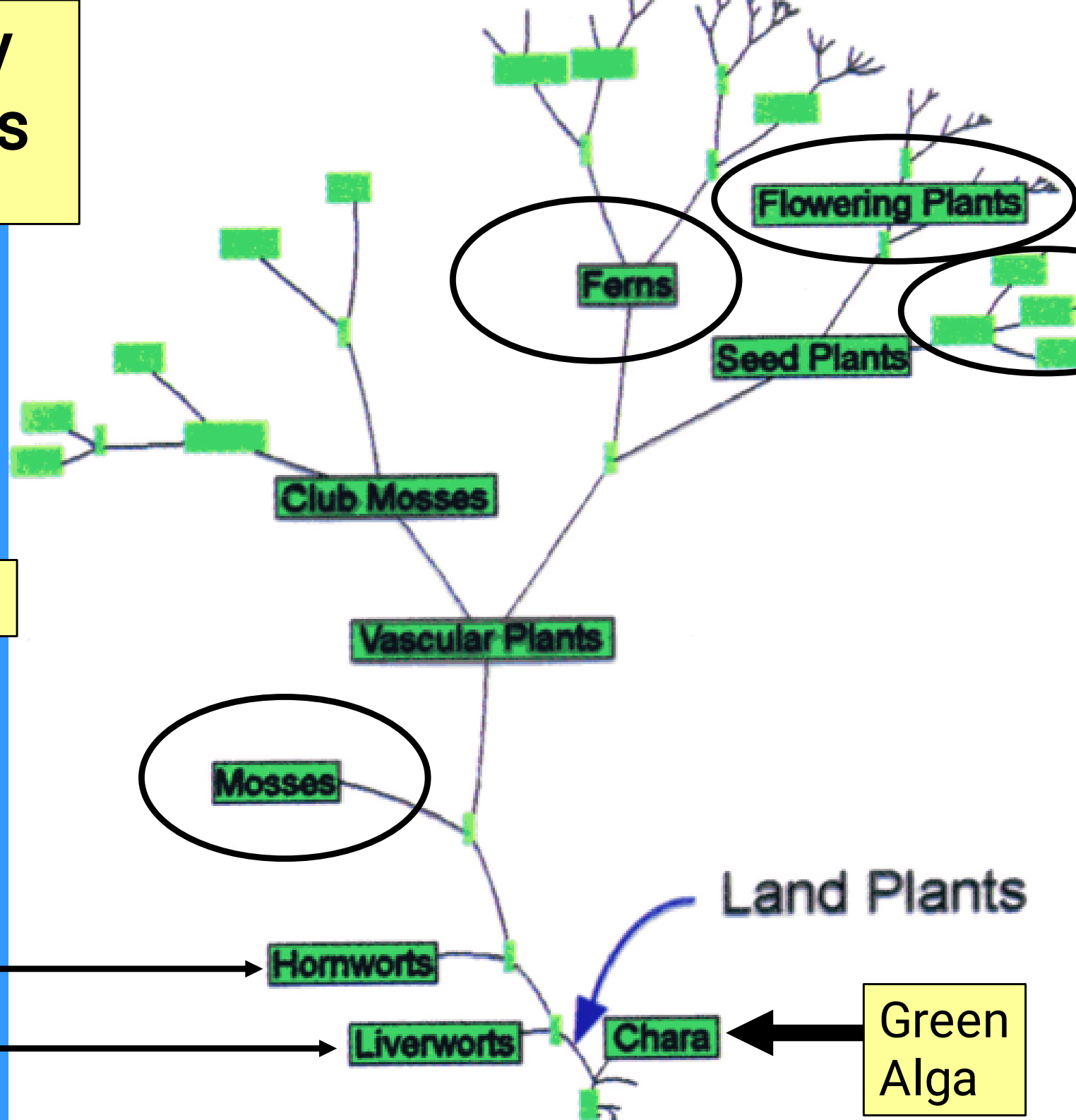
**Bryophytes are a polyphyletic group, somewhat artificial. We will look at only one group, as a representative. Other groups (hornworts, liverworts) are quite different.

**They share in common lacking well developed vascular tissues, but some vascular-less extant organisms have evolved from vascular ancestors.

**The distinguishing characteristic is the presence of only one sporangium on an unbranched sporophyte.

Evolutionary Relationships

Other Bryophytes



Mosses

Hornworts

Liverworts

Chara

Land Plants

Green Alga

Club Mosses

Vascular Plants

Ferns

Seed Plants

Flowering Plants

Bryophytes vs. Algae

Characteristic	Algae	Bryophytes
habitat	mostly aquatic or marine	mostly terrestrial
food conduction	specialized cells generally absent; a few have sieve-like cells (browns)	mostly conduction through relatively unspecialized cells
water conduction	specialized cells absent	simple cells may be present
anchorage	specialized region generally absent (but recall <i>Fucus</i> morphology)	rhizoids for anchorage and nutrient absorption often present
morphology	generally unicellular or filamentous; a few with parenchymatous or coenocytic morphology	generally parenchymatous
life history	alternation of generations in some forms—sporophytes and gametophytes independent	alternation of generations in all forms—sporophyte dependent on gametophyte at least for a period
gametangia	single cells or groups of single cells not accompanied by a jacket of sterile cells	complex reproductive structures

Bryophytes vs. Other Plants

Characteristic	Bryophytes	Other plants
Sporophyte dominance	no	yes
Sporophyte dependence	"yes"	"no"
Vascular tissue	absent, simple	complex
Sporangia/sporophyte	1	many
Lignin (support compound)	"no" ("proto-lignin")	yes
Size	small	may be large
True roots, leaves	no	yes (most groups)
Water, mineral absorption	general	mostly through roots
Protective layers (cuticle)	poorly developed	exquisitely developed
Sporophyte	annual, ephemeral, unbranched	often perennial, many branches
Gametophyte	free-living	free-living ("all" seedless plants) —OR— enclosed in sporophyte (female of all seed plants)

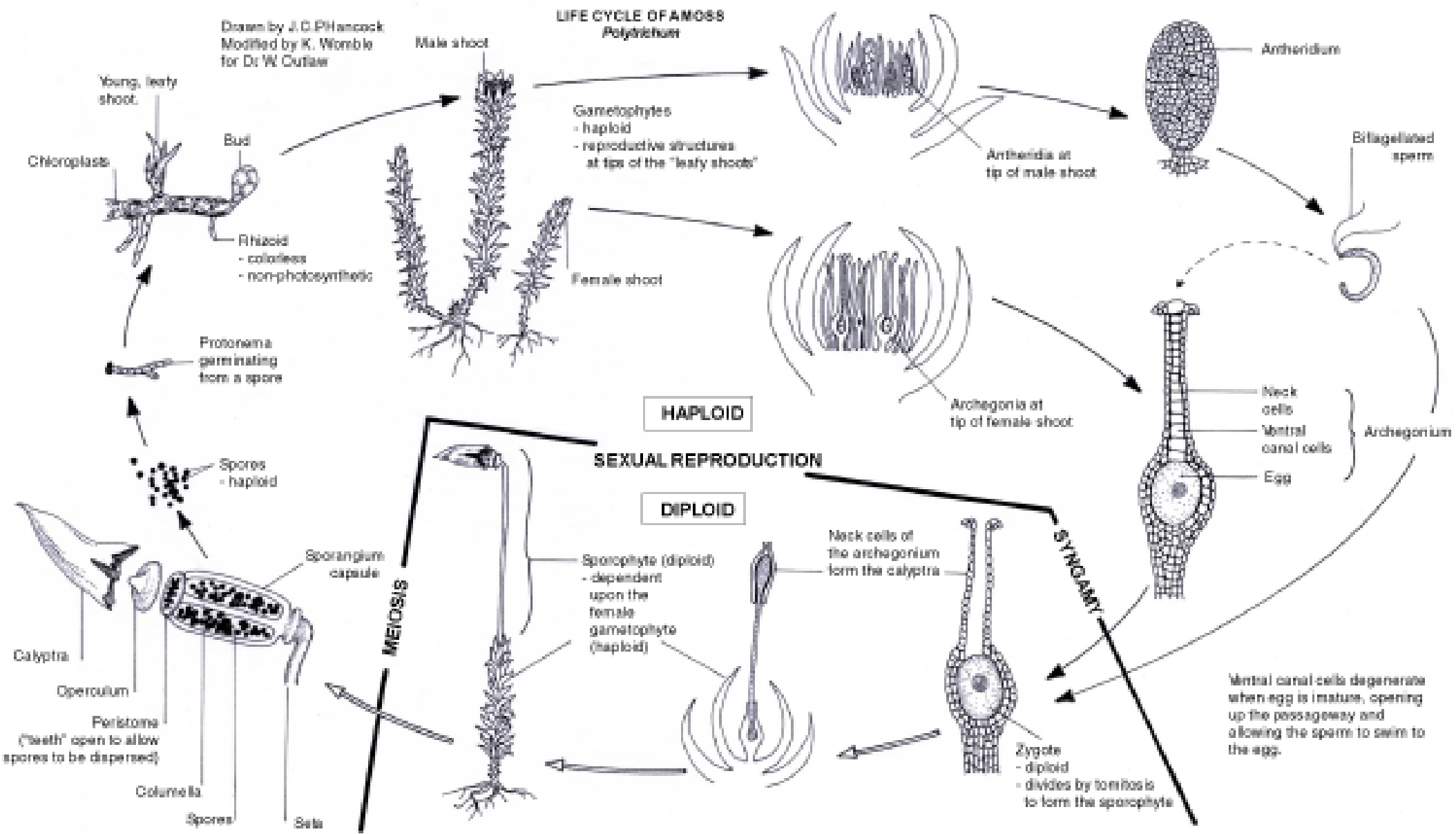
Moss Gametophyte



Moss Sporophyte



Moss Life Cycle



End