

Plantae

I. Introduction

A. Taxonomy

Domain: Eukarya

Kingdom: Plantae

B. General characteristics

Multicellular

Autotrophic / Photosynthetic

Cellulose cell wall

Reproduction – alternation of generations

C. Life cycle

Alternation of generations

Haploid = gametophyte, which produces gametes via mitosis

Diploid = sporophyte, which produces spores via meiosis

Meiosis = cell division from $2n$ to n

Mitosis = cell division either from $2n$ to $2n$, OR from n to n

Fertilization = combine gametes: $n + n = 2n$

Homospory vs. heterospory

II. Major Groups of Plants

A. Characterized by 4 criteria in branching manner

Vascular vs. non-vascular

Seed production or lack thereof

Types of seeds produced

Development & morphology

B. Non-tracheophytes (nonvascular plants)

General characteristics

No vascular tissue

Gametophyte (haploid) generation dominant

Requires water for reproduction

Examples

Liverworts

Hornworts

Mosses

Moss reproductive cycle

C. Tracheophytes

General characteristics

Vascular tissue: Xylem and Phloem

Specialized tissues: Leaves Roots Stems

Cuticles

Stomata

Sporophyte (diploid) generation dominant

Divisions based on seed-bearing vs. non-seed bearing

(Seed vs. spore)

D. Seedless plants

BIO 102 General Biology
Lecture Outline

General characteristics

Have vascular tissue but lack seeds

Examples

Ferns

Whisk ferns

Club mosses

Horsetails

E. Seed-bearing plants

General characteristics

Have vascular tissue and seeds

Divisions based on whether seeds are “covered” or not

F. Gymnosperms

General characteristics

Vascular plants with “naked” seeds = i.e., no fruit

Examples

Conifers

Gingkos

Cycads

Gnetophytes

Gymnosperm life cycle

G. Angiosperms

General characteristics

Vascular plants with “covered” seeds = i.e., seeds within fruits

Fruits are derived from flowers

Angiosperm = flowering plant

Divisions are based on development and plant morphology (i.e., structures)

Angiosperm life cycle

H. Monocots

General characteristics

Seed has one cotyledon

Flower parts come in multiples of 3

Leaves have parallel veins

Vascular bundles in stem are evenly distributed

All herbaceous

Examples

Grasses

Corn

Irises

I. Dicots

General characteristics

Seed has two cotyledons

Flower parts come in multiples of 4 or 5

Leaves have branching veins

Vascular bundles in stem are arranged in a ring

May be herbaceous or woody

Examples

Fruit trees

Roses

Daisies

Beans