

BIO 426 Plant Anatomy – Second exam topics

Stems (Ch 11: pp 356-390)

General functions

Vegetative shoot apex

similar/different from root apex

General structure

Sources for leaves and branches

Early vascular plants like ferns

Seed plants

anticlinal vs. periclinal divisions

zones (What does each zone make?)

conifers

flowering plants

Tunica-corpus concept

Primary tissue arrangement (structure, locations, functions)

epidermis

cortex

vascular tissue

pith

Vascular bundle patterns

stele types

leaf phyllotaxy

vascular system maps

open vs. closed

Fibonacci series (1/3, 2/5, 3/8,...)

Vascular tissue development

procambium

proto, metaxylem

proto, metaphloem

Secondary Growth (Ch 14: pp 480-490)

Woody vs. herbaceous plants, primary vs. secondary tissues

Occurrence (gymnosperms, dicots)

monocots? palms?

Vascular cambium

General functions and need for

Origin and development

Cell production

types of initials

fusiform initial activity, divisions

storied vs. non-storied

ray initials

Cambial activity (seasonal)

links with leaf production

Secondary xylem (Ch 15: pp 516-536)

General functions and evolution

Large-scale appearance

rings

sapwood, heartwood

How created?

Details for conifers

cell types and pitting

resin ducts

axial vs. radial cells

Details for dicots

cell types

axial vs. radial systems

fibers...vascular tracheids

number and size of pits

vessel and parenchyma cell arrangements

Secondary phloem

General functions and characteristics

Seasonal changes in cell types and growth rings

General structure

axial vs. radial systems

details for conifers (cell types)

details for dicots (cell types)

dilatation

Periderm and bark (Ch 16: pp 553-571)

General functions

Need for epidermis replacement

Cell types

Phellogen formation (where?)

Why new periderms?

Cutting-off of tissues

Lenticels

functions

structure & development

Periderm development and bark structure

Why such variation in appearance?

Fates of primary tissues