

Ferns and Gymnosperms

I. FOSSIL LAND PLANTS

A. Ferns

- i. Seed Ferns (convergent evolution)
- ii. Note: Similarity of compound leaves to living taxa; siphonosteles

B. Gymnosperms

- i. Living Species: *Ginkgo* and *Metasequoia*
 - ii. Branches and leaves
-

II. FERNS

A. Eusporangiate Ferns

- i. *Ophioglossum* (Text p. 391-392) Single simple frond with fruiting spike
 - a. Herbarium Specimen
 - b. Prepared slide of fruiting spike
- ii. *Botrychium* (Text p. 389, 391-392) Single compound frond with cluster eusporangia
 - a. Herbarium Specimen (Note: Only living fern with vascular cambium)

B. Leptosporangiate Ferns

- i. Homosporous Fern Diversity
 - a. Five-finger fern (CA Native)
 - b. Sword fern, *Polystichum munitum* (CA Native)
 - c. *Polypodium* (Also view prepared slides of sori and rhizomes)
 - d. *Anemia* (Note separate fertile portion of leaf)
 - f. *Blechnum* (Note completely separate fertile leaves)
 - g. *Pteris* (Compound fronds)
 - h. Giant Chain fern (How many time compound are the fronds?)
 - i. Climbing fern (Indeterminately growing leaves)
 - ii. Heterosporous Fern Diversity
 - a. *Azolla* (Aquatic, remember it has cyanobacterial symbionts)
 - b. *Marsilea* (Aquatic, looks like clover)
 - c. *Salvinia* (Aquatic)
-

III. GYMNOSPERMS (Text Chapter 18)

A. Ginkgos (Ginkgophyta): Lab Manual p.62; Text p. 428-431

- i. *Ginkgo* fresh material (female branches with seeds and male branches with cones)
 - a. Prepared slides: Microstrobili, ovuliferous structures

B. Conifers (Coniferophyta): Lab Manual p. 59-61; Text p. 414-427

- i. *Taxodium*
- ii. *Sequoiadendron* (Giant Sequoia)
- iii. *Chameocyparis*

B. (Conifers continued)

iv. *Pinus*

a. Know life cycle

b. Prepared slides: Microstrobilus, Megastrobilus, Ovule, Embryo

v. *Pseudotsuga* (Douglas-fir)

vi. *Juniper* (scale-like leaves)

vii. *Podocarpus*

C. Gnetophytes (Gnetophyta): Lab Manual p. 62-63; Text p. 431-432

i. *Ephedra* (Photosynthetic stems with male cones)

ii. *Welwitschia* (Indeterminate growing leaves)

iii. *Gnetum* (Herbarium specimen)

D. Cycads (Cycadophyta): Lab Manual p. 61; Text p. 427-428

i. Female cone scales with large ovules

ii. *Cycus* (Compound leaves and prepared slides of microsporophylls and ovules)

iii. *Zamia* (Compound leaves and prepared slides of microsporophylls and ovules)