

**Prepared Slides to Be Examined in the Laboratory:**

**Domain Eukarya**

**Kingdom Plantae**

**Phylum Lycophyta (Common name: Club Mosses or lycophytes)**

*Plants with lycophylls = microphylls*

1. *Lycopodium* (Genus or scientific name)  
Longitudinal section of a strobilus
  - Homosporous strobilus
  - Sporophylls carrying sporangia in their axils
2. *Selaginella* (Genus or scientific name)  
Longitudinal section of a strobilus
  - Heterosporous strobilus
  - Microsporophylls carrying microsporangia containing microspores (produced by meiosis from microspore mother cells)
  - Megasporophylls carrying megasporangia containing megaspores (produced by meiosis from megaspore mother cells)

**Domain Eukarya**

**Kingdom Plantae**

**Phylum Pteridophyta (Common name: Ferns and Their Allies)**

*Plants with euphylls = megaphylls*

3. Fern leaflet indusium (Longitudinal section)  
Examine the following structures:
  - Pinna or leaflet
  - True indusium
  - Sporangia
  - Sorus = cluster of sporangia
4. Fern young sporophyte (Whole mount)  
Examine the following structures:
  - Fern heart-shaped gametophyte (Also known as valentine plant or prothallium); notice the rhizoids, the thallus and the location of archegonia and antherida. If the locations are not clear, could you predict where the antheridia and/or archegonia were?
  - Fern young sporophyte; notice the root and the leaf.

**Domain Eukarya**

**Kingdom Plantae**

**“The gymnosperms = naked seeds”**

**Phylum Coniferophyta (Common name: Mosses)**

***Pinus* (Genus or scientific name)**

*Plants with euphylls = megaphylls*

5. Pine male cone (Longitudinal section)  
Examine the following structures:
  - Microsporophylls
  - Two microsporangia per microsporophyll
6. Pine female cone (Longitudinal section)  
Examine the following structures:
  - Scale
  - Bract
  - Two ovules per scale:
    - Integument
    - Megasporangium
    - Megaspore mother cell = megasporocyte
    - Micropyle
7. Pine ovule before fertilization (Longitudinal section)  
Examine the following structures
  - Egg cell inside an archegonium
  - Megagametophyte
  - Nucellus = megasporangium
  - Integument

**Fresh and Preserved Specimens; Herbarium Sheets:**

1. Preserved specimen of *Lycopodium*  
Note the yellow strobilus and its position.
2. Herbarium sheet (and preserved specimen) of *Selaginella*  
Note that the plant carries strobili at the tips of its branches.
3. Resurrection fern (= *Selaginella lepidophylla*)  
Examine the dried up plant (dehydrated) and the plant in its rehydrated form. It takes around three hours to go from one form to another.
4. Fern sporophyte
  - Check the fronds.
  - Look for fiddle heads!
5. Fern underground stem (Rhizome)
6. Fern fiddle heads  
Fern leaves come out of the rhizome as fiddle heads. Later, they unfold and become mature leaves (fronds). Note that the fronds are euphylls and also sporophylls because they carry sporangia.

7. Fern fertile frond  
Note the sori, each protected by a true indusium.  
Each sorus is a cluster of sporangia. Prepare a slide of a sporangium and compare it to an already prepared slide.
8. *Adiantum* (Genus or scientific name; Common name: Maidenhair fern)  
Note the false indusia at the margin of the pinna.
9. *Equisetum* (Genus or scientific name; Common name = Horsetails or Scouring rushes)
  - Phylum Pterophyta
  - They have true roots, stems (both rhizomes and erect aerial stems), and small leaves (reduced euphylls).
  - The aerial stems are hollow and impregnated with silica.
  - Small leaves are fused in whorls at each node.
  - The green stem is the main organ of photosynthesis.
  - Each reproductive branch bears a terminal cone-like strobilus that bears 5-10 sporangia.
10. Examine pine male and female cones.
11. Dissect a pine seed. Identify all the different parts: hard seed coat, soft seed coat, and embryo. Relate those parts to the different tissues of the ovule.