

Wood Patterns and Wood Grain

Before leaving your observations of plant structures you might be interested in looking at some features of wood and the cellular origin of these patterns.

1. Superficial Features of Wood

Examine a wood block provided that has been cut to reveal **transverse, radial, and tangential surfaces**. Radial and tangential sections are **longitudinal sections**, that is, sections cut parallel to the long axis of the stem. These two sections differ from one another with regard to the orientation of rays. Radial sections are cut more or less parallel to the rays; tangential sections are cut at right angles to the rays. Find the **rays**, which can be seen with the unaided eye, and identify the three types of sections in the wood block.

Identify the annual rings in transverse and radial sections. Such features add variety to the appearance of wood in furniture. The difference in growth rate in spring and summer forms the characteristic rings of wood. Some tropical woods lack distinctive growth rings. Why might this be?

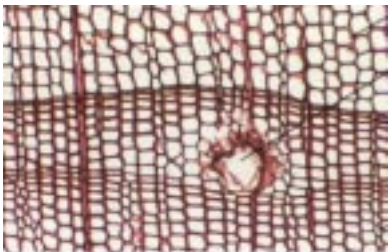
Examine blocks of a conifer wood, such as pine or Douglas fir, and note the absence of vessels in the wood. (Why?) Identify growth rings and early and late wood within each of the rings. The porelike structures in the late wood are **resin ducts**. The rays in the conifer block are often too narrow to be seen.

Examine the wood furniture and woodwork in the laboratory and identify the orientation of the rays and the growth rings. Note that much furniture makes use of veneers - wood strips that have been "peeled" rather than sectioned, so that wood patterns are repeated many times.

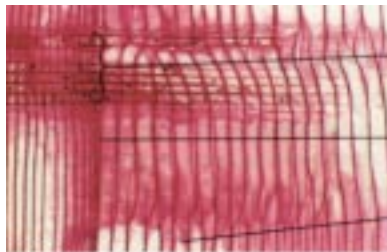
2. Microscope Examination of Wood Sections

a. *Taxodium* wood (xrt)

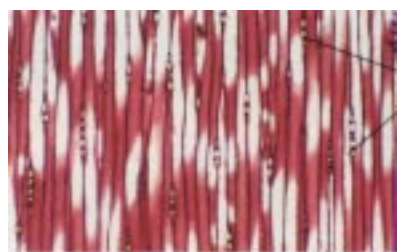
Obtain a prepared slide of *Taxodium* wood containing transverse, radial, and tangential sections (xrt). Examine the slide with low power and identify all three sections. Compare these with similar surfaces of the wood blocks available. *Taxodium* is a conifer. Its wood contains only tracheids, no vessels. Observe the scattered resin ducts, prominent in the transverse section. The wood of Pine, *Pinus* sp., is similar to that of *Taxodium*.



Pine wood, Cross Section



Pine wood, radial section



Pine wood, tangential section

b. Angiosperm wood (xrt)

Now observe an Angiosperm "xrt" section such as *Quercus*, *Acer* or *Tilia* and compare the angiosperm wood, with its many vessels and fibers with the conifer wood. Angiosperms do not have resin canals.

3. Examination of Thin Wood Sections

Examine the thin wood sections in 35mm slide format using the dissecting microscopes. How do different wood sections and types of wood compare?