

Magnetic Resonance Imaging (MRI) of Oak Trees Infected With *Phytophthora ramorum* to Determine Potential Avenues of Infection in Bark

Edwin R. Florance, Lewis & Clark College, Biology Department, 0615 SW Palatine Hill Rd., Portland, OR. 97219, 503-768-7515; florance@lclark.edu

Non-destructive magnetic resonance imaging (MRI) revealed pathological anatomical features of coast live oak trees (*Quercus agrifolia*) naturally infected with *Phytophthora ramorum* (PR). Fresh excised whole slices showing typical macroscopic cankers and bleeding were examined. Infected areas (i.e. cankers) were compared to presumed healthy sections. Various infected tissues were revealed and the depth of infection into the xylem could be estimated. Discontinuous distribution of water in the outer layer of sapwood was observed and high water concentrations appear in the cankers. MRI also revealed channels in the bark (Periderm) with high water concentration. Microscopic examination revealed the channels to be rays continuous with the rays extending into the xylem. The rays function in the radial conduction of water, and it is suggested that they serve as avenues of infection for PR.