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<http://www.apsnet.org/meetings/abstracts.asp>

Goss, E.M. and Grunwald, N.J. 2008. Ancient isolation and independent evolution of the three clonal lineages of the sudden oak death pathogen *Phytophthora ramorum*. *Phytopathology* 98:S61.

Sudden oak death, an emerging disease caused by the exotic pathogen *P. ramorum*, is responsible for extensive mortality of oaks and tanoaks in Northern California as well as economic losses to U.S. and European nurseries due to its infection of common ornamental plants. In its introduced range, *P. ramorum* occurs as three distinct clonal lineages. The two common lineages are opposite mating types, but oospores are not readily produced in culture and they have not been observed in the field. We inferred the evolutionary history of *P. ramorum* from DNA sequence variation at five nuclear loci using coalescent-based approaches. We found that the lineages have been diverged for at least 11% of their history, an evolutionarily significant amount of time roughly estimated to be on the order of 165,000 to 500,000 years. There was also strong evidence for historical recombination between the lineages, indicating that the ancestors of the *P. ramorum* lineages were members of a sexually reproducing population. Due to this recombination, the ages of the lineages varied within and between loci, but analyses suggested that the European lineage may be older than the North American lineages. The divergence of the three clonal lineages of *P. ramorum* supports a scenario in which the three lineages originated from different geographic locations that were sufficiently isolated from each other to allow independent evolution prior to introduction to North America and Europe. It is thus likely that the emergence of *P. ramorum* in North America and Europe was the result of three independent migration events.