Single-Strand Conformation Polymorphism Analysis of Ribosomal DNA for Detection of *Phytophthora ramorum* Directly from Plant Tissues

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At the first science symposium of sudden oak death, we reported use of a single strand conformation polymorphism (SSCP) analysis for rapid identification of *Phytophthora ramorum* in culture (Kong and Hong 2002). We have since assessed and improved the fingerprinting technique for detecting this pathogen directly from plant tissues. The improved SSCP protocol uses a single run PCR reaction with the same primer pair (ITS6/7) and consistently detects *P. ramorum* at 10 fg per reaction or above. It provides reliable diagnoses of sudden oak death no matter whether it is a single infection or dual infection (a second *Phytophthora* species involved). This technique also can provide accurate diagnoses of diseases caused by 12 other species of *Phytophthora* without additional work. These species (*P. cactorum, P. cambivora, P. cinnamomi, P. cryptogea, P. citricola, P. citrophthora, P. gonapodyides, P. lateralis, P. megasperma, P. nemorosa, P. nicotianae,* and *P. pseudosyringae*) are common in ornamental plant and forest tree nurseries as well as in natural forested environments. The through-put capacity of this technique can be greatly improved by use of fluorescence-based technologies such as those common to most commercially available DNA sequencers. This study provides an alternative protocol with increased detection scope and accuracy at a reduced cost for future surveys of nurseries, parks, and forests for *Phytophthora* spp.