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My project examines speciation within the *Phytophthora* genus, namely between the two proposed species *P. fragariae* and *P. rubi*, with the aim of verifying whether or not the two are reproductively isolated and do, indeed constitute distinct species. Despite their identical ITS regions and similar morphology, *P. fragariae* and *P. rubi* have genetic variations at other loci, and possess distinct host specificity, suggesting differentiation. Maximum Likelihood, Bayesian, and Coalescent analysis techniques are enabling phylogenetic inferences regarding the true evolutionary history of these two pathogens.