The soil-borne water mold *Phytophthora cinnamomi* is one of the most widely distributed nursery crop diseases. In fact, it has been reported in every part of the world and affects several hundreds of plant species. In *Castanea* species, this pathogen attacks the root system. Wet environments are preferred by this pathogen, as it helps it get taken up by the root system where it follows the xylem vessels to the heartwood. This causes rapid mortality in most varieties of chestnut. Symptoms of Phytophthora root rot (PRR) include wilting, chlorotic tissue, and abrasions on the roots. Efforts to restore the American chestnut (*Castanea dentata)* to American forests have suffered from low resolution QTL data which becomes an issue as the range of PRR increases due to climate change. American chestnut has low genetic resistance to PRR while research into European chestnut (*Castanea mollissima*) indicates some resistance. This study will screen for a range of heritable traits which can be incorporated into interspecific crosses, adding high quality data to the germplasm collection. The goal of this project is to expand the genetic base of PRR resistant chestnut germplasm. Screening a large and unstudied genetic base of resistance in the *C. mollissima* germplasm will broaden the genetic resources for horticulturalists and identify the trait loci of the resistance. Six families were made using controlled crosses, yielding 595 germinated plants. The populations will be genotyped as bi-parental mapping populations. These trees will then be inoculated using a V8 broth medium with PRR isolates and observed for 100 days for symptoms of decline and mortality. This will provide a quantitative measure of survival across the genomes of the 6 populations.