Please provide a cover letter outlining your research. The cover letter should briefly discuss the context and importance of the submitted work and why it is appropriate for the journal.

**Cover letter**

Although optional, the cover letter is an excellent opportunity to briefly discuss the context and importance of the submitted work and why it is appropriate for the journal. Please avoid repeating information that is already present in the abstract and introduction. The cover letter is not shared with the referees, and should be used to provide confidential information, such as conflicts of interest, and to declare any related work that is in press or submitted elsewhere.

Authors should provide a cover letter that includes the affiliation and contact information for the corresponding author. Authors should briefly discuss the importance of the work and explain why it is considered appropriate for the diverse readership of Nature Plants. Any prior discussions with a Nature Plants editor about the work described in the manuscript should also be mentioned.

Generalist talk to a scientist non-plant

Research into the genetic basis of the plant immune response has given us a clear picture of how interactions between plant hosts and specialist pathogens can cause simple disease outcomes. For example, when a specialist pathogen attacks a host plant, disease or defense can be determined by the state at a single plant locus and a single corresponding pathogen locus. Thus, variation within a small number of genes cause large, binary changes to the disease phenotype. Many of these genes are well characterized through molecular and functional studies in plant pathology.

We understand less clearly how complex genetics in the host and pathogen control continuously variable disease phenotypes. These quantitative interactions are common between generalist pathogens and their varied plant targets. These generalist pathogen species may attack multiple species and genera of plants, and even individual genotypes of the pathogen can generalize. These variable phenotypes can respond to small effects of genetic variation at many loci in both the host and the pathogen. It remains to be seen which genes in host and pathogen control this variation. In this study, we conducted a genomic study to identify thousands of loci with small effects contributing to lesion size in quantitative plant-pathogen interactions.

Plants have undergone artificial selection by humans for thousands of years, leading to their domestication as cultivated crop species. Domestication often drastically reduces the genetic variation of a plant species, as only a small subset of the wild ancestors are cultivated and bred. This can in turn reduce genetic variation available to control plant defenses against pathogens, and may increase the vulnerability of the domesticated plants to disease. Even so, the effect of domestication on the genetics of pathogen resistance is largely unstudied. In this study, we examine how domesticated tomato immunity to a collection of pathogen genotypes differs from immunity in tomato’s closest wild relative. We aim to understand how evolution under domestication has altered interactions genome-wide between pathogen and host.

To delve into pathogen virulence and the effects of plant domestication, we focused on 100 genetically distinct individuals of the common fungal pathogen, *Botrytis cinerea*. *Botrytis* is an extreme generalist, with the ability to form lesions and cause disease on nearly all flowering plant species (eudicots). Botrytis is a major pathogen threat to many domesticated crop plants, including wine grapes and tomato. To examine the effect of domestication on tomato susceptibility to *Botrytis*, we compared six geographically distinct wild tomato genotypes to six domesticated tomato genotypes with varying fruit traits.

* Study system
  + Tomato
    - well understood domestication syndrome?
    - Other pathogens?
    - Variation available for domesticated and closest wild relative
      * Closest to testing domestication
  + Learn about plant domestication generally: single pathogen
  + Availability of pathogen genetic variation to study gene 🡪 phenotype
* Findings of this study
  + Quantitative Phenotype dependent on plant genetics, pathogen genetics