

Researchers identify new enzyme that infects plants—paving the way for potential disease prevention

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By discovering previously unexplored ways in which crop pathogens break through plant cell walls, the scientists have opened up opportunities for developing effective disease control technologies.

The new research, published in *Science*, describes a family of enzymes found in a microorganism called *Phytophthora infestans*. The enzymes enable crop pathogens to degrade pectin—a key component of [plant cell walls](#)—thereby enabling the pathogens to break through the plant's defences to infect the plant.

Led by biologists and chemists from the University of York, the international team of researchers discovered the new class of enzymes that attack pectin called LPMOs. The team also showed that disabling the gene that encodes this [enzyme](#) rendered the pathogen incapable of infecting the host.

P. infestans is known to cause potato late blight, a devastating plant disease that led to widespread starvation in Europe and more than a million deaths in Ireland in the 1840s, in what became known as 'The Great Famine'. Plant infection continues to cause billions of dollars' worth of damage to global crop production each year and continues to threaten world food security.

The identification of this new gene could open up new ways of protecting [crops](#) from this important group of [pathogens](#).

Lead author on the report, Dr. Federico Sabbadin, from the Biology Department's Centre for Novel Agricultural Products (CNAP), at the University of York said: "These new enzymes appear to be important in all plant pathogenic oomycetes, and this discovery opens the way for potentially powerful strategies in crop protection".

Professor Simon McQueen-Mason, also from CNAP, remarked that the work was "the result of interdisciplinary collaborations between biologists and chemists at York along with plant pathologists at the James Hutton Institute, and genomicists at CNRS, with invaluable molecular insights from Professor Neil Bruce (CNAP) and Professors

Gideon Davies and Paul Walton in the Department of Chemistry at York."

More information: Secreted pectin monooxygenases drive plant infection by pathogenic oomycetes, *Science* (2021). [DOI: 10.1126/science.abj1342](https://doi.org/10.1126/science.abj1342)

Provided by University of York

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