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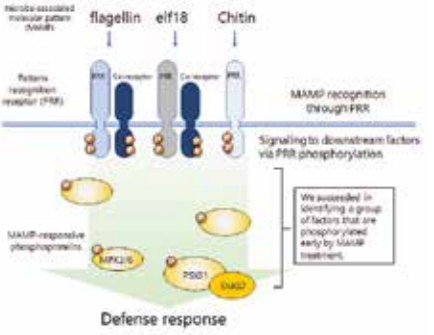
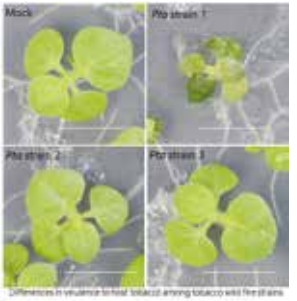
Elucidation of the regulatory mechanism of plant immune responses by focusing on MAMP-responsive phosphoproteins

Plants have a defense mechanism to protect themselves from infection by various pathogens. An understanding of the defense mechanisms of plants is essential for efficient plant breeding. Pattern recognition receptors (PRRs) on the cell membrane recognize the basic structure (Microbe-associated molecular pattern: MAMP) of the microorganism and exert resistance. Many PRRs contain protein kinase domains and, after MAMP recognition, transmit signals downstream via protein phosphorylation. In other words, if we can elucidate the function of proteins whose phosphorylation changes with MAMP recognition, it will help us to understand the molecular mechanism of disease resistance. We have identified several MAMP-responsive phosphoproteins and are investigating the role of their resistance mechanisms.



Elucidation of the virulence regulatory mechanism of phytopathogenic bacteria



Differences in virulence to host tobacco among tobacco wild fire strains

Plant pathogens have evolved various molecular mechanisms to establish infection in the host plant. On the other hand, even plant pathogenic bacteria that can establish infections in plants have different pathogenicity to host plant. The clarification of the molecular mechanisms involved in the exertion of pathogenicity is expected to lead to the development of more efficient drugs and the establishment of infection prevention methods. Currently, we are clarifying the differences in pathogenicity between multiple strains and searching for gene regions important for pathogenicity through comparative genomic analysis.