Setsunan University

Agricultural Science and Technology

Research on infection mechanisms of plant pathogens

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Innovation of plant protection strategies, evaluation of disease resistant plants

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Research Outline

Background

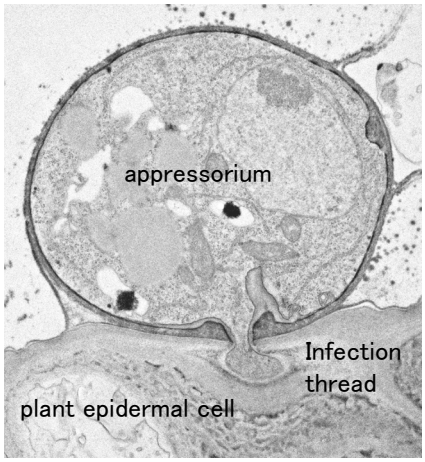
- Plants, just like people, get sick from infections. Viruses, bacteria and filamentous fungi are the main pathogens.
- Among them, filamentous fungi (mold) account for about 80%of plant diseases and cause significant damage to agricultural production.
- Elucidating the infection mechanism of filamentous fungi will lead to the development of pesticides and disease-resistant plants with low environmental impact.

Objective

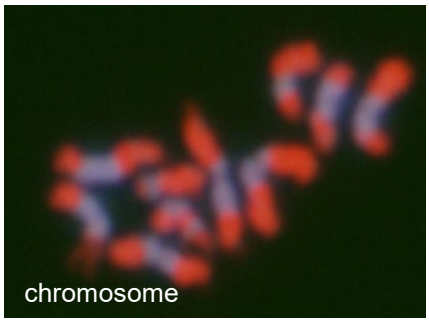
- We will apply thi sknowledge tot he development of new plant protection technologies by elucidating the molecular mechanisms of pathogen infection.

Main Results

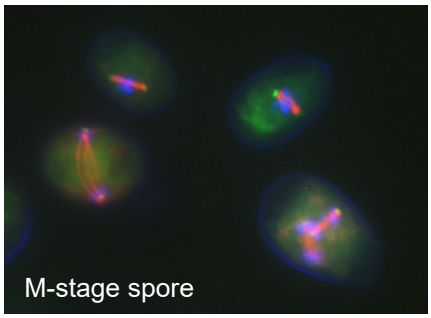
- It has been shown that rice blast, the most important disease of rice, can be controlled by suppressing melanin pigment synthesis by pathogenic bacteria.
- We have identified the mechanism by which the anthracnose fungus recognizes and infects plant surfaces.
- The genome structure of an anthracnose fungus has been elucidated, laying the foundation for molecular analysis of pathogenicity.



Research on the mechanism of infection by plant pathogen



Genome research on the anthracnose fungus



Molecular biology of the anthracnose fungus

Prospects for Collaboration

[Cooperation with chemical manufacturers]
Elucidation of the mechanism of infection of phytopathogenic fungi allows for collaborative research to elucidate the mechanism of action of pesticides.

[Cooperation with seed companies]
Understanding the infection mechanism of plant pathogenic fungi will enable us to evaluate the disease resistance of plant varieties.

Appeal point

By clarifying the mechanism of plant pathogen infection at the molecular level, we can use this information to develop new plant protection technologies.