

Research topics

Background and Purpose

- Microorganisms can adapt to environmental changes through stress signal perception, transduction, and gene expression.
- My goal is to elucidate the molecular mechanisms of stress responses in fungi, to apply them to the production of fermented foods and useful chemicals, and to address the environmental issues using microorganisms..

Main achievements

- Development of the CRISPR/Cas9 system as a powerful genome editing tool in methylotrophic yeast *Ogataea polymorpha*.
- Investigation of the molecular mechanisms in response to saccharides in *Aspergillus* fungi.
- Analysis of the rice proteins in Kyoto original sake brewing rice cultivars and development of original sake.

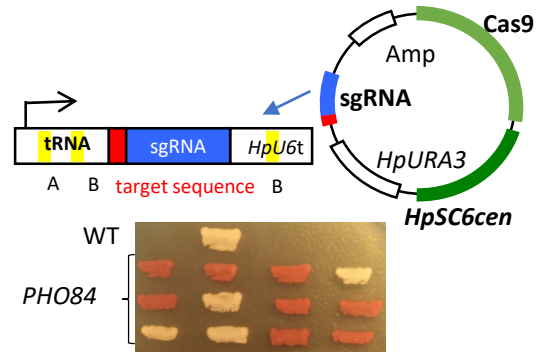
Prospects for collaboration

【Industry】

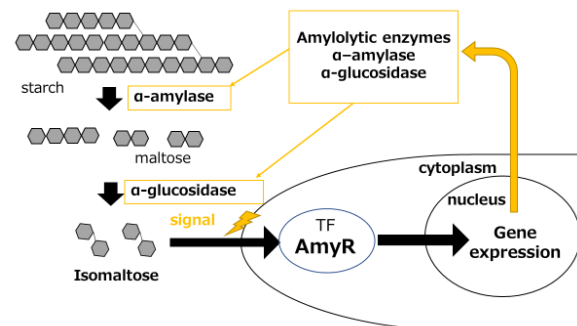
- Elucidation of the mechanisms of stress response in microorganisms.
- Breeding of industrial strains carrying stress resistance and higher productivity.

【Agriculture】

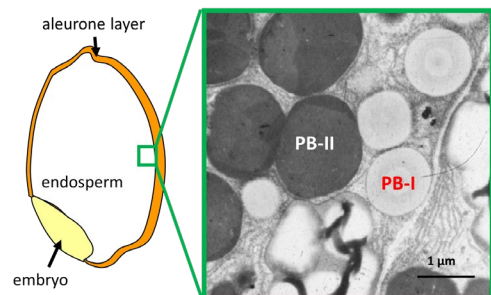
- Molecular characterization of fermentation mechanisms for traditional fermented food.
- Development of new fermented foods and beverages.



Development of CRISPR/Cas9 system as a powerful genome editing tool in *O. polymorpha*



The signal pathway of isomaltose response in *Aspergillus nidulans*



TEM image of protein bodies in rice seed



Original sake



Research feature

My research aims to understand the molecular mechanisms of stress response in yeasts and fungi.

My area of expertise is genetics, biochemistry, and molecular biology.