



**Title of Project : Environmental sensing of plants: Signal perception, processing and cellular responses**

**Term of Project : FY2010-2014**

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**【Purpose of the Research Project】**

Plants perceive various environmental stimuli such as light, temperature and moisture. To understand this sensing ability of plants, we need to elucidate how the plant cells, which consist of various organelles, process the environmental signals (Fig. 1). In this research project, we aim to establish a novel view on plant sensing with an emphasis on plant cells.

For this purpose, researchers specialized in various research fields such as plant physiology, protein chemistry and plant cell biology are gathered. Especially, a special team is assembled to develop new technology to investigate plant cells. In the project, those researchers work together in tight connection to establish a novel framework to understand how plants perceive environmental signals.

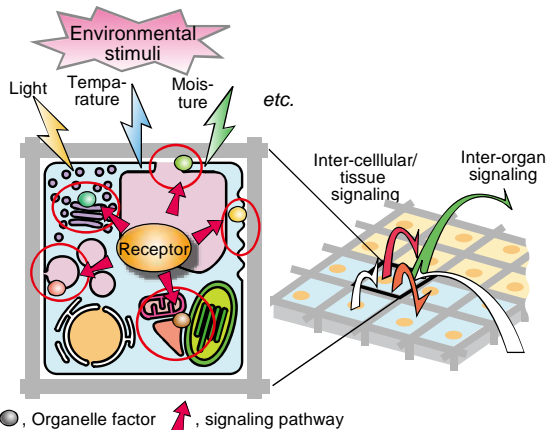


Figure 1 Cellular mechanism of plant sensing

**【Content of the Research Project】**

To establish a new framework on plant sensing, three teams, which act in tight connection, are assembled (Fig. 2).

In the team A01, researchers specialized in various stimuli such as light, temperature and moisture are gathered. They will explore their own subject in collaboration with other teams.

In the team A02, specialists in protein structure and plant cell biology are gathered. They will investigate how those structures function in plant sensing in tight connection

with others.

In the team A03, specialists in advanced techniques such as gene expression analysis, mass spectrometry and laser dissection are gathered. They will develop new techniques to study plant cells in collaboration with other teams.

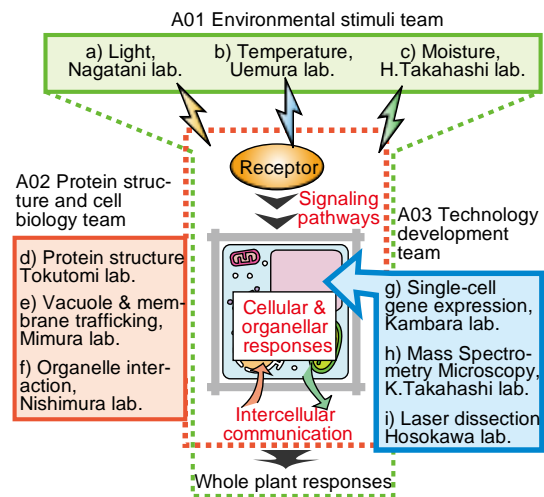


Figure 2 Team organization

**【Expected Research Achievements】**

Plants are essential for our life. This project aims to understand the mechanism by which plants survive in harsh environments. To make better use of plants in future, such knowledge is invaluable.

The new view emerged from the project with the aid of new technology will be extended to understand other organisms. In the applied side, it will benefit other fields such as agricultural and environmental sciences.

**【Key Words】**

Environmental stimuli: Plant cells can perceive various environmental stimuli such as light, temperature and moisture.

Cellular sensing: Individual plant cell senses and processes environmental stimuli with the aid of intracellular structures.

**【Homepage Address】**

<http://physiol2.bot.kyoto-u.ac.jp/~Kaken/>