

## Studies of Bioorganicchemistry on Microbial and Plant Peptide Factors

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### 【Outline of survey】

Recently, genome project reveals whole DNA sequences of various organisms, and amino acid sequences of proteins and peptides in those organisms are clarified. However, there are many proteins and peptides that the functional chemical structure in vivo is unknown such as peptide factors in this research project. Because many of proteins and peptides encoded by DNA are processed and modified by other functional groups, and then they show their biological activities. This process is called posttranslational modification. Now, one of the most important field in post-genome projects is the structure determination of the bioactive protein or peptide with unknown posttranslational modification. In this research project, we will determine the peptide structures of microbial pheromone and plant hormone, and will investigate on the action mechanism of these peptide factors.

### 【Expected results】

Recent studies have shown that microorganisms induce various phenomena in high cell density. The peptide pheromone depending on bacterial cell density in this research project is developing rapidly, and this kind of pheromone is expected to control a bacterial disease and to apply bacterial effective use in the future. The studies about plant peptide hormone have attracted many plant scientists since ten years ago. In near future, many novel plant peptide hormones including results of this research will be available. These peptide hormones will contribute to increase the productivity and environmental adaptability of plants.

### 【References by the principal researcher】

M. Okada, I. Sato, Dubnau, and Y. Sakagami ( three others )

Structure of the *Bacillus subtilis* quorum-sensing peptide pheromone ComX  
*Nature Chemical Biology*, **1**, 23-24 (2005)

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Peptide Hormone in Plant  
*Ann. Rev. Plant Biol.* , **57**, 649-674 (2006)

【Term of project】 FY2006 - 2010

【Budget allocation】 21,900,000 yen

【Homepage address】

<http://www.agr.nagoya-u.ac.jp/~bioact/index.html>