

光化学系I反応中心複合体の構造と機能

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1994 Fiscal Year Final Research Report Summary

Studies on the Structure and Function of Photosystem I Reaction Center Complex.

Research Project

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05640728

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Allocation Type

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Research Field

植物生理

Research Institution

Kanazawa University

Principal Investigator

HOSHINA Satoshi Kanazawa University, Faculty of Science Research Associate, 理学部, 助手 (50019486)

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Research Abstract

Structure and function of photosystem I (PSI) complexes from spinach thylakoid membranes have been studied.

1. Photoinhibitory illumination of PSI complexes caused an inactivation of the secondary electron acceptor, A1 and the degradation of the reaction center proteins with no loss of the primary donor, P700.
2. To investigate the interaction between plastocyanin and PSI complex, chemical cross-linking technique with EDC, and immunostaining with anti-PSI-F- and antiplastocyanin antisera were used for a probe of their accessibility. The data suggest the presence of two plastocyanin binding sites on PSI-F subunit.
3. Femtosecond transient absorption spectroscopy has been used to investigate the primary energy and electron transfer processes in PSI complexes from spinach, green algae and cyanobacteria.

4. PSI reaction center (RC) complex reconstituted into phosphatidylcholine liposomes was treated with trypsin and the polypeptide fragments, thus obtained, were analyzed by amino acid sequencer. The results support the new folding model for PSI RC proteins proposed from X-ray crystallography.

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