21世紀COE講演会報告書
理学研究科　三木邦夫

講演者：Matthias Rögner 教授（ドイツ・ボッフム大学）
Lehrstuhl für Biochemie der Pflanzen, Fakultät für Biologie, Ruhr-Universität Bochum, Germany
演題：Proteomics of Membrane Proteins and Dynamics of Photosystem II: Useful Interrelation?
場所：京都大学理学研究科2号館1階第2講義室（129号室）
日時：2006年4月10日（月）17:00ー19:00
参加者：大学院学生，学生，博士研究員，教員
参加者総数： 50 名

講演内容：

Prof. Dr. M. Rögner gave a seminar at the lecture room of Faculty of Science, Kyoto University. His talk covered four major areas, (1) development for proteomics of membrane proteins; MudPIT (Multidomain Protein Identification Technology), (2) a function of the specific protein working in photosystem (PS) II in plants, (3) the primary charge separation processes in PS II in plants, and (4) hydrogen production using photo-reactive complexes isolated from microalgae.

(1) He showed a recent progress of the methodology for proteomics, especially for membrane proteins. A conventional method for proteomics applied to water-soluble proteins is not necessarily effective for membrane proteins. Therefore they innovated a new method for cleavage of proteins, i.e., trypsin and chemotrypsin treatment in an alcohol solution. He demonstrated a few examples.

(2) Psb27 is a unique lipoprotein associating with PS II. It contains three fatty acids, and is supposed to function for translocation of immature proteins from cell membranes to thylakoid membranes in chloroplasts. This might be a key protein for assembly of water splitting proteins of PS II.

(3) He also demonstrated that the charge separation processes in PS II based on several evidences of ultra-fast spectroscopy. His group found the 1.5-ps lifetime component for the primary charge separation from the peripheral Chl a, which is a recent proposal but not yet fully approved.

(4) He finally showed the possibility of hydrogen production by the specific linkage of two components isolated from cyanobacteria. Since nitrogenase is very sensitive to molecular oxygen, a special technique is required. Therefore he constructed a reaction system on the Au-assisted electrode. Even though the photo-current was not strong at the moment, it might be improved.