

Poster Presentation

MS101.P04

Conformational change of periplasmic heme-binding protein in ABC transporter

N. Nakamura^{1,2}, Y. Naoe², A. Doi², Y. Shiro^{1,2}, H. Sugimoto²

¹University of Hyogo, Department of Life Science, Hyogo, Japan, ²RIKEN SPring-8 Center, Hyogo, Japan

Iron is one of the essential elements for all living organisms. Pathogenic bacteria acquire heme from the host proteins as an iron source. Gram-negative opportunistic pathogen, *Burkholderia cenocepacia* have ATP-binding cassette (ABC) transporter BhuUV-T complex to permeate heme through inner membrane. BhuT, periplasmic binding protein (PBP), bind and deliver heme(s) to inner membrane transporter BhuUV complex. BhuUV is 2:2 complex of the transmembrane permease subunit and cytoplasmic ATP-binding subunit which couple ATP hydrolysis to solute translocation. The molecular level mechanism of heme recognition and dissociation by PBP and heme transport by transporter complex are not fully understood. Here we describe the crystal structures of the heme-free and two types of heme-bound state of BhuT. These crystals were obtained in different crystallization conditions. Crystals diffracted to high resolution at SPring-8. BhuT is composed of two globular domains linked by a long α -helix. The transport ligand heme is bound between the two domains. A detailed structural comparison of the conformation of the domain and residues involved in the heme binding will be presented.

Keywords: ABC transporter, heme, periplasmic binding protein