

Structure and Behavior of Four-helix Bundle Cavitein Systems

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Date: Tuesday, December 20, 2011

Time: 18:00 - 19:00

**Venue: S1 1F. South Seminar Room, Faculty of Pharmaceutical Sciences,
The University of Tokyo**



Cavitein Q4 is a template assembled synthetic protein designed for X-ray crystallographic analysis. It is based on a previous monomeric helical bundle cavitein (N1GG) that consists of four identical parallel helical peptides. Crystals that were grown in the presence of bromide ions were used to solve the initial phases via single-wavelength anomalous dispersion (SAD). A 1.4 Å resolution data set was then refined starting with the SAD phases to provide the crystal structure of cavitein Q4. The crystal structure revealed cavitein Q4 as an asymmetric dimer, although the cavitein appears to be largely monomeric in solution. A comparative analysis is carried out to discern any intrinsic differences between Q4 and its parent cavitein N1GG. We present herein the first X-ray crystal structure of a TASP system and relate this structure to the solution data for both Q4 and its parent N1GG.

**Organizer: GCOE Program Center for Medical System Innovation through Multidisciplinary Integration,
The University of Tokyo**

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