

## Crystallization and X-ray Analysis of a Flagellar Hook Capping Protein

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Many bacteria have flagella for chemotaxis. The bacterial flagellum is a macromolecular structure composed of the filament, hook and basal body. The flagellar hook capping protein FlgD is essential for the assembly of the hook. FlgE, the hook structural protein, is excreted to the cell exterior without polymerization in the absence of FlgD. With the hook cap FlgD, FlgE could fold properly and get incorporated into the growing end of the hook. We recently revealed the atomic structure of the core fragment of FlgE and the dynamic mechanism of the hook as a molecular universal joint [1]. For further understanding of the hook assembly, we overproduced and purified FlgD from *S.typhimurium*. Analytical ultracentrifugation and chemical cross-linking experiment showed that FlgD forms pentamer in solution, suggesting that the FlgD pentamer is the capping structure [2]. We succeeded in obtaining single crystals of FlgD by the hanging drop vapor diffusion method and these crystals diffracted to 3.6 - 4.0 Å at SPring8 BL41XU. Currently we are working on improvements of crystal quality for higher resolution structure analysis.

[1] Samatey F.A., Matsunami H., Imada K., Nagashima S., Shaikh T.R., Thomas D.R., Chen J.Z., DeRosier D.J., Kitao A., Namba K., *Nature*, 2004, **431**, 1062-1068. [2] Matsunami H., Furukawa Y., Namba K., *in preparation*.

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