	Experiment title: BAG LEBS 2011-2	Experiment number: MX-1140
Beamline: BM30A	**Date of experiment**: from: 22/07/2011 8:00 to: 23/07/2011 8:00	**Date of report**: 14/2/11
Shifts: 1.5	**Local contact(s)**: Dr. Michel PIROCCHI	*Received at ESRF:*

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Report:

L. Renault: Structural studies of actin self-assembly regulation by multi-domain proteins containing intrinsically disordered WH2 repeats

We study the regulation of actin cytoskeleton remodeling by multi-domain protein organizations with WH2 domains. WH2 domains are widespread, intrinsically disordered actin-binding peptides (25 to 50 residues) that display significant sequence variability. They are found in many proteins of different organisms as single or repeated (from 2 to 4 repeats) domains. They regulate alone or in synergy with other adjacent domains and other actin-binding proteins different key activities in actin assembly such as actin monomer sequestration, nucleation, or/and unidirectional assembly, and filament barbed end regulation or severing. We study their structure-function relationship in these multi-domain proteins.

Pathogen bacteria *Vibrio choleræ* induce cholera, a diarrheal disease. The bacterial multidomain protein VopF from Vibrio choleræ contributes to remodel actin cytoskeleton of the host cell and to the disruption of epithelial integrity and the diarrheal response. It contains an N-terminal localizing domain, a Proline-Rich domain, 3 consecutive WH2 domains which have been recently identified to nucleate pure G-actin (Tam et al., (2007) Cell Host Microbe 1, 95-107), and an unknown C-terminal domain. We isolated the C-terminal domain and showed that it displays a weak nucleating activity on its own with G-actin-ATP and forms stable dimers. We obtained two crystal forms (small needle-like and cubic crystals) of the C-terminal domain of VopF. The best diffraction we could obtain from these two forms on BM30A on july 2011 was 8 Å. The crystal structure of the new dimeric domain from a close homologous protein has been now published by two other groups (Namgoong et al. (2011) Nat Struct Mol Biol. 18, 1060-7; Yu et al. (2011) Nat Struct Mol Biol. 18, 1068-74).