Experimental Report

Proposal: **8-02-728** **Council:** 10/2014

Title: SANS studies of clathrin-mediated endocytosis

This proposal is a new proposal

Researh Area: Biology

Main proposer: **ZACCAI Nathan**

Experimental Team:

Local Contact: MARTEL Anne

Samples: Clathrin-coated vesicle (lipid-protein complex)

Instrument	Req. Days	All. Days	From	To
D22	2	2	06/07/2015	08/07/2015

Abstract:

Clathrin-mediated endocytosis is crucial for the internalization of most eukaryotic cell-surface proteins. Clathrin-coated vesicles (CCV) assemble with their cargo at the plasma membrane then transport these to the early endosome inside the cell. CCV consist of a clathrin scaffold and a lipid vesicle containing the cargo, linked by adaptor proteins that are associated with effectors of CCV assembly, stability and disassembly.

We recently determined that a single adaptor protein AP2 is sufficient to initiate and drive clathrin-coated bud formation on appropriate membranes, enriched in PtdIns(4,5)P2 (Kelly et al., Science, 2014). The resultant buds were spherical and uniform in size (approximately 400-Ångstrom radius). This technical advance has now put us in a position where we can generate clathrin-coated vesicles with known protein and lipid composition. The opportunity to study simpler and more homogeneous CCVs by SANS will allow us to determine the structural effect of factors that influence CCV formation, size and disassembly.

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SANS data is due to be collected on beamline D22 in July 2015. A more comprehensive experimental report will subsequently be uploaded.