Title:	Characterization of Vps41 Subunit of Mammalian HOPS Complex
Authors:	P.K, Arsila Ashraf (/jspui/browse?type=author&value=P.K%2C+Arsila+Ashraf)
Keywords:	Biology Eukaryotic cells Cells HOmotypic fusion and Protein Sorting HOPS Endosome Lysosomes
Issue Date:	9-Aug-2016
Publisher:	IISER-M

Abstract:	Eukaryotic cells are constantly exchanging materials within and with their environment. This involves the endocytic pathway, which forms a dynamic and complex network with continuous fusion and fission of vesicles. The key molecules like small GTPases, tethering factors, SNAREs mediate the fusion and fission. Lysosomes are terminal compartments in the cell that receive cargo to be metabolized or degraded from different organelles including late endosomes, autophagosomes or phagosomes. HOmotypic fusion and Protein Sorting (HOPS) is a multi-subunit tethering complex conserved from yeast to humans and mediates the fusion of late endosomes with lysosomes. The four subunits Vacuole Protein Sorting (VPS)11, VPS16, VPS18 and VPS33 form the core complex while VPS39 and VPS41 are the accessory subunits of HOPS complex that are involved in recruitment of HOPS complex to the lysosomal membranes. Previous study from our lab has shown that in mammals, Vps41 subunit of the HOPS interacts with the small GTPase Arl8b and thereby recruits it to the lysosomal membrane. Vps41 then recruits the Vps18 subunit of HOPS and further subunit-subunit interactions assemble the HOPS complex on the lysosome in a stepwise manner. We are currently investigating the interaction of Vps41 with Vps18 and the assembly of HOPS complex on the lysosomes. Co-immunoprecipitation studies using the domain deletion mutants of Vps41suggests that RING-H2 domain of Vps41 is critical for its interaction with Vps18 and further assembly of HOPS complex. Interestingly, point mutations replacing the cysteine and histidine residues within the Vps41RING-H2 domain abrogate the interaction of Vps41 with Vps18 supported by co-immunoprecipitation, yeast two-hybrid and subcellular localization studies. In a nutshell, these results show that RINGH2 domain of Vps41 is essential for the assembly of HOPS complex on lysosomal membrane and consequent fusion of late endosome with lysosomes.
URI:	http://hdl.handle.net/123456789/591 (http://hdl.handle.net/123456789/591)
Appears in Collections:	MS-11 (/jspui/handle/123456789/537)

Files in This Item:

File	Description	Size	Format	
MS-11068.pdf (/jspui/bitstream/123456789/591/3/MS-11068.pdf)		2.2 MB	Adobe PDF	View/Open (/jspui/bitstream/123456789/591/3/MS-11

Show full item record (/jspui/handle/123456789/591?mode=full) (/jspui/handle/123456789/591/statistics)