

## ***CHMP1A is a Candidate for Ubiquitin Mediated Protein Sorting***

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**Background and Objective:** The ESCRT (Endosomal Sorting Complex Required for Transport) complexes comprise a major pathway for the lysosomal degradation of transmembrane proteins. ESCRT's are critical for receptor downregulation, budding of the HIV virus, and regulation of cell polarity and cell proliferation. ESCRT machinery has ubiquitin-interaction modules that are necessary for ubiquitin (Ub) cargo-mediated protein sorting. CHMP1A (Chromatin modified protein or Charged multivesicular body protein) is one of the members of the ESCRT III complex. Our objective is to explore the possible involvement of CHMP1A in ubiquitin cargo mediated protein sorting.

**Methods:** Bioinformatics, immunoprecipitation, Western blot, ubiquitination *in vitro*, affinity chromatography, LC/MS/MS.

**Results:** We showed that, (I) besides NLS and the coiled-coil domain, CHMP1A contains a putative ubiquitin-interacting motif (UIM) which exhibits high homology with the canonical UIM consensus. (II) We demonstrated direct binding of rhCHMP1A with ubiquitin. (III) We found that CHMP1A can be modified with Ub or/and SUMO (**S**mall **U**biquitin-related **M**odifier).

**Discussion and Conclusions:** In the past two years progress has been made in the structural understanding of ESCRT machinery that facilitates the trafficking of ubiquitylated proteins via multivesicular bodies. It was shown that ESCRT-0, -I, -II have ubiquitin-interaction modules that are necessary for cargo sorting. However, there is no information about the ubiquitin binding proteins of ESCRT-III. Our data suggest that CHMP1A is ubiquitin-recognizing module in the ESCRT-III complex for protein sorting.

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