

Publication

ARF1.GTP, tyrosine-based signals, and phosphatidylinositol 4,5-bisphosphate constitute a minimal machinery to recruit the AP-1 clathrin adaptor to membranes

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 153656**Author(s)** Crottet, P.; Meyer, D. M.; Rohrer, J.; Spiess, M.**Author(s) at UniBasel** [Spiess, Martin](#) ;**Year** 2002**Title** ARF1.GTP, tyrosine-based signals, and phosphatidylinositol 4,5-bisphosphate constitute a minimal machinery to recruit the AP-1 clathrin adaptor to membranes**Journal** Molecular Biology of the Cell**Volume** 13**Number** 10**Pages / Article-Number** 3672-3682**Keywords** ADP-Ribosylation Factor 1/isolation & purification/*metabolism; Adaptor Protein Complex 1/isolation & Amino Acid Sequence; Animals; Cattle; Cell Membrane/metabolism; Clathrin-Coated Vesicles/metabolism; Guanosine Triphosphate/chemistry/*metabolism; Lipid Metabolism; Lipids/chemistry; Liposomes/chemistry/metabolism; Molecular Sequence Data; Molecular Structure; Peptides/genetics/metabolism; Phosphatidylinositol 4; 5-Diphosphate/*metabolism; Protein Transport/physiology; Sequence Alignment; Signal Transduction/*physiology; Tyrosine/*metabolism; trans-Golgi Network/metabolism

At the trans-Golgi network, clathrin coats containing AP-1 adaptor complexes are formed in an ARF1-dependent manner, generating vesicles transporting cargo proteins to endosomes. The mechanism of site-specific targeting of AP-1 and the role of cargo are poorly understood. We have developed an in vitro assay to study the recruitment of purified AP-1 adaptors to chemically defined liposomes presenting peptides corresponding to tyrosine-based sorting motifs. AP-1 recruitment was found to be dependent on myristoylated ARF1, GTP or nonhydrolyzable GTP-analogs, tyrosine signals, and small amounts of phosphoinositides, most prominently phosphatidylinositol 4,5-bisphosphate, in the absence of any additional cytosolic or membrane bound proteins. AP-1 from cytosol could be recruited to a tyrosine signal independently of the lipid composition, but the rate of recruitment was increased by phosphatidylinositol 4,5-bisphosphate. The results thus indicate that cargo proteins are involved in coat recruitment and that the local lipid composition contributes to specifying the site of vesicle formation.

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