

ANNEXINS AND MEMBRANE ORGANISATION IN THE ENDOCYTIC PATHWAY

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Endosomal membranes represent an intricate network of differently sized tubules and vesicles and it is believed that the complexity of this network is required for efficient and accurate transport along the endocytic route. Members of the annexin family of peripheral membrane-binding proteins have been implicated in stabilizing and/or regulating such endosome organizations. Among these are annexins 1 and 2 which are associated primarily with early endosomes and the plasma membrane and whose membrane interactions are regulated differently by Ca^{2+} . While annexin 1 requires micromolar Ca^{2+} for endosomal membrane binding, annexin 2 can be found on endosomal membranes in the absence of Ca^{2+} provided that cholesterol-rich membrane domains are present. Unique sequences within the N-terminal domains of annexins 1 and 2 have been identified that mediated the specific interactions with endosomes. Furthermore the use of synthetic peptides corresponding to these sequences and of dominant interfering mutant proteins has revealed that at least annexin 2 appears to be required for certain aspects of endosome organisation. Models of potential actions of annexins 1 and 2 within the endocytic pathway will be discussed.