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Biophysical and Structural Characterization of Adaptor-related Protein Complex 4. Lauren Parker, Helen Kent, Phil Evans, MRC Laboratory of Molecular Biology, Cambridge, UK.

Adaptor-related complex 4 (AP-4) is a member of a family of homologous heterotetrameric protein complexes that play a role in various intracellular trafficking pathways. While other members of the family have been well characterized both structurally and functionally, very little is known about the role of AP-4 within the cell. The C-terminal domain of the μ 4 subunit is known to interact with Yxx Φ binding motifs found in cargo molecules. Isothermal titration calorimetry has been used to verify potential motifs and to characterize their binding affinities with μ 4. Some of the main sequence differences between AP-4 and its homologues lie in the appendage “ear” domains of the two largest subunits, ϵ and β 4. These domains interact with regulatory and accessory proteins, and hence, much of the functional diversity is assumed to be in these regions. Crystals of the μ 4 C-terminal domain and of both appendage “ear” domains have been obtained; all are being optimized for data collection. Additionally, portions of the four subunits that together constitute the AP-4 core have been cloned and co-expressed in *E. coli*. Structural studies of this core are currently underway.