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SNARE Selectivity of the COPII Coat. Lincoln C. Bickford, Elena Mossessova, Jonathan Goldberg, Howard Hughes Medical Inst. & the Structural Biology Program, Memorial Sloan-Kettering Cancer Center, 1275 York Ave. New York, NY 10021.

The COPII vesicle coat—comprising the Sar1 GTPase, the Sec23/24 subcomplex, and the Sec13/31 subcomplex—coordinates the budding of transport vesicles from the endoplasmic reticulum in the initial step of the secretory pathway. The coat orchestrates a sequence of events including self-assembly on the membrane, cargo and SNARE molecule selection, and deformation of the membrane into a bud to drive vesicle fission. The molecular basis for concentrative sorting of cargo into transport vesicles has been a longstanding question. The talk will discuss the identification of motifs that are recognized by the COPII coat in the SNARE proteins responsible for vesicle docking and fusion in ER-to-Golgi transport. Crystallographic analysis of COPII-SNARE complexes reveals two distinct binding sites on the Sec24 subunit, one of which also recognizes a common di-acidic cargo sorting motif. The accessibility of the SNARE motifs is regulated by the assembly state of the SNAREs (free monomers as opposed to three- or four-helix bundles), suggesting that the COPII coat selects the fusogenic forms of these SNAREs in readiness for vesicle fusion during the ER-to-Golgi step.

