

Coordinated regulation of the protein trafficking within the Golgi complex

Seung-Yeol Park, Ph.D.

Department of Biological Sciences, POSTECH, Pohang 37673

The Golgi complex plays a central role in the secretory pathway by regulating protein sorting, trafficking and glycosylation. How intracellular transport occurs through membrane contact is being elucidated, but how this process can coordinate with the other major mode of transport that involves membrane-bound carriers remains to be determined. We find that phosphatidylinositol transfer protein beta (PITP β) plays a central role in delivering a critical lipid from the endoplasmic reticulum (ER) to sites of Coat Protein I (COPI) vesicle formation at the Golgi through membrane contact to promote COPI vesicle fission. PITP β also possesses a direct ability to deform membrane, which is also needed for COPI vesicle fission. Our findings achieve a detailed understanding of how membrane contact coordinates with vesicular transport in a model pathway, and also uncovers a function not previously known for lipid transfer proteins, the ability to bend membrane.