Collagen Export from Specific Endoplasmic Reticulum Exit Sites

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Our discovery of TANGO1, a ubiquitously expressed, ER-exit-site-resident, transmembrane protein has made the pathway of collagen secretion amenable to molecular analyses. TANGO1 acts as a scaffold to connect collagens in the lumen to COPII coats on the cytoplasmic side of ER. However, the growth of the collagen containing mega transport carrier is not simply by accretion of a larger COPII coated patch of ER membrane, but instead by rapid addition of premade ERGIC 53 containing small vesicles and tubules. This mode of transport carrier formation is fundamentally different from that used to produce small COPII vesicles. This allows transport of collagen from the lumen of ER to the next compartment of secretory pathway via transient tunnels. In addition, I will present how cells use specific ER exit sites to export collagens and use this selectivity to maintain secretory pathway organization amidst rapid export of newly synthesized secretory proteins.