



ABSTRACT

“Chemical Biology: Towards a Systems View of the Endomembrane system”

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Although it is known that proteins are delivered to and recycled from the plasma membrane (PM) via endosomes, the nature of the compartments and pathways responsible for cargo and vesicle sorting and cellular signaling is poorly understood. Such highly dynamic processes are not easily approached genetically. To define and dissect specific recycling pathways, rapid-acting chemical effectors of proteins involved in vesicle trafficking, especially through endosomes, would be invaluable. Thus, we identified chemicals affecting essential steps in PM/endosome trafficking by utilizing the intensely localized PM transport at the tips of germinating tobacco pollen tubes. We screened diverse chemical libraries for those that interfered with pollen germination and tip growth. We found that many also had effects in Arabidopsis roots for which there are several well-characterized marker proteins that cycle to and from the plasma membrane. Recent results from our screens will be discussed.