

Department of Molecular and Cellular Biology



Graduate Seminar MCB*6500

Friday, March 3, 2017 in SSC 1511 @ 12 noon

presented by:

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Understanding the physiological role of polyprenols in *Solanum lycopersicum*

Plants synthesize a family of hydrophobic polymers known as polyprenols, yet where they reside in the cell and what physiological role they serve is largely unknown. These compounds are typically 55-60 carbons in length and accumulate into biomembranes where they are thought to modulate membrane architecture and dynamics. In *Solanum lycopersicum* (tomato), a chloroplast localized *cis*-prenyltransferase (SICPT5) was recently implicated in the synthesis of polyprenols, and accordingly, the goal of this project is to gain a better understanding of polyprenol biology in tomato through examining the role of SICPT5 in this process. First, the *in vitro* properties of recombinant SICPT5 will be determined using a highly sensitive radiochemical enzyme assay coupled to a reverse phase thin-layer chromatography support. Second, the *in planta* distribution of SICPT5's enzymatic products will be assessed by quantifying the polyprenol content in the various subcompartments of tomato chloroplasts. Lastly, tomato plants that are deficient in polyprenols via RNAi-mediated knockdown of SICPT5 will be examined for various aspects of chloroplast function including photosynthetic operating efficiency, electron transport and CO₂ assimilation. The results of this study will uncover the role(s) of polyprenols in general chloroplast physiology and will therefore help guide efforts towards enhancing plant performance and productivity.