

## Abstract example

### **Determining the Metabolic Organization and Enzymology of the *Citrus sinensis* Flavonoid Biosynthetic Pathway**

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The focus of our research program is the analysis of secondary metabolites important for the development and survival of plants that can also be utilized for advantage to humanity. A metabolon is a group of enzymes in a biosynthetic pathway that organize spatially by forming protein-protein interactions generating a supramolecular complex with the ability to channel metabolites among the component enzymes. This advanced level of organization influences competition for shared pathway intermediates, affects flux throughout the metabolic system, helps to increase local substrate concentrations, maintains stability of labile metabolites, as well as acts to isolate potentially damaging or toxic metabolic intermediates and transition states. Although metabolon formation of the flavonoid biosynthetic pathway has been an active area of study, there is little known about formation in species that accumulate early pathway flavonoid subclasses or the role played by core structure derivatization enzymes, such as glycosyltransferases. *Citrus sinensis* is a particularly suitable and agriculturally significant system in which to perform flavonoid metabolon studies as it produces a popularly consumed food product, flavonoid compounds directly affect its taste characteristics influencing marketability, it uniquely accumulates early flavonoids such as flavones and flavanones, and its genome sequence has recently become available. Furthermore, the existence of "blood" varieties, which exclusively accumulate anthocyanins among citrus species, represents a unique opportunity to investigate the specific impact metabolon formation may have upon anthocyanin biosynthesis. We are currently determining the enzymology and metabolic organization of the *C. sinensis* flavonoid biosynthetic pathway to identify targets for improving the content and quality of flavonoid metabolites for agricultural, nutraceutical, and medicinal applications.