

# Biology Seminar

12:30 - 1:30 pm

Friday, October 14, 2022

Via ZOOM



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## Plant Chronobiology: A Protein Perspective

Plants regulate cellular and physiological processes through a combination of circadian (anticipatory) and light responsive (reactive) mechanisms in order to adapt to their changing daily environment. To date, our systems-level understanding of diel plant cell regulation has largely been derived from a combination of genetic and transcriptomic analysis; however, recent advances in quantitative proteomics, and their application to diel plant cell regulation, offers an exciting new frontier of discovery to better understand plant chronobiology. In particular, protein posttranslational modifications (PTMs), which are central regulators of protein activity and function.

Through the combined use of quantitative, time-course proteomics my lab and others, have begun to define the key intersections between diel plant cell signaling events and the corresponding proteins involved in core plant cell processes (e.g. metabolism). Furthermore, our proteomic approach has revealed a disconnect between temporal changes in transcript and peak protein abundance and PTM changes, which has major implications for both our fundamental understanding diel plant cell processes and the development of new agricultural biotechnologies.

With proteins representing the forefront of plant cell function, our work developing protein-centric strategies to define the diel plant cell environment will be discussed along with key results uncovered in this pursuit.

