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My research program focuses on the organization and control of plant glycolysis, and the metabolic adaptations of phosphorus-starved plants. This work integrates a variety of biochemical, proteomic, molecular biology, and genomic tools to characterize the molecular and functional properties and protein:protein interactions of key enzyme proteins. We are particularly interested in **post-translational protein modification** by phosphorylation, mono-ubiquitination, and glycosylation since these PTMs can play pivotal roles in regulating an enzyme's activity, subcellular location, protein:protein interactions, or turnover in response to various extra- or intracellular signals. Systems that we are currently studying include developing and germinating castor oilseeds, and suspension cell cultures and seedlings of the model plant *Arabidopsis thaliana*. Our research has significant long-term applications to problems in Canadian and world-wide agriculture including: (i) targeted modification of storage oil versus protein levels in oilseeds such as canola or soybean, (ii) optimizing plant-based conversion of atmospheric CO_2 into renewable energy sources such as biodiesel and ethanol, and (iii) development of phosphorus-efficient crops, urgently needed to reduce mankind's widespread but highly inefficient use of non-renewable, unsustainable, and polluting phosphate fertilizers.

For more info please visit the Plaxton lab website at: http://post.queensu.ca/~plaxton/index.html