**Emily Grace Pawlowski**

Email: pawlow41@msu.edu Phone: (586)871-8582

**Employment**

Schnell Lab – Dept of Plant Biology, Michigan State University. March 2017-Present

Research Technologist II: Explored LIP36 function using complementation studies in Arabidopsis thaliana; chloroplast import experiments to study the function of the OR gene in Arabidopsis thaliana

Laboratory Manager: Greenhouse management, supervising undergraduate student workers, disposing of hazardous waste, placing orders for the lab, maintaining lab safety, equipment upkeep and maintenance

Facilities Management: first point of contact for building issues in Plant Biology – worked with building maintenance staff and IPF to correct problems; assisted in Capital Asset inventory; maintained department equipment, coordinated with outside companies for departmental needs (BSC certification, pipette calibration, etc)

Grant Management: assist in administrative duties for a $10M+ Dept. of Energy grant between three institutions

Kerfeld Lab – MSU-DOE Plant Research Laboratories May 2015 – March 2017

Laboratory Aide: Purifying proteins, analyzing protein structure using crystallization and circular dichroism, characterizing protein interactions

Laboratory Manager: Supervising undergraduate student workers, disposing of hazardous waste, placing orders for the lab, maintaining lab safety, equipment upkeep and maintenance

Kerfeld Lab – MSU-DOE Plant Research Laboratories July 2014 – May 2015

Student Research Assistant: Assist in researching mutations in *E.coli* and cyanobacteria. Includes site-directed mutagenesis, protein purification and directed mutagenesis including PCR, restriction digest, transformation.

**Publications**

Yuan H, Pawlowski EG, Yang Y, Sun T, Thannhauser TW, Mazourek M, Schnell D, Li, L. (2020) Arabidopsis orange protein regulates plastid pre-protein import through interacting with tic proteins. *Journal of Experimental Botany*, *72*(4), 1059–1072. https://doi.org/10.1093/jxb/eraa528

Bao H, Melnicki MR., Pawlowski EG, Sutter M., Agostoni M, Lechno-Yossef S, Cai F, Montgomery BL, & Kerfeld, CA (2017) Additional families of orange carotenoid proteins in the photoprotective system of cyanobacteria. *Nature Plants*, *3*(8). https://doi.org/10.1038/nplants.2017.89

Melnicki MR, Leverenz RL, Sutter M, López-Igual R, Wilson A, Pawlowski EG, Perreau F, Kirilovsky D, Kerfeld CA (2016) Structure, Diversity, and Evolution of a New Family of Soluble Carotenoid Binding Proteins in Cyanobacteria. *Mol. Plant* **9**: 1379-1394.

Gupta S, Guttman M, Leverenz RL, Zhumadilova K, Pawlowski EG, Petzold CJ, Lee KK, Ralston CY, Kerfeld CA (2015) Local and global structural drivers for the photoactivation of the orange carotenoid protein. *Proc Natl Acad Sci USA***112**: E5567–E5574.

**Research Skills**

Experience in molecular biology techniques:

* Cloning and site-directed mutagenesis including PCR, restriction digest, transformation.

Experience with *Arabidopsis thaliana* and *Camelina sativa*:

* Transforming plants using floral dip method.
* DNA and protein extractions, chloroplast isolation and import of proteins using radioactive S35 methionine.
* Developed hydroponics system for growth of *Camelina sativa.*
* Assessing phenotypic differences based on plant growth and germination assays.

Experience in native source and affinity-tagged protein purification:

* AKTA FPLC chromatography: IMAC, Anion Exchange, Hydrophobic Interaction, Size Exclusion.
* Analysis of protein purity by SDS-PAGE.
* Detection of proteins by Western Blot.

Experience with protein structural analysis and characterizing protein function:

* Analytical size exclusion chromatography to determine molecular weight and oligomeric state of proteins.
* Protein crystallization: setting up protein crystal trays using a crystal robot; crystal growth optimization.
* Far-UV circular dichroism to look at protein fold and secondary structure.
* Applying circular dichroism spectroscopy and UV-Visible absorption spectroscopy (steady-state and time-resolved) to the study of photoactive proteins.

Experience working on an independent project, as well as part of a team with other lab members and collaborating labs.

**Other Laboratory Skills**

* Ordering supplies
* Biohazardous waste storage and pick up
* Maintaining lab safety by implementing EHS regulations
* Maintaining greenhouse operations
* Training undergraduate students
* Handling equipment upkeep and maintenance
* Inventory upkeep

**Education**

Lyman Briggs College, Honors College – Michigan State University

Bachelor of Science in Human Biology

Specialization – Bioethics, Humanities, and Society

**References available upon request**