Curriculum Vitae
Matthew J. Salie

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EDUCATION

Ph.D. Biochemistry April 2016
Department of Biochemistry, University of Missouri-Columbia Columbia, MO
Bachelor of Science, Biochemistry May, 2011
Calvin College Grand Rapids, MI

ACADEMIC RESEARCH

Postdoc, June 2016-Present
PI: **Dr. Jamie Williamson**, Dept. of Integrative Structural and Computational Biology
- F32 NIH Fellow
- Using proteomics and heavy-isotope labeling to study protein turnover in *E. coli*
- Developing chromatography and mass spectrometry methods, R scripts for data analysis, and protocol for chemostat pulse-labeling
- Applications to the microbiome and infectious diseases like cystic fibrosis.

Doctorate Research, Aug. 2011-April 2016 (postdoc from April 2016-June 2016)
"Discovery and characterization of novel regulatory mechanisms affecting heteromeric acetyl-CoA carboxylase in *Arabidopsis thaliana*"
PI: **Dr. Jay J. Thelen**, Department of Biochemistry
- Operated and maintained various analytical instruments for protein and metabolite identification (Thermo Orbitrap XL ETD, Thermo TSQ Vantage, Agilent GC-MS)
- Designed and performed clone constructs for protein expression, yeast two-hybrid, bimolecular fluorescence complementation, etc.
- Created and analyzed transgenic *Arabidopsis thaliana* to test the effect of gene suppression on seed metabolite accumulation.

Research Assistant, Jan 2010-Aug 2011
PI: **Dr. Larry Louters**, Calvin College, Grand Rapids, MI
- Performed radiolabeled glucose uptake studies, biochemical protein analysis
- Maintained sterile mouse cell culture lines

PUBLICATIONS

1. **Salie, MJ,** Zhang, N, Lancikova, V, Xu, D, and Thelen, JJ (2016) A family of negative regulators targeting the committed step of de novo fatty acid synthesis. *The Plant Cell.* 28(9):2312-2325.
2. **Salie, MJ** and Thelen, JJ (2016) Regulation and structure of plant heteromeric acetyl-CoA carboxylase. *BBA – Molecular and Cell Biology of Lipids.* 1861(9 Pt B):1207-13.
3. Kuipers, DP, Scripture, JP, Gunnink, SM, **Salie, MJ**, Shotanus, MP, Ubels, JL, Louters, LL (2013) Differential regulation of GLUT1 activity in human corneal limbal epithelial cells and fibroblasts. *Biochimie*. 95(2):258-63.

4. **Salie, MJ**, Oram, DS, Kuipers, DP, Scripture, JP, Chenge, J, Griffin, JM, Louters, LL (2012) Nitroxyl (HNO) acutely activates the glucose uptake activity of GLUT1. *Biochimie*. 94:864-69.
5. Cok, A, Plaisier, C, **Salie, MJ**, Oram, DS, Chenge, J, Louters, LL (2011) Berberine acutely activates the glucose transport activity of GLUT1. *Biochimie*. 93:1187-92.
6. Plaisier, C, Cok, A, Scott, J, Opejin, A, Bushhouse, KT, **Salie, MJ**, Louters, LL (2011) Effects of cinnamaldehyde on the glucose transport activity of GLUT1. *Biochimie*. 93:339-344.

CERTIFICATIONS

- Completed Thermo Scientific LTQ Orbitrap Biotech Operations Course
  June, 2013, West Palm Beach, FL.
- Completed Thermo Scientific Quantiva QQQ Operations Course
  April, 2014, PepPro Analytics, Columbia, MO
- The Whole Scientist, May 2017, Jackson Labs, Bar Harbor, ME

SKILLS

Analytical techniques:

- LC-MS/MS (Orbitrap ETD XL, LTQ, TSQ Vantage, Triple-TOF)
- GC-MS
- FPLC
- HPLC

Biochemical techniques:

- Pulse-chase labeling
- C14 label enzyme activity assays
- Subcellular fractionation
- Native protein extraction
- Western Blotting
- Immunoprecipitation
- SDS-PAGE
- Blue Native PAGE
- 2-D Blue Native-SDS PAGE
- Affinity chromatography

Molecular Biology techniques:

- Chemostat/bioreactor operation
- Construct design/cloning (Designed and produced over 70 different constructs)
- Yeast two-hybrid assay
- Recombinant protein expression
- French Press
- Bimolecular fluorescence complementation
- Confocal microscopy
- Arabidopsis transformation

PRESENTATIONS

Invited Oral:

1. Oct. 2015, Regulation of fatty acid synthesis in plants, Chemistry department seminar series, Calvin College, Grand Rapids, MI.
2. Sept. 2015, The BADC proteins – novel players in *de novo* fatty acid synthesis, *Plant Talks*, University of Missouri-Columbia, Columbia, MO.
3. Jan. 2015, A novel protein family directly interacts with heteromeric acetyl-CoA carboxylase, *Gordon Research Seminar - Plant Lipids: Structure, Metabolism & Function*, Galveston, TX.
4. Oct. 2014, Discovering novel protein-protein interactions with heteromeric acetyl-CoA carboxylase, *Plant Talks*, University of Missouri-Columbia, Columbia, MO.
5. Aug. 2014, Discovering novel protein-protein interactions with heteromeric acetyl-CoA carboxylase, *53rd Phytochemical Society of North America*, Raleigh, NC.
   - Earned **Best Student Oral Presentation Award and Student Travel award**

6. July 2014, Discovering novel protein-protein interactions with heteromeric acetyl-CoA carboxylase, *21st International Symposium on Plant Lipids*, Guelph, ON, Canada
    - Was one of 10 selected for **Student Travel award**

Poster:

1. **MJ Salie**, JJ Thelen, The BADC proteins – novel players in *de novo* fatty acid synthesis. *Gordon Research Conference: Proteins*, Holderness, NH, June 2015.
2. **MJ Salie**, JJ Thelen, The BADC proteins – novel players in *de novo* fatty acid synthesis. *Life Sciences Week*, Columbia, MO, April 2015.
    - Earned **Best Graduate Student Poster Presentation award**
3. **MJ Salie**, JJ Thelen, Regulation of plastid heteromeric acetyl-CoA carboxylase: Discovery of protein interactions. *Life Sciences Week*, Columbia, MO, April 2014.
4. **MJ Salie**, JJ Thelen, Regulation of the plastid heteromeric acetyl-CoA carboxylase: Discovery of protein interactions. *5th International BrMASS Conference*, Sao Paulo, Brazil, December 2013.
5. **MJ Salie**, JJ Thelen, Identifying interacting proteins with the Arabidopsis heteromeric acetyl-CoA carboxylase. *Life Sciences Week*, Columbia, MO, April 2013.

GRANTS/FELLOWSHIPS/PATENTS

- Sept. 2017-2019, F32 NIH Fellowship
- April 2017, NIH F32 Individual Fellowship submitted
- July 2016, US Patent 15UMC023, "Increasing plant oil content by altering a negative regulator of acetyl-CoA carboxylase"
    a. Filed a patent describing a novel mechanism of increasing seed oil content in crop species
- July, 2015, United Soybean Board project #1620-632-6601, "Increasing soybean oil yield by targeted silencing of a novel regulator of fatty acid synthesis"
    a. Co-wrote this grant with Jay Thelen that to develop soybeans that contain higher seed oil content
- 2012-2014, T32 NIH Training Grant
    a. Nominated by the MU Biochemistry department and awarded by the NIH based on academic merit and potential in future scientific career

TEACHING EXPERIENCE

- Teacher's Aide, Biochemistry 4270, University of Missouri-Columbia, Fall 2012
- Proteomics lectures, Biochemistry 4974, University of Missouri-Columbia, March 2016
- Postdocs Mentored
    a. Raj Gourav, PhD
- Graduate students Mentored
    a. Wenlin Pan, University of Missouri PhD candidate, Fall 2013
    b. Mark Schroeder, University of Missouri PhD student, Spring 2015
    c. Shannon King, University of Missouri PhD student, Fall 2015
- Undergraduates Mentored
    a. Cassie Orf, University of Missouri student, June 2012-Feb. 2014
    b. Rebecca Tritz, University Missouri student, June 2012-May 2014
    c. Alexa Beck, University of Missouri student, Aug. 2013-Sept. 2015
    d. Jarreau Harrison, visiting student from Medgar-Evers College, June-Aug. 2014
    e. Kyle Oberkrom, University of Missouri student, Oct 2014-May 2016

VOLUNTEERING/PUBLIC SERVICE

1. Biochemistry Graduate Student Organization President, Aug 2013-July 2014
2. Biochemistry Graduate Student Organization Treasurer, Aug 2012-July 2013
3. Mizzou Adventures, April 2014
4. STEM Boy Scout Event, March 2014
5. Chemistry Camp, July 2011

References

1. Jamie Williamson, PhD, The Scripps Research Institute, jrwill@scripps.edu, 858)784-8760
2. Jay Thelen, PhD, University of Missouri-Columbia, thelenj@missouri.edu, 573)884-1325
3. Jan Miernyk, PhD, University of Missouri-Columbia, miernykj@missouri.edu, 573)882-8167