

CURRICULUM VITAE

Jay J. Thelen

CONTACT INFORMATION

Mailing Address: Department of Biochemistry
109 Life Sciences Center
Columbia, MO 65211
University of Missouri-Columbia

Phone: (573) 884-1325
Fax: (573) 884-9676
E-mail: thelenj@missouri.edu

EDUCATION

Ph.D.	Biological Sciences	University of Missouri	1998
B.S.	Biochemistry and Biology	University of Nebraska	1993

PROFESSIONAL EXPERIENCE

2009-present	Associate Professor, Department of Biochemistry University of Missouri
2004–2009	Assistant Professor, Department of Biochemistry University of Missouri
2002–2004	Research Assistant Professor, Biological Sciences Associate Director, Proteomics Center University of Missouri
1999–2002	Postdoctoral Scientist, Plant Protein Biochemistry Michigan State University
1994–1999	Postdoctoral Scientist and graduate student Protein Biochemistry/Molecular Biology Advisor: Doug Randall, University of Missouri
1991–1994	Research Technician/Howard Hughes Research Fellow Plant Biochemistry University of Nebraska

RESEARCH INTERESTS

Seed development, oilseed metabolism, plant metabolic pathways and metabolic engineering, protein biochemistry, genomic and proteomic approaches towards understanding plant metabolism

SERVICE

Grant Reviews: USDA-NRI
NSF Plant Genome Research and Integrative Biology Programs
U.S.-Israel Binational Agricultural Research and Development (BARD)
AgCanada/National Research Council-Canada
Slovak Research and Development Agency
European Union-COST Action
MU Research Board

Manuscript Reviewer: *Analytical Biochemistry, Archives Biochemistry Biophysics, Cell Science, Journal of Proteome Research, Molecular and Cellular Proteomics, Phytochemistry, Plant Molecular Biology, Plant Cell, Plant Journal, Plant Science, Planta, Plant Physiology, Proteomics*

HONORS AND AWARDS

1993 Graduated summa cum laude, University of Nebraska-Lincoln
1992 Outstanding Teaching Assistant (selected by students)
University of Nebraska
1994 Predoctoral Maize Training Grant Fellowship
1995 Best research presentation, Protein Phosphorylation in Plants Congress
1999 USDA-NRI postdoctoral fellow awardee
2003 National Science Foundation Young Investigator Award

PROFESSIONAL ACTIVITIES

1998–Present American Society of Plant Biologists
2004–Present American Oil Chemists Society
2005–Present Graduate Recruitment Committee, Division of Biochemistry
2006–Present College Policy Committee, College of Agriculture Food and Natural Resources (elected Parliamentarian)
April 2007 Bioinformatics Faculty Search Committee, Life Sciences Center
2006–Present Graduate Curriculum Committee, Division of Biochemistry
August 2006 Ad hoc Committee on Statistics, Life Sciences Center
May 2007 Faculty Retreat Committee, Life Sciences Center
May 2007 By-laws Committee, Division of Biochemistry
May 2007 Soybean Genomics Research Strategy Planning Committee Invitee
Jan–May 2007 Organization Committee, Plant Phosphorylation and Proteomics Symposium

PUBLICATIONS

1. Knudten A, **Thelen JJ**, Luethy MH, Elthon TE (1994) Purification, characterization and submitochondrial localization of the 32-kilodalton NADH dehydrogenase from maize. *Plant Physiol.* 106:1115–22
2. Luethy MH, **Thelen JJ**, Knudten A, Elthon TE (1995) Purification, characterization and submitochondrial localization of a 58-kilodalton NAD(P)H dehydrogenase. *Plant Physiol.* 107:443–50
3. **Thelen JJ**, Muszynski MG, Miernyk JA, Randall DD (1998) Molecular analysis of two pyruvate dehydrogenase kinases from maize. *J. Biol. Chem.* 273: 26618–23
4. **Thelen JJ**, Miernyk JA, Randall DD (1998) Partial purification and characterization of the maize mitochondrial pyruvate dehydrogenase complex. *Plant Physiol.* 116: 1443–50
5. **Thelen JJ**, Muszynski MG, David NR, Luethy MH, Elthon TE, Miernyk JA, Randall DD (1999) The dihydrolipoamide S-acetyltransferase subunit of the mitochondrial pyruvate dehydrogenase complex from maize contains a single lipoyl domain. *J. Biol. Chem.* 274:21769–75
6. **Thelen JJ**, Miernyk JA, Randall DD (1999) Molecular cloning and expression analysis of the mitochondrial pyruvate dehydrogenase from maize. *Plant Physiol.* 119:635–44
7. **Thelen JJ**, Miernyk JA, Randall DD (2000) Pyruvate dehydrogenase kinase from *Arabidopsis thaliana*: a protein histidine kinase that phosphorylates serine residues. *Biochem. J.* 349:195–201
8. Mooney BP, David NR, **Thelen JJ**, Miernyk JA, Randall DD (2000) Histidine modifying agents abolish pyruvate dehydrogenase kinase activity. *Biochem. Biophys. Res. Commun.* 267:500–503
9. Broz AK, **Thelen JJ**, Muszynski MG, Miernyk JA, Randall DD (2001) ZMPP2, a novel type-2C protein phosphatase from maize. *J. Exp. Bot.* 52:1739–40
10. **Thelen JJ**, Mekhedov S, Ohlrogge JB (2001) Brassicaceae express multiple isoforms of biotin carboxyl carrier protein in a tissue-specific manner. *Plant Physiol.* 125:2016–28
11. **Thelen JJ**, Mekhedov S, Ohlrogge JB (2001) Biotin carboxyl carrier protein isoforms in Brassicaceae oilseeds. *Biochem. Soc. Trans.* 28:595–98
12. Bao X, **Thelen JJ**, Bonaventure G, Ohlrogge JB (2002) Characterization of cyclopropane fatty acid synthase from *Sterculia foetida*. *J Biol Chem.* 278:12846–53

13. **Thelen JJ**, Ohlrogge JB (2002) Both antisense and sense expression of biotin carboxyl carrier protein isoform two inactivates the plastid acetyl-coenzyme A carboxylase in *Arabidopsis*. *Plant J.* 32:419–31
14. **Thelen JJ**, Ohlrogge JB (2002) The multisubunit acetyl-CoA carboxylase is strongly associated with the chloroplast envelope through non-ionic interactions to the carboxyltransferase subunits. *Arch. Biochem. Biophys.* 400:245–57
15. **Thelen JJ**, Ohlrogge JB (2002) Metabolic engineering of fatty acid biosynthesis in plants. *Metabolic Engineering J.* 4:12–21
16. Beisson F, Koo AJK, Ruuska S, Schwender J, Pollard M, **Thelen JJ**, Paddock T, Salas JJ, Savage L, Milcamps A, Mhaske V, Cho Y, Ohlrogge JB (2003) *Arabidopsis thaliana* genes involved in acyl lipid metabolism: a 2003 census of the candidates, a study of the distribution of ESTs in tissues and a web-based database. *Plant Physiol.* 132:681–97
17. Wilson AP, **Thelen JJ**, Lakritz J, Brown CR, Marsh AE (2004) The identification of a sequence related to apicomplexan enolase from *Sarcocystis neurona*. *Parasitol Res* 94:354–60
18. Mooney BP, Krishnan HB, **Thelen JJ** (2004) High-throughput peptide mass fingerprinting of soybean seed proteins: automated workflow and utility of Unigene expressed sequence tag databases for protein identification. *Phytochemistry* 65:1733–44
19. Ganapathy A, Wan X-F, Wan J, **Thelen JJ**, Emerich DW, Stacey G, Xu D (2004) Statistical assessment for mass-spec protein identification using peptide fingerprinting approach. *Conf Proc IEEE Eng Med Biol Soc.* 4:3051–54
20. Agrawal GK, **Thelen JJ** (2005) Development of a simplified, economical polyacrylamide gel staining protocol for phosphoproteins. *Proteomics.* 5:4684–88
21. Phinney B, **Thelen JJ** (2005) Proteomic characterization of a Triton X-100 insoluble fraction from chloroplasts defines a novel group of proteins associated with macromolecular structures. *J. Proteome Res.* 4:497–506
22. Wan J, Torres M, Ganapathy A, **Thelen JJ**, DaGue BB, Mooney B, Xu D, Stacey G. (2005) Proteomic analysis of soybean root hairs after infection by *Bradyrhizobium japonicum*. *Mol. Plant Microbe Interact.* 18:458–67
23. Hajduch M, Ganapathy A, Stein JW, **Thelen JJ** (2005) A systematic proteomic study of seed-filling in soybean: establishment of high-resolution two-dimensional reference maps, expression profiles, and an interactive proteome database. *Plant Physiol.* 137:1397–1419
24. Mooney BP, Miernyk JA, Greenlief CM, **Thelen JJ** (2006) Using quantitative proteomics of *Arabidopsis* roots and leaves to predict metabolic activity. *Physiol. Plant.* 128:237–50

25. Hajduch M, Casteel JE, Hurrelmeyer KE, Song Z, Agrawal GK, **Thelen JJ** (2006) Proteomic analysis of seed filling in *Brassica napus*: Developmental characterization of metabolic isozymes using high-resolution two-dimensional gel electrophoresis. *Plant Physiol.* 141:32–46
26. Katavic V, Agrawal GK, Hajduch M, Harris SL, **Thelen JJ** (2006) Protein and lipid composition analysis of oil bodies from two *Brassica napus* cultivars. *Proteomics.* 6: 4586–98
27. Agrawal GK, **Thelen JJ** (2006) Large-scale identification and quantitative profiling of phosphoproteins expressed during seed filling in oilseed rape. *Mol. Cell. Prot.* 5:2044–59
28. Kojima M, Casteel J, Miernyk JA, **Thelen JJ** (2007) The effects of down-regulating expression of *Arabidopsis thaliana* membrane-associated acyl-CoA binding protein 2 on acyl-lipid composition. *Plant Science.* 172:36–44
29. Hajduch M, Casteel JE, Tang S, Hearne LB, Knapp S, **Thelen JJ** (2007) Proteomic analysis of near isogenic sunflower varieties differing in seed oil traits. *J. Proteome Res.* 6:3232–41
30. **Thelen JJ**, Peck SC (2007) Quantitative proteomics in plants: choices in abundance. *Plant Cell.* 19:3339–46
31. Miernyk JA, **Thelen JJ** (2008) Biochemical approaches for discovering protein-protein interactions. *Plant J.* 53:597–609
32. Capkovic KL, Stevenson S, Johnson MC, **Thelen JJ**, Cornelison DDW (2008) Neural cell adhesion molecule (NCAM) marks adult myogenic cells committed to differentiation. *Exp. Cell Res.* 314:1553–65
33. Jain R, Katavic V, Agrawal GK, Guzov VM, **Thelen JJ** (2008) Purification and proteomic characterization of plastids from *Brassica napus* developing embryos. *Proteomics.* 8:3397-3405
34. Agrawal GK, Hajduch M, Graham, K, **Thelen JJ** (2008) In-depth investigation of soybean seed-filling proteome and comparison with a parallel study of rapeseed. *Plant Physiol.* 148:504-518
35. Chu Y, Faustinelli P, Ramos ML, Hajduch M, Stevenson S, **Thelen JJ**, Maleki SJ, Ozias-Akins P (2008) Reduction of IgE binding and nonpromotion of *Aspergillus flavus* growth by simultaneously silencing Ara h 2 and Ara h 6 in peanut. *J. Agric. Food Chem.* 56:11225-11233
36. Ozias-Akins P, Ramos ML, Faustinelli P, Chu Y, Maleki S, **Thelen JJ**, Huntley J, Arias K, Jordana M. (2008) Spontaneous and induced variability of allergens in commodity crops: Ara h 2 in peanut as a case study. *Regul. Toxicol. Pharmacol.* 54:37-40

37. **Thelen JJ** (2008) Proteomics tools and resources for investigating protein allergens in oilseeds. *Regul. Toxicol. Pharmacol.* 54:41-45
38. Stevenson S, Ozias-Akins P, **Thelen JJ** (2008) Validation of label-free quantitative proteomics approaches: Applications for seed allergen profiling. *J. Proteomics* 72:555-566
39. Gao J, Agrawal GK, **Thelen JJ**, Xu D (2009) P³DB: A plant protein phosphorylation database. *Nucl. Acids Res.* 37:D960-962
40. Chen M, Mooney BP, Hajduch M, Joshi T, Zhou M, Xu D, **Thelen JJ** (2009) System analysis of an Arabidopsis mutant altered in de novo fatty acid synthesis reveals diverse changes in seed composition and metabolic regulation. *Plant Physiol.* 150:27-41
41. Gao J, Agrawal GK, **Thelen JJ**, Obradovic Z, Dunker AK, Xu D (2009) A new machine learning approach for protein phosphorylation site prediction in plants. Lecture Notes in Bioinformatics (LNBI 5462): Proceedings of the First International Conference on Bioinformatics and Computational Biology (BICoB), April 2009, New Orleans, USA, pp. 18-29.
42. Houston NL, Hajduch M, Thelen JJ (2009) Quantitative Proteomics of Seed Filling in Castor: Comparison with Soybean and Rapeseed Reveals Differences between Photosynthetic and Non-photosynthetic Seed Metabolism. *Plant Physiol.* In press

Invited Book Chapters

43. **Thelen JJ**, Johnston ML, Randall DD (1997) Reversible phosphorylation of the mitochondrial pyruvate dehydrogenase complex: structure of mitochondrial pyruvate dehydrogenase kinase and effects of the E2L2 subdomain on reversible phosphorylation. In: *Proceedings of the 2nd European Symposium on Protein Phosphorylation in Plants*, Paris-Sud Editions.
44. Hajduch M, Agrawal GK, **Thelen JJ** (2007) Proteomics of seed development in oilseed crops. In: *Plant Proteomics*, Springer-Verlag, Germany, Eds. Thelen JJ, Samaj J pp. 137–154.
45. **Thelen JJ** (2007) Introduction to proteomics: a brief historical perspective on contemporary approaches. In: *Plant Proteomics*, Springer-Verlag, Germany, Eds. Thelen JJ, Samaj J pp. 1–13.
46. **Thelen JJ** (2007) Proteomics tools and resources for investigating protein allergens in oilseeds. HESI New Methods Workshop Proceedings. Protein Allergenicity Technical Committee. Nice, France.
47. Agrawal GK, **Thelen JJ** (2009) A high-resolution two dimensional gel- and Pro-Q DPS-based proteomics workflow for phosphoprotein identification and quantitative profiling. In: *Methods in Molecular Biology*, Humana Press, New Jersey, Ed. Grauw MD, 527:3-19

48. Agrawal GK, **Thelen JJ** (2008) A modified Pro-Q DPS staining protocol for phosphoprotein detection in polyacrylamide gels. In: *The Protein Protocols Handbook* (3rd Edition), Humana Press, New Jersey, USA, Ed. Walker JM, pp. 000–000. In Press

Edited Books

49. *Plant Proteomics* (2007) Springer-Verlag, Germany, Eds. **Thelen JJ**, Samaj J.