Wayne K. Versaw

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Education

1990-1995	Ph.D. Biomolecular Chemistry, University of Wisconsin-Madison
1988-1990	M.S. Biochemistry, University of Nebraska-Lincoln
1983-1987	B.S. Food Science, University of Nebraska-Lincoln

Appointments

2014-current	Associate Head for Academic Affairs Department of Biology, Texas A&M University
2018-current	Professor Department of Biology, Texas A&M University
2009-current	Associate Professor Department of Biology, Texas A&M University
2003-2009	Assistant Professor Department of Biology, Texas A&M University
2000-2003	Senior Research Associate II Plant Biology Division, Samuel Roberts Noble Foundation.
1998-2000	Postdoctoral Fellow Plant Biology Division, Samuel Roberts Noble Foundation.
1997-1998	Postdoctoral Research Associate Dept. of Pharmacology, University of Wisconsin-Madison.
1996-1997	Cytogenetics Technologist Waisman Center, University of Wisconsin-Madison.

National Service

2017	Guest editor for *Current Opinion in Plant Biology*
2012-current	Review editor for *Frontiers in Plant Science*
2006-2010	Editorial board member for *Plant Signaling & Behavior*
2010, 2005	NSF grant review panel member (Integrative Organismal Systems)
2003-current	Ad hoc reviewer for NSF, DOE, and USDA-NIFA grant proposals, and for 21 journals

Academic Service

2015	Dept. Biology External Review Committee, member
2014-current	Dept. Biology Executive Committee, member
2014-current	Dept. Biology Undergraduate Program Committee, Ex officio
2009-2014	Dept. Biology Undergraduate Program Committee, Chair
2014-current	Dept. Biology Instructional Enhancement/Equipment Fee Committee, member
2014-current	Dept. Biology Plant Care Committee, member
2013	Dept. Biology Department Head Search Committee, member
2009-2010	Dept. Biology Faculty Search Committee, member
2009-2018	Molecular and Environmental Plant Science (MEPS) Executive Committee, member
2009-2013	MEPS Graduate Program Committee, Chair
2006-2007	Dept. of Biology, Faculty Search Committee, member
2008-2015	MEPS Symposium Committee, member
2005-2009	MEPS Graduate Admissions Committee, member
2004-2006	Dept. Biology, Graduate Program Committee, member
2003-current	MEPS, member
2003-current	Graduate Thesis Committee, chair (2 current, 7 total)
2003-current	Graduate Thesis Committee, member (10 current, 41 total)

Teaching

BIOL 111 Introductory Biology (fall semesters, co-taught with Dr. Paul Harden, 2011-2015)
BIOL 213 Molecular Cell Biology (fall semesters, 2004-2010; summer 2006, 2009, 2013)
BIOL 413 Cell Biology (fall semester, co-taught with Tapasree Roy Sarkar, 2018
BIOL 481 Careers in Life Sciences (spring semesters, 2015-current; guest lectures)

BIOL 635 Plant Molecular Biology (spring semesters, co-taught with Dr. Alan Pepper, 2005-current)
BIOL 681 Seminar in Plant Biology (fall/spring semesters, 2015-2018)

Research Support

Current

DOE DE-SC0014037, *Development of biosensors to measure the spatial and temporal concentration profiles of inorganic phosphate in plants during arbuscular mycorrhizal symbiosis*, 07/01/15-06/30/19, $1,026,581 total ($658,222 to my lab); Maria Harrison (co-PI), Boyce Thompson Institute/Cornell University.

Past

Texas A&M University, *Development of on-line tools to enhance learning in introductory biology*, 01/25/14-08/31/15, $72,838; Kathryn Ryan (PI), Wayne Versaw (co-PI)

NSF #IOS-1243501, *MEPS 2013: Plant signaling systems – from cells to environment* (Conference) 08/15/12-08/14/13, $13,000; Hisashi Koiwa (PI), Wayne Versaw (co-PI), Thomas McKnight (co-PI), Scott Finlayson (co-PI), Carol Loopstra (co-PI)

NSF #IOS-0956486, *Plastidic phosphate transport and plant biomass allocation*, 02/15/10-01/31/14, $429,000
NSF #IOS-127224, REU Supplement to #IOS-0956486, 05/30/12-01/31/14, $5,971
NSF #IOS-1135418, REU Supplement to #IOS-0956486, 05/30/11-01/31/14, $5,954

NSF #IOS-0416443, *Molecular physiology of phosphate transport in Arabidopsis*, 08/01/04-07/31/08, $515,364.
NSF #IOS-0628896, REU Supplement to #IOS-0416443, 05/31/06-07/31/08, $5,485.

Publications (Members from my laboratory are indicated in bold, undergrads indicated with underline)

Voon, C.P., Guan, X., Sun, Y., **Sahu, A.,** Chan, M.N., Gardeström, P., Wagner, S., Fuchs, P., Nitzel, T., **Versaw, W.K**., Schwarzländer, M, and Lim, B.L. (2018) ATP compartmentation in plastid and cytosol of *Arabdopsis thaliana* revealed by fluorescent protein sensing. Proceedings of the National Academy of Science USA https://doi.org/10.1073/pnas.1711497115

Zhang, W., Lo, I.M.C, Hu, L., Voon, C.P., Lim, B.L., and **Versaw, W.K.** (2018) Environmental risks of nano zero-valent iron for arsenate remediation: Impacts on cytosolic levels of inorganic phosphate and MgATP in *Arabidopsis thaliana*. *Environmental Science & Technology*. *Environmental Science & Technology* 52: 4385-4392.

Chiou, T-J**., Versaw, W.K.,** and Fujuwara, T. (2017) Editorial overview: Cell signaling and gene regulation: nutrient sensing, signaling, and transport. *Current Opinion in Plant Biology* 39: 1-3.

Okumoto, S. and **Versaw, W.K.** (2017) Genetically encoded sensors for monitoring the transport and concentration of nitrogen- and phosphorus-containing molecules in plants. *Current Opinion in Plant Biology* 39: 129-135. Review.

Versaw, W.K. and Garcia L.R. (2017) Intracellular transport and compartmentation of phosphate in plants. *Current Opinion in Plant Biology* 39: 25-30. Review.

Banerjee, S., Garcia, L.R. and **Versaw, W.K.** (2016) Quantitative imaging of FRET-based biosensors for cell- and organelle-specific analyses in plants. *Microscopy & Microanalysis* 22: 300-310.

Banerjee, S., Versaw, W.K. and Garcia, L.R. (2015) Imaging cellular inorganic phosphate in *Caenorhabditis elegans* using a genetically encoded FRET-based biosensor. *PLoS One* 10: e0141128. doi:10.1371/journal.pone.0141128.

Mukherjee, P., Banerjee, S., **Wheeler, A., Ratliff, L.A., Irigoyen,** S., Garcia, L.R., Lockless, S.W. and **Versaw, W.K.** (2015) Live imaging of inorganic phosphate in plants with cellular and subcellular resolution. *Plant Physiology* 167: 1-12.

Karlsson, P.M., Herdean, A., Beebo, A., **Irigoyen, S.**, Unnep, R., Zsiros, O., Nagy, G., Garab, G., Aronsson, H., **Versaw, W.K.**, and C. Speatea. (2015) The Arabidopsis phosphate transporter PHT4;1 influences thylakoid pH balance and phosphate accumulation in leaves. *Plant Journal* 84: 99-110.

Irigoyen, S., Karlsson, P.M., Kuruvilla, J., Spetea, C. and **Versaw, W.K.** (2011) The sink-specific plastidic phosphate transporter PHT4;2 influences starch accumulation and leaf size in Arabidopsis. *Plant Physiology* 157: 1765-1777.

Guo, B., Irigoyen, S., Fowler, T.B. and Versaw, W.K. (2008) Differential expression and phylogenetic analysis suggest specialization of plastid-localized members of the PHT4 phosphate transporter family for photosynthetic and heterotrophic tissues. *Plant Signaling and Behavior* 3: 784-790.

Liu, J., **Versaw, W.K**., Pumplin, N., Gomez, S.K., Blaylock, L.A., and Harrison, M.J. (2008) Closely related members of the *Medicago truncatula* PHT1 phosphate transporter gene family encode phosphate transporters with distinct biochemical activities. *Journal of Biological Chemistry* 283: 24673-24681.

Guo, B., Jin, Y., Wussler, C., Blancaflor, E.B., Motes, C.M. **and Versaw, W.K.** (2008) Functional analysis of the Arabidopsis PHT4 family of intracellular phosphate transporters. *New Phytologist* 177: 889-898.

Jin, Y., Allan, S., Baber, L., Bhattarai, E.K., Lamb, T.M. and **Versaw, W.K.** (2007) Rapid genetic mapping in *Neurospora crassa. Fungal Genetics and Biology* 44: 455-465.

Beasley, A.K., Lamb, T.M., **Versaw, W.K.** and Bell-Pedersen, D. (2006) A *ras*^{bd} Mauriceville strain for mapping mutations in Oak Ridge *ras*^{bd} strains. *Fungal Genetics Newsletter* 53: 30-33.

Zhao, L., **Versaw, W.K.**, Liu, J. and Harrison, M.J. (2003) A phosphate transporter from *Medicago truncatula* is expressed in the photosynthetic tissues of plants and located in the chloroplast envelope. *New Phytologist* 157: 291-302.

Versaw, W.K. and Harrison, M.J. (2002) A chloroplast phosphate transporter, PHT2;1, influences allocation of phosphate within the plant and phosphate-starvation responses. *Plant Cell* 14: 1751-1766.

Versaw, W.K., Chiou, T. and Harrison, M.J. (2002) Phosphate transporters of *Medicago truncatula* and arbuscular mycorrhizal fungi. *Plant and Soil* 244: 239-245.

Maldonado-Mendoza, I.E., Dewbre, G.R., van Buuren, M.L., **Versaw, W.K.**, and Harrison, M.J. (2002) Methods to estimate the proportion of plant and fungal RNA in an arbuscular mycorrhiza. *Mycorrhiza* 12: 67-74.

Trieu, A.T., Burleigh, S.H., Kardailsky, I.V., Maldonado-Mendoza, I.E., **Versaw, W.K.**, Blaylock, L.A., Shin, H., Chiou, T., Katagi, H., Dewbrew, G.R., Weigel, D., and Harrison, M.J. (2000) Transformation of *Medicago truncatula* via infiltration of seedlings or flowering plants with *Agrobacterium*. *Plant Journal* 22: 531-541.

Forsberg, E.C., Zaboikina, T.N., **Versaw, W.K.**, Ahn, N.G., and Bresnick, E.H. (1999) Enhancement of beta-globin locus control region-mediated transactivation by mitogen-activated protein kinases through stochastic and graded mechanisms. *Molecular and Cellular Biology* 19: 5565-5575.

Versaw, W.K., Blank, V., Andrews, .M., and Bresnick, E.H. (1998) Mitogen-activated protein kinases enhance long-range activation by the beta-globin locus control region. *Proc. Natl. Acad. Sci. USA* 95: 8756-8760.

Bresnick, E.H., **Versaw, W.K.,** Lam, L. T., Forsberg, C. and Eisenman, H.C. (1997) Activation at a distance: involvement of nucleoprotein complexes that remodel chromatic. *Gene Therapy and Molecular Biology* 1: 483-494.

Versaw, W.K. and Metzenberg, R.L. (1996) Activator-independent gene expression in *Neurospora crassa*. *Genetics* 142: 417-423.

Versaw, W.K. and Metzenberg, R.L. (1996) Intracellular phosphate-water oxygen exchange measured by mass spectrometry. *Analytical Biochemistry* 241: 14-17.

Versaw, W.K. and Metzenberg, R.L. (1995) Repressible cation-phosphate symporters in *Neurospora crassa*. *Proc. Natl. Acad. Sci. USA* 92: 3884-3887.

Versaw, W.K. (1995) A phosphate-repressible, high-affinity phosphate permease is encoded by the *pho-5*$^{+}$ gene of *Neurospora crassa*. *Gene* 153: 135-139.

Versaw, W.K. and Metzenberg, R.L. (1995) Genetic mapping of the *N. crassa pho-5*$^{+}$ gene. *Fungal Genetics Newsletter* 42: 78.

Versaw, W.K., Bevins, M.A., and Markwell, J.P. (1991) Purification and properties of a 4-nitrophenylphosphatase from *Aspergillus niger*. *Archives of Biochemistry and Biophysics* 257: 85-90.

Versaw, W.K., Cuppett, S.L., Winters, D.D., and Williams, L.E. (1989) An improved colorimetric assay for bacterial lipase in nonfat dry milk. *Journal of Food Science* 54: 1557-1558.

Conference proceedings (peer-reviewed)

Karlsson, P.M., **Irigoyen, S, Versaw, W.K.**, and Spetea, C. (2010) The physiological role of Arabidopsis thylakoid phosphate transporter PHT4;1. *Proceedings of the 15th international congress on photosynthesis,* Beijing, China.

Patents

Patent No. 5,183,752 Heat-labile phosphatase isolated from *Aspergillus niger*. Awarded to J.P. Markwell, **W.K. Versaw**, J.C. Osterman and P.M. Kelley, assignors to the Board of Regents, University of Nebraska, Lincoln, NE.

Patent No. 5,432,064 Process for dephosphorylating linear polynucleotide substrate with phosphatase from *Aspergillus niger*. Awarded to J.P. Markwell, **W.K. Versaw**, J.C. Osterman and P.M. Kelley, assignors to the Board of Regents, University of Nebraska, Lincoln, NE.