

Sakiko Okumoto, Ph.D.
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Dept. of Soil and Crop Science
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Education

2003 Ph.D. in Plant Physiology Tübingen University, Germany
Dissertation title: The localization and characterization of the Amino Acid Permeases in Arabidopsis

2000 M.S. in Agricultural Science The University of Tokyo, Japan
Dissertation title: The analysis of the expression of plant amino acid transporters

1998 B.S. in Agricultural Science The University of Tokyo, Japan

Previous and current appointments

2016-present Associate Professor, Department of Soil and Crop, Texas A&M University

2015-2016 Associate professor, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech

2007-2015 Assistant professor, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech

2003-2007 Postdoctoral fellow, Carnegie Institution of Washington

Awards and honors

April 2003 Graduation "cum laude" from Tübingen University

May 1998 Scholarship, Japan Student Services Organization

Research and teaching interests

- Development of biosensors for small biological molecules
- Nitrogen transport and sensing in plants
- Improving nitrogen utilization efficiency of plants

Peer-reviewed selected publications

1. **Okumoto, S.**, et al., *Editorial: Amino acids of the glutamate family: Functions beyond primary metabolism*. Frontiers in Plant Science, 2016. **7**.
2. **Besnard, J.**, and Okumoto, S. 2014. In vivo imaging of metabolites using genetically encoded sensors. Journal of Visualized Experiments 89, e51657. doi: 10.3791/51697
3. **Wilson, M.L.**, Okumoto, S., Adam, L., and Peccoud, J. 2014. Development of a domain-specific genetic language to design Chlamydomonas reinhardtii expression vectors. Bioinformatics 30, 251-257. doi: 10.1093/bioinformatics/btt646
4. **Elashry, A.**, Okumoto, S., Siddique, S., Koch, W., Kreil, D.P., and Bohlmann, H. 2013. The AAP gene family for amino acid permeases contributes to

- development of the cyst nematode *Heterodera schachtii* in roots of *Arabidopsis*. *Plant Physiology and Biochemistry* 70, 379-386. doi: 10.1016/J.Plaphy.2013.05.016
5. **Melo, C.V.**, Okumoto, S., Gomes, J.R., Baptista, M.S., Bahr, B.A., Frommer, W.B., and Duarte, C.B. 2013. Spatiotemporal Resolution of Bdnf Neuroprotection against Glutamate Excitotoxicity in Cultured Hippocampal Neurons. *Neuroscience* 237, 66-86. doi: 10.1016/J.Neuroscience.2013.01.054
 6. **Price, M.**, Kong D. and Okumoto, S. 2013. Inter-subunit interactions between Glutamate-Like Receptors in *Arabidopsis*. *Plant signaling & behavior* 8, e27034. doi: 10.4161/psb.27034
 7. **Gruenwald, K.**, Holland, J.T.*, Stromberg, V.*, Ahmad, A.*, Watcharakichkorn, D.*, and Okumoto, S. 2012. Visualization of glutamine transporter activities in living cells using genetically encoded glutamine sensors. *PloS one* 7, e38591. doi: 10.1371/journal.pone.0038591
 8. **Okumoto, S.**, Jones, A., and Frommer, W.B. 2012. Quantitative imaging with fluorescent biosensors. *Annual Review of Plant Biology* 63, 663-706. doi: 10.1146/annurev-arplant-042110-103745
 9. **Price, M.B.**, Jelesko, J., and Okumoto, S. 2012. Glutamate receptor homologs in plants: functions and evolutionary origins. *Frontiers in Plant Science* 3, 235. doi: 10.3389/fpls.2012.00235
 10. **Hildreth, S.B.**, Gehman, E.A., Yang, H., Lu, R.H., Ritesh, K.C., Harich, K.C., Yu, S., Lin, J., Sandoe, J.L., Okumoto, S., *et al.* 2011. Tobacco nicotine uptake permease (NUP1) affects alkaloid metabolism. *Proceedings of the National Academy of Sciences of the United States of America* 108, 18179-18184. doi: 10.1073/pnas.1108620108
 11. **Okumoto, S.**, and Pilot, G. 2011. Amino acid export in plants: a missing link in nitrogen cycling. *Molecular plant* 4, 453-463. doi: 10.1093/mp/ssp003

Book Chapters

1. **Price, M.B.***, and Okumoto, S. Amino Acid Export in Plants. In *Amino Acid in Higher Plants*, J.P.F. D'Mello, ed. CAB International Publishing.
2. **Okumoto, S.** (2014) Quantitative imaging approaches for small-molecule measurements using FRET sensors in plants, *Methods Mol Biol.* Sriram G. ed. Humana Press, New York, 1083, 55-64. doi: 10.1007/978-1-62703-661-0

Oral presentations at international conferences (since appointed at Virginia Tech)

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| 2013 | 21 st International Conference of Plant Growth Substances, Shanghai, China |
| 2012 | Nitrogen Ideas lab, NSF/BBSRC, Crewe, UK |
| 2010 | 3 rd Pan American Plant Membrane Biology Workshop, Puebla, Mexico |
| 2007 | Plant Cell Biology Symposium, Cologne, Germany |

Invited seminars and oral presentations at regional meetings (since appointed at Virginia Tech)

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| 2014 | Evolution of the first nervous systems II, St. Augustine, Florida |
| 2013 | University of Tennessee, Knoxville, TN |
| 2012 | Pan American Membrane Biology Workshop, Asilomar, CA |
| 2009 | 10 th Annual Plant Biology Mini-symposium, College Park, Maryland, MD |

Competitive Grants and Other Sponsored Research

08/1/14 – 07/31/17 Guillaume Pilot, John McDowell, **Sakiko Okumoto** and Richard Helm “Mechanisms of nutrient transport from plants to biotrophic pathogens” Investigator-initiated research projects, National Science Foundation

04/05/14 – 03/31/16 Eric Schaller, Joseph Kieber and **Sakiko Okumoto** “Development of Fluorescence-based Nanosensors for Dynamic Measurement of Active Cytokinins in Plants” Early-concept Grants for Exploratory Research (EAGER), National Science Foundation

03/01/13 – 06/30/14 **Sakiko Okumoto**, Wade Thomason “Creating artificial nitrogen sink in plants – hoard it up!” Integrated Internal Competitive Grants Program, Virginia Tech

03/01/11 – 02/28/15 **Sakiko Okumoto**, Guillaume Pilot, and Erin Dolan “Identification of cellular amino acid export mechanisms in plants ” National Science Foundation 09/30/08 – 09/29/11 **Sakiko Okumoto** Development of dual-in vivo quantification system for glutamate and glutamine. Exploratory/Developmental Research Grant Award, National Institute of Health 07/01/08 – 06/31/10

Sakiko Okumoto “The development of glutamine sensor for *in vivo* real-time imaging” Jeffress Research Grant, Jeffress foundation