Curriculum Vitae

William R. Underwood

Citizenship United States of America

Address and contact information

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Education

Michigan State University (MSU), East Lansing, MI	Ph.D. Genetics 2006
Indiana University, Bloomington, IN	B.S. Biology 2001

Present position

Research Plant Pathologist	2015-Present
USDA-ARS Sunflower and Plant Biology Research Unit	

Employment History

Dept. of Plant and Microbial Biology
Energy Biosciences Institute
University of California, Berkeley

Research Scientist	4/2012-7/2015
Postdoctoral Fellow	5/2008-4/2012

Dept. of Plant Biology
Carnegie Institution for Science
Stanford, CA

Postdoctoral Fellow	2/2007-5/2008

Employment History (cont)

MSU-DOE Plant Research Laboratory
Genetics Graduate Program

Graduate Research Fellow 9/2001-2/2007

Indiana University
Undergraduate Research Program

Undergraduate Research Intern 10/1999-6/2001

Fellowships and Awards

NIH-NRSA Postdoctoral Fellowship 2007-2010
National Institute of General Medical Sciences
Hans Kende Award for Best Dissertation in 2008
The Plant Sciences
MSU-DOE Plant Research Laboratory 2007
Anton Lang Research Excellence Award
Michigan State University Dr. Marvin Hensley 2006
Endowed Fellowship
United States Department of Education 2003-2006
GAANN Fellowship
Michigan State University Plant Science 2001-2003
Recruiting Fellowship
Indiana University Undergraduate 2000-2001
Teaching Internship
Indiana University Undergraduate May-August 2000
Summer Research Internship

Professional Affiliations and Service Activities

American Phytopathological Society 2017-Present
American Society of Plant Biologists 2002-Present
International Society for Molecular Plant-Microbe Interactions 2009-Present
International Sunflower Association 2017-Present
Review Editor – Frontiers in Plant Science
Review Editor – Frontiers in Microbiology
Editorial Board - Plants
Ad Hoc Reviewer – National Science Foundation
Ad Hoc Reviewer – Plant Cell; The Plant Journal; Molecular Plant-Microbe Interactions; New Phytologist; Plant Pathology; Phytopathology; Physiological and Molecular Plant Pathology; Journal of Experimental Botany; Plant Science; Plant Signaling and Behavior

Publications

Peer-reviewed Research Articles:

Underwood W, Ryan A, Somerville SC (2017) An Arabidopsis lipid flippase is required for timely recruitment of defenses to the host-pathogen interface at the plant cell surface. Molecular Plant, 10, 805-820.

Feehan JM, Scheibel KE, Bourras S, Underwood W, Keller B, Somerville SC (2017) Purification of high molecular weight genomic DNA from powdery mildew for long-read sequencing. Journal of Visialized Experiments 121, e55463.

Seiler GJ, Misar CG, Gulya TJ, Underwood WR, Flett BC, Gilley MA, Markell SG (2017) Identification of novel sources of resistance to Sclerotinia basal stalk rot in South African sunflower germplasm. Plant Health Progress, doi:10.1094/PHP-01-17-0007-RS

Foley ME, Dogramaci M, West M, Underwood WR (2016) Environmental factors for germination of *Sclerotinia sclerotiorum* sclerotia. Journal of Plant Pathology and Microbiology, 7, 379.

Underwood W, Somerville SC (2013) Perception of conserved pathogen elicitors at the plasma membrane leads to relocalization of the Arabidopsis PEN3 transporter. Proceedings of the National Academy of Sciences USA, 110, 12492-12497.

Xin X-F, Nomura K, Underwood W, He SY (2013) Induction and suppression of PEN3 focal accumulation during *Pseudomonas syringae* pv. *tomato* DC3000 infection of Arabidopsis. Molecular Plant-Microbe Interactions, 26, 861-867.

Chen L-Q, Hou, B-H, Lalonde S, Takanaga H, Hartung ML, Qu XQ, Guo, WJ, Kim J-G, Underwood W, Chaudhuri B, Chermak D, Antony G, White FF, Somerville S, Mudgett MB, Frommer W (2010) Sugar transporters for intercellular exchange and nutrition of pathogens. Nature, 468, 527-532.

Beckers GJ, Jaskiewicz M, Liu Y, Underwood WR, He SY, Zhang S, Conrath U (2009) Mitogen-activated protein kinases 3 and 6 are required for full priming of stress responses in *Arabidopsis thaliana*. Plant Cell, 21, 944-953.

Underwood W, Zhang S, He SY (2007) The *Pseudomonas syringae* type III effector tyrosine phosphatase HopAO1 suppresses innate immunity in *Arabidopsis thaliana.* Plant Journal, 52, 658-672.

Melotto M, Underwood W, Koczan J, Nomura K, He SY (2006) Plant stomata function in innate immunity against bacterial invasion. Cell, 126, 1-12.

Thilmony R†, Underwood W†, He SY (2006) Genome-wide transcriptional analysis of the *Arabidopsis thaliana* interaction with the plant pathogen *Pseudomonas syringae* pv. *tomato* DC3000 and the human pathogen *Escherichia coli* O157:H7. Plant Journal, 46, 34-53.

† Denotes Equal Contribution

Refereed Reviews:

Underwood W (2016) Contributions of host cellular trafficking and organization to the outcomes of plant-microbe interactions. Seminars in Cell and Developmental Biology, 56, 163-173.

Underwood W (2012) The plant cell wall: A dynamic barrier against pathogen invasion. Frontiers in Plant Science, 3:85.

Underwood W, Somerville SC (2008) Focal accumulation of defenses at sites of fungal pathogen attack. Journal of Experimental Botany, 59, 3501-3508.

Melotto M, Underwood W, He SY (2008) Role of stomates in plant innate immunity and foliar bacterial diseases. Annual Review of Phytopathology, 46, 101-122.

Underwood W, Melotto M, He SY (2007) Role of plant stomata in bacterial invasion. Cellular Microbiology, 9, 1621-1629.

Book Chapters:

Underwood W, Koh S, Somerville SC (2011) Visualizing cellular dynamics in plant-microbe interactions using fluorescent-tagged proteins. In: McDowell, J., ed. Methods in Molecular Biology: Plant Immunity. Totowa, NJ: Humana Press.

He SY, Bray-Speth E, Imboden L, Huang WN, Lee YN, Melotto M, Mecey C, Nomura K, Underwood W, Uribe F, Yao J, Zeng W (2008) Suppression of host defense by *Pseudomonas syringae* in Arabidopsis. In Lorito M, Woo S, and Scala F, eds, Biology of Plant-Microbe Interactions, Vol 6, APS Press, St. Paul, Minnesota.

He SY, Bandyopadhyay S, Bray-Speth E, Hauck P, Jin QL, Kolade O, Nomura K, Thilmony R, Underwood W, Zwiesler-Vollick J (2003) Bacterial Type III Secretion in Pathogenesis. In Tikhonovich IA, ed, Biology of Plant-Microbe Interactions, Vol 4, APS Press, St. Paul, Minnesota.

Invited Seminars

"Identification of *Sclerotinia sclerotiorum* virulence determinants relevant to infection of multiple host plants by association mapping."
15th Annual National Sclerotinia Initiative Meeting, Jan. 19, 2017, Minneapolis, MN.

"Characterization of Sclerotinia variation for isolate virulence and isolate interactions with sunflower genotypes."
39th Annual Sunflower Research Forum, Jan. 12, 2017, Fargo, ND.

"Sunflower Special Topic: Diseases of the Head."
39th Annual Sunflower Research Forum, Jan. 11, 2017, Fargo, ND.

"Developing mechanistic perspectives on Sclerotinia virulence and host defense to inform rational strategies for improving crop resistance."
14th Annual National Sclerotinia Initiative Meeting, Jan. 21, 2016, Minneapolis, MN.

"New approaches to address multiple sunflower disease challenges."
38th Annual Sunflower Research Forum, Jan. 12, 2016, Fargo, ND.

"Forward genetic screening reveals new insights into cellular processes governing local recruitment of defenses to the plant-microbe interface."
36th New Phytologist Symposium, Cell Biology at the Plant-Microbe Interface. Dec 1, 2015. Munich, Germany.

"Defense targeting to the host-pathogen interface: Endomembrane trafficking in the plant immune response."
University of Utah, Dept. of Biology, Feb 2, 2015.

"Defense targeting to the host-pathogen interface: Endomembrane trafficking in the plant immune response."
University of Minnesota-Duluth, Dept. of Biology, Dec. 15, 2014.

"A TGN-localized lipid flippase is required for continuous endocytic cycling of PEN3 and other Arabidopsis defense proteins and for their timely delivery to papillae at the host-pathogen interface."
Cell Biology concurrent session, July 10, 2014 – 16th International Congress on Molecular Plant-Microbe Interactions. Rhodes, Greece.

"Spatial targeting and recruitment of plant defenses to the host-pathogen interface."
American Society of Plant Biologists Western Section Meeting, May 4, 2014. Santa Clara, CA.

"Targeting of plant antimicrobial immune responses to the host-pathogen interface."
University of Nevada, Dept. of Biochemistry & Molecular Biology, March 24, 2014.

"Targeting of plant cell surface immune responses to the host-pathogen interface."
New Mexico State University, Dept. of Biology, January 30, 2014.

"Targeting of plant cell surface immune responses to the host-pathogen interface."
Washington State University, Dept. of Plant Pathology, November 12, 2013.

"Targeting and regulation of plant cell surface immune responses against phytopathogens."
University of Nebraska, Dept. of Plant Pathology, October 23, 2013.

"Targeting of the Arabidopsis PEN3 transporter to powdery mildew penetration sites."
University of Copenhagen – 3rd International Powdery Mildew Workshop, August 30, 2013. Copenhagen, Denmark.

"Targeting of antimicrobial defenses to sites of pathogen attack at the plant cell surface."
Intracellular Trafficking mini-symposium, July 23, 2013 – American Society of Plant Biologists Annual Conference. Providence, Rhode Island.

"Arabidopsis mutants displaying aberrant localization of the PEN3 ABC transporter have altered responses to powdery mildew fungi."
Powdery Mildew Workshop, July 29, 2012 – 15th International Congress on Molecular Plant-Microbe Interactions. Kyoto, Japan.

"Regulation and targeting of plant cell surface defenses against phytopathogens."
University of Kentucky, Dept. of Horticulture, May 16, 2012.

"Regulation and localization of the PEN3 ABC transporter in Arabidopsis disease resistance."
Michigan State University, Oct. 20, 2008 – Hans Kende Award and Memorial Seminar.