

CURRICULUM VITAE

GREGG A. HOWE

ADDRESS

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EDUCATION

1979 - 1983 East Carolina University, Greenville, NC. B.A., Biology
1984 - 1987 East Carolina University, Greenville, NC. M.Sc., Biology
1987 - 1993 University of California, Los Angeles, CA. Ph.D., Biology
Dissertation title: Biochemical and Genetic Analysis of Plastidic *c*-type
Cytochrome Biosynthesis in *Chlamydomonas reinhardtii*. (Dr. Sabeeha
Merchant, research advisor)

POSITIONS

1986 - 1987 Research Chemist, Plant Molecular Biology Group, Standard Oil of Ohio,
Cleveland, OH
1987 Research Assistant, Agricultural Research Biotechnology Unit, CIBA-
GEIGY, Research Triangle Park, NC
1993 - 1997 Postdoctoral Fellow, Institute of Biological Chemistry, Washington State
University, Pullman, WA (Dr. Clarence Ryan, research advisor)
1997 - 2003 Assistant Professor, MSU-DOE Plant Research Laboratory and Department
of Biochemistry and Molecular Biology, Michigan State University, East
Lansing, MI
2003 - 2007 Associate Professor, MSU-DOE Plant Research Laboratory and Department
of Biochemistry and Molecular Biology, Michigan State University, East
Lansing, MI
2007 - present Professor, MSU-DOE Plant Research Laboratory and Department of
Biochemistry and Molecular Biology, Michigan State University, East
Lansing, MI
2013 – 2022 Project Lead of “*Building and Operating the Biological Solar Panel*”
research theme, core grant to the MSU-DOE Plant Research Laboratory
2016 – present Founding Member, Plant Resilience Institute, Michigan State University

HONORS, AWARDS, AND FELLOWSHIPS

1984-1985 Burroughs Wellcome Research Fellowship
1985 Mary Poston Award (presentation of paper)
1985 James S. McDaniel Award (scholarship)
1987-1990 USDA Doctoral Research Fellowship

1991-1992	University of California Biotechnology Research Fellowship
1992-1993	Ursula Mandel Dissertation Year Fellowship
1994-1997	National Research Service Award (NRSA), National Institutes of Health
1994-1997	Life Sciences Research Foundation Fellowship (declined)
1998-2003	NIH FIRST grant award
2010	MSU Distinguished Faculty Award
2010	College of Natural Science Distinguished Faculty Award
2012	Fellow of AAAS
2014-2022	Highly Cited Researcher (Thomson Reuters/Clarivate)
2016	MSU Foundation Professor
2017	MSU Innovation of the Year
2017	Fellow of American Society of Plant Biologists Award
2017	MSU Distinguished Professor
2020	National Academy of Sciences, Member
2022	US-Japan Fulbright Scholar

PROFESSIONAL SOCIETIES

American Society of Plant Biologists
 American Association for the Advancement of Science

PROFESSIONAL ACTIVITIES

Editorial Boards

2005-2016	Monitoring Editor, <i>Plant Physiology</i>
2004-2006	Member of the Advisory Board, <i>The Plant Journal</i>
2006-2008	Member of the Editorial Board, <i>Molecular Plant Pathology</i>
2008	Co-editor of a Special Issue of <i>Plant Physiology</i> on “Plant Interactions with Arthropod Herbivores”, 2008
2015	Guest Editor, <i>Annual Review of Plant Biology</i>
2012-2019	Guest Editor, <i>Proc Natl Acad Sci USA</i>
2017-present	Section Head of Plant-Biotic Interactions, Faculty of 1000 (F1000)

Committees for Professional Societies

2005-2008	Early Career Award Committee, American Society for Plant Biologists
2021	Selection Committee, NAS Prize in Food and Agriculture Sciences

Grant Panels

1998	Member, DOE Division of Energy Biosciences Grant Panel
1999	Member, USDA/NRICGP Strengthening Grant Panel
2009	Member, USDA/AFRI Arthropod & Nematode Suborganismal Biology and Tools, Resources and Genomics Program
2011-2013	Ad hoc member, Cell Signaling and Regulatory Systems Study Section, NIH
2015	Member, Strategic Partnership Grant Panel, MSU

2016 Chair, Strategic Partnership Grant Panel, MSU
2017 Member, DOE Division of Basic Energy Sciences
2020 Member, NSF IOS Plant Biotic Interactions Panel
2020 Review Team Member, DOE Division of Basic Energy Sciences
2022 Member, NSF IOS/USDA NIFA Panel

OUTREACH

Host high school student for summer internship (1999)
Co-Chaired PRL CHOICES Day (Complete and Honest Information about Careers in Science), 2003; 2009
Faculty participant in MSU Plant Genomics Summer Research Program
<http://plantgenomics.msu.edu/>. Hosted and mentored a high school teacher (Carol Edwards, 2007-2008); Adar Zemin (summer, 2009); Jonathan Terrain (Iraq war veteran; summer 2010); Kayla Moses (summer, 2014); Nicole Haddad (summer, 2016); Ryan Humphrey (2017)
Organized/chaired “Jasmonate signaling” and “Plant-herbivore Interactions” minisymposia, American Society of Plant Biologists Annual Meeting, Merida, MX
Trained graduate student (Missy Smith, UC Riverside) in LC-MS as part of NSF IGERT Program
Co-organizer of Inaugural Symposium on Plant Biotechnology for Health and Sustainability, Michigan State University, October 2012, October 2013, October 2015
Hosted Brazilian Exchange student in Science Without Borders Program (Dalton de Oliveira Ferreira, 2014 – 2015)
Hosted Brazilian Exchange student in Science Without Borders Program (Miriam Pimentel, 2015)
Seeds of Science Program in Plant-Insect Interactions, 4H MSU Children’s Garden (Local Elementary School students). 2015-2018

INVITED CONFERENCE PRESENTATIONS & RESEARCH SEMINARS

1990 Fourth International Conference on the Cell and Molecular Biology of *Chlamydomonas*. Delevan, WI
1992 Fifth International Conference on the Cell and Molecular Biology of *Chlamydomonas*. Pacific Grove, CA
1995 “Plant Biochemistry 1995”. Washington State University, Pullman, WA
1996 Institut de Biologie et de Physiologie végétales, Université de Lausanne, Switzerland
Conference on the Molecular Biology of Tomato. Berkeley, CA
Biology of Proteolysis. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY
1997 Plant Biochemistry 1997. Washington State University, Pullman, WA
Department of Biology, University of Utah, Salt Lake City, UT
1998 National Academy of Sciences/American Society of Plant Physiologists Symposium on “Frontiers in Plant Biology,” Amherst, MA
Joint Annual Meeting, American Phytopathological Society and Entomological Society of America, Las Vegas, NV
Department of Entomology, Michigan State University, East Lansing, MI

- Department of Biological Sciences, Western Michigan University, Kalamazoo, MI
- 1999 “Plant Biochemistry 1999.” Washington State University, Pullman, WA
- 2000 Genetics and CMB Annual Retreat, MSU, Lake Higgins, MI
- 2001 Cayman Chemical Company, Ann Arbor, MI
 Dept of Horticulture/Crop and Soil Science, Michigan State Univ, East Lansing, MI
 Michigan Life Science Corridor Conference, Novi, MI
 1st IOBC Conference on Induced Resistance in Plants against Insects and Diseases,
 Wageningen, The Netherlands
- Department of Biological Sciences, University of South Carolina, Columbia, SC
 “Plant Biochemistry 2001,” Washington State University, Pullman, WA
 Midwest Cytochromes P450 Symposium, West Lafayette, IN
 Program in Cell and Molecular Biology, University of Arkansas, Fayetteville, AR
 Department of Cellular and Molecular Biology, UCLA, Los Angeles, CA
- 2002 Dow AgroSciences, Indianapolis, IN
 Department of Biology, University of Michigan, Ann Arbor, MI
 Department of Plant Sciences, University of Arizona, Tucson, AZ
- 2003 Institute for Plant Physiology and Biotechnology, University of Hohenheim, Stuttgart,
 Germany
 International Meeting on “Intra- and Intercellular Communication in Plants”, Halle,
 Germany
- 2004 American Society of Plant Biologists Annual Meeting, Orlando, FL
 Entomological Society of America Annual Meeting, Salt Lake City, UT
 Biology Department, Calvin College, Grand Rapids, MI
- 2005 Plant Gene Expression Center, USDA, Albany, CA
 Department of Plant Biology, University of California at Davis, Davis, CA
 American Society of Plant Biologists Annual Meeting, Seattle, WA
 “Regulatory Oxylipins”, Lausanne, Switzerland
 Department of Biochemistry, Purdue University, West Lafayette, IN
 Genetics Research Forum, Michigan State University, East Lansing, MI
- 2006 Department of Botany, University of British Columbia, Vancouver BC, Canada
 Department of Biology, University of Victoria, Victoria BC, Canada
 American Chemical Society National Meeting, Atlanta, GA
 Max-Plank Institute for Chemical Ecology, Jena, Germany
 Abteilung Allgemeine und Entwicklungsphysiologie, Albrecht-von-Haller-Institute
 for Plant Sciences, University of Göttingen, Göttingen, Germany
 Leibniz Institute of Plant Biochemistry, Halle (Saale), Germany
 17th International Symposium on Plant Lipids, Michigan State University, East
 Lansing, MI
 Department of Biochemistry, Rice University, Houston, TX
- 2007 Penn State University, Dept. of Entomology, University Park, PA
 Induced resistance against pathogens and insects, Doorn, The Netherlands
- 2008 Kansas State University, Manhattan, KS
 Noble Foundation, Ardmore, OK
 University of North Texas, Denton, TX
 NRI Arthropod Herbivore Biology & Management Programs Awardee Workshop.
 Reno, NV
- 2009 Boyce Thompson Institute, Cornell University, Ithaca, NY
 Regulatory Oxylipins Conference, Lausanne, Switzerland

- Loomis Lecture, Department of Genetics, Development and Cell Biology, Iowa State University, Ames, IA
 Donald Danforth Plant Science Center, St. Louis, MO
 9th International Congress on Plant Molecular Biology, St. Louis, MO
- 2010 Institute of Biological Chemistry, Washington State University, WA
 Michigan State University, Cell and Molecular Biology Retreat, Laingsburg, MI
 Entomological Society of America Annual Meeting, San Diego, CA
 Penn State University, Dept. Plant Biology, University Park, PA
- 2011 Ohio State University, Depts. Plant Pathology and Entomology, Columbus, OH
 (Student-invited speaker)
 22nd International Conference on Arabidopsis Research, Madison, WI
 American Phytopathology Society Annual Meeting, Honolulu, HI
 University of Nebraska, Symposium on plant abiotic and biotic stress responses, Lincoln, NE
- 2012 Molecular Biology Institute, UCLA, Los Angeles, CA
 Science University, Michigan State University, East Lansing, MI
 Inaugural Symposium on Plant Biotechnology for Health and Sustainability, Michigan State University, East Lansing, MI
 DOE Physical Biosciences Research Meeting, Potomac, MD
 Department of Genetics, University of Wisconsin-Madison, Madison, WI
 Plant Biological Science, University of Minnesota, Minneapolis, MN
- 2013 Gordon Research Conference on Plant-Herbivore Interactions, Ventura, CA
 Mid-Atlantic Plant Molecular Biology Society, Laurel, MD
 Interdepartmental Plant Biology Program, University of Iowa, Ames, IA
- 2014 Cold Spring Harbor Frontiers and Techniques in Plant Biology Course, Cold Spring Harbor, NY
 American Society of Plant Biologists Annual Meeting, Portland, OR
 DOE Physical Biosciences Research Meeting, Annapolis, MD
 Dow Gardens and Master Gardner Association, Midland, MI
- 2015 Institute of Biological Chemistry, Washington State University, Pullman, WA
 Albrecht-von-Haller-Institute for Plant Sciences, University of Göttingen, Göttingen, Germany
 Leibniz Institute of Plant Biochemistry, Halle (Saale), Germany
 International Symposium, ‘Bridging Ecology and Molecular Biology: Organismic Responses to Recurring Stress’, Berlin, Germany
 Cold Spring Harbor Frontiers and Techniques in Plant Biology Course, Cold Spring Harbor, NY
 PRL 50th Anniversary Symposium, Michigan State University, East Lansing, MI
 Department of Biological Sciences, Western Michigan University, Kalamazoo, MI
 Department of Entomology, Michigan State University, East Lansing, MI
- 2016 Gordon Research Conference on Plant Volatiles, Ventura CA
 Entomological Society of America annual meeting, Orlando, FL
 University of Western Ontario, Ontario, CA
 Phytochemical Society of North America (PSNA), Davis, CA
- 2017 Department of Entomology, Texas A&M University, College Station, TX
 Forum on Plant Resilience and Innovation, University of Tsukuba, Tsukuba, Japan
 RIKEN Center for Sustainable Resource Science, Yokohama, Japan
 DOE-BES Photosynthesis Systems PI Meeting, Gaithersburg, MD

- University of Nevada at Reno, Reno, NV
- 2018 Molecular Plant Science Program, Michigan State University, East Lansing, MI
4th Annual Symposium Plant Biochemistry, Leibniz Institute of Plant
Biochemistry, Halle (Saale), Germany
Guest speaker, Great Lakes Bioenergy Research Center's "Field-to-Fuel
Optimization" meeting
Agricultural Bioscience International Conference 2018, Weifang, China
Institute of Genetics and Developmental Biology, Chinese Academy of Sciences,
Beijing, China
- 2019 ASPB Midwest Meeting, Morgantown, WV
Regulatory Oxylipins Meeting, Ghent, Belgium
Dept. of Biochemistry & Biophysics, Texas A&M University, College Station, TX
DOE-BES Photosynthesis Systems PI Meeting, Gaithersburg, MD
- 2020 Dept. of Biology, Wilfrid Laurier University, Ontario, CA
- 2021 Dept. of Botany, University of Wisconsin at Madison, WI
31st International Conference on Arabidopsis Research, Seattle, WA
Annual Meeting of the Entomological Society, Denver, CO
- 2022 Plant Biotechnology for Health and Sustainability
Institute of Biological Chemistry, Washington State University, Pullman, WA

PUBLICATIONS

Citation details at:

<https://scholar.google.com/citations?user=76LRNMEAAAAJ&hl=en&oi=ao>

1. Bruschi CV, Comer A, Howe G (1987) Specificity of DNA uptake during whole cell transformation of *Saccharomyces cerevisiae*. *Yeast* 3: 131-137.
2. Bruschi CV, Howe G (1988) High frequency FLP-independent DNA recombination of the 2 micron plasmid in the yeast *Saccharomyces cerevisiae*. *Curr Genet* 14: 191-199.
3. Howe G, Aldrich J (1988) Use of oligonucleotide probes to discriminate chloroplast-encoded streptomycin-resistant from streptomycin-sensitive tobacco plants using total DNA mini-preps. *Plant Mol Biol Rep* 64: 258-265.
4. Howe G, Kutsunai S, Merchant S (1990) Physiological factors affecting the accumulation of plastocyanin, cytochrome *c*-552, and a 30-kD soluble protein in *Chlamydomonas reinhardtii*. In, *Current Research in Photosynthesis*, Vol. III (ed. M. Baltscheffsky), Kluwer Academic Publishers, The Netherlands, pp 13.711-13.714.
5. Merchant S, Hill K, Howe G (1991) Dynamic interplay between two Cu-titrating components in the transcriptional regulation of cytochrome *c6*. *EMBO J* 10: 1383-1389.
6. Howe G, Merchant S (1992) Heavy-metal induced peptides in *Chlamydomonas reinhardtii*. *Plant Physiol* 98: 127-136.
7. Howe G, Quinn J, Hill K, Merchant S (1992) Control of the biosynthesis of cytochrome *c6* in *Chlamydomonas reinhardtii*. *Plant Physiol Biochem* 30: 299-307.
8. Howe G, Merchant S (1992) The biosynthesis of membrane and soluble plastidic c-type cytochromes of *Chlamydomonas reinhardtii* is dependent on multiple common gene products. *EMBO J* 11: 2789-2801.
9. Howe G, Merchant S (1993) The maturation of thylakoid lumen proteins proceeds post-translationally through an intermediate *in vivo*. *Proc Natl Acad Sci USA* 90: 1862-1866.

10. Howe G, Merchant S (1994) Role of heme in the biosynthesis of cytochrome *c6*. *J Biol Chem* 269: 5824-5832.
11. Howe G, Merchant S (1994) The biosynthesis of bacterial and plastidic *c*-type cytochromes. *Photosynthesis Research* 40:147-165.
12. Howe G, Mets L, Merchant S (1995) Biosynthesis of cytochrome *f* in *Chlamydomonas reinhardtii*: analysis of the pathway in gabaculine-treated cells and in the heme attachment mutant B6. *Mol Gen Genet* 246: 156-165.
13. Conconi A, Smerdon M, Howe G, Ryan C (1996) The octadecanoid signaling pathway mediates a UV response in plants. *Nature* 383: 826-829.
14. Bergey D, Howe G, Ryan C (1996) Polypeptide signaling for plant defensive genes exhibits analogies to defense signaling in animals. *Proc Natl Acad Sci USA* 93: 12053-12058.
15. Howe G, Lightner J, Browse J, Ryan C (1996) An octadecanoid pathway mutant (JL5) of tomato is compromised in signaling for defense against insect attack. *Plant Cell* 8: 2067-2077.
16. Howe G, Ryan C (1999) Suppressors of systemin signaling identify genes in the tomato wound response pathway. *Genetics* 153: 1411-1421.
17. Howe GA, Lee GI, Itoh A, Li L, DeRocher A (2000) Cytochrome P450-dependent metabolism of oxylipins in tomato: Cloning and expression of allene oxide synthase and fatty acid hydroperoxide lyase. *Plant Physiol* 123: 711-724.
18. Froehlich JE, Itoh A, Howe GA (2001) Tomato allene oxide synthase and fatty acid hydroperoxide lyase, two cytochrome P450s involved in oxylipin metabolism, are targeted to different membranes of chloroplast envelope. *Plant Physiol* 125: 306-317.
19. Itoh A, Howe GA (2001) Molecular cloning of a divinyl ether synthase. Identification as a novel CYP74 cytochrome P450. *J Biological Chemistry* 276: 3620-3627.
20. Li L, Howe GA (2001) Alternative splicing of prosystemin pre-mRNA in tomato generates two active forms of the prosystemin wound signal. *Plant Mol Biol* 46: 409-419.
21. Li L, Li C, Howe GA (2001) Genetic analysis of wound signaling in tomato: Evidence for a dual role of jasmonic acid in defense and female fertility. *Plant Physiol* 127: 1414-1417.
22. Howe GA (2001) Cyclopentenone signals for plant defense: Remodeling the jasmonate response. *Proc Natl Acad Sci USA* 98: 12317-12319.
23. Li L, Li C, Lee GI, Howe GA (2002) Distinct roles for jasmonic acid synthesis and action in the systemic wound response of tomato. *Proc Natl Acad Sci USA*. 99: 6416-6421.
24. Li C, Williams M, Loh Y-t, Lee G-I, Howe GA (2002) Resistance of cultivated tomato to cell-content feeding herbivores is regulated by the octadecanoid signaling pathway. *Plant Physiol*. 130:494-503.
25. Strassner J, Schaller F, Frick U, Howe GA, Weiler EW, Amrhein N, Macheroux P, Schaller A. (2002) Characterization and cDNA microarray expression analysis of 12-oxophytodienoate reductases reveals differential roles for octadecanoid biosynthesis in local versus systemic wound responses. *Plant J*. 32: 585-601.
26. Itoh A, Schillmiller AL, McCaig B, Howe GA (2002) Identification of a jasmonate-regulated allene oxide synthase that metabolizes 9-hydroperoxides of linoleic and linolenic acids. *J Biological Chemistry* 277: 46051-46058.
27. Howe GA, Li L, Lee GI, Li C, Shaffer D (2002) Genetic dissection of induced resistance in tomato. In, *Induced Resistance in Plants Against Insects and Diseases*. A. Schmitt & B. Mauch-Mani, Eds. vol. 26, pp. 47-52.

28. Howe G, Schillmiller (2002) Oxylin metabolism in response to stress. *Curr Op Plant Biol.* 5:230-236.
29. Lee GI, Howe GA (2003) The tomato mutant *spr1* is defective in systemin perception and the production of a systemic wound signal for defense gene expression. *Plant J.* 33: 567-576.
30. Li C, Liu G, Xu C, Lee GI, Bauer P, Ling HQ, Ganai MW, Howe GA (2003) The tomato *Suppressor of Prosystemin-mediated Responses2 (Spr2)* gene encodes a fatty acid desaturase required for the biosynthesis of jasmonic acid and the production of a systemic wound signal for defense gene expression. *Plant Cell* 15: 1646-1661.
31. Zhao Y, Thilmony R, Bender C, Schaller A, He SY, Howe GA (2003) Virulence systems of *Pseudomonas syringae* pv. *tomato* promote bacterial speck disease in tomato by targeting the jasmonate signaling pathway. *Plant J.* 36: 485-499.
32. Li L, Zhao Y, McCaig BC, Wingerd BA, Wang J, Whalon ME, Pichersky E, Howe GA (2004) The tomato homolog of COI1 is required for maternal control of seed maturation, jasmonate-signaled defense responses, and glandular trichome development. *Plant Cell.* 16: 126-143.
33. Chen H, McCaig BC, Melotto M, He SY, Howe GA (2004) Regulation of plant arginase by wounding, jasmonate, and the phytotoxin coronatine. *J Biological Chemistry* 279: 45998-46007.
34. Howe GA (2004) Jasmonates as signals in the wound response. *J. Plant Growth Reg.* 23:223-237.
35. Li C, Schillmiller AL, Liu G, Lee GI, Jayanty S, Sageman C, Vrebalov J, Giovannoni JJ, Yagi K, Kobayashi Y, Howe GA (2005) Role of β -oxidation in jasmonate biosynthesis and systemic wound signaling in tomato. *Plant Cell* 17: 971-986.
36. Chen H, Wilkerson CG, Kuchar JA, Phinney BS, Howe GA (2005) Jasmonate-inducible plant enzymes degrade essential amino acids in the herbivore midgut. *Proc. Natl. Acad. Sci. USA* 102: 19237-19242.
37. Howe G (2005) Jasmonates. In, *Plant Hormones: Biosynthesis, Signal Transduction, and Action!* (ed. Peter J. Davies), pp. 610-634, Kluwer Academic Publishers, The Netherlands.
38. Schillmiller AL, Howe GA (2005) Systemic signaling in the wound response. *Curr Opin Plant Biol.* 8:369-377.
39. Cañoles MA, Beaudry RM, Li C, Howe GA (2006) Deficiency of linolenic acid in *fad7* mutant tomato changes the volatile profile and sensory perception of disrupted leaf and fruit tissue. *J Amer Soc Hort Sci* 131: 284-289.
40. Chen H, Jones AD, Howe GA (2006) Constitutive activation of the jasmonate signaling pathway enhances the production of secondary metabolites in tomato. *FEBS Letters* 580: 2540-2546.
41. Powers RA, Rife CL, Schillmiller AL, Howe GA, Garavito RM (2006) Structure determination and analysis of acyl-CoA oxidase (ACX1) from tomato. *Acta Crystallographica D* 62: 683-686.
42. Ko J-H, Kim J H, Jayanty S, Howe GA, Han K-H (2006) Loss of function of COBRA, a determinant of oriented cell expansion, invokes cellular defence responses in *Arabidopsis thaliana*. *J Exp Bot* 57: 2923-2936.
43. Koo AJK, Chung HS, Kobayashi Y, Howe GA (2006) Identification of a peroxisomal acyl-activating enzyme involved in the biosynthesis of jasmonic acid in *Arabidopsis*. *J Biol Chem.* 281: 33511-33520.

44. Oh K, Asami T, Matsui K, Howe GA, Murofushi N (2006) Characterization of novel imidazole derivative, JM-8686, a potent inhibitor of allene oxide synthase. *FEBS Letters*, 580: 5791-5796.
45. Schilmiller AL, Koo AJK, Howe GA (2007). Functional diversification of acyl-CoA oxidases in jasmonic acid biosynthesis. *Plant Physiol* 143: 812-824
46. Chen H, Gonzales-Vigil E, Wilkerson CG, Howe GA (2007). Stability of plant defense proteins in the gut of insect herbivores. *Plant Physiol.* 143: 1954-1967.
47. Thines B, Katsir L, Melotto M, Niu Y, Mandaokar A, Liu G, Nomura K, He SY, Howe GA, Browse J (2007) JAZ repressor proteins are targets of the SCF^{COI1} complex during jasmonate signaling. *Nature* 448: 661-665.
48. Kandoth PK, Ranf S, Pancholi S, Jayanty S, Miller M, Howe GA, Lincoln D, and Stratmann JW (2007) The tomato MAP kinases LeMPK1, LeMPK2, and LeMPK3 function in the systemin-mediated defense response against herbivorous insects. *Proc. Natl. Acad. Sci. USA.* 104: 12205-12210.
49. Koo AJK, Howe GA (2007). Role of peroxisomal β -oxidation in the production of plant signaling compounds. *Plant Signaling and Behavior.* 2: 20-22
50. Howe GA, Browse J (2007) Jasmonate synthesis and action in higher plants. In: *Encyclopedia of Life Sciences.* John Wiley & Sons, Ltd: Chichester <http://www.els.net/> [DOI: 10.1002/9780470015902.a0020138]
51. Chung HS, Koo AJK, Gao X, Jayanty S, Thines B, Jones AD, Howe GA (2008) Regulation and function of Arabidopsis *JASMONATE-ZIM* domain genes in response to wounding and herbivory. *Plant Physiol.* 146: 952-964.
52. Katsir L, Schilmiller AL, Staswick PE, He SY, Howe GA (2008). COI1 is a critical component of a receptor for jasmonate and the bacterial virulence factor coronatine. *Proc Natl Acad Sci USA.* 105: 7100-7105.
53. Chen H, Gonzales-Vigil E, Howe GA (2008) Action of plant defensive enzymes in the insect midgut. In, *Induced Plant Resistance to Herbivory*, A. Schaller, ed. Springer Publishing Co.
54. Howe GA, Schaller A (2008) Direct defense induced by wounding and herbivores. In, *Induced Plant Resistance to Herbivory*, A. Schaller, ed. Springer Publishing Co.
55. Jander G, Howe GA (2008) Plant interactions with arthropod herbivores: State of the field. *Plant Physiol.* 146:1-3.
56. Browse J, Howe GA (2008) Update on jasmonate signaling: New weapons and a rapid response against insect attack. *Plant Physiol.* 146: 832-883.
57. Howe GA, Jander G (2008) Plant immunity to insect herbivores. *Annu. Rev. Plant Biol.* 59: 41-66.
58. Katsir L, Chung HS, Koo AJK, Howe GA (2008) Jasmonate signaling: a conserved mechanism of hormone sensing. *Curr Opin Plant Biol.* 11:428-435.
59. Farmer EE, Howe GA, Pearce G, Schaller A (2008) Obituary: Clarence A. "Bud" Ryan (1931-2007). *Phytochemistry* 69:1454-1456.
60. Melotto M, Mecey C, Niu Y, Chung HS, Katsir L, Yao J, Zeng W, Staswick P, Browse J, Howe GA, He SY (2008) A critical role of two positively charged amino acids in the Jas motif of Arabidopsis JAZ proteins in mediating coronatine- and jasmonoyl isoleucine-dependent interaction with the COI1 F-box protein. *Plant J.* 55: 979-988.
61. Boeglin WE, Itoh A, Zheng Y, Coffa G, Howe GA, Brash AR (2008) Investigation of substrate binding and product stereochemistry issues in two linoleate 9-lipoxygenases. *Lipids* 14:979-987

62. Chung HS, Howe GA (2009) A critical role for the TIFY motif in repression of jasmonate signaling by a stabilized splice variant of the JASMONATE ZIM-domain protein JAZ10 in *Arabidopsis*. *Plant Cell* 21: 131-145.
63. Koo AJK, Gao X, Jones AD, Howe GA (2009) A rapid wound signal activates systemic synthesis of bioactive jasmonates in *Arabidopsis*. *Plant J.* 59: 974-986.
64. Chung HS, Niu Y, Browse J, Howe GA (2009) Top hits in contemporary JAZ: An update on jasmonate signaling. *Phytochemistry* 70:1547–1559.
65. Koo AJK, Howe GA (2009). The wound hormone jasmonate. *Phytochemistry* 70:1571-1580.
66. Kang JH, Shi F, Jones AD, Marks D, Howe GA (2010) Distortion of trichome morphology by the hairless mutation of tomato affects leaf surface chemistry. *J Exp Bot.* 61: 1053-1064.
67. Chung HS, Cooke TF, DePew CL, Patel C, Ogawa N, Kobayashi Y, Howe GA (2010) Alternative splicing expands the repertoire of dominant JAZ repressors of jasmonate signaling. *Plant J* 4: 613-622.
68. Kang JH, Liu G, Shi F, Jones AD, Beaudry RM, Howe GA (2010) The tomato *odorless-2* mutant is defective in trichome-based production of diverse specialized metabolites and broad-spectrum resistance to insect herbivores. *Plant Physiol.* 154: 262-272.
69. Sheard LB, Tan X, Mao H, Withers J, Nissan GB, Hinds TR, Kobayashi Y, Hsu F-F, Sharon M, Browse J, He SY, Rizo-Rey J, Howe GA, Zheng N (2010) Mechanism of jasmonate recognition by an inositol phosphate-potentiated COI1-JAZ co-receptor. *Nature.* 468: 400-405.
70. Howe GA (2010) Update: The jasmonate receptor. In, *Plant Hormones: Biosynthesis, Signal Transduction, and Action!* (3rd edition, revised; ed. Peter J. Davies), Kluwer Academic Publishers, The Netherlands.
71. Howe GA (2010) Ubiquitin ligase-coupled receptors extend their reach to jasmonate. *Plant Physiol.* 154:471-474.
72. Gonzales-Vigil E, Bianchetti, CM, Phillips, GN, Howe GA (2011) Adaptive evolution of threonine deaminase in plant defense against insect herbivores. *Proc Natl Acad Sci USA.* 108: 5897-902.
73. Koo AJK, Cooke TF, Howe GA (2011) Cytochrome P450 CYP94B3 mediates catabolism and inactivation of the plant hormone jasmonoyl-L-isoleucine. *Proc Natl Acad Sci USA.* 108:9298-9303
74. Shyu C, Figueroa P, DePew CL, Cooke TF, Sheard LB, Moreno J, Katsir L, Zheng N, Browse J, Howe GA (2012) JAZ8 Lacks a Canonical Degron and has an EAR Motif that Mediates Transcriptional Repression of Jasmonate Responses in *Arabidopsis*. *Plant Cell,* 24: 536-250.
75. Avila CA, Arévalo-Soliz LM, Jia L, Navarre DA, Chen Z, Howe GA, Meng QW, Smith JE, Goggin FL (2012) Loss of function of FATTY ACID DESATURASE7 in tomato enhances basal aphid resistance in a salicylate-dependent manner. *Plant Physiol* 158: 2028-2041.
76. Withers J, Yao J, Meccey C, Howe GA, Melotto M, He SY (2012) Transcription factor-dependent nuclear localization of a transcriptional repressor in jasmonate hormone signaling. *Proc Natl Acad Sci USA.* 109: 20148-20153.
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