

CURRICULUM VITAE

STEVEN A. WHITHAM

Department of Plant Pathology & Microbiology
Iowa State University
4203 Advanced Teaching & Research Bldg.
2213 Pammel Dr.
Ames, IA 50011-1101
Web page: <https://www.plantpath.iastate.edu/whithamlab/>

Tel: 515-294-4952
Fax: 515-294-9420
Email: swhitham@iastate.edu
ORCID: 0000-0003-3542-3188

Education:

1995: Ph. D. Plant Pathology, University of California, Berkeley, CA
1992: M.S. Plant Pathology, University of California, Berkeley, CA
1990: B.S. Agricultural Biochemistry, Iowa State University, Ames, IA

Professional Experience:

2021 – Chair, ISU Institutional Biosafety Committee
2018 – Co-Director, Crop Bioengineering Center, Iowa State University, Ames, IA
2015 – ISU Plant Sciences Institute Faculty Scholar
2013 – 2019 Director, Center for Plant Responses to Environmental Stresses, Iowa State University, Ames, IA
2012 – Professor, Department of Plant Pathology & Microbiology, Iowa State University, Ames, IA
2007 – 2012 Associate Professor, Department of Plant Pathology, Iowa State University, Ames, IA
2000 – 2007 Assistant Professor, Department of Plant Pathology, Iowa State University, Ames, IA
1999 – 2000 Staff Scientist, Torrey Mesa Research Institute, Inc., San Diego, CA
1996 – 1999 Postdoctoral fellow, Institute of Biological Chemistry, Washington State University and Department of Biology, Texas A&M University. Advisor: Dr. James C. Carrington
1995 – 1996 Postdoctoral research, USDA-ARS & Department of Plant Biology, University of California, Berkeley, CA. Advisor: Dr. Barbara Baker
1990 – 1995 Graduate Student, Department of Plant Pathology, University of California, Berkeley, CA. Advisor: Dr. Barbara Baker

Honors and Awards:

Fellow, American Phytopathological Society (2022)
ISU Regents Award for Faculty Excellence (2021)
ISU Rossmann Manatt Faculty Development Award (2019)
Fellow, American Association for the Advancement of Science (2016)
ISU College of Agriculture and Life Sciences Special Research Award (2015)
ISU Exemplary Faculty Mentor (2015)
ISU College of Agriculture and Life Sciences Mid-Career Outstanding Achievement in Research (2009)
NIH National Research Service Award Postdoctoral Fellowship (1996-1999)
USDA Plant Gene Expression Center - outstanding research paper (1994)
William Carrol-Smith Fellowship (1990)

Affiliations:

American Society of Plant Biologists; American Phytopathological Society; International Society for Molecular Plant-Microbe Interactions; American Association for the Advancement of Science

Editorial boards:

Associate Editor, aBIOTECH (2023 – present)
Editor, PhytoFrontiers (2020 – present)
Steering Editorial Board, Journal of Plant Pathology (2020 - present)
Senior Editor, Molecular Plant Microbe Interactions (2015 – 2018)
Review Editor, Frontiers in Plant Science (2014 – present)
Editorial Board, Virology (2013 – 2016)
Senior Editor, Molecular Plant Pathology (2009 – 2014)
Associate Editor, Molecular Plant Microbe Interactions (2005 – 2007, 2011 – 2015)
Editorial Board Member, Molecular Plant Pathology (2006 – 2008)

Pre-print articles

1. Chicowski, A. S., Qi, M., Variz, H., Bredow, M., Montes-Serey, C., Caiazza, F., Dong, H., Margets, A. C., Mejias, J., Walley, J., Craik, C. S., Pedley, K. F., Aung, K., Innes, R. W., **Whitham, S. A.*** (2023) A soybean rust effector protease suppresses host immunity and cleaves a 3-deoxy-7-phosphoheptulonate synthase. bioRxiv. doi: [10.1101/2023.09.07.556260](https://doi.org/10.1101/2023.09.07.556260).
2. Lan, H.-J., Ran, J., Zhang, L., Wu, N.-N., Wang, W.-X., Ni, M., Cheng, N., Nakata, P. A., Pan, J., **Whitham, S. A.**, Liu, J.-Z*. (2023) Clathrin Light Chains are essential in negative regulation of cell death and immunity in Arabidopsis through interacting with autophagy pathway. bioRxiv. doi: [10.1101/2023.04.09.535952](https://doi.org/10.1101/2023.04.09.535952).

Peer-Reviewed Journal Articles (99; * indicates corresponding author):

1. Qi, M., Yu, H., Bredow, M., Chicowski, A. S., Fields, L. D., **Whitham, S. A.*** (2023) Insights into *Phakopsora pachyrhizi* effector-effector interactions. Mol. Plant Microbe Interact. Accepted. doi: [10.1094/MPMI-08-23-0120-FI](https://doi.org/10.1094/MPMI-08-23-0120-FI).
2. Chicowski, A. S., Bredow, M., Utiyama, A. S., Marcelino-Guimarães, F. C.*, **Whitham, S. A.*** (2023) Soybean-*Phakopsora pachyrhizi* interactions: toward the development of next-generation disease-resistant plants. Plant Biotechnol. J. Accepted. doi: [10.1111/pbi.14206](https://doi.org/10.1111/pbi.14206).
3. N., Singh, Khan, R. R., Xu, W., **Whitham, S. A.**, Dong, L.* (2023) Plant virus sensor for rapid detection of bean pod mottle virus using virus-specific nanocavities. ACS Sensors. Accepted 09/13/2023. doi: [10.1021/acssensors.3c01478](https://doi.org/10.1021/acssensors.3c01478).
4. Beernink, B. M., **Whitham, S. A.*** (2023) Foxtail mosaic virus: A tool for gene function analysis in maize and other monocots. Mol. Plant Pathol. 24:811-822. doi: [10.1111/mpp.13330](https://doi.org/10.1111/mpp.13330).
5. Bredow, M., Natukunda, M. I., Beernink, B. M., Sartor-Chicowski, A., Salas-Fernandez, M. G., **Whitham, S. A.*** (2023) Characterization of a foxtail mosaic virus vector for gene silencing and analysis of innate immune responses in *Sorghum bicolor*. Mol. Plant Pathol. 24:71-79. doi: [10.1111/mpp.13270](https://doi.org/10.1111/mpp.13270).
6. Lappe, R. R., Elmore, M. G., Lozier, Z. R., Jander, G., Miller, W. A.*, **Whitham, S. A.*** (2022) Metagenomic identification of novel viruses of maize and teosinte in North America. BMC Genomics. 23:767. doi: [10.1186/s12864-022-09001-w](https://doi.org/10.1186/s12864-022-09001-w).
7. Elmore, M. G., Groves, C. L., Hajimorad, M. R., Stewart, T. P., Gaskill, M. A., Wise, K. A., Sikora, E., Kleczewski, N. K., Smith, D. L., Mueller, D. S., **Whitham, S. A.*** (2022) Detection and discovery of plant viruses in soybean by metagenomic sequencing. Virology J. 19:149. doi: [10.1186/s12985-022-01872-5](https://doi.org/10.1186/s12985-022-01872-5).
8. Beernink, B. M., Lappe, R. L., Bredow, M., **Whitham, S. A.*** (2022) Impacts of RNA mobility signals on virus induced somatic and heritable gene editing. Front. Genome Ed. 4:925088. doi: [10.3389/fgeed.2022.925088](https://doi.org/10.3389/fgeed.2022.925088).
9. Chung, S. H., Zhang, S., Song, H., **Whitham, S. A.**, Jander, G.* (2022) Maize resistance to insect herbivory is enhanced by silencing expression of genes for jasmonate-isoleucine degradation using sugarcane mosaic virus. Plant Direct. 6:e407. doi: [10.1002/pld3.407](https://doi.org/10.1002/pld3.407).

10. Bueno, T. V., Fontes, P. P., Abe, V. Y., Satiko, A. U., Senra, R. L., Oliveira, L. S., dos Santos, A. B., Capote Ferreira, E. G., Darben, L. M., de Oliveira, A. B., Abdelnoor, R. V., **Whitham, S. A.**, Fietto, L. G., Marcelino-Guimarães, F. C.* (2022) A *Phakopsora pachyrhizi* effector suppresses PAMP-triggered immunity and interacts with a soybean glucan endo-1,3- β -glucosidase to promote virulence. *Mol. Plant Microbe Interact.* 35:779-790. doi: [10.1094/MPMI-12-21-0301-R](https://doi.org/10.1094/MPMI-12-21-0301-R).
11. Yu, H., Ruan, H., Xia, X., Sartor Chicowski, A., **Whitham, S. A.**, Li, Z., Wang, G., Liu, W.* (2022) Maize FERONIA-like receptor genes are involved in the response of multiple disease resistance in maize. *Mol. Plant Pathol.* 23:1331-1345. doi: [10.1111/mpp.13232](https://doi.org/10.1111/mpp.13232).
12. Xu, R.* , Gao, M., Li, M., **Whitham, S.A.**, Zhang, S., Xu, Y. (2022) Identification of MdGRF genes and the necessary role of MdGRF02 in apple root growth regulation. *Scientia Horticulturae* 295:110866. doi: [10.1016/j.scienta.2021.110866](https://doi.org/10.1016/j.scienta.2021.110866).
13. McCaghey, M., Shao, D., Kurcezewski, J., Lindstrom, A., Ranjan, A., **Whitham, S. A.**, Conley, S. P., Williams, B., Smith, D. L., Kabbage, M.* (2021) Host-induced gene silencing of a *Sclerotinia sclerotiorum* oxaloacetate acetylhydrolase using bean pod mottle virus as a vehicle reduces disease on soybean. *Front. Plant Sci.* 12:677631. doi: [10.3389/fpls.2021.677631](https://doi.org/10.3389/fpls.2021.677631).
14. Gerber, M., Pillay, N.* , Holan, K., **Whitham, S. A.**, Berger, D. K. (2021) Automated Hyper-Parameter Tuning of a Mask R-CNN for Quantifying Common Rust Severity in Maize, 2021 International Joint Conference on Neural Networks (IJCNN), pp. 1-7. doi: [10.1109/IJCNN52387.2021.9534417](https://doi.org/10.1109/IJCNN52387.2021.9534417).
15. Pillay N.* , Gerber M., Holan K., **Whitham S. A.**, Berger D. K. (2021) Quantifying the Severity of Common Rust in Maize Using Mask R-CNN. In: Rutkowski L., Scherer R., Korytkowski M., Pedrycz W., Tadeusiewicz R., Zurada J.M. (eds) *Artificial Intelligence and Soft Computing*. ICAISC 2021. Lecture Notes in Computer Science, vol 12854. Springer, Cham. doi: [10.1007/978-3-030-87986-0_18](https://doi.org/10.1007/978-3-030-87986-0_18)
16. O'Conner, S., Zheng, W., Qi, M., Kandel, Y., Fuller, R., **Whitham, S. A.**, Li, L.*. (2021) GmNF-YC4-2 Increases Protein, Exhibits Broad Disease Resistance and Expedites Maturity. *Int. J. Mol. Sci.* 22: 3586; <https://doi.org/10.3390/ijms22073586>
17. Chung, S. H., Bigham, M., Lappe, R., Chan, B., Nagalakshmi, U., **Whitham, S. A.**, Dinesh-Kumar, S., Jander, G.* (2021) A sugarcane mosaic virus vector for rapid in planta screening of proteins that inhibit the growth of insect herbivores. *Plant Biotechnol. J.* doi: [10.1111/pbi.13585](https://doi.org/10.1111/pbi.13585)
18. Beernink, B. M., Holan, K. L., Lappe, R. R., **Whitham, S. A.*** (2021) Direct Agroinoculation of Maize Seedlings by Injection with Recombinant Foxtail Mosaic Virus and Sugarcane Mosaic Virus Infectious Clones. *J. Vis. Exp.* 168:e62277. doi: [10.3791/62277](https://doi.org/10.3791/62277)
19. Zheng, N., Li, T., Dittman, J. D., Su, J., Li, R., Gassmann, W., Peng, D., **Whitham, S. A.***, Liu, S.* , Yang, B.* (2020) CRISPR/Cas9-based gene editing using egg cell-specific promoters in Arabidopsis and soybean. *Front. Plant Sci.* 11:800. doi: [10.3389/fpls.2020.00800](https://doi.org/10.3389/fpls.2020.00800)
20. Elmore, M. G.* , Banerjee, S., Pedley, K. F., Ruck, A., **Whitham, S. A.** (2020) *De novo* transcriptome of *Phakopsora pachyrhizi* uncovers putative effector repertoire during infection. *Physiol. Mol. Plant Pathol.* 110:101464. doi: [10.1016/j.pmpp.2020.101464](https://doi.org/10.1016/j.pmpp.2020.101464)
21. Mei, Y., Beernink, B. M., Ellison, E. E., Konečná, E., Neelakandan, A. K., Voytas, D. F., **Whitham, S. A.*** (2019) Protein expression and gene editing in monocots using foxtail mosaic virus vectors. *Plant Direct.* 3:e00181. doi: [10.1002/pld3.181](https://doi.org/10.1002/pld3.181)
22. Bao, Y., Zarecor, S., Shah, D., Tuel, T., Campbell, D. A., Chapman, A. V. E., Imberti, D., Kiekhäfer, D., Imberti, H., Lübberstedt, T., Yin, Y., Nettleton, D., Lawrence-Dill, C. J., **Whitham, S. A.**, Tang, L., Howell, S. H.* (2019) Assessing plant performance in the envirotron. *Plant Methods.* 15:117. doi: [10.1186/s13007-019-0504-y](https://doi.org/10.1186/s13007-019-0504-y)

23. Qi, M., Yu, M., Grayczyk, J. P., Darben, L. M., Rieker, M. E. G., Seitz, J., Voegelé, R. T., **Whitham, S. A.**, Link, T. I.* (2019) Candidate effectors from *Uromyces appendiculatus*, the causal agent of rust on common bean, can be discriminated based on suppression of immune responses. *Front. Plant Sci.* 10:1182. doi: [10.3389/fpls.2019.01182](https://doi.org/10.3389/fpls.2019.01182)
24. Mei, Y., Liu, G., Zhang, C., Hill, J. H., **Whitham, S. A.*** (2019) A sugarcane mosaic virus vector for gene expression in maize. *Plant Direct.* 3:e00158. doi: [10.1002/pld3.158](https://doi.org/10.1002/pld3.158)
25. Chang, H. X., Tan, R., Hartman, G. L., Wen, Z., Sang, H., Domier, L. L., **Whitham, S. A.**, Wang, D., Chilvers, M. I.* (2019) Characterization of soybean STAY-GREEN genes in susceptibility to foliar chlorosis of sudden death syndrome. *Plant Physiol.* 180:711-717. doi: [10.1104/pp.19.00046](https://doi.org/10.1104/pp.19.00046)
26. Helm, M., Qi, M., Sarkar, S., Yu, H., **Whitham, S. A.**, Innes, R. W.* (2019). Engineering a decoy substrate in soybean to enable recognition of the *Soybean mosaic virus* N1a protease. *Mol. Plant Microbe Interact.* 32:760-769. doi: [10.1094/MPMI-12-18-0324-R](https://doi.org/10.1094/MPMI-12-18-0324-R)
27. Pedley, K. F.*, Pandey, A. K., Ruck, A., Lincoln, L. M., **Whitham, S. A.**, Graham, M. A.* (2019) *Rpp1* encodes a ULP1-NBS-LRR protein that controls immunity to *Phakopsora pachyrhizi* in soybean. *Mol. Plant Microbe Interact.* 32:120-133. doi: [10.1094/MPMI-07-18-0198-FI](https://doi.org/10.1094/MPMI-07-18-0198-FI)
28. Qi, M., Zheng, W., Zhao, X., Hohenstein, J., Kandel, Y., O'Conner, S., Wang, Y., Du, C., Nettleton, D., Macintosh, G., Tylka, G., Wurtele, E., **Whitham, S. A.**, Li, L.* (2019) QQS orphan gene and its interactor NF-YC4 reduce susceptibility to pathogens and pests. *Plant Biotechnol. J.* 17:252-263. doi: [10.1111/pbi.12961](https://doi.org/10.1111/pbi.12961)
29. Xu, H.-Y., Zhang, C., Li, Z.-C., Wang, Z.-R., Jiang, X.-X., Shi, Y.-F., Fang, Y., Braun, E., Mei, Y., Qiu, W.-L., Li, S., Wang, B., Xu, J., Navarre, D., Ren, D., Cheng, N., Nakata, P. A., Graham, M. A., **Whitham, S. A.**, Liu, J.-Z.* (2018) GmMEKK1 is a key regulator of cell death and defense responses in soybean. *Plant Physiol.* 178:907-922. doi: [10.1104/pp.18.00903](https://doi.org/10.1104/pp.18.00903)
30. Irizarry, M. D., Elmore, M. G., Batzer, J. C., **Whitham, S. A.**, Mueller, D. S.* (2018). Alternative hosts for *Soybean vein necrosis virus* and feeding preferences of its vector soybean thrips. *Plant Health Progress.* 19:176-181. doi: [10.1094/PHP-11-17-0071-RS](https://doi.org/10.1094/PHP-11-17-0071-RS)
31. Hajimorad, M. R.*, Domier, L. L., Tolin, S. A., **Whitham, S. A.**, Saghai Maroof, M. A. (2018) *Soybean mosaic virus*: A successful potyvirus with a wide distribution but restricted natural host range. *Mol. Plant Pathol.* 19:1563-1579. doi: [10.1111/mpp.12644](https://doi.org/10.1111/mpp.12644)
32. Burkhov, S. J., Stephens, N. M., Mei, Y., Duenas, M. E., Freppon, D. J., Ding, G., Smith, S. C., Lee, Y.-J., Nikolau, B. J., **Whitham, S. A.**, Smith, E. A.* (2018) Characterizing virus-induced gene silencing at the cellular level with *in situ* multimodal imaging. *Plant Methods.* 14:37. doi: [10.1186/s13007-018-0306-7](https://doi.org/10.1186/s13007-018-0306-7)
33. Ranjan, A., Jayaraman, D., Grau, C., Hill, J. H., **Whitham, S. A.**, Ané, J.-M., Kabbage, M.* (2018) The pathogenic development of *Sclerotinia sclerotiorum* in soybean requires specific host NADPH oxidases. *Mol. Plant Pathol.* 19:700-713. doi: [10.1111/mpp.12555](https://doi.org/10.1111/mpp.12555)
34. Qi, M., Grayczyk, J. P., Seitz, J. M., Lee, Y., Link, T. I., Choi, D., Pedley, K. F., Voegelé, R. T., Baum, T. J., **Whitham, S. A.*** (2018) Suppression or activation of immune responses by predicted secreted proteins of the soybean rust pathogen *Phakopsora pachyrhizi*. *Mol. Plant Microbe Interact.* 31:163-174. doi: [10.1094/MPMI-07-17-0173-FI](https://doi.org/10.1094/MPMI-07-17-0173-FI)
35. Mei, Y., **Whitham, S. A.*** (2018) Virus-induced gene silencing in maize with a *Foxtail mosaic virus* vector. *Methods Mol. Biol.* 1676:129-139. doi: [10.1007/978-1-4939-7315-6_7](https://doi.org/10.1007/978-1-4939-7315-6_7)
36. Liu, J. Z.*, Duan, J., Ni, M., Liu, Z., Qiu, W.-L., **Whitham, Steven A.**, Qian, W.-J. (2017) S-nitrosylation inhibits the kinase activity of tomato phosphoinositide-dependent kinase 1 (PDK1). *J. Biol. Chem.* 292:19743-19751. doi: [10.1074/jbc.M117.803882](https://doi.org/10.1074/jbc.M117.803882)

37. Lu, H., Tang, L.* **Whitham, S. A.**, Mei, Y. (2017) An automated platform for maize seedling morphological traits characterization. *Sensors*. 17:2082. doi:[10.3390/s17092082](https://doi.org/10.3390/s17092082)
38. Rajamaki, M.-L.* **Whitham, S. A.**, Xi, D., Sikorskaite, S., Valkonen, J. P. T., (2017) Differential requirement of the ribosomal protein S6 and ribosomal protein S6 kinase for plant-virus accumulation and interaction of S6 kinase with potyviral VPg. *Mol. Plant Microbe Interact.* 30:374-384. doi: [10.1094/MPMI-06-16-0122-R](https://doi.org/10.1094/MPMI-06-16-0122-R)
39. Bak, A., Cheung, A., Yang, C., **Whitham, S. A.**, Casteel, C. L.* (2017) A viral protease relocalizes in the presence of the vector to promote vector performance. *Nat. Comm.* 8:14493. doi: [10.1038/ncomms14493](https://doi.org/10.1038/ncomms14493)
40. De Carvalho, M. C. C. G, Nascimento, L. C., Darben, L. M., Polizel-Podanosqui, A. M., Lopes-Caitar, V. S., Rocha, C. S., Qi, M., Carazzolle, M. F., Kuwahara, M. K., Pereira, G. A. G., Abdelnoor, R. V., **Whitham, S. A.**, Marcelino-Guimarães, F. C.* (2017) Prediction of *P. pachyrhizi* secretome expressed *in planta* and potential effector families. *Mol. Plant Pathol.* 18:363-377. doi: [10.1111/mpp.12405](https://doi.org/10.1111/mpp.12405)
41. Qi, M., Link, T. I., Müller, M., Hirschburger, D., Pudake, R. N., Pedley, K. F., Braun, E., Voegelé, R. T., Baum, T. J., **Whitham, S. A.*** (2016) A small cysteine-rich protein from the Asian soybean rust fungus, *Phakopsora pachyrhizi*, suppresses plant immunity. *PLoS Pathog.* 12:e1005827. doi: [10.1371/journal.ppat.1005827](https://doi.org/10.1371/journal.ppat.1005827)
42. Martin, K. M., Singh, J., Hill, J. H., **Whitham, S. A.**, Cannon, S.* (2016) Dynamic transcriptome profiling of *Bean common mosaic virus* (BCMV) infection in common bean (*Phaseolus vulgaris* L.). *BMC Genomics* 17:613 doi: [10.1186/s12864-016-2976-8](https://doi.org/10.1186/s12864-016-2976-8)
43. **Whitham, S. A.***, Qi, M., Innes, R. W., Ma, W., Lopes-Caitar, V., Hewezi, T. (2016) Molecular soybean-pathogen interactions. *Annu. Rev. Phytopathol.* 54:19.1-19.26 doi: [10.1146/annurev-phyto-080615-100156](https://doi.org/10.1146/annurev-phyto-080615-100156)
44. Mei, Y., Zhang, C., Kernodle, B. M., Hill, J. H., **Whitham, S. A.*** (2016) A *Foxtail mosaic virus* vector for virus-induced gene silencing in maize. *Plant Physiol.* 171:760-772 doi: [10.1104/pp.16.00172](https://doi.org/10.1104/pp.16.00172)
45. Irizarry, M. D.* Groves, C. L., Elmore, M. G., Bradley, C. A., Dasgupta, R., German, T., Jardine, D. J., Saalau-Rojas, E., Smith, D. L., Tenuta, A. U., **Whitham, S. A.**, Mueller, D. S. (2016) Re-emergence of *Tobacco streak virus* infecting soybean in the United States and Canada. *Plant Health Progress* 17:92-94 doi: [10.1094/PHP-BR-15-0052](https://doi.org/10.1094/PHP-BR-15-0052)
46. **Whitham, S. A.***, Lincoln, L. M., Chowda-Reddy, R. V., Dittman, J. D., O'Rourke, J. A., Graham, M. A.* (2016) Virus-induced gene silencing and transient gene expression in soybean using *Bean pod mottle virus* infectious clones. *Curr. Protoc. Plant Biol.* 1:263-283. doi: [10.1002/cppb.20012](https://doi.org/10.1002/cppb.20012)
47. Casteel, C. L.* De Alwis, M., Bak, A., Dong, H., **Whitham, S. A.**, Jander, G. (2015) Disruption of ethylene signaling by *Turnip mosaic virus* mediates suppression of plant defense against the aphid vector, *Myzus persicae*. *Plant Physiol.* 169:209-218. doi: <http://dx.doi.org/10.1104/pp.15.00332>
48. Liu, J. Z., Graham, M. A., Pedley, K. F., **Whitham, S. A.*** (2015) Gaining insight into soybean defense responses using functional genomics approaches. *Brief. Funct. Genomics.* 14:283-290. doi: [10.1093/bfpg/elv009](https://doi.org/10.1093/bfpg/elv009)
49. Moran-Lauter, A. N., Peiffer, G. A., Yin, T., **Whitham, S. A.**, Cook, C., Shoemaker, R. C., Graham, M. A.* (2014) Identification of candidate genes involved in early iron deficiency chlorosis signaling in soybean (*Glycine max*) roots and leaves. *BMC Genomics.* 15:702. doi: [10.1186/1471-2164-15-702](https://doi.org/10.1186/1471-2164-15-702)
50. Liu, J. Z., Braun, E., Qiu, W. L., Shi, Y. F., Marcelino-Guimarães, F. C., Navarre, D., Hill, J. H., **Whitham, S. A.*** (2014) Positive and negative roles for soybean MPK6 in regulating defense responses. *Mol. Plant Microbe Interact.* 27:824-834. doi: [10.1094/MPMI-11-13-0350-R](https://doi.org/10.1094/MPMI-11-13-0350-R)
51. Casteel, C., Yang, C., Nanduri, A., De Jong, H., **Whitham, S. A.**, Jander, G.* (2014) The Nla-pro protein of *Turnip mosaic virus* improves growth and reproduction of the aphid vector, *Myzus persicae* (green peach aphid). *Plant J.* 77:653-663. doi: [10.1111/tpi.12417](https://doi.org/10.1111/tpi.12417)

52. Link, T. I., Lang, P., Scheffler, B. E., Duke, M. V., Graham, M. A., Cooper, B., Tucker, M. L., van de Mortel, M., Voegelé, R. T., Mendgen, K., Baum, T. J., and **Whitham, S. A.*** (2014) The haustorial transcriptomes of *Uromyces appendiculatus* and *Phakopsora pachyrhizi* and their candidate effector families. *Mol. Plant Pathol.* 15:379-393. doi: [10.1111/mpp.12099](https://doi.org/10.1111/mpp.12099)
53. Atwood, S., O'Rourke, J., Peiffer, G., Yin, T., Majumder, M., Zhang, C., Cianzio, S., Hill, J. H., Cook, D., **Whitham, S. A.**, Shoemaker, R. C., Graham, M. A.* (2014) Replication protein A subunit 3 and the iron efficiency response in soybean. *Plant Cell Environ.* 37:213-234. doi: [10.1111/pce.12147](https://doi.org/10.1111/pce.12147)
54. Kandoth, P. K., Heinz, R., Yeckel, G., Nathan, G. W., Parijat, J. S., Hill, J., **Whitham, S. A.**, Baum, T. J., Mitchum, M. G.* (2013) A virus-induced gene silencing method to study soybean cyst nematode parasitism in *Glycine max*. *BMC Res. Notes.* 6:255. doi: [10.1186/1756-0500-6-255](https://doi.org/10.1186/1756-0500-6-255)
55. Morales, A. M. A. P., O'Rourke, J. A., van de Mortel, M., Schneider, K. T., Bancroft, T. J., Borém, A., Nelson, R. T., Nettleton, D., Baum, T. J., Shoemaker, R. C., Fredrick, R. D., Abdelnoor, R. V., Pedley, K. F., **Whitham, S. A.**, and Graham, M. A.* (2013) Transcriptome analyses and virus-induced gene silencing identify genes in the *Rpp4*-mediated Asian soybean rust resistance pathway. *Funct. Plant Biol.* 40:1029-1047. doi: [10.1071/FP12296](https://doi.org/10.1071/FP12296)
56. Pogorelko, G. V., Lionetti, V., Fursova, O., Sundaram, R. M., Qi, M., **Whitham, S. A.**, Bogdanove, A. J., Bellincampi, D., and Zabolina, O. A.* (2013) Alteration of cell wall polysaccharide acetylation increases plant resistance to fungal pathogens. *Plant Physiol.* 163:9-23. doi: [10.1104/pp.113.214460](https://doi.org/10.1104/pp.113.214460)
57. Smith, D. L.*, Fritz, C., Watson, Q., Willis, D. K., German, T. L., A., Mueller, D., Dittman, J. D., Saalau-Rojas, E., and **Whitham, S. A.** (2013) First report of soybean vein necrosis disease caused by *Soybean vein necrosis-associated virus* in Wisconsin and Iowa. *Plant Disease.* 97:693. doi: [10.1094/PDIS-11-12-1096-PDN](https://doi.org/10.1094/PDIS-11-12-1096-PDN)
58. Liu, J. Z. and **Whitham, S. A.*** (2013) Overexpression of a soybean nuclear localized type III DnaJ domain-containing HSP40 reveals its roles in cell death and disease resistance. *Plant J.* 74:110-121. doi: [10.1111/tpj.12108](https://doi.org/10.1111/tpj.12108)
59. Zhang, C.*, **Whitham, S. A.**, Hill, J. H. (2013) Virus-induced gene silencing in soybean and common bean. *Methods Mol. Biol.* 975:149-156. doi: [10.1007/978-1-62703-278-0_11](https://doi.org/10.1007/978-1-62703-278-0_11)
60. Liu, S., Kandoth, P. K., Warren, S. D., Yeckel, G., Heinz, R., Alden, J., Yang, C., Jamai, A., El-Mellouki, T., Juvale, P. S., Hill, J. H., Baum, T. J., Cianzio, S., **Whitham, S. A.**, Korkin, D., Mitchum, M. G.*, Meksem, K.* (2012) A soybean cyst nematode resistance gene points to a new mechanism of plant resistance to pathogens. *Nature.* 492:256-260. doi: [10.1038/nature11651](https://doi.org/10.1038/nature11651)
61. Zhang, C.*, Grosic, S., **Whitham, S. A.**, Hill, J. H. (2012) The requirement of multiple defense genes in soybean *Rsv1* mediated extreme resistance to *Soybean mosaic virus*. *Mol. Plant Microbe Interact.* 25:1307-1313. doi: [10.1094/MPMI-02-12-0046-R](https://doi.org/10.1094/MPMI-02-12-0046-R)
62. Wu, Q., Lin, J., Liu, J.-Z., Wang, X., Lim, W., Oh, M., Park, J., Rajashekar, C. B., **Whitham, S. A.**, Cheng, N.-H.*, Hirschi, K. D., Park, S.* (2012) Ectopic expression of Arabidopsis glutaredoxin *AtGRXS17* enhances thermotolerance in tomato. *Plant Biotechnol. J.* 10:945-955. doi: [10.1111/j.1467-7652.2012.00723.x](https://doi.org/10.1111/j.1467-7652.2012.00723.x)
63. Juvale, P. S., Hewezi, T., Zhang, C., Kandoth, P. K., Mitchum, M. G., Hill, J. H., **Whitham, S. A.**, Baum, T. J.* (2012) Temporal and spatial *Bean pod mottle virus*-induced gene silencing in soybean. *Mol. Plant Pathol.* 13:1140-1148. doi: [10.1111/J.1364-3703.2012.00808.X](https://doi.org/10.1111/J.1364-3703.2012.00808.X)
64. Moeller, J. R., Moscou, M. J., Bancroft, T., Skadsen, R. W., Wise, R. P., **Whitham, S. A.*** (2012) Differential accumulation of host mRNAs on polyribosomes during obligate pathogen-plant interactions. *Mol. BioSyst.* 8:2153-2165. doi: [10.1039/C2MB25014D](https://doi.org/10.1039/C2MB25014D)

65. Liu, J. Z., Horstman, H. D., Braun, E., Graham, M. A., Zhang, C., Navarre, D., Qiu, W. L., Lee, Y., Nettleton, D., Hill, J. H., **Whitham, S. A.*** (2011). Soybean homologs of MPK4 negatively regulate defense responses and positively regulate growth and development. *Plant Physiol.* 157:1363-1378. [doi: 10.1104/pp.111.185686](https://doi.org/10.1104/pp.111.185686)
66. Schneider, K. T., van de Mortel, M., Bancroft, T. J., Braun, E., Nettleton, D., Nelson, R. T., Frederick, R. D., Baum, T. J., Graham, M. A., **Whitham, S. A.*** (2011). Biphasic gene expression changes elicited by *Phakopsora pachyrhizi* in soybean correlates with fungal penetration and haustoria formation. *Plant Physiol.* 157: 355-371. [doi:10.1104/pp.111.181149](https://doi.org/10.1104/pp.111.181149)
67. Cheng, N.* Liu, J.Z., Liu, X., Wu, Q., Thompson, S. M., Lin, J., Chang, J., **Whitham, S. A.**, Park, S., Cohen, J. D., Hirschi, K. D., (2011). Arabidopsis monothiol glutaredoxin, AtGRXS17, is critical for temperature-dependent postembryonic growth and development via modulating auxin response. *J. Biol. Chem.* 286:20398-20406. [doi: 10.1074/jbc.M110.201707](https://doi.org/10.1074/jbc.M110.201707)
68. Ye, C., Dickman, M. B., **Whitham, S. A.**, Payton, M. E., Verchot, J.* (2011). The unfolded protein response is triggered by a plant viral movement protein. *Plant Physiol.* 156:741-755. [doi: 10.1104/pp.111.174110](https://doi.org/10.1104/pp.111.174110)
69. Pandey, A. K., Yang, C., Zhang, C., Graham, M. A., Horstman, H. D., Lee, Y., Zabolina, O. A., Hill, J. H., Pedley, K. F.* **Whitham, S. A.*** (2011). Functional analysis of the Asian soybean rust resistance pathway mediated by *Rpp2*. *Mol. Plant Microbe Interact.* 24: 194–206. [doi: 10.1094/MPMI-08-10-0187](https://doi.org/10.1094/MPMI-08-10-0187)
(Highlighted as the Editor's Pick for the February 2011 issue of *Mol. Plant Microbe Interactions*)
70. Cosson, P., Sofer, L., Le, H., Leger, V., Schurdi-Levraud, V., **Whitham, S. A.**, Gopalan, S., Le Gall, O., Candresse, T., Carrington, J. C., Revers, F.* (2010). RTM3 which controls long distance movement of potyviruses is a member of a new plant gene family encoding a meprin and TRAF homology (MATH) domain-containing protein. *Plant Physiol.* 154:222-232. [doi: 10.1104/pp.110.155754](https://doi.org/10.1104/pp.110.155754)
71. Zhang, C.* Bradshaw, J. D., **Whitham, S. A.**, Hill, J. H. (2010). The development of an efficient multi-purpose BPMV viral vector set for foreign gene expression and RNA silencing. *Plant Physiol.* 153:52-65. [doi: 10.1104/pp.109.151639](https://doi.org/10.1104/pp.109.151639)
72. Zhang, C.* Hajimorad, M. R., Eggenberger, A. L., Tsang, S., **Whitham, S. A.**, Hill, J. H. (2009). Cytoplasmic inclusion cistron of *Soybean mosaic virus* serves as a virulence determinant on *Rsv3*-genotype soybean and a symptom determinant. *Virology.* 391:240-248. [doi:10.1016/j.virol.2009.06.020](https://doi.org/10.1016/j.virol.2009.06.020)
73. Yang, C., Zhang, C., Dittman, J. D., **Whitham, S. A.*** (2009). Differential requirement of RIBOSOMAL PROTEIN S6 by plant RNA viruses with different translation initiation strategies. *Virology.* 390:163-173. [doi: 10.1016/j.virol.2009.05.018](https://doi.org/10.1016/j.virol.2009.05.018)
74. Meyer, J. D. F., Silva, D. C. G., Yang, C., Pedley, K. F., Zhang, C., van de Mortel, M., Hill, J. H., Shoemaker, R. C., Abdelnoor, R. V., **Whitham, S. A.**, Graham, M. A.* (2009). Identification and analyses of candidate genes for *Rpp4*-mediated resistance to Asian soybean rust in soybean (*Glycine max* (L.) Merr.). *Plant Physiol.* 150:295-307. [doi: 10.1104/pp.108.134551](https://doi.org/10.1104/pp.108.134551)
75. Zhang, C.* **Whitham, S. A.** Hill, J. H. (2009). Development and use of an efficient DNA-based viral gene silencing vector for soybean. *Mol. Plant Microbe Interact.* 22:123-131. [doi: 10.1094/MPMI-22-2-0123](https://doi.org/10.1094/MPMI-22-2-0123).
(Ranked in the Top 9 papers of 2009 in *Mol. Plant Microbe Interact.*, <http://www.apsnet.org/journals/apsupdate/apsresearchupdate25.htm>)
76. Tasma, I. M., Brendel, V., **Whitham, S. A.**, Bhattacharyya, M. K.* (2008). Expression and evolution of the phosphoinositide-specific phospholipase C gene family in *Arabidopsis thaliana*. *Plant Physiol. Biochem.* 46:627-37. [doi: 10.1016/j.plaphy.2008.04.015](https://doi.org/10.1016/j.plaphy.2008.04.015)
77. Shibolet, Y. M., Haronsky, E., Leibman, D., Arazi, T., Wassenegger, M., **Whitham, S. A.**, Gaba, V., Gal-On, A.* (2007). The conserved FRNK box in plant viral suppressor of gene silencing HC-Pro is required for small RNA binding and mediates symptom development. *J. Virol.* 81:13135-13148. [doi: 10.1128/JVI.01031-07](https://doi.org/10.1128/JVI.01031-07)

78. van de Mortel, M., Recknor, J. C., Graham, M. A., Nettleton, D., Dittman, J. D., Nelson, R. T., Godoy, C. V., Abdelnoor, R. V., Almeida, A. M. R., Baum, T. J.*, **Whitham, S. A.*** (2007). Distinct biphasic mRNA changes in response to Asian soybean rust infection. *Mol. Plant Microbe Interact.* 20:887-899. doi: [10.1094/MPMI-20-8-0887](https://doi.org/10.1094/MPMI-20-8-0887)
79. Wise, R. P.*, Moscou, M. J., Bogdanove, A. J., **Whitham, S. A.** (2007). Transcript profiling in host–pathogen interactions. *Annu. Rev. Phytopathol.* 45:329-369. doi: [10.1146/annurev.phyto.45.011107.143944](https://doi.org/10.1146/annurev.phyto.45.011107.143944)
80. Yang, C., Guo, R., Jie, F., Nettleton, D., Peng, J., Carr, T., Yeakley, J. M., Fan, J.-B., **Whitham, S. A.*** (2007). Spatial and temporal analysis of *Arabidopsis thaliana* gene expression in response to *Turnip mosaic virus* infection. *Mol. Plant Microbe Interact.* 20:358-370. doi: [10.1094/MPMI-20-4-0358](https://doi.org/10.1094/MPMI-20-4-0358)
81. **Whitham, S. A.***, Yang, C., Goodin, M. M. (2006). Global impact: Elucidating plant responses to viral infection. *Mol. Plant Microbe Interact.* 19:1207-1215. doi: [10.1094/MPMI-19-1207](https://doi.org/10.1094/MPMI-19-1207)
82. Carr, T., Yongzeng, W., Huang, Z., Yeakley, J. M., Fan, J. -B., **Whitham, S. A.*** (2006). Tobamovirus infection is independent of *HSP101* mRNA induction and protein expression. *Virus Res.* 121:33-41. doi:[10.1016/j.virusres.2006.03.013](https://doi.org/10.1016/j.virusres.2006.03.013)
83. Huang, Z., Yeakley, J. M., Wickham, E., Holdridge, J. D., Fan, J.-B., **Whitham, S. A.*** (2005). Salicylic acid dependent expression of host genes in compatible *Arabidopsis*-virus interactions. *Plant Physiol.* 137:1147-1159. doi: [10.1104/pp.104.056028](https://doi.org/10.1104/pp.104.056028)
84. **Whitham, S. A.***, Wang, Y. (2004). Roles for host factors in plant viral pathogenicity. *Curr. Op. Plant Biol.* 7:365-371. doi:[10.1016/j.pbi.2004.04.006](https://doi.org/10.1016/j.pbi.2004.04.006)
85. Shou, H., Frame, B. R., **Whitham, S. A.**, Wang, K.* (2004). Assessment of transgenic maize events produced by particle bombardment or *Agrobacterium*-mediated transformation. *Mol. Breeding.* 13:201-208.
86. **Whitham, S. A.***, Quan, S., Chang, H.-S., Cooper, B., Estes, B., Zhu, T., Wang, X., Hou, Y.-M. (2003). Diverse RNA viruses elicit the expression of common sets of genes in susceptible *Arabidopsis thaliana* plants. *Plant J.* 33:271-283. doi: [10.1046/j.1365-313X.2003.01625.x](https://doi.org/10.1046/j.1365-313X.2003.01625.x)
87. Lellis, A. D., Kasschau, K. D., **Whitham, S. A.**, Carrington, J. C.* (2002). Loss-of-susceptibility mutants of *Arabidopsis thaliana* reveal an essential role for eIF(iso)4E during potyvirus infection. *Curr. Biol.*, 12:1046-1051. doi:[10.1016/S0960-9822\(02\)00898-9](https://doi.org/10.1016/S0960-9822(02)00898-9)
88. Chen, W., Provar, N. J., Glazebrook, J., Katagiri, F., Chang, H. S., Eulgem, T., Mauch, F., Luan, S., Zou, G., **Whitham, S. A.**, Budworth, P. R., Tao, Y., Xie, Z., Chen, X., Lam, S., Kreps, J. A., Harper, J. F., Si-Ammour, A., Mauch-Mani, B., Heinlein, M., Kobayashi, K., Hohn, T., Dangl, J. L., Wang, X., Zhu, T.* (2002). Expression profile matrix of *Arabidopsis* transcription factor genes suggests their putative functions in response to environmental stresses. *Plant Cell*, 14:559–574. doi: [10.1105/tpc.010410](https://doi.org/10.1105/tpc.010410)
89. Paskowski, J.*, **Whitham, S.** (2001). Gene silencing and DNA methylation processes. *Curr. Opin. Plant Biol.* 4:123-129. doi:[10.1016/S1369-5266\(00\)00147-3](https://doi.org/10.1016/S1369-5266(00)00147-3)
90. **Whitham, S. A.**, Anderberg, R. J., Chisholm, S. T., Carrington, J. C.* (2000). *RTM2* is required for resistance to tobacco etch virus in *Arabidopsis* and encodes a unique protein with similarity to small heat shock proteins. *Plant Cell.* 12:569-582. PMID: PMC139854
91. Chisholm, S. T., Mahajan, S. K., **Whitham, S. A.**, Yamamoto, M. L., Carrington, J. C.* (2000). *RTM1* is required for resistance to tobacco etch virus in *Arabidopsis* and encodes a protein with similarity to the lectin jacalin. *Proc. Natl. Acad. Sci. USA.* 97:489-94. PMID: PMC26690
92. **Whitham, S. A.**, Yamamoto, M. L., Carrington, J. C.* (1999). Selectable viruses and altered susceptibility mutants in *Arabidopsis thaliana*. *Proc. Natl. Acad. Sci. USA.* 96:772-777. PMID: PMC15212

93. Hehl, R., Faurie, E., Hesseslbach, J., Salamini, F., **Whitham, S.**, Baker, B., Gebhardt, C.* (1999). TMV resistance gene *N* homologs are linked to *Synchytrium endobioticum* resistance in potato. *Theor. Appl. Genet.* 98:379-386. [doi: 10.1007/s001220051083](https://doi.org/10.1007/s001220051083)
94. Carrington, J. C.*, **Whitham, S. A.** (1998). Viral invasion and host defense: strategies and counter-strategies. *Curr. Op. Plant Biol.* 1:336-341. [doi:10.1016/1369-5266\(88\)80056-6](https://doi.org/10.1016/1369-5266(88)80056-6)
95. Mahajan, S. K., Chisholm, S. T., **Whitham, S. A.**, Carrington, J. C.* (1998). Identification and characterization of a locus (*RTM1*) that restricts long-distance movement of tobacco etch virus in *Arabidopsis thaliana*. *Plant J.* 14:177-186. [doi: 10.1046/j.1365-313X.1998.00105.x](https://doi.org/10.1046/j.1365-313X.1998.00105.x)
96. **Whitham, S.**, McCormick, S., Baker, B.* (1996). The *N* gene from tobacco confers resistance to tobacco mosaic virus in transgenic tomato. *Proc. Natl. Acad. Sci. USA.* 93:8870-8781. PMID: PMC38750
97. Dinesh-Kumar, S. P., **Whitham, S.**, Choi, D., Hehl, R., Corr, C., Baker, B.* (1995). Transposon tagging of the tobacco mosaic virus resistance gene *N*: Its possible role in the TMV-*N* mediated signal transduction pathway. *Proc. Natl. Acad. Sci. USA* 92:4175-4180. PMID: PMC41906
98. **Whitham, S.**, Dinesh-Kumar, S. P., Choi, D., Hehl, R., Corr, C., Baker, B.* (1994). The product of the tobacco mosaic virus resistance gene *N*: Similarity to Toll and the Interleukin-1 Receptor. *Cell* 78:1101-1115. [doi:10.1016/0092-8674\(94\)90283-6](https://doi.org/10.1016/0092-8674(94)90283-6)
99. Negrerie, M., Bellefeuille, S. M., **Whitham, S.**, Petrich, J. W., Thornburg, R. W.* (1990). Novel noninvasive in situ probe of protein structure and dynamics. *J. Am. Chem. Soc.* 112(20); 7419-7421. [doi: 10.1021/ja00176a066](https://doi.org/10.1021/ja00176a066)

Book Chapters (* indicates corresponding author):

1. O'Rourke, J. A., Graham, M. A., **Whitham, S. A.*** (2017) Soybean Functional Genomics: Bridging the Genotype to Phenotype Gap. *In* The Soybean Genome. Edited by Bhattacharyya, M. K., Nguyen, H. T. Springer, Cham. pp. 151-170. [doi: 10.1007/978-3-319-64198-0_10](https://doi.org/10.1007/978-3-319-64198-0_10)
2. **Whitham, S. A.***, Hajimorad, M. R. (2016) Plant Genetic Resistance to Viruses. *In* Current Research Topics in Plant Virology. Edited by Wang, A. Springer, Cham. pp. 87-111. [doi: 10.1007/978-3-319-32919-2_4](https://doi.org/10.1007/978-3-319-32919-2_4)
3. **Whitham, S. A.***, Eggenberger, A. L., Zhang, C., Chowda-Reddy, R. V., Martin, K. M., Hill, J. H. (2015). Recent advances in *in planta* transient expression and silencing systems for soybean using viral vectors. *In* Recent Advancements in Gene Expression and Enabling Technologies in Crop Plants. Edited by Azhakanandam, K., Silverstone, A., Daniell, H., Davey, M. Springer, Cham. pp. 423-451. doi: [10.1007/978-1-4939-2202-4_15](https://doi.org/10.1007/978-1-4939-2202-4_15).
4. Hill, J. H.* and **Whitham, S. A.** (2014) Control of Virus Diseases in Soybeans. *In*: Control of Plant Virus Diseases – Seed-Propagated Crops. Edited by G. Loebenstein and N. Katis, *Advances in Virus Research*, Vol. 90, Burlington: Academic Press, pp. 355-390. doi: [10.1016/B978-0-12-801246-8.00007-X](https://doi.org/10.1016/B978-0-12-801246-8.00007-X)
5. Miller, W. A.* , **Whitham, S. A.** (2013). Plant Viruses. *In* *Fields Virology*. Edited by D. M. Knipe. Lippincott, Williams, & Wilkins. Philadelphia, PA.
6. **Whitham, S. A.***, Yang, C. (2010). Spatial analysis of the effects of viral infection on host gene expression by macro dissection and microarray analysis. *In* *Principles and practice of advanced methods in plant virology*. Edited by A. Wang. Research Signpost. Kerala, India. pp 131-140.
7. Carr, T., **Whitham, S. A.*** (2007). An emerging model system: *Arabidopsis* as a viral host plant. *In* *Viral Transport in Plants. Springer book series: Plant Cell Monographs*. Edited by E. Waigman and M. Heinlein. Springer-Verlag GmbH, Heidelberg, Germany. pp. 159-183
8. **Whitham, S. A.*** (2004). Viral Host Genomics. *In* *Encyclopedia of Plant and Crop Science*. Edited by R. M. Goodman. Marcel Dekker, Inc., New York, NY. pp. 1269-1272

9. **Whitham, S. A.***, Dinesh-Kumar, S. P. (2002). Signaling in plant-virus interactions. In *Plant Signal Transduction: Frontiers in Molecular Biology*. Edited by D. Scheel and C. Wasternack. Oxford University Press. pp. 226-242
10. **Whitham, S. A.***, Hou, Y.-M., Quan, S., Zhu, T., Chang, H.-S., Wang, X. (2002). Microarray analysis to identify common gene expression changes induced by RNA viruses. In *Biology of Plant-Microbe Interactions Volume 3*. Edited by S. A. Leong, C. Allen, and E. W. Triplett. International Society for Molecular Plant-Microbe Interactions. pp. 152-157

Patents:

1. Hill, J. H., **Whitham, S. A.**, Zhang, C., Mei, Y. (2022). Sugarcane mosaic virus as a transient gene expression vector. United States Patent Number 11,261,455.
2. Hill, J. H., Zhang, C., Mei, Y., **Whitham, S. A.** (filing date 1/20/2017). Foxtail mosaic virus as a gene silencing vector. United States Patent Application, serial no. 15/411,045. No claims issued.
3. Hill, J. H., Zhang, C., **Whitham, S. A.** (2013). BPMV-based viral constructs useful for VIGS and expression of heterologous proteins in legumes. United States Patent Number 8,569,579
4. Baker, B., **Whitham, S.** (1996). Plant Virus Resistance Gene and Methods. United States Patent Number 5,571,706

Video:

1. Baum, T. J., Mueller, D. S., **Whitham, S. A.** (2017). Soybean Rust: The Life Cycle of *Phakopsora pachyrhizi*. Edited by Verreet, J.-A., Klink, H. Produced by STUMM-FILM. Published by APS Press, St. Paul, MN. Winner of World Media Festival's Intermedia-Globe Silver Award in 2018. ISBN: 978-0-89054-594-2.