



Name: Chunquan Zhang

Rank: Associate Professor

Education: PhD

Area of Specialization: Plant Pathology, Biotechnology

Research: My laboratory conducts research on molecular plant –microbe interactions and application of biotechnology in crop improvement

Recent Publications:

Publications - book chapter (* corresponding author):

1. Steven A. Whitham, Alan L. Eggenberger, **Chunquan Zhang**, R. V. Chowda-Reddy, Kathleen M. Martin, John H. Hill. 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**”, 2015, pp 423-451, ISBN 978-1-4939-2201-7, published by Springer New York.
2. **Chunquan Zhang***, Steven A. Whitham and John H. Hill. 2013. Development of a viral vector system for VIGS. In “**Methods in Molecular Biology**”. 975:149-156. ISSN: 1064-3745, published Springer.

Publications - peer reviewed articles:

1. Yu Mei, **Chunquan Zhang**, John Hill, and Steven Whitham. 2016. A *Foxtail mosaic virus* vector for virus-induced gene silencing in maize. *Plant Physiology* 171(2):760-772
2. Sarah E Atwood, Jamie A O'Rourke, Gregory A Peiffer, Tengfei Yin, Mahbulul Majumder, **Chunquan Zhang**, Silvia R Cianzio, John H Hill, Dianne Cook, Steven A Whitham, Randy C Shoemaker, Michelle A Graham. 2014. Replication protein A subunit 3 and the iron efficiency response in soybean. *Plant Cell Environment* 37(1): 213-234
3. **Chunquan Zhang***, Steven A. Whitham and John H. Hill. 2013. Development of a viral vector system for VIGS. In “**Methods in Molecular Biology**”. 975:149-156.
4. Victor N. Njiti, Qun Xia, Leonna S. Tyler, Lakeisha D. Stewart, Antione T. Tenner, **Chunquan Zhang**, Dovi Alipoe, Franklin Chukwuma and Ming Gao 2013. Influence of prohexadione calcium on sweetpotato growth and storage root yield. *HortScience* 48 (1): 73-76.
5. **Chunquan Zhang***, Steven A. Whitham and John H. Hill. 2012. The requirement of multiple defense genes in soybean *Rsv1* mediated extreme resistance to *Soybean mosaic virus*. *Mol. Plant-Microbe Interact.* 25 (10): 1307-1313.
6. Parijat S. Juvale, Tarek Hewezi, **Chunquan Zhang**, Pramod Kaitheri Kandoth, Melissa G. Mitchum, John H. Hill, Steven A. Whitham and Thomas J. Baum. 2012. Temporal and spatial *Bean pod mottle virus*-induced gene silencing in soybean. *Mol Plant Pathol.* 13 (9): 1140-1148.
7. Jeff D. Bradshaw, **Chunquan Zhang***, John H. Hill and Marlin E. Rice. 2011. Identification of a novel naturally occurring reassortant of *Bean pot mottle virus* from a native perennial plant and the molecular characterization of adjacent soybean-field isolates. *Archives of Virology* 156 (9): 1615-1619 (equal contribution).

8. Jianzhong Liu, Heidi D. Horstman, Edward Braun, Michelle A. Graham, **Chunquan Zhang**, Duroy Navarre, Wenli Qiu, Yeunsook Lee, Dan Nettleton, John H. Hill and Steven A. Whitham. 2011. Soybean homologs of MPK4 negatively regulate defense responses and positively regulate growth and development. *Plant Physiology* 157 (3): 1363-1378.
9. Ajay K. Pandey, Chunling Yang, **Chunquan Zhang**, Michelle A. Graham, Heidi D. Horstman, Yeunsook Lee, Olga A. Zabolina, John H. Hill, Kerry F. Pedley and Steven A. Whitham. 2011. Functional analysis of the Asian soybean rust resistance pathway mediated by *Rpp2*. *Mol. Plant-Microbe Interact.* 24 (2): 194-206.
10. **Chunquan Zhang***, Jeffrey D. Bradshaw, Steven A. Whitham and John H. Hill. 2010. The development of an efficient multi-purpose BPMV viral vector for foreign gene expression and RNA silencing. *Plant Physiology* 153 (1): 1-14.
11. **Chunquan Zhang***, Reza R. Hajimorad, Alan L. Eggenberger, Stephanie Tsang, Steven A. Whitham and John H. Hill. 2009. Cytoplasmic inclusion cistron of *Soybean mosaic virus* serves as a virulence determinant on Rsv3-genotype soybean and a symptom determinant. *Virology* 391 (2): 240-248.
12. Chunling Yang, **Chunquan Zhang**, Jaime D. Dittman and Steven A. Whitham. 2009. Differential requirement of ribosomal protein S6 by plant RNA viruses with different translation initiation strategies. *Virology* 390 (2): 163-173.
13. Jenelle D.F. Meyer, Danielle C.G. Silva, Chunling Yang, **Chunquan Zhang**, Martijn van de Mortel, Kerry F. Pedley, John H. Hill, Randy C. Shoemaker, Ricardo V. Abdelnoor, Steven A. Whitham, and Michelle A. Graham. 2009. Identification and analyses of candidate genes for *Rpp4* mediated resistance to Asian soybean rust in soybean (*Glycine max*). *Plant Physiology* 150 (1): 295-307.
14. **Chunquan Zhang***, Chunling Yang, Steven A. Whitham and John H. Hill. 2009. Development and use of an efficient DNA-based viral gene silencing vector for soybean. *Mol. Plant-Microbe Interact.* 22 (2): 123-131. (on the list of **most read** of the journal).
15. **Chunquan Zhang**, Hongcang Gu and Said A. Ghabrial. 2007. Molecular characterization of naturally occurring RNA1 recombinants of the comovirus *Bean pod mottle virus*. *Phytopathology* 97 (10): 1255-1262.
16. Hongcang Gu, **Chunquan Zhang** and Said A. Ghabrial. 2007. Novel naturally occurring *Bean pod mottle virus* reassortants with mixed heterologous genomes. *Phytopathology* 97 (1): 79-86.
17. **Chunquan Zhang** and Said A. Ghabrial. 2006. Development of *Bean pod mottle virus*- based vectors for stable protein expression and sequence-specific virus-induced gene silencing in soybean. *Virology* 344 (2): 401-411. (**Cover story**, on the list of "TOP25 Hottest Articles" of the journal selected by ScienceDirect).

Conference Proceedings (latest 4 years):

1. Faith Iseguede, Yan Meng, **Chunquan Zhang**, Victor Njiti. 2019. Using biotechnological approaches for improving sweetpotato viral disease resistance. *Journal of the Mississippi Academy of Sciences*, 64(1): 33.

2. **Chunquan Zhang**. 2018. Investigation of small farm ecosystem crop diseases and integration of plant pathology resources for limited-resource farmers in rural Mississippi. 1890 Institution Teaching, Research and Extension Capacity Building Grants (CBG) Program Project Director Meeting. July 10-11, 2018. National Institute of Food and Agriculture, 800 9th Street, SW, Washington, DC
3. Kyler Holmes, Yan Meng, **Chunquan Zhang**, Victor Njiti. 2018. Development of biotechnological approaches for improving sweetpotato with multiple viral disease resistance. Journal of the Mississippi Academy of Sciences, 63(1): 25.
4. Daniela Adjaye, Yan Meng, Victor Njiti, **Chunquan Zhang**. 2018. Whole genome sequencing and the construction of infectious poplar mosaic virus clones. Journal of the Mississippi Academy of Sciences, 63(1): 41.
5. **Chunquan Zhang**, Yan Meng, Kyler Holmes, Rita Okoro and Victor Njiti. 2017. Development and Application of Novel Biotechnological Approaches for Sweetpotato (*Ipomoea batatas*) Virus Resistance in Mississippi. National Sweetpotato Collaborators Group Annual Conference. Feb. 3-4, Mobile, AL
6. Kyler Holmes, Yan Meng, Rita Okoro, Victor Njiti, **Chunquan Zhang**. 2017. Development of a virus-free sweetpotato program for limited-resource farmers in Mississippi. Journal of the Mississippi Academy of Sciences, 62(1): 37.
7. Gerard Winters, Daniel Collins, **Chunquan Zhang**. 2017. Peanut and cowpea foliar leaf spot disease diagnosis in southern Mississippi. Journal of the Mississippi Academy of Sciences, 62(1): 34.
8. Yan Meng, **Chunquan Zhang** and Victor Njiti. 2016. Exploiting the approaches of biotechnology in sweetpotato for virus diseases resistance. American Phytopathological Society (APS) annual meeting. Jul. 30-Aug. 3, Tampa, FL, USA.
9. **Chunquan Zhang** 2016. Plant viral diseases and molecular virology studies in agriculture. 2016 June 18, San Jose, Costa Rica
10. Landrick Akrong, Yan Meng, Victor Njiti, Christopher Clark and **Chunquan Zhang**. 2016. Construction of full length genomic cDNA clones of sweetpotato feathery mottle virus. Journal of the Mississippi Academy of Sciences, 61(1): 25.
11. David Henderson, **Chunquan Zhang**, Victor Njiti and Yan Meng. 2016. Development of transgenic sweetpotato with multiple virus resistance in US. Journal of the Mississippi Academy of Sciences, 61(1): 27.
12. **Chunquan Zhang**, Tresel Benjamin, Gregory Smith, Yan Meng, Victor Njiti and Christopher A. Clark, 2015. Analysis of full length infectious genomic cDNA clones of SPFMV. American Phytopathological Society (APS) annual meeting. Aug. 1-5, Pasadena, CA, USA.
13. **Chunquan Zhang**, Shonquatta Williams, Yan Meng, Victor Njiti, Christopher A. Clark, 2015. Construction of Full Length Genomic cDNA Clones of SPFMV and Infectivity Analysis. National Sweetpotato Collaborators Group Annual Conference, 2015 January 24-25, 2015, Nashville, TN

Extension and Outreach activities:

Funding:

1. Establishing A Genome Editing Consortium at 1890 Universities. **PI**, awarded \$499,457 by USDA (2019-2021).
2. Norman Borlaug fellow: genetic improvement of cucurbits in Ghana. **PI-advisor**, awarded \$40,000 by USDA (2016-2018).
3. Plant friends and foes: plant interactions with other organisms as related to plant health, agriculture and environment. **Co-PI**, awarded \$300,000 by USDA (2016-2019).
4. Investigation of small farm ecosystem crop diseases and integration of plant pathology resources for limited-resource farmers in rural Mississippi. **PI**, awarded \$246,318 by USDA (2014-2017).
5. Establishment and application of a virus-free sweetpotato program for limited resource farmers in Mississippi. **Co-PI**, awarded \$248,719 by USDA (2015-2018).
6. Tropical agriculture, ecology, environmental and energy sustainability research and education in Costa Rica. **Co-PI**, awarded \$299,918 by USDA (2015-2018).
7. Alcorn State University-Monsanto partnership to enhance small-farm productivity and training the next generation of agricultural scientists. **Co-PI**, awarded \$ 850,000 by Monsanto (2015-2016).
8. Multidisciplinary Approach to Train Five Under-Represented Minority Students in the Agriculture and Natural Resource Sciences. **Co-PI**, awarded \$ 200,000 by USDA (2015-2017).
9. Development of a Tobacco Rattle Virus-induced gene silencing system on basil (*Ocimum basilicum*), **Co-PI**, awarded \$ 516,550 by USDA Evans Allen, (2014-2017).
10. Establishing an Advanced Plant Pathology course to strengthen Agriculture related education at Alcorn State University. **PI**, awarded \$149,665 by USDA NIFA (expired 2014).
11. Evaluation of a plant viral gene expression platform for disease resistance, and protein expression studies. **PI** \$43,600 funded by KiOR, a next-generation renewable fuels company (expired 2013).
12. Development of virus resistant sweet potato varieties through biotechnology approach. **PI**, awarded \$292,076 by USDA NIFA (expired 2013).

Collaborators:

Recent Graduate Students: Leonna Tyler, Shonquatta J. Williams, Shala Johnson and Landrick Akrong.

Undergraduate Researchers: *Present and past*

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