



## Blue Mold is the Name, Pome Fruit Decay is the Game: Omics-based studies to Identify the Achilles Heel of a Global Postharvest Pathogen

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### Abstract:

Apples are stored for many months, and up to one year in controlled atmosphere cold storage. Over time, fruit become more susceptible to postharvest decay, caused by *Penicillium* spp., which manifest in multi-million-dollar losses, annually. *Penicillium* spp. produce an array of mycotoxins and secondary metabolites, which include patulin, a globally regulated toxin that contaminates processed apple fruit products. There are only 4 postharvest fungicides labeled to control blue mold on pome fruit in the U.S. and fungicide resistant isolates have emerged making control difficult. Hence, new tools, tactics and strategies to manage decay are greatly needed. Research will be discussed that has integrated omics-based approaches to uncover new control points that can be used to aid in the management of blue mold decay. Specifically, genome-level studies to identify new virulence genes in *Penicillium expansum*, validation of candidate gene functions in the fungus, and comparative proteomics to elucidate the function of global regulators of fungal virulence. The talk will include the latest research findings along with progress from our laboratory with the overall goals to maintain fruit quality, reduce food loss, abate patulin contamination, and increase food security.

### Biography:

Dr. Jurick II has led international postharvest pathology research for 13 years at USDA-ARS in Beltsville, Maryland. His work has been published in prestigious journals like *The Proceedings of the National Academy of Sciences*, *BMC Genomics*, and *Molecular and Cellular Proteomics*. Dr. Jurick's research has significantly impacted the sustainability of the pome fruit industry as his results have optimized postharvest fungicide applications, uncovered new genes and molecular targets for control, and guided fungicide resistance management practices. His status is highly recognized, which is evidenced by multiple invitations at national and international venues, hosting international visiting scientists, training graduate stu-



dents and mentoring postdoctoral scholars that have gone onto impressive scientific careers. He is Senior Editor of *Phytopathology*, evaluates competitive grant proposals, and participates on multiple graduate supervisory committees.

### Publication of speakers:

1. F.J. Lichtner, W.M. Jurick II, K.M. Ayer, V.L. Gaskins, S.M. Villani and K.D. Cox. 2020. *Venturia inaequalis* genome resource with multiple fungicide resistance phenotypes causing preharvest apple scab and postharvest pinpoint scab. *Phytopathology*. doi.org/10.1094/PHYTO-06-19-0222-A.
2. W.M. Jurick II, H. Peng, H. Beard, W.M. Garrett, F.J. Lichtner, D. Luciano-Rosario, O. Macarisin, Y. Liu, K.A. Peter, V.L. Gaskins, T. Yang, J. Mowery, G. Bauchan, N.P. Keller, and B.D. Cooper. 2020. Blistering1 modulates *Penicillium expansum* virulence via vesicle-mediated protein secretion. *Molecular and Cellular Proteomics*. RA119.001831.
3. R. de Jonge, M.K. Ebert, C.R. Huitt-Roehl, P. Pal, J.C. Suttle, R.E. Spanner, J.D. Neubauer, W.M. Jurick II, K.A. Stott, G.A. Secor, B. Thomma, Y. Van de Peer, C.A. Townsend, and M.D. Bolton. 2018. Gene cluster conservation provides insight into cercosporin biosynthesis and extends production to the genus *Colletotrichum*. *Proc. Natl. Acad. Sci.* 115(24): E5459-E5466.

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