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**Education:**

 B.S. Bates College 1992

 Ph.D. Columbia University 1998

 Postdoctoral: Yale University 1998-2000

 Postdoctoral: Tulane University 2000-2005

 Postdoctoral: Arizona State University Biodesign Institute 2006-2008

**Publications:**

 Wilson, J.W., C.P. Santiago, J. Serfecz, and L.N. Quick. 2013. Recombineering and conjugation as tools for targeted genomic cloning. In "Genetic Manipulation of DNA and Protein - Examples from Current Research", ed. Dr. David Figurski, InTech Publishing. http://www.intechopen.com/articles/show/title/recombineering-and-conjugation-as-tools-for-targeted-genomic-cloning

 Jennings ME, Quick LN, Ubol N, Shrom S, Dollahon N, and J.W. Wilson. 2012. Characterization of Salmonella Type III Secretion Hyper-Activity Which Results in Biofilm-Like Cell Aggregation. PLoS ONE 7(3): e33080.

 Ott, C. M., A.Crabbé, J. W. Wilson, J. Barrila, S. L. Castro, and C. A. Nickerson. 2012. Microbial stress: spaceflight-induced alterations in microbial virulence and infectious disease risks for the crew. In "Stress Challenges and Immunity in Space", ed. A. Chouker. Springer Press, Inc. Pages 203-226.

 Santiago, C. P., L. N. Quick, and J. W. Wilson. 2011. Self-transmissible IncP R995 plasmids with alternative markers and utility for Flp/FRT cloning strategies. J. Microbiol. Biotechnol. 21(11):1123-1126.

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 Crabbe, A., M.J. Schurr, P. Monsieurs, J. Schurr, J.W. Wilson, C.M. Ott, et. al. 2011. Transcriptional and proteomic responses of Pseudomonas aeruginosa PAO1 to spaceflight conditions involve Hfq regulation and reveal a role for oxygen. Appl. Environ. Microbiol. 77(4):1221-30

 Radtke, A.L., J.W. Wilson, S. Sarker, and C.A. Nickerson. 2010. Analysis of interactions of Salmonella type III secretion mutants with 3-D intestinal epithelial cells. PLoS ONE. 5(12):e15750.

 Quick, L. N., A. Shah, and J. W. Wilson. 2010. A series of vectors with alternative antibiotic resistance markers for use in lambda Red recombination. J. Microbiol. Biotechnol. 20(4):666-9.

 O'Sullivan, L. E., C. A. Nickerson, and J. W. Wilson. 2010. A series of IncQ-based reporter plasmids for use in a range of Gram negative genera. J. Microbiol. Biotechnol. 20(5):871-874.

 Stomel, J.M., J.W. Wilson, M.A. Leon, P. Stafford, and J.C. Chaput. 2009. A man-made ATP-binding protein evolved independently of nature causes abnormal growth in bacterial cells. PLoS ONE. 4(10):7385.

 Wilson, J.W., C.M. Ott, L. Quick, R. Davis, et.al. 2008. Media ion composition controls regulatory and virulence response of*Salmonella* in spaceflight. PLoS ONE. 3(12):3923.

 Wilson, J.W. and C.A. Nickerson. 2007. In-vivo excision, cloning, and broad-host-range transfer of large bacterial DNA segments using VEX-Capture. Methods Mol. Biol. 394:105-118.

 Wilson, J.W., C.M. Ott, K. Honer zu Bentrup, et. al. 2007. Spaceflight alters bacterial gene expression and virulence and reveals a role for global regulator Hfq. Proc. Natl. Acad. Sci. USA. 104(41):16299-16304.

 Wilson, J.W., C. Coleman, and C.A. Nickerson. 2007. Cloning and transfer of the Salmonella SPI-2 type III secretion system for studies in a range of Gram negative bacteria. Appl. Environ. Microbiol. 73(18):5911-5918.

 Wilson, J.W. and C.A. Nickerson. 2006. A new experimental approach for studying bacterial genomic island evolution identifies island genes with bacterial host-specific expression patterns. BMC Evol Biol. 6:2.

 Wilson, J.W. and C.A. Nickerson. 2006. Cloning of a functional SPI-1 type III secretion system and development of a method to create mutations and epitope fusions in the cloned genes. J. Biotechnol. 122(2):147-160.

 Wilson, J.W. 2006. Bacterial protein secretion mechanisms. In C.A. Nickerson and M.J. Schurr (ed.), Molecular Paradigms of Infectious Disease: A Bacterial Perspective. Springer Publishing, NY, NY.

 Wilson, J.W. 2006. Genetic exchange in bacteria and the modular structure of mobile DNA elements. In C.A. Nickerson and M.J. Schurr (ed.), Molecular Paradigms of Infectious Disease: A Bacterial Perspective. Springer Publishing, NY, NY.

 Nickerson, C.A., C.M. Ott, J.W. Wilson, R. Ramamurthy, and D.L. Pierson. 2004. Microbial responses to microgravity and other low shear environments. Microbiol. Mol. Biol. Rev. 68 (2): 345-361.

 Wilson, J.W., R. Ramamurthy, S. Porwollik, M. McClelland, T. Hammond, P. Allen, C.M. Ott, D.L. Pierson, and C.A. Nickerson. 2002. Microarray analysis identifies Salmonella genes belonging to the low-shear modeled microgravity regulon. Proc. Natl. Acad. Sci. U S A. 99(21):13807-13812.

 Wilson, J.W., C.M. Ott, R. Ramamurthy, S. Porwollik, M. McClelland, D.L. Pierson, C.A. Nickerson. 2002. Low-shear modeled microgravity alters the Salmonella enterica serovar Typhimurium stress response in an RpoS-independent manner. Appl. Environ. Microbiol. 68(11):5408-5416.

**Areas of Interest:**

 We study genes and growth conditions that can be used to engineer bacteria. There is immense potential to utilize bacterial cells for a variety of applications that benefit society. This potential is more quickly and efficiently realized by manipulating specific genes and growth parameters using multiple approaches tailored toward desired goals. The work in our lab can be divided into four main areas:

 **(1) Unexplored bacterial genes.** Our previous studies have demonstrated that specialized growth environments, such as spaceflight and low-fluid-shear culture, can be used to alter the ability of the gastrointestinal pathogen *Salmonella typhimurium* to cause disease. We have identified several novel transcriptional regulators involved in the response to these environments and have focused on studying how these previously uncharacterized regulators impact bacterial growth, survival, and virulence.

 **(2) Rotating wall vessel (RWV) culture**. The RWV is a specialized growth apparatus that promotes beneficial bacterial phenotypes that cannot be obtained otherwise using traditional culture methods. The potential of the RWV to open new doors in bacterial engineering is vast. We have focused on using the RWV to culture a range of bacterial species to expand the uses of the apparatus. We also want to determine if specific responses to RWV culture are conserved across species.

 **(3) Cloned type III secretion systems.** We have cloned two separate *S. typhimurium*type III secretion gene systems using a plasmid vector that can easily transfer between bacterial cells. Our work focuses on building new type III secretion platforms in a range of different bacterial species. These transferred gene systems can be used for a variety of specific applications including functional protein display and vaccine delivery.

 **(4) Molecular reagents for DNA manipulation.** We design a variety of plasmids and PCR templates that can be used for more convenient performance of molecular biological techniques such as lambda Red recombination, cloning of large DNA fragments, and reporter gene assays.

**Selected Publications**

Wilson, J.W., M.J. Schurr, C.L. LeBlanc, R. Ramamurthy, K.L. Buchanan, and C.A. Nickerson. 2002. Mechanisms of Bacterial Pathogenicity.  Postgrad. Med. J.  78:216-224.

Wilson, J.W., and D.H. Figurski.  2002.  Host-specific incompatibility by 9-bp direct repeats indicates a role in the maintenance of broad-host-range plasmid RK2.  Plasmid.  47(3):216-23.

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Johanson, K., P. L Allen, R. A. Gonzalez-Villalobos, J. Nesbitt, C. A. Nickerson, K. Honer zu Bentrup, J. W. Wilson, R. Ramamurthy, R. D’Elia, K. E. Muse, J. Hammond, J. Freeman, L. S. Stodieck, and T. G. Hammond.  2007.  Haploid deletion strains of Saccharomyces cerevisiae that determine survival during space flight. Acta Astronautica.  60(4-7):460-471.

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Cody, W.L., **J.W. Wilson,** D.R. Hendrixson, K.S. McIver, K.E. Hagman, C.M. Ott, C.A. Nickerson, M. Schurr.  2008.  Skim Milk Enhances the Preservation of Thawed -80°C Bacterial Stocks.  J. Microbiol. Methods.  75:135-138.

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Santiago, C. P. \*\*\*, L. N. Quick, and **J. W. Wilson**.  2011.  Self-transmissible IncP R995 plasmids with alternative markers and utility for Flp/FRT cloning strategies.  J.  Microbiol. Biotechnol.  21(11):1123-1126.

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Jennings ME\*\*\*, Quick LN, Ubol N\*\*\*, Shrom S, Dollahon N, **J.W. Wilson**. 2012. Characterization of Salmonella Type III Secretion Hyper-Activity Which Results in Biofilm-Like Cell Aggregation. PLoS ONE 7(3): e33080.

**J.W. Wilson**, C.P. Santiago\*\*\*, J. Serfecz\*\*\*, and L.N. Quick.  2012.  Recombination and conjugation as tools for targeted genomic cloning.  In “Directed Mutagenesis”, ed. David Figurski.  In Tech Press, Inc.  In press.