JENNIFER CLIFFORD, Ph.D.
Somerville, MA, 02143 |

SUMMARY

Plant Pathologist with expertise in using biological assays and 'omics' approaches to investigate molecular host-microbe interactions. Over 15 years of experience in experimental design, execution, and analysis with demonstrated ability in basic and applied research of various crop plants. Active in coordinating outreach events for a community laboratory aimed toward providing public access to science.

EDUCATION

University of Wisconsin-Madison, Ph.D., Molecular Plant-Microbe Interactions (Plant Pathology) 2009
University of New Hampshire, M.S., Phytopathology (Plant Biology) 2002
University of New Hampshire, B.S., Animal Sciences (minor: Microbiology) 1992

PROFESSIONAL EXPERIENCE

Research Associate, Laboratory of Applied Microbiology (Mitchell Group) April, 2018 - present
Harvard University, Cambridge, MA

- Evaluating microbial communities associated with the *USS Arizona* using traditional culturing techniques and high-throughput sequencing of 16S rDNA.
- Co-edited reference book aimed toward scientists and conservators reviewing current methods and treatments for microbial degradation of cultural heritage items.
- Planning collaborative efforts to determine role of microbial communities recovered from USS *Arizona* in metal corrosion.

Outreach Coordinator (May, 2017 – present); **Member, Board of Directors** (Nov, 2016 – May, 2017); **Team Member/Mentor** (May, 2016 – Nov, 2016)
Boston Open Science Laboratory, Somerville, MA

- Active participant in a community laboratory with the mission to support citizen science and provide community science education.
- Identify opportunities for outreach and organize events to engage the community in science discussion.
- Provide assistance in fundraising efforts.
- Provide expertise to accelerate molecular biology and microbiology aspects of in-house projects.

Independent Consultant, Laboratory of Applied Microbiology 2016-March, 2018
Harvard University, Cambridge, MA

- Evaluating microbial communities associated with the *USS Arizona* using traditional culturing techniques and high-throughput sequencing of 16S rDNA.
- Collaboratively design follow-up experiments and perform analysis.

Principal Scientist, Plant Laboratory 2017
SproutsIO, Inc., Cambridge, MA

- Oversaw the Plant Laboratory operations at a startup with responsibility for R&D geared toward plant growth in a high performance, indoor 'smart' gardening system.
- Designed plant growth experiments, determined protocols for monitoring plant growth and health, determined equipment use methods and maintenance, and supervised laboratory technicians.
- Provided analysis and reports on R&D efforts and product development directly to the CEO.

microbiological, and biochemical approaches such as evaluating terminal oxidase function, biofilm formation, and mutation rates.
- Research led to 2 publications (one 'Editor's Pick'), 3 invited talks, 3 presentations at national conferences, and 1 technical bulletin.
- Innovated an assay development method to determine growth of a bacterial species under microaerobic conditions.
- Mentored one MS student and 2 BS students. Supervised lab personnel.

Visiting Scholar, Bacteriology Unit
The World Vegetable Center, Shanua, Taiwan Jun-Sep 2008

- Awarded an NSF grant to conduct metagenomic research for a microbial ecology project designed to determine the bacterial community in soil amended with a biofumigant mustard crop, and its impact on *Ralstonia solanacearum* and bacterial wilt disease using molecular biology approaches including DNA extraction from bulk soil, 16S rDNA sequencing, restriction digest characterization, and BLAST analysis.
- Report submitted to the National Science Foundation and the National Science Council of Taiwan.

PEER-REVIEWED PUBLICATIONS

Vasankathumar, A., **Clifford, J.C.**, Mittleman, M., Seymour, B., Conlin, D., and Mitchell, R. Molecular analysis of communities associated with sediment and oil samples taken from the *USS Arizona*. In preparation.

Clifford, J.C., Buchanan, A., Vining, O., Kidarsa, T.A., Chang, J.H., McPhail, K., and Loper, J.E. 2015. Phloroglucinol functions as an intracellular and intercellular chemical messenger influencing gene expression in *Pseudomonas protegens*. Environ. Microbiol. doi: 10.1111/1462-2920.13043.

Clifford, J. C., Rapicavoli, J., and Roper, M.C. 2013. A rhamnose-rich O-antigen mediates adhesion, virulence and host colonization for the xylem-limited phytopathogen, *Xylella fastidiosa*. Mol. Plant-Microbe Interact. 26(6): 676-685. *Manuscript chosen as 'Editor's Pick' for this issue.*

Colburn-Clifford, J.M., Scherf, J.M., and Allen, C. 2010. *Ralstonia solanacearum* Dps contributes to oxidative stress tolerance and to colonization of and virulence on tomato plants. Appl. Environ. Microbiol. 76(22): 7392-7399.

Colburn-Clifford, J.M. and Allen, C. 2010. A cbb_3-type cytochrome *c* oxidase contributes to *Ralstonia solanacearum* R3bv2 growth in microaerobic environments and to bacterial wilt disease development in tomato. Mol. Plant-Microbe Interact. 23(8): 1042-1052. *Manuscript chosen as 'Editor's Pick' for this issue.*

Gabriel, D., Allen, C., Schell, M., Denny, T.P., Greenberg, J.T., Duan, Y.P., Flores-Cruz, Z., Huang, Q., **Clifford, J.M.**, *et al.* 2006. Identification of Open Reading Frames Unique to a Select Agent: *Ralstonia solanacearum* Race 3 Biovar 2. Mol. Plant-Microbe Interact. 19: 69-79.

ABSTRACTS AND BULLETINS

Yan, Q., **Clifford, J.,** Chang, J., Loper, J. 2015. *pltM* is important in the phloroglucinol-mediated crosstalk between biosynthetic gene clusters for the antibiotics 2,4 diacetylphloroglucinol and pyoluteorin in *Pseudomonas protegens* Pf-5. Proceedings from Phytobiomes 2015: Designing a new paradigm for crop improvement.

Clifford, J., Kidarsa, T.A., Buchanan, A., Chang, J.H., and Loper, J.E. 2013. Using next-generation sequencing to determine the influence of metabolic intermediates on the *Pseudomonas protegens* transcriptome. Phytopathology 103:S2.28.

Rapicavoli, J.N., **Clifford, J.**, Shugart, H., Backus, E., May, C. Perring, T., and Roper, M.C. 2013. The role of the bacterial cell surface lipopolysaccharide in grapevine colonization and insect acquisition of *Xylella fastidiosa*. Phytopathology 103(6):S2.119.