Scientist, Innovator, Teacher, and Microbial Aficionado

BRITTANY M. BERDY

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Summary: I am passionate about the microbiome and its therapeutic potential. Through my research in Boston for the past 7 years I've developed a highly competitive research background specializing in microbiology and cultivation approaches. I have also been exposed to an energetic start-up culture and have sought out unique innovation opportunities to match my research objectives. I aim t o merge my interpersonal skills with my management experience and research background in microbiology.

Education

Ph.D., Biology – Northeastern University – Boston, MA
May 2017
Awards: College of Science Dean's Award for Graduate Student Excellence in Leadership (2016)

B.A., Biology (*summa cum laude*) – Skidmore College – Saratoga Springs, NY
May 2010, GPA 3.94
Awards: Dowd-Lester Award: Outstanding Biology Major (2010), Phi Beta Kappa (2010), Periclean Honors Society (2010), Department Honors and Highest Honors (2010)

Highlighted Experience

PROJECT MANAGER – Alm and Xavier Labs, The Broad Institute - Cambridge, MA – 2019 - present

- Curator of the Broad Institute-OpenBiome Microbe Library in charge of maintaining, cataloguing, and characterizing all bacterial strains and associated genomic information
- Build, maintain, and share "Diversity Boxes" containing at least one strain of all species in the library
- Main point of contact for all collaborative efforts and customers
- Isolation of new strains from healthy donors

POSTDOCTORAL RESEARCH FELLOW/LAB MANAGER - Brucker Lab, Rowland Institute @ Harvard Univ. - Cambridge, MA – 2017 - 2019

Research: the impact of xenobiotics on the microbiome of the host

- Leading the honey bee research project to connect our lab's previous research work to a new species (*Apis mellifera*).
- Established and maintained connections with beekeeping communities to keep up to date on current problems and innovative solutions
- Guiding overall project design, as well as performed all experiments, including laboratory work such as bacterial cultivation, toxicity studies, next generation sequencing, and microbiome analysis
- Mentor to graduate and undergraduate students
- Successfully awarded funding to support honey bee research

Innovation:

- Spearheading the development of ColonyWise by working closely with technical advisors to develop a mobile-friendly software for beekeepers enabling large-scale data collection
- Promoting and assisting a team of electrical engineers and programmers to pair innovative sensor technologies with the ColonyWise application to help beekeepers (and scientists!) understand and predict hive health and colony behavior

Lab Management:

- Implementation and maintenance of lab management systems to facilitate lab productivity, including Quartzy (ordering), Evernote (lab documentation and protocols), Mendeley (shared content), and Slack (communication)

GRADUATE RESEARCH ASSISTANTANT/LABORATORY OPERATIONS MANAGER - Epstein Lab, Northeastern Univ. - Boston, MA – 2011 - 2017

Dissertation: Microbial Community Composition of Lake Sediment in the High Arctic

- Examined the overlap and success of culture-independent vs. cultivation methodologies using lake sediment. Work included design and implementation of novel cultivation approaches. Resulted in vast culture collection of over 1700 isolates. In addition, work included phylogenetic analyses of organisms using 16s rRNA gene sequencing and analysis of large genomic datasets using Illumina sequencing

Research, Development and Innovation:

- Designed, developed, and optimized a novel cultivation device to achieve microbial cultivation and isolation in a single step
- Consulted and collaborated on projects with other departments, Universities, and companies to provide expertise in microbiology and particularly microbial cultivation
- Worked with entrepreneurial partners at Northeastern and external companies (i.e. 3M) to develop an ichip for high throughput microbial cultivation that is easy to use and affordable for all education levels
- Collaborated with Bruker Daltonics on MADLI-TOF applications for dereplication and identification of environmental microorganisms
- Collaborated with NovoBiotic Pharmaceuticals LLC. to compare in situ cultivation and standard cultivation technologies for potential drug discovery in marine life (corals and sponges)
- Coordinated and organized establishment of a temporary lab space abroad in a remote area of the Arctic. This required working with the USDA, NSF, and the associated CH2M Hill Polar Service Team to ensure all guidelines, permits, and protocols were in place and that lab operations could occur safety and effectively in Greenland

Management:

- Trained and mentored undergraduates and exchange students in laboratory techniques and experimental design
- Oversaw laboratory operations including coordination and review of business with other administrative offices, departments, and collaborators
- Monitored and managed lab safety, including documentation, standard operating procedures, and registration with appropriate agencies within the University and Federal Government
- Liaison for all press-related inquiries and projects, redesign of lab website and maintenance
- Sole person in charge of purchasing all lab supplies, maintaining vendor relations, and providing oversight for equipment repair

Teaching Experience

INSTRUCTOR (ONLINE) – Mass. General Hospital, Institute of Health Professions - Boston, MA – 2013 - Present

- Head instructor for biology 2 course
- Assistant instructor for microbiology and biology 1; roles include curriculum design and maintenance
- Facilitate online discussion boards to ensure competence in core medical biology and microbiology concepts while promoting discussion on new and emerging research in the medical health-related fields
- Grading of quizzes, exams, papers, and discussion boards

TEACHING ASSISTANT/LAB INSTRUCTOR – Northeastern University - Boston, MA – 2012 – 2015

- Conducted lab courses for General Biology I & II, Principles of Biology, Microbiology
- Responsibilities included lecturing on weekly topics, preparation and supervision of experiments, quiz, test, and practical design, and assessment of student performance.
- Assisted with troubleshooting a new course (Principles of Biology) and generated teaching notes for future

Teaching Assistants

- Guest lecture for graduate course: Dynamics of Microbial Ecology

BIOLOGY TEACHING ASSISTANT– Skidmore College – Saratoga Springs, NY – 2008-2009

- Assisted in weekly lab sections for undergraduate introductory biology
- Directed weekly study sessions

Funding

Essex Beekeepers Association – Harvard University
Project: Testing the Host-Microbiota Response in Acute Exposure to Pesticides
$5K Award December 2017

Alpha Fund Grant – Northeastern University
Project: GULLIVER, prototype design and testing
$5K Award September 2016

Leadership Experience

President/Co-founder – Biology Graduate Student Association, Northeastern Univ. - Boston, MA 2014-2016

- Organized Career Development Panels to help PhD students interact with various professionals and answer questions on pursuing a variety of career options in the Sciences
- Helped organize and host a College-wide Career Development Seminar 3-Part Series (by Propel Careers)
- Liaison and advocate for the graduate student body regarding student education, concerns, and well being

Ph.D. Student Council Representative - Northeastern Univ. - Boston, MA 2014-2016
President of Graduate Biology Club – Northeastern University – Boston, MA 2013-2014
European Career Fair organizing committee - MIT - Cambridge, MA 2012-2013

- Solicited companies and vendors to participate in the fair
- Helped design and construct the advertisement booklet for all final participating companies and vendors

Academic Council – Skidmore College – Saratoga Springs, NY 2009-2010

Publications, Presentations, and Outreach

M. Poyet, M. Groussin, S. M. Gibbons, J. Avila-Pacheco, X. Jiang, S. M. Kearney, A. R. Perrotta, **B. Berdy**, S. Zhao, T. D. Lieberman, P. K. Swanson, M. Smith, S. Roesemann, J. E. Alexander, S. A. Rich, J. Livny, H. Vlamakis, C. Clish, K. Bullock, A. Deik, J. Scott, K. A. Pierce, R. J. Xavier & E. J. Alm. A library of human gut bacterial isolates paired with longitudinal multiomics data enables mechanistic microbiome research. *Nature Medicine*, 2019 DOI: 10.1038/s41591-019-0559-3

Wang, G.H., **Berdy, B.M.**, Velasquez, O., Sami, S.K., Minibiole K.P.C., Brucker, R.M. Experimental Hologenomic Evolution: Heritable effects of acute-pesticide poisoning on the microbiome and adapation across host generations. In review. *Cell: Host and Microbe*

B. Berdy. (2018, October 7). "I can't believe they're letting me write this blog": Imposter Syndrome, Science, and the Rest of the World. [web log comment]. https://www.hellobio.com/blog/i-cant-believe-theyre-letting-me-write-this-blog-imposter-syndrome-science-and-the-rest-of-the-world.html

Claire Williams, **Brittany Berdy,** and Slava Epstein (2018) Development of Gulliver, a novel *in situ* cultivation strategy. International Society of Microbial Ecology: Leipzig, German (poster presentation).

Brittany Berdy and Robert Brucker (2018) Microbiome differences between honey bee colonies following xenobiotic exposure: A preliminary study. American Society of Microbiology General Meeting 2018: Atlanta, GA (poster presentation).

Brittany Berdy (2018) "Studies with bees: Pesticides and our microbiome." Talk at Skidmore College, Saratoga Springs, NY (invited guest, main speaker)

Brittany Berdy. 2018. Microbial community composition of lake sediment in Thule, Greenland during the summer of 2014. Arctic Data Center. doi:10.18739/A20C4G.

Berdy, B., Spoering, A., Ling, L., & Epstein, S. 2017. In situ cultivation of previously uncultivable microorganisms using the ichip. *Nature Protocols*. 12:2232-2242. doi:10.1038/nprot.2017.074

Kim, S., De Jonghe, D., Kuelsa, A., Feldman, D., Vatanen, T., Bhattacharyya, R., **Berdy, B.,** Gomez, J., Nolan, J., Epstein, S., & Blainey, P. 2017. High throughput Automated Microfluidic Sample Preparation for Microbial Genomics. *Nature Communications*. 8.

Brittany Berdy, Dawoon Jung, Manny Torralba, Slava Epstein, Karen Nelson. (2014) "Microbial Dynamics in Thule." Talk at Thule Airbase: Thule, Greenland (main speaker)

Sebastian Doerfert*, **Brittany Berdy*,** Eva Wunschel, Maria Sizova, Josh Timmons, Dawoon Jung, Gary Kruppa, Slava Epstein. (2014) MALDI-TOF applications for dereplication and identification of environmental microorganisms isolated from Thule, Greenland. Boston Bacterial Meeting 2014: MA (poster presentation).

Berdy B, Buerger S, Sousa A, Edson E, Halligan K, Ling L, Spoering S, Epstein SS. (2013) Bacterial slow growth – a common survival strategy? Boston Bacterial Meeting 2013: Boston, MA (poster presentation).

Berdy B, Buerger S, Sousa A, Edson E, Halligan K, Ling L, Spoering S, Epstein SS. (2013) Do Slow Growers Exist? RISE 2013: Boston, MA and American Society of Microbiology General Meeting 2013: Denver, CO (poster presentation).

Freeman-Gallant, C., Amidon, J., **Berdy, B**., Wein, S., Taff, C. & Haussmann, M. F. 2011. Oxidative damage to DNA related to survivorship and carotenoid-based sexual ornamentation in the common yellowthroat. *Biol. Lett.* Published online before print January 19, 2011. (doi:10.1098/rsbl.2010.1186)