

Emelia Anne DeForce

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Education

1. **Ph.D.** Molecular, Cellular, and Organismal Biology 2011
University of Massachusetts Boston
Archaeal Diversity and Potential Function in Soil Ecosystems
2. **M.S.** Biology 2005
University of Massachusetts Boston and Children's Hospital Boston
*A New Method to Quantify Capsular Hyaluronic Acid from *Streptococcus pyogenes* Isolates*
3. **B.S.** Biology 2002
Edinboro University of Pennsylvania

Work Experience

- Scripps Institute of Oceanography. **Volunteer** August 2017 - present
- MO BIO Laboratories, Inc, a QIAGEN company. **Research Scientist** Dec 2013 – July 2017
- Woods Hole Oceanographic Institution **Research Associate** July 2012 - Dec 2013
Diversity and function of shallow hydrothermal vent microbial communities
- Sea Education Association **Chief Scientist** Oct 2 - Nov 9, 2012
Plastics at SEA: North Pacific Expedition
- Marine Biological Laboratory **Post Doctoral Researcher** Oct 2010 - Dec 2011
Diversity of leaf surface microbial communities, colonization, and succession
- Children's Hospital Boston **Clinical Technician** Sept 2002 - Sept 2005
molecular pathogenesis of *Streptococcus pyogenes* and *Bacillus anthracis*

Academic Research Experience

Diversity and potential role(s) of microorganisms in anthropogenically altered ecosystems such as rainforests, coral reefs, salt marshes, glacier retreat, and open ocean marine plastic debris using molecular techniques (sample prep and NGS), specifically diversity, abundance, and function.

Industry Research Experience

Sample prep optimization of nucleic acids from all sample types. The use of physics and chemistry to lyse cells, bind nucleic acids, wash, and release them for downstream analysis.

- sample prep **kits developed**

1. PowerMag® Blood DNA/RNA Isolation Kit
2. UltraMag™ Tissue & Cells DNA/RNA Isolation Kit
3. PowerMag® FFPE DNA/RNA Isolation Kit (transferred to QIAGEN under acquisition)
4. AllPrep PowerSoil DNA/RNA Isolation Kit (transferred to QIAGEN under acquisition)

Teaching Experience

Cape Cod Community College Anatomy and Physiology lab Fall 2013
Cape Cod Community College Medical Microbiology lecture/lab Spring 2012
University of Massachusetts Boston Student Supervisor Sept 2005 - May 2011
NSF Teaching Fellow Sarah Greenwood MS 5th grade Jun 2007 - Jun 2009
University of Massachusetts Boston Lecturer and Teaching Assistant Sept 2004 - May 2007

Professional Relationships/Collaborators

Relationships cultivated with Key Opinion Leaders in Microbiome include: Rob Knight (UCSD), Jack Gilbert (University of Chicago), Janet Jansson (Pacific Northwest National Laboratory), Joël Doré (INRA), Embriette Hyde (American Gut Project), Jim Prosser (University of Aberdeen), Craig Cary (University of Waikato), Stefan Sievert (Woods Hole Oceanographic Institution), Amy Apprill (Woods Hole Oceanographic Institution), Graeme Nicol (Université de Lyon).

Selected Presentations

JCVI, La Jolla, CA. *How to extract Nucleic Acids from Inhibitor Rich Samples*. July 2017.
Bastyr University California. *How to determine The Microbiome of your gut*. May 2017.
EMBL (Heidelberg, Germany), Microbial Metagenomics: A 360° Approach. *Extracting Nucleic Acids from Inhibitor Rich Samples*. May 2017.
Univeristy of North Carolina at Chapel Hill. *How to extract Nucleic Acids from Inhibitor Rich Samples*. October 2015.
Conservation Genetics Course (Puerto Rico). *Extracting Nucleic Acids from Inhibitor Rich Samples*. January 2015.
Dupont Research and Development Lab. *Extracting Nucleic Acids from Inhibitor Rich Samples*. November 2014.
Surfrider Foundation San Diego (monthly presentations). *Plastics at SEA: The Effect of Plastic Pollution in Our Ocean*. 2014 – present.
Woods Hole Oceanographic Institution. Science Made Public. *Plastics at SEA: The Effect of Plastic Pollution in Our Ocean*. Aug 2013.
International Whaling Commission Marine Debris Workshop. *Plastics at SEA: Past, Present, and Future*. May, 2013.

Relevant Publications and Patents

Patent pending: *Kits for the isolation of inhibitor-depleted DNA and RNA from stool and soil*

KC Bierlich, Carolyn Miller, **Emelia DeForce**, Ari. S. Friedlaender, David W. Johnston, Amy Apprill
Seasonal and regional variability in the skin microbiome of humpback whales along the Western Antarctic Peninsula. *Environmental Microbiology* (in review).

Laura G Weber, **Emelia DeForce**, and Amy Apprill. (2017). Optimization of DNA Extraction for Advancing Coral Microbiota Investigations. *Microbiome*. 5:18.

Lavender-Law, K., Morét-Ferguson, S., Goodwin, D., Zettler, E., **DeForce, E.**, Kukulka, T., and Proskurowski, G. (2014). Distribution of Surface Plastic Debris in the Eastern Pacific Ocean from an 11-Year Data Set. *Environmental Science & Technology*, 48, 4732-4738.

Maignien, L., **DeForce, E.**, Chafee, M., Murat, A.E., Simmons, S. (2014). Ecological Succession and Stochastic Variation in the Assembly of *Arabidopsis thaliana* Phyllosphere Communities. *mBio*, 5, 1-10.

Gryllos, I., Grifantini, R., Colaprico, A., Jiang, S., **DeForce, E.**, Hakansson, A., Telford, J. L., Grandi, G. and Wessels, M. R. (2007). Mg²⁺ signaling defines the group A streptococcal CsrRS (CovRS) regulon. *Molecular Microbiology*, 65, 671-83.

DeForce, E., DeForce, C., and Lindeman, P.V. (2004). *Phrynops gibbus* (Gibba Turtle). Trap-happy behavior. *Herpetological review*. (35:1).

Fieldwork

ARSV *Laurence M. Gould* and Long Term Ecological Research group Jan 2013

- the affect of regional warming on ecosystem of the **western Antarctic Peninsula**

SSV *Robert C. Seamans* and Sea Education Association Oct 2012

- affect of marine plastic pollution in the **North Pacific subtropical gyre**

(<http://www.sea.edu/plastics/>)

SSV *Corwith Cramer* and Sea Education Association June 2010

- sampling plastic debris in the **North Atlantic subtropical gyre**

(<http://www.sea.edu/plastics2010>)

R/V *Thomas G. Thompson* and University of Washington June 2009

- sampling **hydrothermal vents** at Lau Basin in the South Pacific using **ROV Jason**

Organization for Tropical Studies Costa Rica March 2008

- sampling soil from **research stations** at Las Cruces, La Selva, and Palo Verde

R/V *Atlantis* and Woods Hole Oceanographic Institution Jan 2008 & Oct 2008

- sampling **hydrothermal vents** at EPR and Guaymas Basin using **DSV Alvin**

(dives 4396 and 4468)

Personal Experiences

Traveling: China, Europe, Thailand, Mexico, Canada, United States, Australia, Tonga, Fiji, Samoa, Costa Rica, Bermuda, Belize, Colombia, Ecuador, Argentina, Falkland Islands, Antarctica, Korea.

Hobbies: traveling, sailing, SCUBA, SUP, swimming, running, surfing, Broadway musicals

Professional References

Eddie Adams, Ph.D. (current supervisor)

Director of Research and Development, MO BIO Laboratories, Inc.

505-697-8058

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Sheri Simmons, Ph.D. (post doctoral advisor)

Senior Scientist, Microbiome Sciences, Seres Therapeutics

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Stefan Sievert, Ph.D. (research associate advisor)

Associate Scientist, Biology, Woods Hole Oceanographic Institution

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