

# LAUREN BROOKS

## Assistant Professor of Biology – Utah Valley University

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### EDUCATION

#### **Doctor of Philosophy, 2016**

Department of Microbiology, Oregon State University, Corvallis, OR

**Dissertation:** Novel experimental designs and mathematical models to study Fecal Indicator Bacteria persistence in surface water

#### **Graduate Certificate in College and University Teaching, 2015**

Oregon State University, Corvallis, OR

#### **Master of Environmental Science, 2011**

Yale School of Forestry & Environmental Studies, New Haven, CT

**Concentration:** Water Science and Policy

**Master's Project:** Use of Quantitative-PCR and host-specific genetic markers to identify sources of bacterial contamination in Coastal Connecticut

#### **Bachelor of Science, 2009**

Marshall University, Huntington, WV

**Majors:** Environmental Science; Ecology and Evolutionary Biology **Minor:** Chemistry

**Senior Thesis:** Assessment of the Second Creek Watershed in Monroe County, WV

### PROFESSIONAL EXPERIENCE- TEACHING AND MENTORING

**Courses taught:** BIOL 1010 – General Biology (F18, S19)

MICR 3450 – General Microbiology (F18, S19)

#### **W-STEM Mentorship Program**

**January 2017 – May 2018**

*Univeristy of California, Merced* Merced, CA

• Matched and organized mentorship program to promote women in Science, Technology, Engineering, and Mathematics (STEM) fields. Served as mentor to multiple undergraduate students.

#### **Undergraduate Research Mentor**

**May 2010 – Present**

*Yale University* New Haven, CT, *Oregon State University* Corvallis, OR, and *UC Merced* Merced, CA

• As a graduate student, I have been responsible for guiding undergraduates to gain laboratory skills. Mentoring has included teaching PCR and qPCR, water filtration method, and microbial culturing techniques.

#### **Instructor**

**January 2016 – June 2016**

ALS 116: Academic Success, *Oregon State University* Corvallis, OR

• Instructor for Academic Success, a course designed to help students overcome common academic pitfalls and improve their learning and study skills.

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## Teaching Assistant

January 2015 – March 2015

*Oregon State University* Corvallis, OR

- Duties included grading quizzes and exams, developing and holding weekly recitations, meeting with students during office hours, and presented several lectures to the full class.

## Winter Wonderings

February 2014 – March 2014

*Oregon State University* Corvallis, OR

- As part of a team, developed and taught a course held every Saturday for six weeks entitled “Microbes – the Invisible World” to Talented and Gifted 5<sup>th</sup> grade students.

## Volunteer

May 2008-April 2009

*Greenbrier River Watershed Association* Lewisburg, WV

- Learned West Virginia *Save our Streams* monitoring techniques and helped teach methods to 25 middle school students and local residents.

## PROFESSIONAL EXPERIENCE- RESEARCH

### Postdoctoral Scholar

September 2016 – August 2018

*University of California, Merced* Merced, CA

- Work individually and as a member of multiple teams to provide bioinformatic and statistical analyses to a range of projects with a broad focus around environmental microbiology.
- Develop and share new bioinformatics pipelines to analyze Next Generation Sequencing data including comparative genomics and metagenomics.
- Implement laboratory analyses including microbial culturing, molecular techniques, and Next Generation Sequencing.
- Collaborate with others to produce scientific publications.

### Researcher

January 2016 – April 2017

*Long Island Sound Futures Fund* New Haven, CT

- Expanded on previous work to implement a Microbial Source Tracking protocol across three watersheds in Coastal Connecticut.
- Developed a sampling scheme and design for study and conducted laboratory analyses as described in a governmental report.

### Doctoral Researcher *Oregon State University* Corvallis, OR

September 2012 – September 2016

- Conducted a Bayesian Hierarchical Meta-Analysis to identify existing gaps in the knowledge of fecal indicator bacteria survival research.
- Used simulations and power analysis techniques to explore how experimental design impacts the interpretation of fecal indicator bacteria decay studies.
- Developed, tested, and implemented a novel open-system model for improved measuring of fecal indicator bacteria decay.

### Research Assistant

April 2011 - August 2012

*Yale University* New Haven, CT

- Secured funding through a USDA Farm Viability Grant to support sampling and molecular analyses to determine sources of pollution impacting the Farm River, Branford, Connecticut.
- Collected, filtered and analyzed water samples for total coliform and genetic analysis.
- Prepared final report for East Shore District Health Department.

### Laboratory Technician

May 2011 - August 2012

*Yale University – DNA Analysis Facility on Science Hill* New Haven, CT

- Performed laboratory work including DNA sequencing and Fragment Analysis as well as sample management and computer-based data analysis.

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### Research Assistant

May 2011- November 2011

*Northeastern Regional Aquaculture Center Grant Branford, CT*

- Collected and filtered water samples for use as data to calibrate a GIS based regression model.

### Intern

April 2010 - October 2011

*East Shore District Health Department Branford, CT*

- Collected water samples from bathing water sites as well as potential shellfish harvesting locations selected by the ESDHD.

### Intern

April 2010 - May 2011

*The Nature Conservancy New Haven, CT*

- Created and analyzed watershed and sub-watershed scale GIS maps for the Salmon River Watershed.
- Used prepared maps to make recommendations for locations to target sites for long term water quality monitoring.

### Research Assistant

September 2009 - January 2010

*Dr. Gaboury Benoit - Yale University, New Haven, CT*

- Analyzed sewage effluent for biological oxygen demand and nitrogen.

## PEER-REVIEWED PUBLICATIONS

- **Lauren Brooks** and Katharine Field (In preparation for Water Research) Assessing the potential to use an open system to study fecal indicator bacteria decay.
- Asja Korajkic, Pauline Wanjugi, **Lauren Brooks**, Yiping Cao, and Valerie Harwood (In prep for Microbiology and Molecular Biology Reviews) Persistence and Decay of Fecal Microbiota in Aquatic Habitats
- **Lauren Brooks**, Mo Kaze, Mark Siström (In-press) Where the plasmids roam: Large scale sequence analysis reveals plasmids with large host ranges. *Microbial Genomics*
- **Lauren Brooks**, Mo Kaze, Mark Siström (In-press) A curated, comprehensive database of plasmid sequences. *Microbiology Resource Announcements*
- **Lauren Brooks**, Sabah Ul-Hasan, Benjamin Chan, and Mark Siström (2018) Quantifying the evolutionary conservation of genes encoding multidrug efflux pumps in the ESKAPE pathogens to identify antimicrobial drug targets. *mSystems* 3 (3), e00024-18
- **Lauren Brooks** and Katharine Field, (2017) Global model fitting to compare survival curves for Fecal Indicator Bacteria and ruminant-associated genetic markers. *Journal of Applied Microbiology* 122 (6), 1704-1713
- **Lauren Brooks** and Katharine Field, (2016) Bayesian meta-analysis to synthesize decay rate estimates for common Fecal Indicator Bacteria. *Water Research* 104, 262-271
- Orin Shanks, Catherine Kelty, Robin Oshiro, Richard Haugland, Tania Madi, **Lauren Brooks**, Katharine Field, and Mano Sivaganesan, (2016) Data acceptance criteria for standardized human-associated fecal source identification quantitative real-time PCR methods. *Applied and environmental microbiology* 82 (9), 277-2782

## FACULTY MENTOR FOR STUDENT RESEARCH GRANTS

*Scholarly Activities Committee Grants*

Stayner Richards, Bryson Carrier, Cory Hancock (Awarded Fall 2018) Comparison of the Utah Valley University indoor climbing wall microbiome with and without street shoes allowed.

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## POSTERS AND PRESENTATIONS

- American Society for Microbiology - Microbe; Atlanta, GA; May 2018  
**Harboring a Fugitive: Identifying unexplored vectors and carriers of antibiotic resistance plasmids**
- Evolution; Portland, OR; June 2017  
**Exploring the role of environmental bacteria in the spread of antibiotic resistance genes.**
- American Society for Microbiology; New Orleans, LA; May 2015  
**Analysis of an open system to study the decay of fecal indicator bacteria.**
- American Society for Microbiology; Boston, MA; May 2014  
**Application of Bayesian Hierarchical Linear Modeling to improve decay rate estimates for fecal indicator bacteria, genetic markers, and pathogens.**
- Coastal Estuarine Research Federation; Daytona Beach, FL; November 2011  
**RT-PCR as a tool for microbial source tracking in coastal Connecticut.**
- Yale School of Forestry and Environmental Studies Research Colloquium; New Haven, CT; April 2011  
**Use of RT-PCR and host-specific genetic markers to identify sources of bacterial contamination in Coastal Connecticut.**
- Connecticut Conference on Natural Resources; Storrs, CT; March 2011  
**Use of RT-PCR and host-specific genetic markers to identify sources of bacterial contamination in Coastal Connecticut.**
- Hixon Fellows Presentation; New Haven, CT; February 2011  
**Validation of genetic markers and application to detect fecal contamination in Coast Connecticut.**
- Association of Southeastern Biologists Birmingham, AL; April 2009  
**Annual Meeting; Effects of nitrogen fertilization on resorption proficiency and diameter growth in forest trees.**
- Senior Thesis Presentation; Huntington, WV; May 2009  
**Assessment of the Second Creek Watershed in Monroe County, WV.**

## HONORS AND AWARDS

- Charles E. and Clara Marie Eckelman Fellowship, September 2013- September 2016
- Provost's Distinguished Graduate Fellowship, September 2012-September 2013
- Yale University, School of Forestry and Environmental Studies Research Colloquium:  
Best Presentation, April, 2011
- Hixon Fellowship, January 2010-May 2011
- Graduated Magna Cum Laude, May 2009
- Biological Science Outstanding Graduating Student Award, May 2009
- Integrated Science and Technology Outstanding Graduating Student Award, May 2009
- Charles J. Gould Travel Award, March 2009
- Undergraduate Research Award at Marshall University, March 2009

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## SERVICE

### *Service to the profession*

- Peer reviewer for scientific journals
  - PLOS ONE Fall 2018

### *Service to the department*

- Committee member for Virology candidate; Fall 2018 – Spring 2019
- Active member of Curriculum committee; Fall 2018 – Ongoing
  - Revised learning objectives for BIOL 2500
- Active member of Spending and Budgeting Committee; Fall 2018 – Ongoing
  - Assisted with Feasibility Plan for Bioinformatics Major

## PROFESSIONAL LEADERSHIP

- Health Sciences Research Institute. Advisory Council; January 2017 – June 2018
- University of California, Merced Women in STEM. President; September 2016 – September 2017
- Microbiology Graduate Student Association. President; September 2012 – August 2015
- Yale Environmental Women. President; January 2010- May 2011
- Second Creek Watershed Association. Board of Directors; July 2008-July 2009

## WORKSHOPS AND PROFESSIONAL DEVELOPMENT

- SCULPT Mentoring Academy: Entering Mentoring. Fall 2018
- Crucial Conversations: Tools for talking when stakes are high. December 2017
- Mentoring Workshop Series with Dr. Daniel Wong – Part 1: Becoming a Master Mentor: A Student-Centered Approach. Part 2: Negotiating the Mentor-Mentee Dynamic. Part 3: Addressing Equity and Inclusion in Mentoring Relationships. November 2017
- American Institute of Biological Science workshop: Informing and engaging decision-makers. June 2017
- ASN Science communication workshop: Effective communication of science and its impacts. June 2017