

Curriculum Vitae

JESSICA HARDWICKE

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❖ Education

2015-2016	M.S. in Bioinformatics (completion by December 2016) University of Oregon, Eugene OR
2012-2015	B.S in Biology: Micro/Molecular with Thesis, <i>Cum Laude</i> Portland State University, Portland OR Thesis chair: Dr. Anna-Louise Reysenbach

❖ Skills

Programming Languages	Python, Unix, R, MySQL, LaTeX
Bioinformatics Tools	TORQUE server, Qiime, Git/Github, Snakemake, BLAST+, JGI:IMG, RAxML, PhyML, Velvet, ARB, EzBioCloud, Geneious, Trinity, GMAP, GSNAP, FigTree, Stacks, MEGA, ...
Laboratory	DNA extraction, Sanger Sequencing preparation, mRNA extraction, Illumina Library preparation, RNA-Seq, Genetic quantification, FISH, SEM biological prep and imaging, Media preparation, Microbial culture & characterization, Hungate technique
Graphic Design	GIMP, Inkscape, Illustrator, Photoshop, InDesign, Front-end web design

❖ Research Experience

Bioinformatics Intern – Microbial Ecology: 2016-current

University of Oregon, Institute of Ecology and Evolution: Dr. Brendan Bohannon

- Assist graduate students with improving bioinformatics pipelines and downstream analysis
- Manage implementation of collaborative tools for towards scientific communication (Github, Slack, Google cloud apps)
- Present and train bioinformatics tools to lab group

16S rRNA Amplicon Research – Amazon Soil Microbiome: 2015

University of Oregon, Institute of Ecology and Evolution: Dr. Brendan Bohannon

- Analysis of 16s rRNA amplicon data from soil samples using Qiime and R/Studio software
- Focus on comparing results of normalization and rarefaction methods

Field Study - Deep-Sea Hydrothermal Vent Metagenomics: 2015

Portland State University, Center for Life in Extreme Environments: Dr. Anna-Louise Reysenbach

Scripps Institute of Oceanography, Woods Hole Oceanographic Institute, GNS Science

- Month-long NSF-funded collaborative research expedition aboard the R/V Roger Revelle to collect hydrothermal vent samples in the Eastern Lau Spreading Center off the coast of Tonga
- Assisted with preparation, packing, and shipping of laboratory supplies for field study
- Processed dive samples for preparation of off-boat metagenomic and transcriptomic studies
- Transcription and organization of dive notes to electronic format
- Contributed to the expedition's public outreach blog - <http://laugeomicro2015.blogspot.com/>

Field Study – New Zealand Hot Spring Thermophiles: 2015

Portland State University, Center for Life in Extreme Environments: Dr. Anna-Louise Reysenbach

GNS Science

- Assisted with the collection and storage of thermophilic microbial samples from Waimangu volcanic valley, New Zealand

Undergraduate Honors Thesis – Extremophile Microbe Characterization: 2014-2015

Portland State University, Center for Life in Extreme Environments: Dr. Anna-Louise Reysenbach

- Wrote and received two separate competitive grants for this study resulting in \$14,400 project funding
- Conducted microbiological research on the characterization of a novel thermoalkaliphilic bacterium
- Utilized studies of growth rates, substrate utilization, and 16S rRNA phylogeny in order to support hypothesis of novel species

BI431: Recombinant DNA Techniques - Sulfolobus Spindle-Shaped Virus Insertion Library: 2014

Portland State University, Center for Life in Extreme Environments: Dr. Kenneth Stedman

- Contribution to insertion library investigating genome of a novel archaeal virus
- Generated viral mutants using transposable elements & screened insertion loci using restriction enzymes and agarose gel electrophoresis techniques
- Transfected *Escherichia coli* host with viral plasmids via chemical competency, and *Sulfolobus solfataricus* via electroporation techniques
- Prepared selected mutant for Sanger sequencing using Big Dye Terminator reaction to determine interrupted gene region

Research Assistant – Microbial Ecology: 2013-2014

Portland State University, Center for Life in Extreme Environments: Dr. Anna-Louise Reysenbach

- Performed anaerobic thermophile microbial culturing techniques
- Completed DNA extraction, amplification, quantification and processing for Sanger sequencing of various microbes in culture
- Managed and updated the chemical inventory

❖ Publications

Hardwicke, J., Liu, Y., Brileya, K., Reysenbach, A.L.. Characterization of a novel, thermoalkaliphilic, spore-forming bacterium isolated from a hot spring at Lake Shala, Ethiopia. *Manuscript in preparation for publication.*

❖ Presentations

- 2015 Genomics in Action Conference - *University of Oregon*
Presented a poster containing preliminary results of my group project: "Utilizing 16S rRNA Amplicon Data to Assess Microbial Diversity Response to Land Use Change in the Amazon"
- 2015 Oregon NASA Consortium Symposium - *Oregon State University*
Presented a poster of my research: "Characterization of a Novel Thermoalkaliphilic Bacterium Isolated from a Hot Spring at Lake Shala, Ethiopia"
- 2015 McNair Scholars Symposium - *Portland State University*
Presentation to a general academic audience on my research project "Characterization of a Novel Thermoalkaliphilic Bacterium Isolated from a Hot Spring at Lake Shala, Ethiopia"

❖ Teaching Experience

- 2016 BI112: Introduction to Human Genetics – *University of Oregon*
- Lead discussion activities & prepare review slides
 - Conduct office hours & participate in online discussions
 - Grade discussion and homework assignments
- 2016 BI331: Microbiology; Guest workshop: Introduction to Bioinformatics for Microbial Ecology – *University of Oregon*
- Updated background material provided by Dr. Ann Klein at the UO
 - Wrote and published tutorial introducing bash, command line tools, Github, RDP classifier, and R/Rstudio for microbial ecology data
 - Course material available at <https://github.com/jmicrobe/BI331-taxonomy>
- 2015-2016 BI211: Introductory Biology Laboratory - *University of Oregon*
- Lead laboratory activities for undergraduate biology students
 - Conduct office hours for additional student assistance
 - Review and provide feedback to students for scientific writing project
 - Grade laboratory activities and lecture exams
- 2012 Volunteer Adult Literacy Tutor - *Portland Community College*
- Provided one-on-one tutoring with an adult education student with English as a second language over the course of one month
 - Designed activities in mathematics and writing preparing the student for entrance into a dental assistant program

❖ Grants, Awards, Honors

- 2016 Attendance Scholarship – *University of Oregon Women in Graduate Science*

- Travel grant to attend the Pacific Northwest Women in Science retreat and participate in professional development workshops, career panels and networking events.
- 2015-2016 Graduate Teaching Fellowship - *University of Oregon*
- 2014 Oregon NASA Consortium Undergraduate Research Grant - *Portland State University*
\$12,000 awarded for my proposal investigating a novel extremophile species, a project relevant to NASA goals.
- 2014 Ronald E. McNair Scholars - *Portland State University*
National program aimed at preparing students for graduate studies. Included seminars for developing skills necessary to conduct original research project. Awarded \$2,100 stipend for my project investigating a novel extremophile species.
- 2014 Biology Honors - *Portland State University*
Production of an undergraduate thesis with departmental approval.

❖ Outreach & Education

- 2016 STEAM Hack Day – *George Middle School, Portland OR*
Co-taught middle school STEAM classes for a day to introduce students to science & hacking. The activity included a challenge to increase amplification of cell phone speakers using everyday objects. This event included filming & an interview for Portland Public Schools social media. Footage located here: <https://youtu.be/skPaBEbWPtM>
- 2016 Science Hack Day Portland – *XOXO Outpost, Portland OR*
Organizer for a non-profit, 24-hour science-centric hackathon geared towards bringing all ages and experience levels together to form teams and prototype a science hack. Activities included public outreach, social media, graphic design, fundraising and event planning.
<http://portland.sciencehackday.org/>
- 2016 HackSeq – *University of British Columbia* (upcoming Oct 15th)
Three-day hackathon sponsored by the National Center for Biotechnology Information & the American Society for Human Genetics. Plans to participate on a project focused on creating a reproducible pipeline to close bacterial genomes using long-read PacBio sequencing data.