

Charles Pepe-Ranney

Microbial Genomics Data Scientist
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Professional Preparation

B.S. Engineering (high honors) - Environmental Science Specialty, Colorado School of Mines 2006.

M.S. Environmental Engineering - Biotechnology and Environmental Microbiology Emphasis, Colorado School of Mines 2009.

PhD Environmental Science and Engineering Division, Colorado School of Mines 2012.

Relevant Experience

Methods in microbiome analysis teaching fellow at Microbial Diversity Course, 2010-2013 (Marine Biology Laboratory, Woods Hole, MA).

Proficient with **Python**, **R**, JavaScript, Latex, Bash, Amazon AWS, Docker, and Linux system administration.

Thorough understanding and fluent with many data science tools in Python, R, and JavaScript including Jupyter, ggplot2 (R), Plotly, scikit-learn (Python), Matplotlib (Python), Pandas (Python), phyloseq (R), plyR/dplyR/tidyR (R), Bokeh (Python), D3.js

Appointments

Research Assistant, Environmental Science and Engineering Division, Colorado School of Mines (2006-2012)

Postdoctoral Researcher, Department of Crop and Soil Sciences, Cornell University (2013-2015)

Research Associate, School of Integrative Plant Science, Cornell University (2015-2016)

Teaching Fellow - Microbial Diversity Course, Marine Biological Laboratory (Woods Hole, MA) (2010-2013)

Awards and Fellowships

2015 Poster Prize, AEM Gordon Research Seminar

2010, 2011, 2012 and 2013 Teaching fellow for the Microbial Diversity Course at the Marine Biological Laboratory, Woods Hole. Course Directors: Daniel Buckley and Steve Zinder.

2006 Outstanding Graduating Senior Award, Colorado School of Mines - Environmental Science and Engineering Division

2005 and 2006 Department of Energy Science Undergraduate Laboratory Internship (SULI) at Idaho National Lab

2006 Idaho National Lab Undergraduate Scholarship

Publications in Refereed Journals

Choudoir MJ, Pepe-Ranney C, Buckley DH. **Diversification of secondary metabolite biosynthetic gene clusters coincides with lineage divergence in *Streptomyces***. 2018. *Antibiotics* 7(1), 12

Jackson EW, Pepe-Ranney C, Debenport SJ, Buckley DH, Hewson I. **The microbial landscape of sea stars and the anatomical and interspecies variability of their microbiome**. 2018. *Frontiers in Microbiology* 9, 1829

Whitman T, Pepe-Ranney C, Enders A, Koechli C, Campbell A, Buckley DH, Lehmann J. **Dynamics of microbial community composition and soil organic carbon mineralization in soil following addition of pyrogenic and fresh organic matter**. 2016. *ISMEJ* 10(12), 2918

- Pepe-Ranney C, Campbell AN, Koechli CN, Berthrong S, Buckley DH. **Unearthing the ecology of soil microorganisms using a high resolution DNA-SIP approach to explore cellulose and xylose metabolism in soil.** 2016. *Frontiers in Microbiology* 7, 703
- Pepe-Ranney C, Berelson WM, Corsetti FA, Treants M, Spear JR. **Cyanobacterial construction of hot spring siliceous stromatolites in Yellowstone National Park, Wyoming,** 2012, *Environmental Microbiology* 14(5), 1182-1197.
- Pepe-Ranney C, Koechli C, Potrafka R, Garcia-Pichel F, Andam C, Eggleston E, Buckley DH. **Non-cyanobacterial diazotrophs mediate dinitrogen fixation in biological soil crusts during early crust formation.,** 2015, *ISMEJ*
- Pepe-Ranney C and Hall EK. **The effect of carbon subsidies on planktonic niche partitioning and recruitment during biofilm assembly.,** 2015, *Frontiers in Microbiology*, 6:703.
- Berelson WM, Corsetti FA, Pepe-Ranney C, Hammond DE, Beaumont W, Spear JR. **Hot spring siliceous stromatolites in Yellowstone National Park: assessing growth rates and laminae formation,** 2011, *Geobiology* 9(5), 411-424.
- Osburn MR, Sessions AL, Pepe-Ranney C, Spear JR. **Hydrogen-isotopic variability in fatty acids from Yellowstone National Park hot spring microbial communities,** 2011, *Geochimica et Cosmochimica Acta* 75(17), 4830-4845.
- Bräuer S, Vuono D, Carmichael M, Pepe-Ranney C, Strom A, Rabinowitz E, Buckley DH, Zinder S. **Microbial sequencing analyses suggest the presence of a fecal veneer on indoor climbing wall holds.,** 2014, *Current Microbiology* 69(5), 681-689.
- Wallace B, Roberts A, Pollet R, Venkatesh M, Guthrie L, O'Neal S, Ingle J, Robinson S, Dollinger M, Figueroa E, McShane S, Jin J, Frye S, Zamboni W, Pepe-Ranney C, Mani S, Kelly L, and Redinbo M. **Structure and Inhibition of Firmicutes Bacterial b-Glucuronidases to Alleviate Drug-Induced GI Toxicity** *Chemistry & Biology*

Invited Talks

- 50,000 genomes and counting: how to manage and explore the data from your giant collection of microbial isolates. 2018. New Frontiers in Plant Biology Workshop CBGP-Madrid
- Leveraging analytics: putting big data to Good use. 2016. Ag Biotech Professional Forum at the NC Biotechnology Center.
- Tracking carbon into and through the soil microbial community with DNA-SIP. 2016. EcoFAB Workshop, Joint Genome Institute
- Targeting unknowns just underfoot: microbial ecology and community genomics of C cycling in soil informed and enabled with DNA-SIP. 2015. AGU Fall Meeting - *Understanding Microbial Processes, Dependencies, and Impacts through 'omics* session
- Cyanobacterial construction of finely laminated siliceous stromatolites in a Yellowstone National Park hot spring. 2012. Astrobiology Science Conference - *Microbes in Lithifying Systems*.
- ¹⁴ C and microbial diversity study of Yellowstone siliceous stromatolites: searching for the depositional community. 2009. Microbiology Supergroup, University of Colorado - Boulder.