

# Charles Pepe-Ranney

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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*

Proficient with **Python**, **R**, Latex, Bash scripting and **Linux system administration**. Experience with Perl, JavaScript, PostgreSQL, MySQL.

Thorough understanding and fluent with many data science/bioinformatics tools including IPython notebooks, GGPlot2 (R), Matplotlib (Python), Pandas (Python), phyloseq (R), plyR/dplyR/tidyR (R), QIIME, Mothur, Khmer, and BioPython. Experience with Bokeh (Python), D3.js (my bl.ocks: [bl.ocks.org/chuckpr](http://bl.ocks.org/chuckpr)), ggvis (R) and lattice (R).

Taking online courses for the **Data Science Signature Track** with Coursera – Received verified certificate with distinction for [The Data Scientist's Toolbox](#), [R Programming](#), [Exploratory Data Analysis](#), [Statistical Inference](#), and [Regression Models](#) courses.

## *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-present)

**Teaching Fellow**, Marine Biology Laboratory (Microbial Diversity Course) (2010-2014)

## *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*

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. [link](#)

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* Epub ahead of print. [link](#)  
Code for sequence analysis and manuscript figures can be found here:  
[github.com/chuckpr/NSIP\\_data\\_analysis](https://github.com/chuckpr/NSIP_data_analysis)

Pepe-Ranney C and Hall EK. **The effect of carbon subsidies on planktonic niche partitioning and recruitment during biofilm assembly.**, 2015, *Frontiers of Aquatic Microbiology* Epub ahead of print. [link](#)  
Code for sequence analysis and manuscript figures can be found here:  
[github.com/chuckpr/BvP\\_manuscript\\_figures](https://github.com/chuckpr/BvP_manuscript_figures)

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. [link](#)

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. [link](#)

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. [link](#)

### Submitted Journal Articles

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**  
In review at *Chamistry & Biology*  
Contributed figure: [link](#)

Pepe-Ranney C\*, Campbell A\*, Koechli C, Berthrong S, Buckley DH. **Unearthing the microbial ecology of soil carbon cycling with DNA-SIP** \*co-first authors  
Submitted to *PNAS*  
Code for manuscript figures can be found here:  
[github.com/chuckpr/CSIP\\_succession\\_data\\_analysis](https://github.com/chuckpr/CSIP_succession_data_analysis)

### Journal Articles in Preparation

Pepe-Ranney C, Campbell A, Buckley DH. **Community genomics of soil cellulose degraders discovered by nucleic acid stable isotope probing**  
Code for manuscript figures can be found here:  
[nbviewer.ipython.org/github/chuckpr/CG-SIP](https://nbviewer.ipython.org/github/chuckpr/CG-SIP)

Hahn C, Hall EK, Pepe-Ranney C, Oyler-McCance S. **Evaluating the gut and cloacal bacterial community of cowbirds: a potential mechanism for enhanced immunity.**  
Code for sequence analysis and manuscript figures can be found here:  
[nbviewer.ipython.org/github/chuckpr/cowbird](https://nbviewer.ipython.org/github/chuckpr/cowbird)

### Invited Talks

<sup>14</sup> C and microbial diversity study of Yellowstone siliceous stromatolites: searching for the depositional community. 2009. Microbiology Supergroup, University of Colorado - Boulder.

Cyanobacterial construction of finely laminated siliceous stromatolites in a Yellowstone National Park hot spring. 2012. Astrobiology Science Conference - Microbes in Lithifying Systems.