

# Chuck Pepe-Ranney

Data Scientist

Durham, NC

Data Scientist with extensive DevOps, genomics, and data visualization experience. I have programmed in Python for over ten years and R for over six. I make sense of complex data using modern data science tools, cloud technology, and domain expertise.

## Experience



- Data Scientist and Data Science Group Leader** 2016–present  
AgBiome  
I designed and led the development of AgBiome's AWS Genomics Data Platform.  
I developed the cloud-based infrastructure and data scientist developer tooling to write and deploy data-driven monitoring and real-time analytics dashboards.  
I wrote (first author) AgBiome's first peer-reviewed scientific publication. The Phytobiomes Journal awarded our manuscript with the "Editor's Pick" distinction.
- Adjunct Faculty Instructor** 2019–present  
University of North Carolina, Chapel Hill—Gillings School of Public Health  
I teach the Data Science Basics course (BIOS512) in the Gillings School of Global Public Health at UNC. The course covers professional data transformation, preparation, and visualization using the R programming language and Tidy Data principles.
- Postdoctoral Researcher and Research Associate** 2013–2016  
Cornell University; Ithaca, NY  
I designed and applied a microbiome analysis pipeline for DNA-SIP-based microbial ecology studies of agricultural soils and biological soil crusts.  
As first author I published several manuscripts in refereed journals and contributed as a co-author to many additional scientific publications.
- Teaching Fellow Microbial Diversity Course, Four Summers** 2010–2014  
Marine Biology Laboratory, Woods Hole  
I taught data analysis best practices in microbiome science focusing on the QIIME and Mothur toolkits and molecular biology laboratory techniques. I also administered the course Linux servers.
- SULI Undergraduate Researcher, Two Summers** 2005–2006  
Idaho National Laboratory  
Two summers studying thermophilic microorganisms at INL.  
Awarded SULI undergraduate scholarship.

## Education



- PhD, Environmental Science and Engineering Division** 2009–2013  
Colorado School of Mines
- M.S. Environmental Engineering** 2007–2009  
Colorado School of Mines  
Biotechnology and Environmental Microbiology emphasis
- B.S. Engineering, Environmental Science Specialty** 2002–2006  
Colorado School of Mines  
High Honors  
Outstanding Graduating Senior Award, 2006

## SKILLS

Python  
R  
JavaScript/D3js  
SQL  
AWS  
Docker  
HTML/CSS/SVG  
Bash  
Linux

## LINKS

[chuckpr.github.io](https://github.com/chuckpr)  
 [github.com/chuckpr](https://github.com/chuckpr)  
 Google Scholar  
 [linkedin.com/in/chuckpr](https://www.linkedin.com/in/chuckpr)

## CONTACT

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- **Pepe-Ranney, C**; Keyser, C; Trimble, JK; Bissinger, B, **Surveying the sweetpotato rhizosphere, endophyte, and surrounding soil microbiomes at two North Carolina farms reveals underpinnings of sweetpotato microbiome community assembly** 2020 *Phytobiomes Journal* (**Awarded Editor's Pick distinction**)
- Jackson, EW; **Pepe-Ranney, C**; Johnson, MR; Distel, DL; Hewson, I, **A highly prevalent and pervasive densovirus discovered among sea stars from the North American Atlantic Coast** 2020 *Applied and Environmental Microbiology*
- Roco, CA; Dörsch, P; Booth, JG; **Pepe-Ranney, C**; Groffman, PM; Fahey, TJ; Yavitt, JB; Shapleigh, JP, **Using metagenomics to reveal landscape scale patterns of denitrifiers in a montane forest ecosystem** 2019 *Soil Biology and Biochemistry*
- 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*
- Choudoir, MJ; **Pepe-Ranney, C**; Buckley, DH, **Diversification of secondary metabolite biosynthetic gene clusters coincides with lineage divergence in *Streptomyces*** 2018 *Antibiotics*
- 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*
- **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* (**\*co-first authors**)
- **Pepe-Ranney, C**; Koechli, C; Potrafka, R; Andam, C; Eggleston, E; Garcia-Pichel, F; Buckley, DH, **Non-cyanobacterial diazotrophs mediate dinitrogen fixation in biological soil crusts during early crust formation.** 2015 *ISMEJ*
- **Pepe-Ranney, C**; Hall, EK, **The effect of carbon subsidies on marine planktonic niche partitioning and recruitment during biofilm assembly** 2015 *Frontiers in Microbiology*
- Wallace, BD; Roberts, AB; Pollet, RM; Ingle, JD; Biernat, KA; Pellock, SJ; Venkatesh, MK; Guthrie, L; O'Neal, SK; Robinson, SJ; Dollinger, M; Figueroa, E; McShane, SR; Cohen, RD; Jin, J; Frye, SV; Zamboni, WC; **Pepe-Ranney, C**; Mani, S; Kelly, L; Redinbo1, MR, **Structure and inhibition of microbiome  $\beta$ -glucuronidases essential to the alleviation of cancer drug toxicity** 2015 *Chemistry & Biology*
- Bräuer, SL; Vuono, D; Carmichael, MJ; **Pepe-Ranney, C**; Strom, A; Rabinowitz, E; Buckley, DH; Zinder, SH, **Microbial sequencing analyses suggest the presence of a fecal veneer on indoor climbing wall holds** 2014 *Current Microbiology*
- **Pepe-Ranney, C**; Berelson, WM; Corsetti, FA; Treants, M; Spear, JR, **Cyanobacterial construction of hot spring siliceous stromatolites in Yellowstone National Park** 2012 *Environmental Microbiology*
- 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*
- Berelson, WM; Corsetti, FA; **Pepe-Ranney, C**; Hammond, DE; Beaumont, W; Spear, JR, **Hot spring siliceous stromatolites from Yellowstone National Park: assessing growth rate and laminae formation** 2011 *Geobiology*

## 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
- 40,000+ Genomes and counting: Computational lessons from building a giant culture collection** 2017 *AICHE (American Institute of Chemical Engineers): Microbial communities and microbiomes for agriculture and bioenergy session*
- Tracking carbon into and through the soil microbial community with DNA-SIP** 2016 *EcoFAB Workshop* Joint Genome Institute
- Leveraging analytics: Putting big data to good use** 2016 *Ag Biotech Professional Forum* North Carolina Biotechnology Center
- Targeting unknowns just underfoot: Microbial ecology and community genomics of C cycling in soil informed and enabled with DNA-SIP** 2015 *American Geophysical Union 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 session*
- <sup>14</sup>C and microbial diversity study of Yellowstone siliceous stromatolites: searching for the depositional community** 2009 *Microbiology Supergroup Meeting* MCDB University of Colorado Boulder