

**Sean Patrick Jungbluth, Ph.D.**  
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## Work Experience

**Data Scientist** at DOE Lawrence Berkeley Laboratory - Environmental Genomics & Systems Biology Division 2019-present

**Affiliate Scientist** at University of California at Berkeley, Department of Bioengineering

- Active contributing member of the DOE Systems Biology Knowledgebase (KBase) project
- Responsible for packaging and applying new microbiome-relevant computational tools within KBase
- Developing novel data visualization techniques intended for high-throughput quality-control of microbial genomes
- Python, Shell, R, Jupyter Notebook, Git

**Computational Biologist Postdoctoral Fellow** at DOE Lawrence Berkeley Laboratory - Joint Genome Institute 2017 - 2019

- Generated world's largest Metagenome-Assembled Genome (MAG) dataset from over 6,000 metagenomes
- Implemented sophisticated quality-control measures on world's largest MAG dataset
- Developed an integrated data visualization strategy to explore and pursue novel science stories
- Python, R, Shell, Jupyter Notebook, Git

**Postdoctoral Research Associate** at University of Southern California, Department of Earth Sciences 2015 - 2016

- Led and produced multiple first-author publications exploring genomic diversity of subseafloor microbial communities
- Contributed to multiple outside collaborations and publications across many institutions
- Invited participant to UNOLS Deep-Submergence Chief Scientist Training where collaborative techniques were honed
- R, Shell, Git

**Postdoctoral Research Associate** at University of Hawaii at Manoa, Department of Oceanography 2014 - 2015

- Led and produced a first-author publication exploring the genomic diversity of a globally-abundant subseafloor *Firmicute*
- Attended JGI Microbial Genomics and Metagenomics Workshop
- R, Shell

**Graduate Research Assistant** at University of Hawaii at Manoa, Department of Oceanography 2008 - 2014

- Led and produced numerous publications exploring the diversity and community structure of seafloor microbes using NGS and Sanger sequencing techniques
- Participant in six oceanographic expeditions involving remote- and human-operated deep-sea vehicles and nine other oceanographic expeditions
- Invited participant to NASA-Nordic Astrobiology Winter School
- R, Shell

## Education

**Doctor of Philosophy** at University of Hawaii at Manoa

- Emphasis: Biological Oceanography
- Thesis Title: “Microbial Ecology in the Sediment-Covered Ocean Basement of the Juan de Fuca Ridge”
- Recipient of Center for Dark Energy Biosphere Investigation Graduate Student Fellowship
- Recipient of U.S. Science Support Program Schlanger Ocean Drilling Fellowship

**Bachelor of Science** at University of Wisconsin at Madison

- Majors: Bacteriology and Biology
- Accumulated ~50 credits in excess of those required for graduation
- Travel study experiences in Brisbane Australia and Kampala, Uganda

## Publications

- (23) Magnabosco C, Biddle JF, Cockell CS, **Jungbluth SP**, Twing KI. (2019) Biogeography, ecology, and evolution of deep life. In: Orcutt BN, Daniel I, Dasgupta R (ed). *Deep Carbon: Past to Present*. Cambridge University Press [Book Chapter]
- (22) Boyd JA\*, **Jungbluth SP\***, Leu AO, Evans PN, Woodcroft BJ, Chadwick GL, Orphan VJ, Amend JP, Rappé MS, Tyson GW. (2019) Divergent methyl-coenzyme M reductase genes in a deep-seafloor Archaeoglobi. *The ISME Journal* 13: 1269-1279. (\*co-first authors)
- (21) Carr SA, **Jungbluth SP**, Eloë-Fadrosh EA, Stepanauskas R, Woyke T, Rappé MS, Orcutt BN. (2019) Carboxidotrophy potential of uncultivated Hydrothermarchaeota from the seafloor crustal biosphere. *The ISME Journal* 13: 1457-1468.
- (20) Chen, I-MA, Chu K, Palaniappan K, Pillay M, Ratner A, Huang J, Huntemann M, Varghese N, White JR, Seshadri R, Smirnova T, Kirton E, **Jungbluth SP**, Woyke T, Eloë-Fadrosh EA, Ivanova NN, Kyrpides NC. (2019) IMG/M v.5.0: an integrated data management and comparative analysis system for microbial genomes and microbiomes. *Nucleic Acids Research* 47(D1): D666-D677.
- (19) Anatharaman K, Hausmann B, **Jungbluth SP**, Kantor RS, Lavy A, Warren LA, Rappé MS, Pester M, Loy A, Thomas BC, Banfield JF. (2018) Expanded diversity of microbial groups that shape the dissimilatory sulfur cycle. *The ISME Journal* 12: 1715-1728.
- (18) McVeigh D, Skarke AE, Dekas A, Borrelli C, Hong W-L, Marlow J, Pasulka A, **Jungbluth SP**, Barco RA, Djurhuus A. Characterization of benthic biogeochemistry and ecology at three methane seep sites on the Northern US Atlantic Margin. *Deep-Sea Research Part II* 150: 41-56.
- (17) Teehara KB, **Jungbluth SP**, Acosta TE, Hellebrand E, Misra AK, Onac PB, Pflitsch A, Smith SM, Rappé MS, Telus M, Schorghofer N. (2017) Cryogenic minerals in Hawaiian lava tubes: A geochemical and microbiological exploration. *Geomicrobiology Journal* 35: 227-241.

- (16) Bowers RM, Kyrpides NC, Stepanauskas R, Harmon-Smith M, Doud D, Reddy TBK, Schulz F, Jarett J, Rivers AR, Elloe-Fadrosh EA, Tringe SG, Ivanova NN, Copeland A, Clum A, Becraft ED, Malmstrom RR, Birren B, Podar M, Bork P, Weinstock GM, Garrity GM, Dodsworth JA, Yooseph S, Sutton G, Glöckner FO, Gilbert JA, Nelson WC, Hallam SJ, **Jungbluth SP**, Ettema TJG, Tighe S, Konstantinidis KT, Liu W-T, Baker BJ, Rattei T, Eisen JA, Hedlund B, McMahon KD, Fierer N, Knight R, Finn R, Cochrane G, Karsch-Mizrachi I, Tyson GW, Rinke C, The Genome Standards Consortium, Lapidus A, Meyer F, Yilmaz P, Parks DH, Eren AM, Schriml L, Banfield JF, Hugenholtz P, Woyke T. (2017) Minimum information about a single amplified genome (MISAG) and a metagenome-assembled genome (MIMAG) of bacteria and archaea. *Nature Biotechnology* 35: 725-731.
- (15) Momper L, **Jungbluth SP**, Lee M, Amend JP. (2017) Energy and carbon metabolisms in a deep terrestrial subsurface fluid microbial community. *The ISME Journal* 11: 2319-2333.
- (14) Marlow J, Borrelli C, **Jungbluth SP**, Hoffman C, Marlow H, Girguis P, AT-36 Team. (2017) Telepresence is a potentially transformative tool for field science. *Proceedings of the National Academy of Sciences USA* 114: 4841-4844.
- (13) **Jungbluth SP**, Glavina del Rio T, Tringe SG, Stepanauskas R, Rappé MS. (2017) Genomic comparisons of a bacterial lineage that inhabits both marine and terrestrial deep subsurface systems. *PeerJ* 5:e3134.
- (12) **Jungbluth SP**, Amend JP, Rappé MS. (2017) Metagenome sequencing and 98 microbial genomes from Juan de Fuca Ridge flank subsurface fluids. *Scientific Data* 4:170037.
- (11) Nigro OD, **Jungbluth SP**, Lin H-T, Hsieh C-C, Miranda J, Schvarcz C, Rappé MS, Steward GF. (2017) Viruses in the oceanic basement. *mBio* 8: e02129-16.
- (10) Robador A, LaRowe, DE, **Jungbluth SP**, Lin H-T, Rappé MS, Nealson KH, Amend JP. (2016) Nanocalorimetric characterization of microbial activity in deep subsurface oceanic crustal fluids. *Frontiers in Microbiology* 7: 454.
- (9) **Jungbluth SP**, Bowers RM, Lin H-T, Cowen JP, Rappé MS. (2016) A novel microbial assemblage inhabits fluids within mid-ocean ridge flank subsurface basalt. *The ISME Journal* 10: 2033-2047.
- (8) Robador A, **Jungbluth SP**, LaRowe DE, Bowers RM, Amend JP, Rappé MS, Cowen JP. (2015) Activity and phylogenetic diversity of sulfate-reducing microorganisms in low-temperature subsurface fluids within the upper oceanic crust. *Frontiers in Microbiology* 5: 748.
- (7) Biddle JF, **Jungbluth SP**, Lever MA, Rappé MS. (2014) Life in the ocean crust. In: Kallmeyer J (ed). *Life in Extreme Environments: The Deep Biosphere*. DeGruyter. [Book Chapter; No Peer-Review]
- (6) Böttjer D\*, **Jungbluth SP\***, Boiteau R, Burkhardt B, De Leo F, Bruno BC. (2014) Career choices in marine and environmental sciences: navigating a sea of options. *Oceanography* 27(4): 37-43. [No Peer-Review; \*co-first authors]
- (5) Lin H-T, Cowen JP, Olson EJ, Lilley MD, **Jungbluth SP**, Wilson ST, Rappé MS. (2014) Dissolved hydrogen and methane in the oceanic basaltic biosphere. *Earth and Planetary Science Letters* 405: 62-73.
- (4) **Jungbluth SP**, Lin H-T, Cowen JP, Glazer BT, Rappé MS. (2014) Phylogenetic diversity of microorganisms in seafloor crustal fluids from boreholes 1025C and 1026B along the Juan de Fuca Ridge flank. *Frontiers in Microbiology* 5: 119.
- (3) **Jungbluth SP**, Johnson LGH, Cowen JP, Rappé MS. (2013). Data report: microbial diversity in sediment near Grizzly Bare Seamount from Holes U1363B and U1363G. *Proceedings of the Integrated Ocean Drilling Program* 327: pp. 1-27.
- (2) **Jungbluth SP**, Grote J, Lin H-T, Cowen JP, Rappé MS. (2013). Microbial diversity within basement fluids of the sediment-buried Juan de Fuca Ridge flank. *The ISME Journal* 7(1): 161-172.
- (1) Fisher AT, Tsuji T, Petronotis K, Wheat CG, Becker K, Clark JF, Cowen J, Edwards K, Jannasch H, IODP Expedition 327 and **Atlantis Expedition AT18-07 Shipboard Parties** (2012). IODP Expedition 327 and Atlantis Expedition AT18-07: Observatories and Experiments on the Eastern Flank of the Juan de Fuca Ridge. *Scientific Drilling* 13: 4-11.

## Publications (Submitted)

- (24) Marlow J, Hoer D, **Jungbluth SP**, Reynard L, Gartman A, Tuross N, Orphan V, Girguis P. (submitted) Endolithic microbial communities possess unprecedented methane oxidizing potential at geologically diverse marine methane seep sites.
- (25) Marlow J, Colocci I, **Jungbluth SP**, Moritz-Weber N, Gartman A, Kallmeyer J. (submitted) Mapping metabolic activity at single cell resolution in intact volcanic fumarole sediment.
- (26) Schulz F, Roux S, Paez-Espino D, **Jungbluth SP**, Walsh D, Denev V, McMahon K, Konstantinidis K, Eloe-Fadrosh E, Kyrpides N, Woyke T. (in press) Giant virus diversity and host interactions through global metagenomics. *Nature*.
- (27) Neyfach S, Roux S, Seshadri R, Udvary D, Varghese N, Schulz F, Wu D, Paez-Espino D, Chen I-M, Huntemann M, Palaniappan K, Mukherjee S, Reddy T, Nielsen T, Kirton E, Faria JP, Edirisinghe JN, Henry CS, **Jungbluth SP**, Chivian D, Dehal P, Wood-Charlson EM, Arkin AP, Tringe S, Visel A, IMG/M Data Consortium, Woyke T, Mouncey NJ, Ivanova NN, Kyrpides NC, Eloe-Fadrosh EA. (submitted) A genomic catalogue of Earth's microbiomes.
- (28) Jarett JK, Džunková M, Schulz F, Roux S, Paez-Espino D, Eloe-Fadrosh E, **Jungbluth SP**, Ivanova N, Spear JR, Carr SA, Trivedi CB, Corsetti FA, Johnson HA, Becraft E, Kyrpides N, Stepanauskas R, Woyke T. (submitted) Community-level linkage of viruses and hosts within a microbial mat.
- (29) Orcutt BN, D'Angelo T, **Jungbluth SP**, Huber JA, Sylvan JB. (submitted) Microbial life in oceanic crust.

## Refereed Competitive Grants

- 2015: “Metagenomics of Viral and Microbial Communities Inhabiting Warm, Anoxic Fluids of the Sediment-Buried Deep Ocean Crust”, supported by the **DOE Joint Genome Institute** Community Sequencing Program (Lead-PI Michael Rappé; Co-PIs Grieg Steward, Sean Jungbluth, Olivia Nigro).
- 2012: “Promoting Scientific Collaborations, Networking and Professional Development Among C-MORE's Next-Generation”, supported by the **Center for Microbial Oceanography: Research and Education (C-MORE)** EDventures Program (Co-funded with C-MORE Professional Development Organizing Committee; \$22,486)
- 2011: “Metagenomics, Metatranscriptomics, and Single-Cell Genomics of Microbial Communities Inhabiting Juan de Fuca Ridge Flank Borehole Fluids”, supported by the **Center for Dark Energy Biosphere Investigations (C-DEBI)** Research Support Program (Co-funded with Michael Rappé; \$45,494)

## Invited Seminars/Talks

- September 2019: Omics-based discovery of novel environmental microbes and bioinformatic applications. **Bayer Crop Science**, Sacramento, CA.
- January 2019: Microbial genomics of marine and terrestrial biomes and opportunities for collaborative science. **Lawrence Berkeley National Laboratory** Environmental Genomics & Systems Biology Division Seminar, Berkeley, CA.
- July 2017: Illuminating the phylogenetic breadth and metabolic potential of microbial life with thousands of archaeal metagenome-assembled genomes. Archaea: Ecology, Metabolism & Molecular Biology – **Gordon Research Conference**, Waterville Valley, NH.
- January 2016: Investigating novel microbial life in the deep igneous oceanic crust. **University of Southern California** Department of Earth Sciences Paleoenvironmental Seminar, Los Angeles, CA.

- October 2014: Juan de Fuca Ridge flank basement fluid microbiology. **C-DEBI Networked Speaker Series**. Honolulu, HI. [broadcast online]
- September 2014: Microbial diversity in anoxic, seafloor basaltic fluids. NASA Astrobiology Institute Seminar, **University of Hawaii**, Honolulu, HI.
- December 2012: Microbial diversity within Juan de Fuca ridge basement fluids sampled from oceanic borehole observatories. **American Geophysical Union Annual Meeting**, San Francisco, CA.

#### Professional Service

- Journal/Proposal Referee: Bioinformatics, BMC Genomics, Environmental Microbiology; Estuarine, Coastal and Shelf Science, FEMS Microbiology Ecology, Frontiers in Microbiology; ISME Journal; Journal of Microbiological Methods, Limnology & Oceanography, Microbiome Journal, mSystems, National Science Foundation (Biological Oceanography; CAREER); PeerJ, PLoS ONE
- Co-organizer and co-moderator, 2013: C-MORE Networking Workshop at Association for Limnology and Oceanography (ASLO) Aquatic Sciences Meeting, New Orleans, LA
- Co-organizer and co-moderator, 2012: C-MORE Careers in Ocean Sciences Workshop, Honolulu, HI
- Participant, 2010-present, C-DEBI, NSF-funded science and technology center of excellence, University of Southern California
- Participant, 2009-2011: DEBI RCN workshops of various topics (Borehole Observatories, Sediment Microbiology, Ocean Crustal Processes) and at various locations (Kona, HI, Chapel Hill, NC, Bremen, Germany)
- Participant, 2008-2015, C-MORE, NSF-funded science and technology center of excellence, University of Hawaii at Manoa

#### Community Service

- Lecturer and Activity Lead, 2013-2015: Ongoing contributions to education of K-12 students and educators on Oahu, Maui, Molokai, and Hawaii, sponsored by various organizations [C-DEBI, National Aeronautics and Space Administration (NASA), and Center for Microbial Oceanography: Research and Education (C-MORE)]
- Judge, 2015-2014: Hawaii State Science and Engineering Fair