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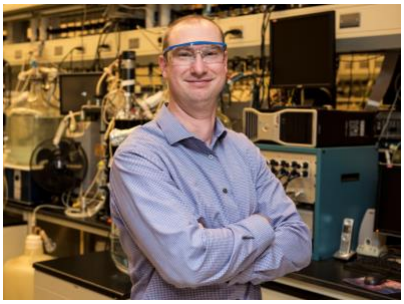

EXPERTISE

Chemical engineer specializing in genome-enabled systems biology and synthetic biology of microbes and microbial communities. Applications are at the juxtaposition of fundamental and applied science relating to the fields of bioprocess engineering, biodesign, microbial ecology, and molecular systems biology.

PROFESSIONAL EXPERIENCE

2018-pres.	**Associate Professor and Research Group Leader,** Microalgae & Microbiomes Research Group, Norwegian College of Fishery Science, Arctic Centre for Sustainable Energy – UiT - The Arctic University of Norway, Tromsø, Norway
2016-2018	**Senior Staff Scientist,** Biological Sciences Division, Microbiome Sciences Group, Pacific Northwest National Laboratory, Richland, WA, USA
2015-2018	**Adjunct Professor,** Voiland School of Chemical and Biological Engineering, Washington State University, Pullman, WA, USA
2013-2016	**Linus Pauling Distinguished Postdoctoral Fellow,** Pacific Northwest National Laboratory, Richland, WA, USA
2012	**Research Intern**, Pacific Northwest National Laboratory, Richland, WA, USA
2007-2013	**Doctoral Candidate and Research Associate,** U.S. National Science Foundation IGERT-fellowship, Montana State University, Bozeman, MT, USA
2003-2007	**Research Associate**, Center for Biofilm Engineering, Montana State University, Bozeman, MT, USA

EDUCATION & TRAINING

2013		Linus Pauling Distinguished Postdoctoral Fellowship, Pacific Northwest National Laboratory, Richland, WA, USA
2013	Ph.D.	Chemical Engineering, Montana State University, Bozeman, MT, USA
2007	B.S.	Chemical and Biological Engineering, Montana State University, Bozeman, MT, USA

AWARDED RESEARCH FUNDING & SUPPORT

2021-2024	The Norwegian Research Council. AlgScaleUp – Scaleup of the production of microalgae as a sustainable salmon feed raw material for the salmon industry. Knowledge-building Project for Green platform (40 M NOK); **Work Package Leader in Microalgae-Bacterial Interactions**
2021-2024	UiT- The Arctic University of Norway Strategic Research Funds (29 M NOK); "ABSORB – Arctic Carbon Storage with Biomes." **Principle Investigator**
2018-2020	UiT- The Arctic University of Norway Strategic Research Funds for ARC - The Arctic Centre for Sustainable Energy (250 K NOK); "Gaining genomic insight into Arctic microalgae carbon capture technologies." **Principle Investigator**

2017-2020 U.S. Department of Energy, Office of Science, Biological and Environmental Research, Genomic Science Program; Scientific Focus Area (Funded at $7.5 M USD); "Phenotypic Response of the Soil Microbiome to Environmental Perturbations." **Key Staff Member and Task Lead for Building Model Microbial Consortia** under PI: Janet Jansson and Co-PI: Kirsten Hofmockel

2016-2018 U.S. Department of Energy, Office of Science, Biological and Environmental Research, Genomic Science Program; Scientific Focus Area (Funded at $4.31 M USD); "MOSAIC: Metabolic and Spatial Interactions in Communities." **Key Staff Member and Synthetic Biology Task Lead** under PI: Charlette Geffen and Co-PI: Jim Fredrickson

2016-2018 U.S. Department of Energy, Office of Science user facility, Environmental Molecular Science Laboratory; EMSL Science Theme Award (Funded at $125 K USD equivalent instrument hours); "Metabolic Flux Coupling in Microbial Consortia: Demystifying Metabolic Exchanges across Species." **Principal Investigator**

2016-2018 Laboratory Directed Research and Development (LDRD); Microbiomes in Transition Initiative (Funded at $400 K USD); "Probiotics and secondary bile acids as regulators of the gut microbe interactome." **Principal Investigator**

2016-2018 Laboratory Directed Research and Development (LDRD); National Security Seed Funding Initiative (Funded at $400 K USD); "Retro-fitting non-traditional microbes with state-of-the-art synthetic biology tools: Towards the next generation of engineered microbial biosensors." **Principal Investigator**

2016-2018 Laboratory Directed Research and Development (LDRD); Energy and Environment Seed Funding Initiative (Funded at $400 K USD); "Filling the gaps: midscale research at the coastal interface." **Key Staff Member** under PI: George Bonheyo

2013-2016 Laboratory Directed Research and Development (LDRD) award (Funded at $832.5 K USD); "Exploring and engineering phototrophic-heterotrophic partnerships." **Principal Investigator**

PUBLICATIONS (h-index = 19; orcid.org/0000-0003-2913-7708)
Google Scholar: https://scholar.google.com/citations?user=MZpM2nsAAAAJ&hl=en&oi=ao

1. Aalto, N.J., Campbell, K., Eilertsen, H.C., **Bernstein, H.C.*** (2021). Drivers of atmospheric-ocean CO2 flux in northern Norwegian fjords. *Frontiers in Marine Science*. https://doi.org/10.3389/fmars.2021.692093
2. Schweitzer, H.D., Aalto, N.J., Busch, W., Chan, D.T.C., Chiesa, M., Elvevoll, E.O., Gerlach, R., Krause, K., Mocaer, K., Moran, J.J., Noel, J.P., Patil, S.K., Schwab, Y., Wijffels, R.H., Wulff, A., Øvreås, L., **Bernstein, H.C.*** (2021). Innovating carbon capture biotechnologies through ecosystem inspired solutions. *One Earth*. *https://doi.org/10.1016/j.oneear.2020.12.006*
3. Khan, N., Yeung, E., Farris, Y., Fansler, S.J., **Bernstein, H.C.*** (2020). A broad-host-range event detector: expanding and quantifying performance between Escherichia coli and Pseudomonas species. *Synthetic Biology*. *https://doi.org/10.1093/synbio/ysaa002*
4. Kessell, A.K., McCullough, H.C., Auchtung, J.M., **Bernstein, H.C.,** Song, H-S.*. (2020). Predictive interactome modelling for precision microbiome engineering. *Current Opinion in Chemical Engineering*. https://doi.org/10.1016/j.coche.2020.08.003
5. Lee, J-Y, Haruta, S., Kato, S., **Bernstein, H.C.,** Lindemann, S.R., Lee, D-Y., Fredrickson, J.K., Song, H-S.* (2020). Prediction of Neighbor-dependent Microbial Interactions from Limited Population Data. *Frontiers in Microbiology*. https://doi.org/10.3389/fmicb.2019.03049
6. Zupanic, A., **Bernstein, H.C.,** Heiland, I.* (2020). Systems biology – Current status and challenges. *Cellular and Molecular Life Sciences. https://doi.org/10.1007/s00018-019-03410-z*
7. **Bernstein, H.C.*** (2019). Reconciling engineering and ecological design principles for building microbiomes. *mSystems.* https://msystems.asm.org/content/4/3/e00106-19

8. Zengler, K., Hofmockel, K., Baliga, N.S., Behie, S.W., **Bernstein, H.C.,** Brown, J.B., Dinney, J.R., Folge, S.A., Forry, S.P., Hess, M., Jackson, S.A., Jansson, C., Lindemann, S.R., Pett-Ridge, J., Maranas, C., Venturelli, O.S., Wallenstein, M.D., Shank, E.A., Northen, T.R.* (2019) EcoFABS: advancing microbiome science through standardized fabricated ecosystems. *Nature Methods.* 16, pages567–571. https://doi.org/10.1038/s41592-019-0465-0
9. Zegeye, E.K., Brislawn, J.C., Farris, Y., Fansler, S.J., Hofmockel, K.S., Jansson, J.K., Wright, A.T., Graham, E.B., Naylor, D., McClure, R.S.*, **Bernstein, H.C.*** (2019). Selection, succession and stabilization of soil microbial consortia. *mSystems.* https://msystems.asm.org/content/4/4/e00055-19
10. Song, H-S.*, Lee, J-Y, Haruta, S., Nelson, W.C., Lee, D-Y., Lindemann, S.R., Fredrickson, J.K., **Bernstein, H.C.** (2019). Minimal Interspecies Interaction Adjustment (MIIA): inference of member-dependent interactions in microbiomes. *Frontiers in Microbiology*. https://doi.org/10.3389/fmicb.2019.01264
11. Brislawn, J.C., Graham, E.B., Dana, K., Ihardt, P., Fansler, S.J., Chrisler, W.B., Cliff, J.B., Stegen, J.C., Moran, J.J.*, **Bernstein, H.C.*** (2019). Forfeiting the priority effect: turnover defines biofilm community succession. *The ISME Journal. https://doi.org/10.1038/s41396-019-0396-x*
12. Linn, V.S., Volk, R.F., DeLeon, A.J., Anderson, L.N., Purvine, S.O., Shukla, A.K., **Bernstein, H.C.,** Smith, J.N., Wright, A.T.* (2019). Structure dependent determination of organophosphate targets in mammalian tissues using activity-based protein profiling. *Chemical Research in Toxicology*. *https://doi.org/10.1021/acs.chemrestox.9b00344*
13. McClure, R.S., Overall, C.C., Charania, M., Hill, E.A., **Bernstein, H.C.**, McDermott, J.E., Beliaev, A.S.* (2018). Species-specific transcriptomic network inference of interspecies interactions in microbial communities. *The ISME Journal. https://doi.org/10.1038/s41396-018-0145-6*
14. Khan, N., Maezato, Y., McClure, R.S., Brislawn, C.J., Mobberley, J.M., Isern, N., Chrisler, W.B., Markille, L.M., Barney, B.M., Song, H-S., Nelson, W.C., **Bernstein, H.C**.* (2018). Phenotypic responses to interspecies competition and commensalism in a naturally-derived microbial co-culture. *Scientific Reports, 8, 297.* DOI: 10.1038/s41598-017-18630-1. https://www.nature.com/articles/s41598-017-18630-1
15. Song, H-S., Lee, J-Y., Nelson, W.C., Taylor, R.C., Henry, C.S., Beliaev, A.S., Ramkrishna, D., **Bernstein, H.C.** (2018). Metabolic network modeling for computer-aided design of microbial interactions. *Emerging Areas in Bioengineering. Wiley Biotechnology Series.* DOI: 10.1002/9783527803293.ch45. http://onlinelibrary.wiley.com/doi/10.1002/9783527803293.ch45/summary
16. **Bernstein, H.C.***, Brislawn, C., Dana, K., Flores-Wentz, T., Cory, A.B., Fansler, S.J., Fredrickson, J.K., Moran, J.J. (2017). Primary and heterotrophic productivity relate to multi-kingdom diversity in a hypersaline mat. *FEMS Microbial Ecology,* DOI: 10.1093/femsec/fix12. https://academic.oup.com/femsec/article/4555378
17. **Bernstein, H.C.***, McClure, R.S., Thiel, V., Sadler, N.C., Kim, Y-M., Chrisler, W.B., Hill, E.A., Bryant, D.A., Romine, M.F., Jansson, J.K., Fredrickson, J.K., Beliaev, A.S. (2017). Indirect interspecies regulation; transcriptional and physiological responses of a cyanobacterium to heterotrophic partnership. *mSystems.* DOI: 10.1128/mSystems.00181-16. http://msystems.asm.org/content/2/2/e00181-16
18. Hill, E.A., Chrisler, W.B., Beliaev, A.S., **Bernstein, H.C.*** (2017). A flexible co-culture platform for simultaneous utilization of methane and carbon dioxide from gas feedstocks. *Bioresource Technology*. *https://doi.org/10.1016/j.biortech.2016.12.111*
19. Beck, A.E., **Bernstein, H.C.**, Carlson, R. P.* (2017). Stoichiometric network analysis of cyanobacterial acclimation to photosynthesis-associated stresses identifies heterotrophic niches. *Processes*. DOI: 10.3390/pr5020032. http://www.mdpi.com/2227-9717/5/2/32

20. Mobberley, J.M., Lindemann, S.R., **Bernstein, H.C.**, Moran, J.J., Renslow, R.S., Hu, D., Babauta, J., Beyenal, H., Nelson, W.C.* (2017). Organismal, metabolic, and chemical microgradients reveal partitioning of energy and biogeochemical cycling within a hypersaline microbial mat system. *FEMS Microbial Ecology*. DOI: 10.1093/femsec/fix028. https://academic.oup.com/femsec/article/3071443/Organismal-and-spatial-partitioning-of-energy-and
21. **Bernstein, H.C.***, Brislawn, C., Renslow, R.S., Dana, K., Morton, B., Lindemann, S.R., Song, H-S., Atci, E., Beyenal, H., Fredrickson, J.K., Jansson, J.K., Moran, J.J.* (2016). Trade-offs between microbiome diversity and productivity in a stratified microbial mat. *The ISME Journal.* https://doi.org/10.1038/ismej.2016.133
22. **Bernstein, H.C.***, McClure, R.S., Hill, E.A., Markillie, L., Chrisler, W.A., Romine, M., A., Posewitz, M.A., Bryant, D.A., Konopka, A.E., Fredrickson, J.K., Beliaev, A.S.* (2016). Unlocking the constraints of cyanobacterial productivity: acclimations enabling ultra-fast growth. *mBio, 7(4), e00949-16.* DOI: 10.1128/mBio.00949-16. http://mbio.asm.org/content/7/4/e00949-16.short
23. Sadler, N.C., **Bernstein, H.C.,** Melnicki, M.R., Charania, M.A., Hill, E.A., Anderson, L.N., Monroe, M.E., Smith, R.D., Beliaev, A.S., Wright, A.T.* (2016). Dinitrogenase driven photobiological hydrogen production alleviates oxidative stress. *Applied and Environmental Microbiology*, DOI: 10.1128/AEM.02098-16. http://aem.asm.org/content/early/2016/10/10/AEM.02098-16.abstract
24. Henry, C.S., **Bernstein, H.C.,** Weisenhorn, P., Taylor, R.C., Lee, J-Y., Zucker, J., Song, H-S.* (2016). Microbial community metabolic modeling: a community data-driven network reconstruction. *Journal of Cellular Physiology*. (COVER ARTICLE). https://doi.org/10.1002/jcp.25428
25. Lindemann, S.R., **Bernstein, H.C.**, Song, H-S., Fredrickson, J.K., Fields, M.W., Shou, W., Johnson, D., Beliaev, A.S.* (2016). Engineering microbial consortia for controllable outputs. *The ISME Journal. https://doi.org/10.1038/ismej.2016.26*
26. Beam, J.P., **Bernstein, H.C.**, Jay, Z., Kozubal, M.A., Jennings, R., Tringe, S.G., Inskeep, W.P.* (2016). Assembly and succession of iron oxide microbial mat communities in acidic geothermal springs. *Frontiers in Microbiology, 7.* DOI: 10.3389/fmicb.2016.00025. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4753309/
27. James, G.A., Zhao, A.G., Usui, M., Underwood, R.A., Nguyen, H.D., Beyenal, H., Pulcini, E., Agostinho, A., **Bernstein, H.C.**, et al., Stewart, P.S.* (2016). Microsensor and transcriptomic signatures of oxygen depletion in biofilms associated with chronic wounds. *Wound Repair and Regeneration.* DOI: 10.1111/wrr.12401. http://onlinelibrary.wiley.com/doi/10.1111/wrr.12401/abstract
28. Beck, A., Hunt, K., **Bernstein, H.C.**, Carlson, R.P.* (2016). Interpreting and designing microbial communities for bioprocess applications; from components to interactions to emergent properties. *Biotechnologies for Biofuel Production and Optimization.* DOI: 10.1016/B978-0-444-63475-7.00015-7. http://www.sciencedirect.com/science/article/pii/B9780444634757000157
29. **Bernstein, H.C.***, Charania, M., McClure, R.S., Sadler, N., Melnicki, M., Hill, E.A., Markillie, L, M., Nicora, C., Wright, A., Romine, M., A., Beliaev, A.S.* (2015). Multi-omic dynamics associate oxygenic photosynthesis with nitrogenase-mediated H_2 production in Cyanothece sp. ATCC 51142. *Scientific Reports, 5.* DOI: 10.1038/srep16004. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4630603/
30. Song, H-S.*, McClure, R.S., **Bernstein, H.C.,** Overall, C.C., Hill, E.A., Beliaev, A.S., (2015). Integrated in silico analyses of the regulatory and metabolic networks of Synechococcus sp. PCC 7002 reveal relationships between gene centrality and essentiality. *Life, 5(2), 1127-1140.* DOI: 10.3390/life5021127. http://www.mdpi.com/2075-1729/5/2/1127/htm
31. **Bernstein, H.C.,** Konopka, A., Melnicki, M.R., Hill, E.A., Kucek, L.A., Zhang, S., Shen, G., Bryant, D.A., Beliaev, A.S.* (2014). Effect of mono- and dichromatic light quality on growth

rates and photosynthetic performance of Synechococcus sp. PCC 7002. *Frontiers in Microbiology, 5, 488.* DOI: 10.3389/fmicb.2014.00488. http://journal.frontiersin.org/article/10.3389/fmicb.2014.00488/full

32. Moran, J.J.*, Doll, C.G., **Bernstein, H.C.,** Renslow, R.S., Cory, A.B, Hutchison, J.R., Lindemann, S.R., Fredrickson, J.K. (2014). Spatially tracking ^{13}C labeled substrate (bicarbonate) accumulation in microbial communities using laser ablation isotope ratio mass spectrometry. *Environmental Microbiology Reports, 6(6), 786-791.* DOI: 10.1111/1758-2229.12211. http://onlinelibrary.wiley.com/doi/10.1111/1758-2229.12211/abstract
33. **Bernstein, H.C.,** Carlson, R.P.* (2014). Design, construction and characterization methods for synthetic microbial consortia. *Engineering Multi-Cellular Systems; Methods and Protocols, Methods in Molecular Biology, 49-68.* DOI: 10.1007/978-1-4939-0554-6_4. http://link.springer.com/protocol/10.1007/978-1-4939-0554-6_4
34. Beliaev, A.S.*, Romine, M.F., Serres, M., **Bernstein, H.C.,** Linggi, B.E., Markillie, L.M., Isern, N.G., Chrisler, W.B., Kucek, L.A., Hill, E.A., Pinchuk, G.E., Bryant, D.A., Wiley, S.H., Fredrickson, J.K., Konopka, A., (2014). Inference of interactions in cyanobacterial-heterotrophic co-cultures via transcriptome sequencing. *The ISME Journal, 8(11), 2243-2255.* DOI: 10.1038/ismej.2014.69. http://www.nature.com/ismej/journal/v8/n11/abs/ismej201469a.html
35. **Bernstein, H.C.,** Kesaano, M., Moll, K., Smith, T., Gerlach, R., Carlson, R.P., Miller, C.D., Peyton, B.M., Cooksey, K.E., Gardner, R.D.*, Sims, R. C.* (2014). Direct measurement and characterization of active photosynthesis zones inside wastewater remediating and biofuel producing microalgal biofilms. *Bioresource Technology, 156, 206-215.* https://doi.org/10.1016/j.biortech.2014.01.001
36. **Bernstein, H.C.,** Beam, J.P., Kozubal, M.A., Carlson, R.P., & Inskeep, W. P.* (2013). In situ analysis of oxygen consumption and diffusive transport in high-temperature acidic iron-oxide microbial mats. *Environmental Microbiology, 15(8), 2360-2370.* DOI: 10.1111/1462-2920.12109. http://onlinelibrary.wiley.com/doi/10.1111/1462-2920.12109/full
37. DePas, W.H., Hufnagel, D.A., Lee, J.S., Blanco, L.P., **Bernstein, H.C.**, Fisher, S.T., James, G.A., Stewart, P.S. Chapman, M. R.* (2013). Iron induces bimodal population development by Escherichia coli. *Proceedings of the National Academy of Sciences USA, 110(7), 2629-2634.* https://doi.org/10.1073/pnas.1218703110
38. Bhardwaj, C., Cui, Y., Hofstetter, T., Liu, S. Y., **Bernstein, H. C.**, Carlson, R. P., ... & Hanley, L.* (2013). Differentiation of microbial species and strains in coculture biofilms by multivariate analysis of laser desorption postionization mass spectra. *Analyst, 138(22), 6844-6851.* DOI: 10.1039/C3AN01389H. http://pubs.rsc.org/is/content/articlehtml/2013/an/c3an01389h
39. **Bernstein, H.C.**, Carlson, R.P.* (2012). Microbial Consortia Engineering for Cellular Factories: in vitro to in silico systems. *Computational and Structural Biotechnology Journal, 3(4), 1-8.* DOI: 10.5936/csbj.201210017. http://www.sciencedirect.com/science/article/pii/S2001037014600738
40. Bhardwaj, C., Moore, J. F., Cui, Y., Gasper, G.L., **Bernstein, H.C.**, Carlson, R. P., & Hanley, L.* (2012). Laser desorption VUV postionization MS imaging of a cocultured biofilm. *Analytical and bioanalytical chemistry, 405(22), 6969-6977.* DOI: 10.1007/s00216-012-6454-0. http://link.springer.com/article/10.1007/s00216-012-6454-0
41. **Bernstein, H.C.,** Paulson, S. D., Carlson, R. P.* (2012). Synthetic *Escherichia coli* consortia engineered for syntrophy demonstrate enhanced biomass productivity. *Journal of Biotechnology, 157(1), 159-166.* DOI: 10.1016/j.jbiotec.2011.10.001. http://www.sciencedirect.com/science/article/pii/S0168165611006067
42. Zuroff, T., **Bernstein, H.**, Lloyd-Randolfi, J., Jimenez-Taracido, L., Stewart, P., Carlson, R.P.* (2010). Robustness analysis of culturing perturbations on Escherichia coli colony biofilm beta-lactam and aminoglycoside antibiotic tolerance. *BMC Microbiology, 10(1), 185.* DOI:

10.1186/1471-2190-10-185. http://bmcmicrobiol.biomedcentral.com/articles/10.1186/1471-2180-10-185

PUBLICATIONS IN-PRESS OR PEER REVIEW

1. Dautel, S., Khan, N., Brandvold, K.R., Brislawn, C.J., Hutchison, J., Weitz, K.W., Heyman, H.M., Song, H-S., Ihan, Z.E., Hill, E.A., Hansen, J.R., Zheng, X., Baker, E.S., Cort, J.R., Kim, Y-M., Isern, N.G., DiBaise, J.K., Krajmalnik-Brown, R., Jansson, J.K., Wright, A.T., Metz, T.O., **Bernstein, H.C.*** (In-review). Lactobacillus acidophilus disrupts collaborative multispecies bile acid metabolism. Pre-print: https://www.biorxiv.org/content/early/2018/04/11/296020.2
2. Moran, J.J.*, Mobberley, J., **Bernstein, H.C.,** Boaro, A., Thompson, A., Dana, K., Cory, A., Renslow, R.S., Nunez, J.R., Riha, K., Huang, E., Fredrickson, J.K., Lipton, M. (In-review). Diel control on spatial appropriation of freshly fixed carbon within a structured photoautotrophic community. *Environmental Microbiology Reports*

REGISTERED PATENT

1. Beliaev, A.S., McClure, R.S., **Bernstein, H.C.**, Lindemann, S.R., Jansson, G.C. (2016). Microbial consortia for programmable output via photoautotroph-heterotroph interactions. *US Patent App. 14/991,263, 2016. https://www.google.com/patents/US20160201026*

SELECTED OPEN-SCIENCE REPOSITORIES (data and code)

1. **Bernstein, H.C.,** Aalto, N.J., (2021). Open Science Framework (*OSF*). Northern Norwegian Fjord CO2 Flux. DOI: 10.17605/OSF.IO/TBZSE. https://osf.io/tbzse/
2. **Bernstein, H.C.,** (2019). Open Science Framework (*OSF*). Introduction to Qbio concepts using R. https://osf.io/48yuh/
3. Brislawn, C.J., **Bernstein, H.C.,** (2019). Open Science Framework (*OSF*). Zegeye – NAG consortia. DOI: 10.17605/OSF.IO/6D5KZ. https://osf.io/6d5kz/
4. **Bernstein, H.C.** (2018). Open Science Framework (*OSF*). A broad-host-range event detector: data and models. DOI: 10.17605/OSF.IO/J295C. https://osf.io/j295c/
5. Mitchell, H., **Bernstein, H.C.,** Brislawn, J.B., (2018). Open Science Framework (*OSF*). Bernstein_Rhizosphere_transcriptomes. https://osf.io/b4qcj/
6. Brislawn, J.B., Mitchell, H., **Bernstein, H.C**., (2018). Open Science Framework (*OSF*). bernstein_root_transcriptomes. https://osf.io/kcvrn/
7. Brislawn, J.B., Mitchell, H., **Bernstein, H.C.,** (2018). Open Science Framework (*OSF*). Bernstein Brachy umbrella project. https://osf.io/hfc5a/
8. Brislawn, J.B., **Bernstein, H.C.,** (2018). Open Science Framework (*OSF*). Brachy_hans_colin. https://osf.io/hn3ck/
9. Brislawn, J.B., **Bernstein, H.C.,** (2018). Open Science Framework (*OSF*). diatom_hans_colin. https://osf.io/tju2v/
10. Brislawn, C., **Bernstein H.C., (**2017). Github. Heterotrophic and primary productivity influences on multi-kingdom diversity in a hypersaline mat microbiome. https://github.com/pnnl/bernstein-2017-productivity-and-diversity-2/
11. Brislawn, C., **Bernstein, H.C.,** (2016). Github. Trade-offs between microbiome diversity and productivity in a stratified microbial mat. https://github.com/pnnl/bernstein-2016-productivity-and-diversity

SELECTED TEACHING

2019 **Qualified for Basic Pedagogic Competence and Supervisions.** This is in accordance with the Norwegian national standard for professional quality teaching at the university level.

2019-current **Instructor and course designer:** *Quantitative Microbial Biotechnology (Bio-3614/8606)*; Fall term, College of Fisheries Sciences, Faculty of Biosciences, Fisheries and Economics, UiT, Tromsø, Norway. *This course has been designed to teach graduate-level students quantitative principles of microbial cultivation, systems biology, bioprocess engineering and contemporary synthetic biology.*

2018 **Co-Instructor:** *Basic and Applied Microalgae (Bio-3614/8606)*; Fall term, College of Fisheries Sciences, Faculty of Biosciences, Fisheries and Economics, UiT, Tromsø, Norway. *This course was designed to teach graduate-level students pursuing degrees in Marine Biotechnology basic taxonomy, physiology, ecology and bioprocess-engineering applications associated with microalgae.*

2018 **Instructor and course designer:** *Metabolic Engineering*; fall semester BIO ENG 455/CHE 474 at The Voiland School of Chemical and Biological Engineering, Washington State University, Pullman, WA, USA. *This course was designed to teach senior-level undergraduate students the basic mathematical principals of systems biology and modern practices/applications in metabolic engineering.*

2011-2012 **Teaching assistant:** *Bioprocess Engineering***;** under Professor Ross Carlson for multiple semesters of EBIO 438 at The Department of Chemical and Biological Engineering, Montana State University, Bozeman, MT, USA. *This course was designed to teach junior-level undergraduate students how to apply basic mass and energy balances to design and evaluate unit operations common to bioprocess including bioreactors, fermentation, and separations.*

AWARDS & HONORS

2013-2016 ***Linus Pauling Distinguished Postdoctoral Fellowship* Award**, Pacific Northwest National Laboratory operated by Battelle, Richland, WA, USA. http://www.pnl.gov/pauling/

2010-2013 ***National Science Foundation Integrated Graduate Education and Research Traineeship*** *(NSF-IGERT PhD Fellowship) in Geobiological Systems*, Montana State University, Bozeman, MT, USA. http://www.igertmsu.montana.edu/

2012 ***International Society for Microbial Ecology Student Poster Award***, Copenhagen, Denmark, 14th ISME Symposium

2007 ***Undergraduate Research Scholarship***, Center for Biofilm Engineering, Montana State University, Bozeman, MT, USA

RESEARCH HIGHLIGHTS & NEWS

- ***UiT is helping to push the exciting field of systems biology.*** Faculty of Biosciences, Fisheries and Economics News. December 3, 2019. https://uit.no/om/enhet/aktuelt/nyhet?p_document_id=657396&p_dimension_id=88163
- ***Chitin- and N-Acetylglucosamine-Derived Soil Consortia.*** **VIDEO.** American Society for Microbiology. August 13, 2019. Presented by former PhD student mentee. https://www.youtube.com/watch?v=L-j5bOCScSU&feature=youtu.be
- ***Scientists take on greenhouse gas challenge.*** Climate News Network, May 2017, http://climatenewsnetwork.net/scientists-greenhouse-gas-challenge/
- ***Mind Blow #112.*** **VIDEO.** Vsauce2, April 2017, https://www.youtube.com/watch?v=PXd-sZb5oqA&feature=youtu.be&t=4m11s
- ***Living Green: PNNL converting methane into a usable source of fuel***. **VIDEO.** NBC Right Now, KNDU-Washington, April 2017, http://www.nbcrightnow.com/story/35247740/living-green-pnnl-converting-methane-into-a-usable-source-of-fuel

- ***From Moo to Goo: Methane to Alternative Fuel Source at PNNL***. Cleantech Concepts, April 2017, http://www.cleantechconcepts.com/2017/04/from-moo-to-goo-methane-to-alternative-fuel-source-at-pnnl/
- ***Methane to Biomass – or Moo to Goo.*** **VIDEO.** PNNL.gov/YouTube., April 2017, https://www.youtube.com/watch?v=KAMaQkrPD64&feature=youtu.be
- ***The Cows of America Have a Renewable Energy Message for You.*** Clean Technica, April 2017, https://cleantechnica.com/2017/04/12/cows-america-renewable-energy-message/
- ***Getting from Greenhouse Gas to Microbial Biomass.*** NanoWerk (Nanotechnology Press), February 2017, http://www.nanowerk.com/news2/green/newsid=45762.php
- ***Bernstein Named to Microbiology Editorial Board at Scientific Reports*****.** PNNL News, October 2016, http://www.pnnl.gov/science/highlights/highlight.asp?id=4453
- ***Fast-growth cyanobacteria gets thumbs up from scientists for biofuels production.*** Biofuels International, July 2016. http://biofuels-news.com/display_news/10828/fastgrowth_cyanobacteria_gets_thumbs_up_from_scientists_for_biofuels_production/
- ***Fast-growth cyanobacteria have allure for biofuel, chemical production.*** Science Daily, July 2016. https://www.sciencedaily.com/releases/2016/07/160728110437.htm
- ***Speeding cyanobacteria growth "brightens" biofuel's future.*** R&D Magazine, January 2015. http://www.rdmag.com/news/2015/01/speeding-cyanobacteria-growth-brightens-biofuels-future
- ***Microbes map path toward renewable energy future.*** Science Daily, November 2015. https://www.sciencedaily.com/releases/2015/11/151111114827.htm
- ***When the going gets tough, the tough get growing.*** PNNL News, July 2016. http://www.pnnl.gov/news/release.aspx?id=4298
- ***Microbes map path toward renewable energy future.*** Global News Connect, November 2015, http://globalnewsconnect.com/microbes-map-path-toward-renewable-energy-future/
- ***Microbes map path toward renewable energy future.*** PNNL News, November 2015, http://www.pnnl.gov/news/release.aspx?id=4234&utm_source=Google%2B&utm_medium=Social&utm_campaign=RelCyanothece
- ***Bernstein co-authors book chapter that Aims to guide microbial community engineering*****.** PNNL News, September 2015, http://www.pnnl.gov/science/highlights/highlight.asp?id=4097
- ***Synthetic microbial consortia can be engineered for enhanced biomass productivity.*** National Science Foundation's Integrative Graduate and Research Traineeship (IGERT) Highlights, December 2013, http://www.igert.org/highlights/785
- ***Yellowstone National Park's extremely hot springs and pools provide niches for specialized microbial communities.*** **VIDEO**. Center for Biofilm Engineering's science video, 2012, https://www.youtube.com/watch?v=UdSrYHWLHZE

INVITED SEMINARS & SELECTED CONFERENCE PROCEEDINGS

1. **Bernstein, H.C.** "Hot Lake: A story of salty biofilms, microbial activity gradients, and succession dynamics." (June 1st, 2021). Invited Talk, EMBL's Planetary Biology Seminar Series. **YouTube link**: https://www.youtube.com/watch?v=hEJO3F2DcAk
2. **Bernstein, H.C**., Lead Session Organizer, Carbon Capture and Utilization Workshop (March 23rd, 2021). The Peter F. Hjort Seminar; Circular Economy and Sustainability (in Norwegian). https://uit.no/tavla/artikkel/718309/peter_f_hjort-seminaret_i_mo_i_rana_sirkulaer_ok
3. **Bernstein, H.C**., Lead Session Organizer, "Algae in the Arctic: Nature's Gift for Combating Greenhouse Gasses." (May 15th, 2021). UArctic Congress 2021(digital sessions)
4. **Bernstein, H.C.** "Hot Lake: A story of salty biofilms, chemical gradients, and succession dynamics." (March 25th, 2021). Invited Talk, The Center for Biofilm Engineering's Virtual Seminar Series. https://biofilm.montana.edu/cbe-seminar-series.html

5. **Bernstein, H.C**., Lead Session Organizer, Carbon Capture and Utilization Workshop (March 23rd, 2021). The Peter F. Hjort Seminar; Circular Economy and Sustainability (in Norwegian). https://uit.no/tavla/artikkel/718309/peter_f_hjort-seminaret_i_mo_i_rana_sirkulaer_ok
6. **Bernstein, H.C.** "Leveraging Microbial Ecosystems for Innovating CCUS Technologies" (November 3rd 2020). Invited Talk, Carbon Capture Utilization and Sequestration Session, Norway – Singapore Science Week 2020. Digital - **YouTube link**: https://www.youtube.com/watch?v=JszJF027LG8&t=8520s
7. **EcoTech4CCU: Ecosystem Inspired Biotechnology for Carbon Capture, Sequestration and Utilization.** (Workshop Organizer) A workshop sponsored by University of the Arctic and hosted by UiT. To be held October 16-18th (Tromsø, Norway).
8. **Bernstein, H.C.** Organizing Committee member and Session Chair "Principles and Engineering for Molecular Systems Biology" (September 25th 2018). International Study Group for Systems Biology (ISGSB) Conference 2018 – Tromsø, Norway
9. **Bernstein, H.C.** "Model Gut Consortia Elucidate Collaborative Multispecies Bile Acid Metabolism" (August 13th 2018). Contributed Talk, Human Microbiomes Session, The 17th Symposium for The International Society of Microbial Ecology (ISME17) – Leipzig, Germany
10. **Bernstein, H.C.** "Living Chemical Event Detectors Engineered from Self-regulating Gene Circuits in No-traditional Microbial Hosts" (November 29th 2017). **Invited Talk**, Chemical and Biological Defense Science & Technology Conference – Long Beach, CA, USA
11. **Bernstein, H.C.** "Deciphering Carbon and Energy Flows through Photosynthetically-Driven Microbial Communities: integrated kinetic and genomic approaches." (August 10th 2017). **Invited research seminar** for the Department of Arctic and Marine Biology, The Arctic University of Norway – UiT, Tromsø, Norway
12. **Bernstein, H.C.** "Biotechnological potentials of diatoms." (August 9th 2017**). Invited research seminar** for The Arctic Centre for Sustainable Energy, The Arctic University of Norway – UiT, Tromsø, Norway
13. **Bernstein, H.C.** "Deciphering Carbon and Energy Flows through Photosynthetically-Driven Microbial Communities: integrated kinetic and genomic approaches." (December 1st 2016). **Invited seminar** for the Department of Biosystems Engineering, WSU, Pullman, USA
14. **Bernstein, H.C.**, McClure, R.S., Song, H-S., Bryant, D.A., Fredrickson, J.K., Beliaev, A.S., Jansson, J.K. (2016). Emergent responses of microbial partnership; acclimation and coordination in a model phototrophic-heterotrophic consortium. *16th Symposium for the International Society for Microbial Ecology ISME16. Montreal, Canada*
15. **Bernstein, H.C.**, Hill, E.A., Beliaev, A.S. (2015). Phototrophic polycultures enable robust biomass and bioproduct synthesis from natural gas feedstock. Poster presentation. *Algae Biomass Summit conference, Washington, DC, USA*
16. **Bernstein, H.C.**, Carlson, R.P., Beliaev, A.S., Fredrickson, J.K. (2015). Engineering emergent properties in synthetic microbial communities. Poster presentation. *Synthetic Biology: Engineering, Evolution and Design. Boston, MA, USA*
17. **Bernstein, H.C.**, McClure, R.S., Song, H-S., Lindemann, S.R., Jansson, G.C., Beliaev, A.S. (2015). Using photoautotroph-heterotroph interactions as framework for building a self-sustained microbial consortium. Poster presentation. *Keystone Symposium-Precision Genome Engineering. Bigsky, MT, USA*
18. **Bernstein, H.C.**, Hill, E.A., Markillie, L.M., Fredrickson, J.K., Konopka, A., Beliaev, A.S. (2014). Understanding multispecies interactions between cyanobacteria and heterotrophs: from growth kinetics to global transcription. Poster presentation. *15th Symposium for the International Society for Microbial Ecology ISME15. Seoul, S. Korea*
19. **Bernstein, H.C.**, Gardner, R., Miller, C., Sims, R., (2014). Spatially evaluating oxygenic photosynthesis and respiration inside wastewater remediating and biofuel producing algal biofilms. Oral presentation. *15th Symposium for the International Society for Microbial Ecology ISME15. Seoul, S. Korea*

20. **Bernstein, H.C.**, Bleem, A., Carlson, R.C., (2012). Microelectrode analysis of an artificial phototrophic biofilm consortium reveals a positive feedback basis of syntrophic interactions. Oral presentation. *AIChE Annual Meeting, Pittsburgh, PA*
21. **Bernstein, H.C.**, Paulson, S.R.., Carlson, R.C., (2012). Synthetic Escherichia coli consortia engineered for syntrophy demonstrate enhanced biomass productivity. Poster presentation. *14th Symposium for the International Society for Microbial Ecology ISME14. Copenhagen, Denmark. Poster presentation*, BEST POSTER AWARD
22. **Bernstein, H.C.**, Carlson, R.C., (2011). A synthetic microbial community design based on syntrophic metabolite exchange. Oral presentation. *AIChE Annual Meeting, Minneapolis, MN*

SYNERGYSTIC ACTIVITIES AND COMMISIONS OF TRUST

- Editorial board member for The ISME Journal, an International Society for Microbial Ecology journal from Nature Publishing Group (2020 – Current); https://www.nature.com/ismej/editors/editorial-board
- Editorial board member for mSystems, an open access journal from the American Society for Microbiology (2019 – Current); https://msystems.asm.org/content/board-editors
- Editorial board member for Scientific Reports, an open access journal (2015 – 2020)
- Co-Editor for Special Issue of Cellular and Molecular Life Sciences (Springer Publishing). Systems Biology Mini-Reviews (2019).
- Board member for the International Study Group for Systems Biology (ISGSB). https://site.uit.no/isgsb/
- Review Editor for Frontiers in Microbiotechnology. Ecotoxicology and Bioremediation; http://journal.frontiersin.org/journal/all/section/microbiotechnology-ecotoxicology-and-bioremediation
- SANOCEAN International Review Committee Member. Research Council of Norway (Forskningsrådet) and National Research Foundation of South Africa. 13-14.10.2018. Pretoria, South Africa. https://www.forskningsradet.no/prognett-southafrica/Home_page/1226994002766
- Energy-i-Corps training from the U.S. Department of Energy (Formerly DOE Lab Corps); Entrepreneurial Lead of Team *Co-culture Green* (1st cohort Oct. 11–Nov. 19, 2015, Golden, CO, USA) http://energy.gov/eere/technology-to-market/lab-corps
- EcoFAB summit: Model Ecosystems Linking Genome Biology to Ecosystem Processes (April 27, 2017, Washington DC, USA); https://uho.wpengine.com/ecofab2/wp-content/uploads/sites/12/2017/09/2017_EcoFAB_Summit_Report.pdf
- Panelist for the 2017 Chemical Engineering Graduate Student Symposium at the University of Washington, Seattle, WA., USA (Sept. 25, 2017). https://depts.washington.edu/acesche/2017-graduate-student-symposium
- Staff and Engineer Training and Development Program (SEDP); https://acs.confex.com/acs/norm07/techprogram/P45348.HTM
- Thesis Committee member for graduate students studying in the Voiland School of Chemical and Biological Engineering, Washington State University
- *Ad hoc* reviewer for:
    - U.S. Department of Energy Bioenergy Technology Office, SBIR programmatic funding
    - U.S. National Science Foundation, programmatic funding
    - Nature Reviews Microbiology
    - Trends in Microbiology
    - Nucleic Acid Research
    - Biotechnology for Biofuels
    - Environmental Microbiology
    - Frontiers in Microbiology
    - Wound Repair and Regeneration

    - Astrobiology
- Selected list of service as evaluator on faculty hiring committees at UiT
    - 2019: Tenure-Track Faculty member with Centre for new Antibacterial Strategies (CANS)
    - 2019: Associate/Full-Professor with The Arctic Centre for Sustainable Energy (ARC)
- National Science Foundation-IGERT Fellow (MSU)
- Active member of the American Institute of Chemical Engineering (AIChE) and the International Society for Microbial Ecology (ISME)
- Youth Football/Soccer Trainer, Kvaløya Sports Klub (KSK, Tromsø, Norway), 2019-current.
- Youth Fly Fishing Instructor, Big Sky Youth Empowerment, Bozeman, MT, USA (summer 2011)

STUDENTS & SUPERVISION

2021- pres.	Sebastian Petters, Senior Laboratory Engineer in Bioinformatics, Norwegian College of Fisheries Sciences, UiT- The Arctic University of Norway, Tromsø, NO
2020- pres.	Vanja Verusevski, MSc Student, Norwegian College of Fisheries Sciences, UiT- The Arctic University of Norway, Tromsø, NO
2019- pres.	Dennis Chan, PhD Student, Norwegian College of Fisheries Sciences, UiT- The Arctic University of Norway, Tromsø, NO
2019- pres.	Hannah Schweitzer, Postdoctoral Researcher, Norwegian College of Fisheries Sciences, UiT- The Arctic University of Norway, Tromsø, NO
2019- pres.	Stina Krsmanovic, Head Laboratory Engineer, Norwegian College of Fisheries Sciences, UiT- The Arctic University of Norway, Tromsø, NO
2018- pres.	Nerea Johanna Aalto, PhD Student, Norwegian College of Fisheries Sciences, UiT- The Arctic University of Norway, Tromsø, NO
2018 - 2020.	Erlend Grann-Meyer, MSc Student, Norwegian College of Fisheries Sciences, UiT- The Arctic University of Norway, Tromsø, NO
2018- 2019	Richard Andre Ingebrigtsen, Postdoctoral Researcher and Instructor, Norwegian College of Fisheries Sciences, UiT- The Arctic University of Norway, Tromsø, NO
2017-2019	Elias Zegeye, PhD Student and Research Assistant, Washington State University, Pullman, WA, USA; and Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA, USA
2016-2018	Bryan Killinger, PhD Student and Research Assistant, Washington State University, Pullman, WA, USA; and Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA, USA
2017-2018	Nymul Khan, Post-Doctoral Research Scientist, Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA, USA
2016-2018	Colin Brislawn, Staff Technician, Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA, USA
2017-2018	Yuliya Farris, Post-Bachelor's Research Scientist, Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA, USA
2015-2018	Tobias Flores-Wentz, Student Research Apprenticeship Program (SRAP), Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA, USA
2015	Safwan Elkhatib, Department of Energy Science Undergraduate Laboratory Intern (SULI), Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA, USA
2011-2013	Alissa Bleem, Undergraduate Researcher, Chemical and Biological Engineering, Montana State University, Bozeman MT, USA
2010-2012	Steven Paulson, Undergraduate Researcher, Chemical and Biological Engineering, Montana State University, Bozeman MT, USA