

Dr. Steven W. Singer

Biological Systems and Engineering Division/Joint BioEnergy Institute
Lawrence Berkeley National Laboratory
Berkeley, CA 94720
Phone: (510) 220-3649
Email: SWSinger@lbl.gov
Web of Science ResearcherID: I-1851-2014

Education:

2001 Ph.D., Organic Chemistry, University of Wisconsin, Madison, WI.
1996 B.A., Chemistry (*Cum Laude*), Williams College, Williamstown, MA.

Professional Positions:

2016-present Deputy Vice President, Deconstruction Division, Joint BioEnergy Institute
2014-present Staff Scientist, Biological Systems and Engineering Division, Lawrence Berkeley National Laboratory
2011-present Director, Microbial Communities Group, Deconstruction Division, Joint BioEnergy Institute
2009–2014 Research Scientist, Earth Sciences Division, Lawrence Berkeley National Laboratory
2008–2009 Staff Scientist, Lawrence Livermore National Laboratory
2005–2008 Postdoctoral Staff Research Member, Lawrence Livermore National Laboratory
2002–2005 Postdoctoral Associate, University of California-Berkeley, Laboratory of Professor Paul Ludden
1997–2001 Research Assistant, University of Wisconsin, Madison, Laboratory of Professor Charles Casey

Current Research Grants

“Biosurfactant Production by Engineering Microbial One Carbon Conversion” Laboratory Directed Research and Development 10/1/16-9/30/18 (Role: PI)

“Developing *Thermoascus aurantiacus* as a thermophilic fungal platform for industrial production of cellulases” Department of Energy/Bioenergy Technologies Office, 10/14-9/17 (Role: PI)

“Fermentation and Electrohydrogenic Approaches to Hydrogen Production” Department of Energy/Fuel Cell Technologies Office, 10/15-9/16 (role co-PI)

“Joint BioEnergy Institute, Deconstruction Division, Microbial Communities Group, Department of Energy/Office of Biological and Environmental Research, 10/07-09/17 (Role: Director)

Completed Research Grants

“The Effect of salinity on geochemical processes in confined aqueous fluids” Department of Energy/Basic Energy Sciences, 10/14-9/15 (Role: Co-PI).

“Interconnections between Dynamic Processes that Control the Formation, Evolution and Reactivity of Environmental Interfaces.” Department of Energy/Basic Energy Sciences, 10/11-9/14 (Role: Co-PI).

“Microbial Electrocatalytic Biofuel Production” Department of Energy /Advanced Research Projects Agency-Energy (ARPA-E), 09/10-12/13 (Role: PI)

“Development and integration of genome-enabled techniques to track and predict the cycling of carbon in model microbial communities” Department of Energy/Office of Biological and Environmental Research, 10/10-09/13 (Role: Co-PI)

“3D Reconstruction of Biological Organization and Mineralization in Sediment Attached Biofilms During Uranium Bioremediation” Department of Energy/Office of Biological and Environmental Research, 10/10-09/13 (Role: Co-PI)

“LLNL SFA- systems biology approach to energy flow in H₂-producing microbial communities” Department of Energy/Office of Biological and Environmental Research, 10/09-10/12 (Role: Co-PI)

“Targeted discovery of lignocellulose-deconstructing enzymes from extremophilic fungi” National Nuclear Security Administration/ Global Initiatives for Proliferation Prevention, 10/10-09/12 (Role: PI)

“NanoSIP: Developing community imaging for phylogenetic and functional characterization” Department of Energy/Office of Biological and Environmental Research, 10/07-09/10 (Role: Co-PI)

Research Teaching:

Current Staff

2016 Lauren Tom, Principal Research Associate

Current Postdoctoral Scholars

2012-present Dr. Chijioke Joshua (UC-Berkeley)
2015-present Dr. Sebastian Kolinko (Ludwig Maximillians Universtiat)
2015-present Dr. Timo Schuerg (Braunschweig Technical University)
2015-present Dr. Jie Dong (Ohio State University)

Current Graduate Students

2016 Shizeng Wang, Beijing Institute of Technology
2016 Simon Harth, Braunschweig Technical University
2016 Anne Oostlander, Braunschweig Technical University

Current Undergraduates

2012-present Yung-Hsu Tang, San Francisco State University

Former Postdoctoral Scholars

2008–2011 Dr. John Gladden, currently Senior Member of the Technical Staff, Sandia National Laboratories
2008–2011 Dr. Dagmar Wobken (co-supervised with Prof. Alfred Spormann, Stanford), currently Group Leader, Department of Microbial Ecology, University of Vienna
2011 Dr. Stephanie Eichorst, currently Staff Scientist, University of Vienna
2010–2013 Dr. Jana Mueller (co-supervised with Dr. Harry Beller, LBNL), currently Scientist, Calysta
2011–2012 Dr. Yi-Chun Yeh, currently Associate Professor, National Taiwan Normal University
2011–2012 Dr. Shara McClendon Brooks
2011–2012 Dr. Cindy Castelle, currently a postdoc at UC-Berkeley
2011-2013 Dr. Changhao Bi (co-supervised with Dr. Nathan Hillson, LBNL), currently Researcher, Chinese Academy of Sciences
2012-2015 Dr. Jennifer Hiras, Science and Discovery Center, Corning, NY
2012-2016 Dr. Yu-Wei Wu, currently Assistant Professor, Taipei Medical University

Former Graduate Students

2016 Jan-Philip Prah, Braunschweig Technical University
2016 Margaux Molinas, Chimie ParisTech
2015-2016 Dario Frey, Mannheim University of Applied Science
2015-2016 Raphael Gabriel, University of Vienna
2014 Evelyn Denzel, Mannheim University of Applied Science
2014 Nora Baecker, Mannheim University of Applied Science

Former Undergraduates

2015 Alexander Dizik, City College of San Francisco
2012-2013 Veronica Benites, City College of San Francisco (M.S., San Francisco State University)

2012-2013 Camden Miller, University of California-Berkeley (M.S. candidate, SUNY Buffalo)
 2012-2013 Peter Su, University of California-Berkeley (Ph.D candidate, Northwestern University)

Service

Editorial Board Member, *Applied and Environmental Microbiology* (2013-2019), Review Editor, *Frontiers in Microbiology*

Reviewer for *Journal of Bacteriology*, *ISME Journal*, *Bioresource Technology*, *Biotechnology for Biofuels*, *Environmental Science and Technology*, *PLoS One*, *Scientific Reports*, *Biotechnology and Bioengineering*

NSF Panel Member, Energy for Sustainability program, 4/2013

College of Reviewers, Genome Canada 2015 Large-Scale Applied Research Project Competition, May 24-27, 2016, Calgary, AL,

Planning Committee, Society for Industrial Microbiology Annual Meeting New Orleans, LA, July 24-28, 2016

Publications

67. "Ionic liquid tolerant microorganisms and microbial communities for lignocellulose conversion to bioproducts" VanderGheynst, J.S.; Yu, C.; Singer, S.W.; Simmons, B.A.; Thelen, M.P. *Applied Microbiology and Biochemistry*, submitted.
66. "Nitrogen amendment of green waste impacts microbial communities and their potential for lignocellulose decomposition" Yu, C.; Duff, H.; Claypool, J.; Simmons, B. A.; Singer, S.W.; Simmons, C.W.; VanderGheynst, J.S. *Environmental Science and Technology*, submitted.
65. "Microbiome and Metagenomic Analyses of Microbial Communities Along a Hypersalinity Gradient" Kimbrel, J.A.; Ballor, N.; Wu, Y.-W.; David, M.; Hazen, T.C.; Simmons, B.A.; **Singer, S.W.**; Jansson, J.K. **2016**, *mSystems*, submitted.
64. "Ionic liquids impact the bioenergy feedstock degrading microbiome and transcription of enzymes relevant to polysaccharide hydrolysis" Wu, Y.-W., Higgins, B.; Reddy, A.P.; Ceballos, S.; Joh, L.D.; Simmons, B.A.; Singer, S.W.; VanderGheynst, J.S. *mSystems*, submitted.
63. "Transcriptomic analysis of the marine oil-degrading bacterium *Acinetobacter venetianus* RAG-1 reveals genes important in dodecane uptake and utilization. Kothari, A.; Charrier, M.; Wu, Y.-W. ; Malfatti, S.; Zhou, C.E.; **Singer, S.W.**; Dugan, L.; Mukhopadhyay, A. *FEMS Microbiology Ecology*, in press.
62. "Comparative community proteomics demonstrates the unexpected importance of an actinobacterial glycoside hydrolase family 12 for crystalline cellulose hydrolysis" Hiras, J.; Wu, Y.-W.; Deng, K.; Nicora, C.D.; Aldrich, J.T.; Frey, D.; Kolinko, S.; Robinson, E.W.; Jacobs, J.M.; Adams, P.D.; Northen, T.R.; Simmons, B.A.; **Singer, S.W.** **2016** *mBio*, 7, e01106-16
61. "Refining the Phylum Chlorobi by Resolving the Phylogeny and Metabolic Potential of the Representative of a Deeply Branching, Uncultivated Lineage" Hiras, J.; Wu, Y.-W.; Eichorst, S.A.; Simmons, B.A.; **Singer, S.W.** *ISME J.*, **2016**, 10, 833-845
60. "The role of organic matter amendment level on soil heating, organic acid accumulation, and development of bacterial communities in solarized soil" Simmons, C.W., Higgins, B.; Staley, S.; Joh, L.D.; Simmons, B.A.; **Singer, S.W.**; Stapleton, J.J.; VanderGheynst, J.S. **2016** *Applied Soil Ecology*, 106, 37-46

59. "Ferricyanide-based analysis of aqueous lignin suspension revealed sequestration of water-soluble lignin moieties" Joshua, C.; Simmons, B.A.; **Singer, S.W.** *2016 RSC Advances*, 6, 54382-54393
58. "Thermoascus aurantiacus: an Intriguing Thermophilic Fungus for Cellulase Production" Schuerg, T.; Gabriel, R.; Baecker, N.; Baker, S.E.; **Singer, S.W.** *2016, Current Biotechnology*, 5 doi: 10.2174/2211550105666160520123504
57. "Thermophilic enrichment and preservation of microbial communities tolerant to the ionic liquids tetrabutylphosphonium chloride and tributylethylphosphonium diethylphosphate" Pace, S.; Ceballos, S.; Harrold, D.; Stannard, W.; Thelen, M.P.; Simmons, B.A.; **Singer, S.W.**; VanderGheynst, J.S., *Appl. Microbiol. Biotech.* **2016**, 100, 5639–5652.
56. "Fungi contribute critical but spatially varying roles in nitrogen and carbon cycling in acidic environments" Mosier, A.C.; Miller, C.S.; Frischkorn, K.R.; Ohm, R.A.; Li, Z.; LaButti, K.; Lapidus, A.; Lipzen, A.; Chen, C.; Kaplan, J.; Lindquist, E.A.; Pan, C.; Hettich, R.L.; Grigoriev, I.V.; **Singer, S.W.**; Banfield, J.F. *Frontiers in Microbiology.*, **2016**, 7, 238.
55. "Preservation of microbial communities enriched on lignocellulose under thermophilic and high solids conditions" Yu, C.; Reddy, A.P.; Simmons, C.W.; Simmons, B.A.; **Singer, S.W.** VanderGheynst, J.S *Biotechnology for Biofuels*, **2015**, 8,1.
54. "MaxBin 2.0: an automated binning algorithm to recover genomes from multiple metagenomic datasets" Wu, Y.-W., Simmons, B.A.; **Singer, S.W.** *2015, Bioinformatics*, btv638.
53. "Reconstruction of the Genome of an Uncultivated Member of the *Truperaceae* Reveals its Role in Thermophilic Biomass Deconstruction" Wu, Y.W.; Joshua, C.; Eichorst, S.A.; Gladden, J.M.; Simmons, B.A.; **Singer, S.W.** *Bioenergy Research*, **2015**, 8, 1031-1038
52. "Changes in protein expression across laboratory and field experiments in *Geobacter bemidjiensis*" Merkley, E.; Wrighton, K.C.; Castelle, C.J.; Anderson, B.; Wilkins, M.J.; Shah, V.; Arbour, T.; Brown, J.; **Singer, S.W.**; Smith, R.; Lipton, M. *Journal of Proteome Research*, **2015**, 14, 1361-75.
51. "Yeast tolerance to the ionic liquid 1-ethyl-3-methylimidazolium acetate, by Sitepu, I.; Shi, S.; Simmons, B.A.; **Singer, S.W.**; Boundy-Mills, K.; Simmons, C.W. *FEMS Yeast Research*, **2014**, 14, 1286-94.
50. "Metatranscriptomic analysis of lignocellulolytic microbial communities involved in high-solids decomposition of rice straw" Simmons, C.W.; Reddy, A.P.; D'haeseleer, P.; Khudyakov, J.; Martim, J.A.; Simmons, B.A.; **Singer, S.W.**; Thelen, M.P.; VanderGheynst, J.S., *Biotechnology for Biofuels*, **2014**, 7, 495.
49. "Effect of inoculum source on the enrichment of microbial communities on lignocellulosic biofuel feedstocks under thermophilic and high-solids conditions" Simmons, C.W.; Reddy, A.P.; Simmons, B.A.; **Singer, S.W.**; VanderGheynst, J.S. *J. Appl. Micro.* **2014**, 117, 1025-34.
48. "Substrate-Specific Development of Thermophilic Bacterial Consortia Using Chemically Pretreated Switchgrass" Eichorst, S.A.; Joshua, C.; Sathitsuksanoh, N.; Singh, S.; Simmons, B.A.; **Singer, S.W.** *Applied and Environmental Microbiology*, **2014**, 80, 7423.
47. "MaxBin: An Automated Binning Method to Recover Individual Genomes from Metagenomes using an Expectation-Maximization Algorithm" Wu, Y.W.; Tang, Y.H.; Tringe, S.G.; Simmons, B.A.; **Singer, S.W.** *Microbiome*, **2014**, 2, 26.
46. "Revisiting N₂ fixation in Guerrero Negro intertidal microbial mats with a functional single-cell approach" Woebken, D.; Burow, L.C.; Benham, F.; Mayali, X.; Schintlmesiter, A.; Fleming, E.D.; Prufert-Bebout, L.;

Singer, S.W.; Cortes, A.L.; Hoehler, T.M.; Pett-Ridge, J.; Spormann, A.M.; Wagner M.; Weber, P.K.; Bebout, B.M. *ISME Journal*, **2015**, 9, 486-495.

45. "Engineering bacterial tolerance to an ionic liquid used in advanced biofuel production" Rüegg, T.L.; Kim, E.-M.; Keasling, J.D.; Simmons, B.A.; **Singer, S.W.**; Lee, T.S.; Thelen, M.P. *Nature Communications*, **2014**, 5, 3490.
44. "Characterization of two novel β -glucosidases from an Amazon soil metagenomic library" Bergmann, J.C.; Costa, O. Y. A.; Gladden, J.M.; **Singer, S.W.**; Heins, R.; D'haeseleer, P.; Simmons, B.A.; Quirino, B.F. *FEMS Microbiology Letters*, **2014**, 351, 147-155.
43. "*Bacillus coagulans* tolerance to 1-ethyl-3-methylimidazolium-based ionic liquids in aqueous and solid-state thermophilic culture" Simmons, C.W.; Reddy A.P.; VanderGheynst, J.S. Simmons, B.A.; **Singer, S.W.**; *Biotechnology Progress*, **2014**, 30, 311-16.
42. "Identification of *Desulfobacterales* as primary hydrogenotrophs in a complex microbial mat community" Burow, L.C.; Woebken, D.; Marshall, I.P.G.; Bebout, B.M.; Prufert-Bebout, L.; **Singer, S.W.**; Pett-Ridge, J.; Weber, P.K.; Spormann, A.M.; Hoehler, T.M.; *Geobiology*, **2014**, 12, 221-30.
41. "Discovery and Characterization of Ionic Liquid-Tolerant Thermophilic Cellulases from a Switchgrass-Adapted Microbial Community" Gladden, J.M.; Park, J.I.; Bergmann, J.; Reyes-Ortiz, V.; D'haeseleer, P.; Quirino, B.F.; Sale, K.L.; Simmons, B.A.; **Singer, S.W.** *Biotechnology for Biofuels* **2014**, 7, 15.
40. "High throughput nanostructure-initiator mass spectrometry screening of microbial growth conditions for maximal β -glucosidase production" Cheng, X.; Hiras, J.; Deng, K.; Bowen, B.; Simmons, B.A.; Adams, P.D.; **Singer, S.W.** Northen, T.R. *Frontiers in Microbial Physiology and Metabolism* **2013**, 4, 365.
39. "Characterization of bacterial communities in solarized soil amended with lignocellulosic organic matter" Simmons, C.W.; Claypool, J.T.; Marshall M.N.; Jabusch, L.K.; Reddy, A.P.; Simmons, B.A.; **Singer, S.W.**; Stapleton, J.J.; VanderGheynst, J.S. *Applied Soil Ecology*, **2013**, 73, 97-104.
38. "Development of a Broad-Host Synthetic Biology Toolbox for *Ralstonia eutropha* and its Application to Engineering Hydrocarbon Biofuel Production" Bi, C.; Su, P.; Müller J.; Yeh, Y.-C.; Chhabra, S.R.; Beller, H.R.; **Singer, S.W.**; Hillson, N.J. *Microbial Cell Factories*, **2013**, 12, 107
37. "One-pot Ionic Liquid Pretreatment and Saccharification of Switchgrass" Shi, J.; Gladden, J.M.; Sathitsuksanoh, N.; Kambam, P.; Sandoval, L.; Mitra, D.; Zhang, S.; **Singer, S.W.**; George, A.; Simmons, B.A.; Singh, S. *Green Chemistry*, **2013**, 15, 2579-2589.
36. "Draft Genome Sequence of an Oscillatorian Cyanobacterium, Strain ESFC-1" Everroad, R.C.; Woebken D.; **Singer, S.W.**; Burow, L.C.; Kyrpides, N.; Woyke, T.; Goodwin, L.; Detweiler A.; Prufert-Bebout L.; Pett-Ridge, J. *Genome Announcements*, **2013**, 1, e00527-13
35. "Engineering of *Ralstonia eutropha* H16 for autotrophic and heterotrophic production of methyl ketones" Müller, J.; MacEachran, D. ; Burd, H.; Sathitsuksanoh N; Bi, C.; Yeh, Y.-C.; Lee, T.S.; Hillson, N.J.; Chhabra, S.R.; **Singer, S.W.**; Beller, H.R. *Applied and Environmental Microbiology*, **2013**, 9, 4433-9.
34. "Discovery of microorganisms and enzymes involved in high-solids decomposition of rice straw using metagenomic analyses" Reddy, A.P.; Simmons, C.W.; D'haeseleer, P.D.; Khudyakov, J.; Burd, H.; Hadi, M.; Simmons, B.A.; **Singer, S.W.**; Thelen, M.P.; VanderGheynst, J.S. *PLoS One*, **2013**, 8, e77985.
33. "Proteogenomic Analysis of a Thermophilic Bacterial Consortium Adapted to Switchgrass" D'haeseleer, P.; Gladden, J.M.; Allgaier, M.; Chain, P.S.G.; Tringe, S.G.; Malfatti, S.A.; Aldrich, J.T.; Nicora, C.D.; Robinson, E.W.; Pasa-Tolic, L.; Hugenholtz, P.; Simmons, B.A.; **Singer, S.W.** *PLoS One*, **2013**, 8, e68465.

33. "Extraordinary phylogenetic diversity and metabolic versatility in aquifer sediment" Castelle, C.J.; Hug, L.A.; Wrighton, K.C.; Thomas, B.C.; Williams, K.H.; Wu, D.; Tringe, S.G.; **Singer, S.W.**; Eisen, J.B.; Banfield, J.F. *Nature Communications*, **2013**, *4*, 2120.
31. "Functionalizing Living Bacterial Cell Surfaces with a Phage Protein" Yeh, Y.C.; Mueller, J.; Bi, C. Hillson, N.J.; Beller, H.R.; Chhabra, S.R. **Singer, S.W.** *Chemical Communications*, **2013**, *49*, 910-912.
30. "Community Dynamics of Cellulose-Adapted Thermophilic Bacterial Consortia" Eichorst, S.A.; Varasani, P.; Stalvia, V.; Singh, S.; Simmons, B.A.; **Singer, S.W.** *Environmental Microbiology*, **2013**, *15*, 2573-87
29. "Anoxic carbon flux in photosynthetic microbial mats as revealed by metatranscriptomics" Burow, L.C.; Woebken, D.; Marshall, I.P.G.; Lindquist, E.A.; Bebout, B.M.; Prufert-Bebout, L.; Hoehler, T.M.; Tringe, S.G.; Pett-Ridge, J.; Weber, P.K.; Spormann, A.M.; **Singer, S.W.** *ISME Journal*, **2013**, *7*, 817-829.
28. "Thermophilic Enrichment of Microbial Communities in the Presence of 1-ethyl-3-methylimidazolium acetate" Reddy, A.P.; Simmons, C.W.; Claypool, J.; Jabusch, L.; Burd, H.; Hadi, M.Z.; Simmons, B.A.; **Singer, S.W.**; VanderGheynst, J.S. *J. Appl. Microbiol.*, **2012**, *113*, 1362-70.
27. "Targeted isolation of proteins from natural microbial communities living in an extreme environment" **Singer, S.W.** *Methods Mol Biol.* **2012**, *881*, 63-72.
26. "*Thermoascus aurantiacus* is a promising source of enzymes for deconstruction of lignocellulosic biomass under thermophilic conditions" McClendon, S.D.; Baath, T.; Petzold, C.J.; Adams, P.D.; Simmons, B.A.; **Singer, S.W.** *Biotechnology for Biofuels*, **2012**, *5*, 54
25. "A thermophilic ionic liquid-tolerant cellulase cocktail for the production of cellulosic biofuels" Park J.I.; Steen E.J.; Burd H.; Evans S.S.; Redding-Johnson A.M.; Bath T.; Benke P.I.; D'haeseleer P.; Sun N.; Sale K.L.; Keasling J.D.; Lee T.S.; Petzold C.J.; Mukhopadhyay A.; **Singer S.W.**; Simmons B.A.; Gladden J.M.; *PLOS One*, **2012**, *7*, e37010.
24. "Identification of a Novel Cyanobacterial Lineage as Active Diazotrophs in a Coastal Microbial Mat using NanoSIMS." Woebken, D.; Prufert-Bebout L.; Burow, L.C.; Bebout, B.M.; Hoehler, T.M.; Pett-Ridge, J.; Spormann, A.M.; Weber, P.K.; **Singer S.W.** *ISME Journal*, **2012**, *6*, 1427-39.
23. "Metal affinity enrichment increases the MS proteomics identification of extracellular microbial proteins." Wheeler, K. E.; Erickson, B.K.; Mueller, R.; **Singer, S.W.**; VerBerkmoes, N.C.; Hwang, M.; Thelen, M.P.; Hettich, R.L. *Journal of Proteomics Research*, **2012**, *11*, 861-70.
22. "Substrate Perturbation Alters Glycoside Hydrolase Activities and Community Composition of Thermophilic Bacterial Consortia Adapted to Switchgrass" Gladden, J.M.; Eichorst, S.A.; Hazen, T.C.; Simmons, B.A.; **Singer, S.W.** *Biotechnology and Bioengineering*, **2012**, *109*, 1140-5.
21. "Hydrogen Production in Photosynthetic Microbial Mats in the Elkhorn Slough Estuary, Monterey Bay." Burow, L.C.; Woebken, D.; Bebout, B.M.; McMurdie, P.J.; **Singer S.W.**; Pett-Ridge, J.; Prufert-Bebout L.; Spormann, A.M.; Weber, P.K.; Hoehler, T.M. *ISME Journal*, **2012**, *6*, 863-74.
20. "A Colloid-based Multiplexed Method for Screening Glycoside Hydrolase Activities using Nanostructure-Initiator Mass Spectrometry." Reindl, W.; Deng, K.; Gladden, J.M.; Cheng, G.; Wong, A.; **Singer, S.W.**; Singh, S.; Lee, J.C.; Yao, J.-S.; Hazen, T.C.; Adams, P.D.; Singh, A.K. Simmons, B.A.; Northen, T.R. *Energy and Environmental Science*, **2011**, *4*, 2884-93.
19. "Glycoside Hydrolase Activities of Thermophilic Bacterial Consortia Adapted to Switchgrass." Gladden, J.M.; Allgaier, M.; Miller, C.S.; Hazen, T.C. VanderGheynst, J.S.; Simmons, B.A.; Hugenholtz, P.; **Singer, S.W.** *Applied and Environmental Microbiology*, **2011**, *77*, 5804-12.

18. "High-solids Enrichment of Thermophilic Microbial Communities and their Enzymes on Bioenergy Feedstocks." Reddy, A.P.; Allgaier, M.; **Singer, S.W.**; Hazen, T.C.; Simmons, B.A.; Hugenholtz, P.; VanderGheynst, J.S. *Biotechnology and Bioengineering*, **2011**, 108, 2088-98.
17. "Reconstruction of Full Length Ribosomal Genes from Microbial Community Short Read Sequencing Data." Miller, C.S.; Baker, B.J.; **Singer S.W.**; Banfield, J.F. *Genome Biology*, **2011**, 12:R44.
16. "Enrichment, isolation and characterization of fungi tolerant to 1-ethyl-3-methylimidazolium acetate" Singer, S.W.; Reddy, A.P.; Gladden, J.M.; Guo, H.; Hazen, T.C.; Simmons, B.A.; VanderGheynst, J.S. *Journal of Applied Microbiology*, **2011**, 110, 1023-1030.
15. "Functional Insights from Computational Modeling of Orphan Proteins Expressed in a Natural Microbial Community" Wheeler, K.E.; Zemla, A.; Jiao, Y.; Goltsman, D.S.A.; **Singer S.W.**; Banfield, J.F.; Thelen, M.P. *J. of Proteomics and Bioinformatics*, **2010**, published online 9/22/10.
14. "Chain Mechanism for Exchange of D₂ with a Ruthenium Hydride." Casey, C.P.; Johnson, J.B.; Jiao, X.; Beetner, S.E.; **Singer, S.W.** *Chem. Comm.* **2010**, 46, 7915-7917.
13. "Strategies for Targeted Enzyme Discovery from Lignocellulolytic Microbial Communities using Enrichment and Metagenomics." DeAngelis, K.M.; Gladden, J.M.; Allgaier, M.; D'Haeseleer, P.; Fortney, J.; Reddy, A.; Hugenholtz, P.; **Singer, S.W.**; VanderGheynst, J.S.; Simmons, B.A.; Hazen, T.C. *Bioenergy Research*, **2010**, 3, 146-158.
12. "Post-Translational Modification and Sequence Variation of Redox-Active Proteins Correlate with Biofilm Lifecycle in a Natural Microbial Community." **Singer, S.W.**; Erickson, B.E.; VerBerkmoes, N.C.; Hwang, M.; Shah, M.; Banfield, J.F.; Hettich, R.L.; Thelen, M.P. *The ISME Journal*, **2010**, 4, 1398-1409.
11. "Integrating Computational and Experimental Methods to Identify Signal Peptide Cleavage in the Extracellular Proteins of a Natural Microbial Community." Erickson, B.E.; VerBerkmoes, N.C.; Shah, M.; **Singer S.W.**; Thelen, M.P.; Banfield, J.F.; Hettich, R.L. *J. of Proteome Research*, **2010**, 9, 2148-2159.
10. "Genomics and Comparative Proteogenomics of Chemoautotrophic, Iron-Oxidizing "*Leptospirillum rubrum*" and *Leptospirillum ferrodiazotrophum* Populations in Biofilm Communities." Goltsman, D.S.A.; Denef, V.J.; **Singer, S.W.**; VerBerkmoes, N.C.; Lefsrud, M.; Mueller, R.; Sun, C.; Wheeler, K.W.; Zemla, A.; Baker, B.J.; Hauser, L.; Land, M.; Shah, M.; Thelen, M.P.; Hettich, R.L.; Banfield, J.F. *Applied and Environmental Microbiology*, **2009**, 75, 4599-4615.
9. "Characterization of Cytochrome₅₇₉, an Unusual Cytochrome Isolated from an Iron-Oxidizing Microbial Community." **Singer, S.W.**; Chan, C.S.; Hwang, M.H.; Zemla, A.; VerBerkmoes, N.C.; Hettich, R.L.; Banfield, J.F.; Thelen, M.P. *Applied and Environmental Microbiology*, **2008**, 74, 4454-4462.
8. "Cytochrome₅₇₂ is a Conspicuous Membrane Protein with Iron Oxidation Activity Purified Directly from a Natural Acidophilic Microbial Community." Jeans, C.; **Singer, S.W.**; Chan, C.S.; VerBerkmoes, N.C.; Hettich, R.L.; Banfield, J.F.; Thelen, M.P. *ISME Journal*, **2008**, 2, 540-548.
7. "CO-Dependent H₂ Evolution by *Rhodospirillum rubrum*: Role of CODH:Coof Complex." **Singer, S.W.**; Hirst, M.B.; Ludden, P.W. *Biochimica Et Biophysica Acta,- Bioenergetics*, **2006**, 1757, 1582-1591.
6. "New Insights into the Mechanism of Nickel Insertion into Carbon Monoxide Dehydrogenase: Analysis of *Rhodospirillum rubrum* Carbon Monoxide Dehydrogenase Variants with Substituted Ligands to the [Fe₃S₄] Portion of the Active-site C-cluster. Jeon, W.B.; **Singer S.W.**; Ludden, P.W.; Rubio, L.M. *J. of Biol. Inorg. Chem.*, **2005**, 10, 903-912.

5. "Hydrogen Elimination from a Hydroxycyclopentadienyl Ruthenium(II) Hydride: Study of Hydrogen Activation in a Ligand-Metal Bifunctional Hydrogenation Catalyst. Casey, C.P.; Johnson, J.B.; **Singer, S.W.**; Cui, Q, . *J. Am. Chem. Soc.* **2005**, *127*, 3100-3109.
4. "Purification and Characterization of NafY from *Azotobacter vinelandii*." Rubio, L.M.; **Singer, S.W.**; Ludden, P.W. *J. Biol. Chem.*, **2004**, *279*, 19739-19746.
3. "Protonated Aminocyclopentadienyl Ruthenium Hydride Reduces Benzaldehyde and Can be Regenerated by Reaction with H₂." Casey, C.P.; Vos, T.E.; **Singer, S.W.**; Guzei, I.A. *Organometallics*, **2002**, *21*, 5038-5046.
2. "The Role of Hydroxycyclopentadienyl Ruthenium Formate in Formic Acid Reactions of Carbonyl Compounds with Shvo's Diruthenium Catalyst." Casey, C.P.; **Singer, S.W.**; Powell, D.R. *Can. J. Chem.*, **2001**, *79*, 1002-1011.
1. "Hydrogen Transfer from a Hydroxycyclopentadienyl Ruthenium Hydride to Carbonyls and Imines. Evidence for Concerted Proton and Hydride Transfer." Casey, C.P.; **Singer, S.W.**; Powell, D.R.; Hayashi, R.K.; Kavana, M. *J. Am. Chem. Soc.* **2001**, *123*, 1090-1100.

Book Chapters

1. "Microbial Electro-Catalytic Biofuel Production" Chapter 34, in Advanced Biofuels and Bioproducts, Part 8, Pages 1091-1099, Springer, Humana Press, New York.

Patent Applications

3. "A novel cellulase complex, and glycosidase hydrolases thereof, and methods of using thereof" Application No. 62/257,477
2. EJIB-3264P "Ionic liquid-tolerant cellulase enzymes" Application No. 61/935,288
1. IB-3131 "Hybrid organic-inorganic systems for biotechnological applications" Application No.: 61/557,357

Invited Seminars and Conference Presentations:

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| 07/15/2016 | "A bacterial pioneer leaves a complex legacy" 10th Georgia Glycoscience Symposium/2016 Plant Polysaccharide Workshop, University of Georgia, Athens, GA. |
| 04/25/2016 | "Isolation and characterization of a non-cellulosomal cellulase complex from a thermophilic microbial community" 38 th Symposium on Biotechnology for Fuels and Chemicals, Baltimore, MD. |
| 03/14/2016 | "Engineering <i>Ralstonia eutropha</i> to Produce Fuels and Chemicals from Diverse Biomass-Derived Substrates" American Chemical Society National Meeting, San Diego, CA |
| 01/22/2016 | "A community approach to identifying new cellulases" Department of Chemistry, Santa Clara University, Santa Clara, CA |
| 11/13/2015 | "Harnessing microbial communities to improve the deconstruction of plant biomass" Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA |
| 08/02/2015 | "A community approach to identifying new cellulases" Society for Industrial Microbiology Annual Meeting, Philadelphia, PA. |
| 05/04/2015 | "The Promise and Perils of Automating Metagenomic Binning" Genome Standards Consortium-17, Walnut Creek, CA |
| 04/30/2015 | "Development of a versatile multicomponent glycoside hydrolase mixture from thermophilic bacteria for high temperature biomass saccharification" 37 th Symposium on Biotechnology for Fuels and Chemicals, San Diego, CA |
| 11/04/2013 | "Producing Biofuels from H ₂ /CO ₂ by Metabolic Engineering of <i>Ralstonia eutropha</i> " American Institute of Chemical Engineers Annual Meeting, San Francisco, CA. |
| 07/10/2013 | "Adapting Microbial Communities to Deconstruct Plant Biomass" Applied and Environmental Microbiology Gordon Conference, Mount Holyoke, MA. |

06/06/2013 "Understanding Nitrogen Fixation in a Complex Microbial Community" Biosciences Division, Argonne National Laboratory.

05/14/2013 "The Joint BioEnergy Institute: Converting Biomass to Biofuels" Biomass to Bioproducts Symposium, Netherlands Ministry of Economic Affairs, Utrecht, Netherlands.

05/01/2013 "Development of Synthetic Biology Toolbox for Metabolic Engineering of *Ralstonia eutropha*" 35th Symposium on Biotechnology for Fuels and Chemicals, Portland, OR.

02/27/2013 "Improving Biomass Deconstruction by Learning from Microbial Communities" Genome Sciences Program, Annual Contractor-Grantee Meeting, Bethesda, MD

02/01/2013 "Improving Biomass Deconstruction by Learning from Microbial Communities" Department of Integrative Biology, University of Colorado-Denver

01/10/2013 "Improving Biomass Deconstruction by Learning from Microbial Communities" Department of Microbiology, The Ohio State University

06/27/2012 "Extracellular c-Type Cytochromes from *Geobacter bemidjiensis*" 2012 Goldschmidt Conference, Montreal, Quebec

06/19/2012 "Anoxic Carbon And Nitrogen Metabolism In Photosynthetic Microbial Mats Revealed By Metatranscriptomics And NanoSIMS Studies" 2012 ASM General Meeting, San Francisco, CA

04/30/2012 "Bacterial Community Dynamics and Glycoside Hydrolase Activities during Thermophilic Biomass Deconstruction" 34th Symposium on Biotechnology for Fuels and Chemicals, New Orleans, LA

11/09/2011 "Microbial-Electrocatalytic Biofuel Production" Society of Biological Engineering, Electrofuels Meeting, Providence, RI

09/02/2011 "Thermophilic Bacteria and Fungi for Biomass Deconstruction" Durmishidze Institute for Biochemistry and Biotechnology, Tbilisi, Republic of Georgia.

07/26/2011 "Metagenomic and Proteomic Analysis of Feedstock-Adapted Microbial Communities" Society for Industrial Microbiology Annual Meeting, New Orleans, LA.

11/12/2010 "Targeted Enzyme Discovery from Enriched Microbial Consortia for High Temperature Saccharification of Ionic-Liquid Pre-treated Biomass" American Institute of Chemical Engineers National Conference, Salt Lake City, UT.

08/25/2010 "Targeted Enzyme Discovery in Thermophilic Feedstock-adapted Microbial Communities using Proteogenomic and Biochemical Techniques" 13th International Symposium on Microbial Ecology (ISME-13), Seattle, WA.

08/04/2010 "Understanding Carbon Cycling in Low Diversity Chemoautotrophic Communities" Molecular Basis of Microbial One Carbon Metabolism Gordon Conference, Lewiston, ME August 4, 2010.

06/12/2010 "NanoSIP: Combining Stable Isotope Probing and High Resolution Secondary Ion Mass Spectrometry to Identify Diazotrophs in Stratified Marine Microbial Communities" Goldschmidt Conference, Knoxville, TN.

04/19/2010 "Targeted Enzyme Discovery in Thermophilic Feedstock-Adapted Microbial Communities" Society for Industrial Microbiology Biotechnology for Biofuels and Bioproducts Conference, Clearwater Beach, FL.

07/15/2009 "Ionic-Liquid Tolerant *Aspergilli* Isolated from Lignocellulose-Degrading Environments" Applied and Environmental Microbiology Gordon Conference, South Hadley, MA.

04/28/2009 "*Aspergillus fumigatus* JF1-An Ionic Liquid Tolerant Fungus Isolated from Compost" Society for Industrial Microbiology Biotechnology for Biofuels and Bioproducts Conference, San Francisco, CA.

07/22/2008 "Using Proteogenomics to Understand Autotrophy in an Acidophilic Microbial Community" Molecular Basis of Microbial C1 Metabolism Gordon Conference, Lewiston ME.

03/20/2008 "New Methods to Study Natural Microbial Communities" Purdue University, IA.

03/13/2008 "New Methods to Study Natural Microbial Communities" University of Nebraska-Lincoln.

07/18/2007 "Biochemistry and Ecology of Novel Cytochromes Isolated from Acidophilic Biofilms at Iron Mountain, CA" Applied and Environmental Gordon Conference, Mount Holyoke, MA.

05/24/2007 "Isolation of Novel Cytochromes Involved in Fe(II) Oxidation by an Acidophilic Microbial Community" American Society of Microbiology National Meeting, Toronto, ON.

01/09/2005 "Chemical and Biological Catalysts for Hydrogen Production" North Carolina State University, NC.

12/03/2004 "Hydrogen Utilization and Production in Catalysis" Texas A & M University, TX.
04/01/2004 "Biochemical and Spectroscopic Characterization of *Rhodospirillum rubrum* carbon monoxide dehydrogenase (CODH) bound to its *in vivo* electron acceptor, CooF." American Chemical Society National Meeting, Anaheim, CA, April 1, 2004.
03/28/2003 "Ni Insertion into *Rhodospirillum rubrum* Carbon Monoxide Dehydrogenase". American Chemical Society National Meeting, New Orleans, LA.
08/28/2001 "Formation of a Hydroxycyclopentadienyl Ruthenium Hydride through Formate and Dihydrogen Intermediates." American Chemical Society National Meeting, Chicago, IL.