Ping Hu, Ph.D
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Achievements:

- Broad research experience over wide range of areas in microbiology, biochemistry, microbial physiology, molecular biology and genetics. Employed microarray, sequencing, metabolic engineering, synthetic biology and related molecular techniques to dissect molecular mechanism of biological machinery, design powerful diagnostics tools for biological source tracking, develop new and improved materials and research capacities for biofuel conversion and assess impact of climate changes and ecosystem management to aquatic life.
- Excellent interpersonal and communication skills; successfully completed numerous collaborative projects.
- Strong computer programming and database skills matching biological questions with computational resources
- Outstanding project management skills to lead difficult project to successful conclusion.
- Co-inventor on seven patents; multiple first author papers and scientific presentations

Professional Experience:

Principle Scientific Engineering Associate 2008-present
Staff Research Associate Feb. 2004-2008
Lawrence Berkeley National Laboratory

- Lead project to study the metabolic impact in cyanobacteria and plant using chemical imaging. Constructed cyanobacteria strains to increase fatty acids and/or alkane production. These studies will provide important understanding for increase biofuel production.
- Completed studies using microarray and next generation sequencing to study rain forest fungal community shift, microbial pathway changes in petroleum production field, clinical pathogen source tracking and human microbiome. Lead in custom design of microarray and analyzing sequencing data using bioinformatics and statistical tools.
- Completed over twenty gene syntheses for studies of cell division in *Caulobacter crescentus* and system biology of *Zymomonas motilis*.
- Responsible for setting up and managing tissue cultural and microbiology labs and ensure the operations meet regulatory requirements.
- Successfully applied grants for international collaborations in scientific research and managed project involving multiple partners, including multiple agencies, university and foreign partners.
- Outreach/Education: Mentored students in undergraduate research projects. Developed multimedia materials for outreach and education. Established international bioinformatics training workshop in Georgia Republic.

Computational Biologist
Metabolex, Inc 2000-Dec.2003

- Responsible for developing database/scripts supporting diabetes drug discovery and provided bioinformatics support for patent filing.

Bioinformatics Scientist II
diaDexus, Inc 1998-2000

- Designed and implemented LIMS to provide and to manage access to sequences, R&D experimental data, user annotation, bioinformatic analysis, public annotation and patent information. Provided bioinformatics analysis for cancer diagnostic markers.

Biomedical Scientist. 1997-1998
Lawrence Livermore National Lab

- Analyzed and annotated sequences of three naturally occurring plasmids (10-100kb each) and other chromosomal regions in *Yersinia pestis*. Developed primer sets for DNA-based biotyping. Such tool can be used to identify geographically diverse strains and survey strain evolution.

Postdoctoral Research Associate. 1995-1997
University of California at Berkeley

- Elucidated cellular response to nitrogen starvation and possible metabolite flux control mechanism in Bacillus subtilis.

Postdoctoral Research Associate. 1992-1994
University of Illinois at Urbana-Champaign

- Determined mechanism of the regulation of glutamine-PRPP amidotransferase and degradation of aspartate transcarbamylase in Bacillus subtilis.

Education:

Ph.D, Biochemistry,
Rutgers University September 1992

B. S, Microbiology,
Fudan University, Shanghai, PRC, July 1986

Certificate of Computer Information System, UC Berkeley May 2000

Patents:

Co-inventor of six patents on cancer diagnostic leads 1998 - 2000.
Con-inventor of a patent "Heavy metal biosensor". 2007

Publications:

P. Hu, S. Borglin, N. A. Kamennaya, L. Chen, H. Park, L. Mahoney, A. K. George Shan, K. L. Chavarría, C. Zhang, N. W.T. Quinn, D. Wemmer, H-Y Holman, C. Jansson. 2012. Metabolic phenotyping of the cyanobacterium Synechocystis 6803 engineered for production of alkanes and free fatty acids. Applied Energy. In Press.

A. A. Fodor, T Z. DeSantis, K. M. Wylie, J. H. Badger, Y. Ye, T. Hepburn, **P. Hu**, E. Sodergren, K. Liolios, H. Huot-Creasy, B. W. Birren, A. M. Earl. 2012. The Most Wanted Bacteria from the Human Microbiome. PloSOne **7**(7):e41294.

P. K H Lee, D. Cheng, **P. Hu**, K. A West, G. J Dick, E. L Brodie, G. L Andersen, S. H. Zinder, J. He and L. Alvarez-Cohen. 2011. Comparative genomics of two newly isolated Dehalococcoides strains and an enrichment using a genus microarray. The ISME Journal. **5**:1014–1024.

West, K. A., D. R. Johnson, **P. Hu**, T. DeSantis, E. L. Brodie, P. K. H. Lee, H. Feil, G. L. Andersen, S. H. Zinder and L. Alvarez-Cohen. 2008. Comparative genomics of Dehalococcoides ethenogenes 195 and an enrichment culture containing unsequenced Dehalococcoides strains. Appl. Environ. Microbiol. **74:**3533-3540.

Hillson, N. J., **P. Hu**, G. L. Andersen, and L. Shapiro. (2007). *Caulobacter crescentus* as a Whole-Cell Uranium Biosensor. Appl. Environ. Microbiol. **73:**7615-7621.

Lynch. S. V., L. Dixon, M. R. Benoit, E. L. Brodie, M. Keyhan, **P. Hu**, D. F. Ackerley, G. L. Andersen, and A. Matin. (2007). Role of the rapA Gene in Controlling Antibiotic Resistance of *Escherichia coli* Biofilms. Antimicrobial Agents and Chemotherapy. **51:** 3650-3658.

McGrath, P. T., L. Zhang, H. Lee, A. A. Iniesta, A. K. Hottes, M. H. Tan, N. J. Hillson, **P. Hu**, L. Shapiro, and H. H. McAdams. (2007). High-throughput identification of transcription start sites, conserved promoter motifs, and predicted regulons. Nature Biotechnology. **25:**584-592. LBNL-63029.

DeSantis, T. Z., P. Hugenholtz, N. Larsen, M. Rojas, E. L. Brodie, K. Keller, T. Huber, D. Dalevi, **P. Hu**, and G. L. Andersen. 2006. Greengenes, a Chimera-Checked 16S rRNA Gene Database and Workbench Compatible with ARB. Appl. Environ. Microbiol. **72:**5069-72.

Chain, P. S. G.., **P. Hu**, S. A. Malfatti, L. Radnedge, F. Larimer, L. M. Vergez, P. Worsham, M. C. Chu, and G. L. Andersen. 2006. Complete genome sequence of *Yersinia pestis* strains Antiqua and Nepal516: evidence of gene reduction in an emerging pathogen. J. Bacteriol. **188:**4453-4463.

Hu, P, E. L. Brodie, Y. Suzuki, H. H. McAdams and G. L. Andersen. 2005. Whole Genome Transcriptional Analysis of Heavy Metal Stresses in *Caulobacter crescentus*. J. Bacteriol. **187:**8437-8449.

Motin VL, Georgescu AM, Elliott JM, **Hu P**, Worsham PL, Ott LL, Slezak TR, Sokhansanj BA, Regala WM, Brubaker RR, Garcia E. 2002. Genetic variability of Yersinia pestis isolates as predicted by PCR-based IS100 genotyping and analysis of structural genes encoding glycerol-3-phosphate dehydrogenase (glpD). J Bacteriol. **184:**1019-27.

Youngren B, L. Radnedge, **P. Hu**, E. Garcia and S. Austin. 2000. A plasmid partition system of the P1-P7 par family from the pMT1 virulence plasmid of *Yersinia pestis*. J. Bacteriol. **182:**3924-3928.

Hu, P., J. Elliott, P. McCready, E. Skowronski, J. Garnes, A. Kobayashi, R. R. Brubaker and E. Garcia. 1998. Structural organization of virulence-associated plasmids of *Yersinia pestis.* J. Bacteriol. **180:**5192-202.

Hu, P., T. Leighton, G. Ishkhonova and S. Kustu. 1999. Sensing of Nitrogen Limitation by *Bacillus subtilis*: Comparison to Enteric Bacteria. J. Bacteriol. **181:**5042-5050.

Chen, S. , D. R. Tomchick, D. Wolle, **P. Hu**, J. L. Smith, R. L. Switzer, and H. Zalkin. 1997. Mechanism of the synergistic end-product regulation of Bacillus subtilis glutamine phosphoribosylpyrophosphate amidotransferase by nucleotides. Biochemistry **36:**10718-10726.

Hu, P. and R. L. Switzer. 1995. Evidence for substrate stabilization in the degradation of Bacillus subtilis aspartate transcarbamylase *in vivo*. Archives Biochem. Biophy. **316:**260-266.

Hu, P., T. Chase, Jr. and D. E. Eveleigh. 1993. Cloning of a Microbispora bispora cellobiohydrolase gene in *Streptomyces lividans.* Appl. Microbiol. Biotechnol. **38:**631-637.

Hu, P., S. K. Kahrs, T. Chase, Jr. and D. E. Eveleigh. 1992. Cloning of a Microbispora bispora cellobiohydrolase gene in *Escherichia coli*. J. Indus. Microbiol. 10:103-110.

Ma, J., X. Zhu and **P. Hu**. 1988. Application of a new method in primary screening mutant strain of fortimicin. Journal of Microbiology, Shanghai.

Presentations:

P. Hu, E. Zhgenti, G. Chanturia, D. Tsereteli, M. Kekelidze, E. Zangaladze, R. Stokowski, G.L. Andersen, T. Torok. 2012. Application of a SNP-genotyping High Density Microarray to Study *Yersinia pestis* Isolates from the Caucasus Region. Annual meeting for American Society of Microbiology. San Francisco, CA.

E. A. Dubinsky, **P. Hu**, Y. M. Piceno, F. C. Reid, L. M. Tom, J. Wong, T. C. Hazen and G. L. Andersen. 2012. Microbial Community Composition in a Deep Water Oil Plume and Dissolved Oxygen Anomalies. Ocean Sciences Meeting. Salt Lake City, UT.

P. Hu, H-Y. Holman, K. Chavarria, L. Mahoney, C. Zhang, N. Quinn, C. Jansson. 2011. Single-Cell Metabolic Fingerprinting of the Cyanobacterium Synechocystis PCC6803 Engineered for Production of free Fatty Acids using Synchrotron Infrared Spectromicroscopy and Multivariate Analysis. Annual meeting for American Society of Microbiology. New Orleans, LA.

P. Hu, C. H. Wu, T. DeSantis, P. Jasrotia, H. Woo1, K. Kearcher, S. Meiss, T. Torok, D. L. Taylor, W. Overholt, S. Green, G. L. Andersen**,** J. E. Kostka, T. C. Hazen. 2011. Validation of MycoChip – A Microarray for Fungal Community Studies. Annual meeting for American Society of Microbiology. New Orleans, LA.

Z. Hao, **P. Hu**, D. Long, R. Chakraborty, A. N. Tauscher, H-Y. N. Holman. 2011. Towards real-time and high throughput molecular characterization of microbial deconstruction of biomass. 2011. Genome Sciences Contractor-Grantee Meeting. Arlington, VA.

H-Y. N. Holman, H. A. Bechtel, R.l Gomez-Sjoberg, Z. Hao, L. Chen,**P. Hu**, M. C. Martin, P. S. Nico. 2011. The Berkeley Synchrotron Infrared Structural Biology (BSISB) Program. Genome Sciences Contractor-Grantee Meeting. Arlington, VA.

Holman, H. N., Z. Hao, **P. Hu**, R. Miles, A. Pisano, I. Park, S. Choi**.** 2009. Synchrotron Infrared Spectromicroscopy of Cellulose Degradation Strategies of Living Cellulolytic Bacteria. DOE GTL workshop. Washington, DC.

Hu, P., Romy Chakraborty, Eoin L Brodie, Gary L Andersen, Terry C Hazen. 2008. Reduction of Cr(VI) and survival in Cr-contaminated sites by *Caulobacter crescentus*.
The 2008 AGU Fall Meeting, San Francisco, California.

West, K. A., D. R. Johnson, **P. Hu**, T. Z. DeSantis, E. L. Brodie, H. Feil, G. L. Andersen, S. H. Zinder, L. Alvarez-Cohen. 2007. Comparative Genomics of *Dehalococcoides ethenogenes* 195 and a *Dehalococcoides*-Containing Enrichment Culture Using a Whole-Genome Microarray. American Society for Microbiology Annual Conference. Toronto, Canada

Hu, P, J. Zhu, G. L. Andersen, L. Shapiro, H. H. McAdams, T. Earnest. 2007.High throughput mapping of *Caulobacter crescentus* protein interactions using tandem affinity purification. American Society for Microbiology Annual Conference. Boston, MA

Hillson, N. J., **P. Hu**, G. L. Andersen and L. Shapiro. 2007. A uranium Biosenser. Department of Energy Genomes-To-Life workshop. Washington DC.

Belnap, C. P., I. Ball, **P. Hu**, G. L. Andersen and J. F. Banfield. 2007. Ferroplasma acidarmanus fer1 expression analysis and ecological interactions in co-cultures. American Society for Microbiology Annual Conference. Toronto, Canada

Andersen, G. L., **P. Hu**, E. L. Brodie, Y. Suzuki and H. H. McAdams. 2006. Whole Genome Transcriptional Analysis of Toxic Metal Stresses in *Caulobacter crescentus*. Genomes-To-Life workshop. Washington DC.

Hu,P., D. Ballinger, C. Pethiyagoda, K. Pant, T. Torok and G. L. Andersen. 2006 Genome-wide Single Nucleotide Polymorphism Analysis of *Salmonella enterica.* American Society for Microbiology Annual Conference. Orlando, FL.

D. R. Johnson, J. He, **P. Hu**, G. L. Andersen, S. H. Zinder, L. Alvarez-Cohen. 2006. Whole-Genome Transcription Analysis of *Dehalococcoides ethenogenes* Strain 195 Reveals a Cobalamin (Vitamin B_{12}) Regulon. American Society for Microbiology Annual Conference. Orlando, FL.

D. R. Johnson, J. He, P. K. H. Lee, E. L. Brodie, **P. Hu**, G. L. Andersen, S. H. Zinder, L. Alvarez-Cohen. 2006. Effect of Exposure to Cell-Free Spent Media From Different Reductive Dechlorinating Mixed Cultures on Whole-Genome Transcription in *Dehalococcoides ethenogenes* Strain 195. American Society for Microbiology Annual Conference. Orlando, FL.

K. West, D. R. Johnson, J. He, P. K. H. Lee, T. Z. DeSantis, **P. Hu**, G. L. Andersen, S. H. Zinder, L. Alvarez-Cohen. 2006. Comparative Transcriptomics of *Dehalococcoides ethenognenes* Strain 195 and Dehalococcoides sp. Strain BAV1. American Society for Microbiology Annual Conference. Orlando, FL.

T. Z. DeSantis1, K. D. Hansen, E. L. Brodie, Y. M. Piceno, J. Bullard, **P. Hu**, , G. L. Andersen. 2006.Hybridization efficiency analysis of probes targeting 16S rRNA genes using the Affymetrix Genechip format. American Society for Microbiology Annual Conference. Orlando, FL.

T. Z. DeSantis1, P. Hugenholtz, N. Larsen, M. Rojas, E. L. Brodie, K. Keller, T. Huber, D. Dalevi, **P. Hu**, Y. M. Piceno, R. Phan, G. L. Andersen. 2006. Greengenes, The ARB-compatible Chimera-checked 16S rRNA Gene Database, Introduces New Online Tools Including NAST, A Flexible Massive Multiple Sequence Alignment Tool. American Society for Microbiology Annual Conference. Orlando, FL.

Hu, P, E. L. Brodie, Y. Suzuki, H. H. McAdams and G. L. Andersen. 2005. Whole Genome Transcriptional Analysis of Heavy Metal Stresses in *Caulobacter crescentus*. American Society for Microbiology Annual Conference. Atlanta, GA.

Andersen , G. L., **P. Hu**, E. L.. Brodie and H. H. McAdams. 2005. Whole Genome Transcriptional Analysis of Toxic Metal Stresses in *Caulobacter crescentus.* Genomes-To-Life workshop. Washington DC.

Andersen , G. L., **P. Hu** and H. H. McAdams. 2004. Whole Genome Transcriptional Analysis of Toxic Metal Stresses in *Caulobacter crescentus.* Genomes-To-Life workshop. Washington DC.

Salceda, S., C. Drumright, A. DiEgidio, B. Liang, **P. Hu**, Y. Sun, V. V. Hoang, A. Munteanu, H. Recipon, R. Cafferkey and R. A. Macina . 2001. Identification of differentially expressed genes in breast cancer. AACR and Nature Genetics meeting: Oncogenomics.

Ali, S., S. Salceda, H. Recipon, Y. Sun, **P. Hu**, C. Drumright, V.V. Hoang, A. Nguyen, N, Dada, M. Iyer, D. Cooper and R. Cafferkey. In Search of New Prostate Cancer Diagnostic Markers. 2000. UCSF Prostate Cancer Center Retreat. San Francisco, CA.

Motin, V. L., A. Georgescu, J. Elliott, **P. Hu**, P.L. Worsham, A. M. Friedlander, R.R. Brubaker and E. Garcia. 2000. PCR-IS100-based fingerprinting of a large collection of Yersinia pestis Strains unraveled a putative ancestor isolate to the one that caused the third plague pandemic. Amer. Soc. for Microbiol. Annual Meeting, Los Angeles, CA

Hu, P., J. Elliott, J. Garnes, A. Kobayashi, P. McCready, E. Skowronski, A. Adamson and E. Garcia. 1998. Sequence and analysis of three plasmids encoding virulence determinants in Yersinia pestis Microbial Genome II, Hiltonhead, SC.

Hu, P., J. Elliott, J. Garnes, A. Kobayashi, P. McCready, E. Skowronski, A. Adamson and E. Garcia. 1998. Sequencing and analysis of the three virulence factor-encoding plasmids in Yersinia pestis. Annual meeting of American Society for microbiology, Atlanta, GA.

Hu, P., T. Ikeda, A. Shauger and S. Kustu. 1995. Sensing of nitrogen limitation by Bacillus subtilis. The 8th International Conference on Bacilli. Standford, CA.

Hu, P and D. E. Eveleigh. 1992. Cloning and Characterization of a cellobiohydrolase from Microbispora bispora in E. coli and Streptomyces lividans. Amer. Soc. for Microbiol. Annual Meeting, New Orleans, LA.

Hu, P. and D. E. Eveleigh. 1991. Characterization of a cellobiohydrolase gene from Microbispora bispora. Theobold Smith Society, Annual Meeting, North Brunswick, NJ.

Goyal, A. K., **P. Hu**, R. M. Wright, K. O. Elliston and D. E. Eveleigh. 1991. The cellobiohydrolase and beta-glucosidases of Microbispora biospora. Biotechnology Meeting, New York, NY.

Hu, P., M. Frosco, T. Chase, Jr. and D. E. Eveleigh. 1990. Cloning and characterization of a cellobiohydrlase from Microbispora bispora. Amer. Soc. for Microbiol. Annual Meeting, Anaheim, CA.

Wright, R. M., M. D. Yablonsky, **P. Hu**, Z. Shalita and D. E. Eveleigh. 1989. Cloning and characterization of a beta-glucosidase from *Microbispora bispora* in *Escherichia coli.* Amer. Soc. for Microbiol. Annual Meeting, New Orleans, LA.

Elliston, K. O., M. D. Yablonsky, R. Wright, **P. Hu**, A. Goyal, M. Szakacs-Dobozi and D. E. Eveleigh. 1990. Cellulase-Insights through recombinant DNA approaches. Amer. Chem. Soc. 199th Meeting, Boston, MA