

Jana Müller

Calysta Energy™ | 1140 O'Brien Drive | Menlo Park, CA 94025 | Email: janamueller8@gmail.com

Profile

Highly motivated and result-driven Microbial Physiologist with expertise in synthetic biology and a strong focus on metabolic engineering of microorganisms for industrial applications. Adept in creative experimental design and execution. Works efficiently in a team and independently. Able to work under tight deadlines.

Research Experience

- Calysta Energy™, Menlo Park, CA 08/2013-present
Natural Gas to Liquid Fuels and Chemicals. Scientist Strain Engineering.
- Lawrence Berkeley National Laboratory, Berkeley, CA 11/2010-07/2013
Joint BioEnergy Institute (JBEI), Emeryville, CA
Metabolic Engineering of *Ralstonia eutropha* H16. As part of the ARPA-E Electrofuels program my postdoctoral work focuses on metabolically engineering the chemolitho-autotrophic β -proteobacterium *R. eutropha* to produce fatty-acid based hydrocarbons and methyl ketones from H₂ and CO₂ using advanced synthetic biology tools. During my project I have also developed new molecular biology tools for protein expression in this non-model microorganism and evaluated strain performance for high titer production of methyl ketone biofuels by GC-MS. This project is executed in collaboration with Logos Technologies, Virginia.
- Stanford University, Stanford, CA 6/2004-9/2010
Physiology of *Shewanella oneidensis* and *Vibrio cholerae* Biofilms.
My graduate work focused on elucidating physiological and genetic factors involved in the control of formation and detachment of *S. oneidensis* and *V. cholerae* biofilms. I applied physiological, genetic and biochemical techniques in these studies combined with Confocal Laserscan Microscopy (CLSM).
- BASF AG, Ludwigshafen, Germany 3/2003-12/2003
Research intern in the laboratory of Dr. Hartwig Schröder. My internship focused on engineering *Corynebacterium glutamicum* for amino acid production. I also optimized culture conditions for production of amino acids.
- Universite de Paris XI- Paris-sud, Orsay, France 6/2000-8/2000
Research intern in the laboratory of Dr. Mark A. Blight. Biochemistry of *Photothabdus luminescence*, a candidate in insecticides research. During my internship I optimized a method for isolating the periplasmic fraction of *P. luminescence* which was crucial for successful isolation of a protease.

Education

- Stanford University, Stanford, CA 2004 – 2010
Ph.D., Environmental Engineering
Thesis: Regulation of Biofilm Formation in two Gamma-Proteobacteria: Shewanella oneidensis MR-1 and Vibrio cholerae A1552.
Professor Alfred M. Spormann, Advisor.
- Universite de Paris XI – Paris- Sud, Orsay, France 1999 – 2000
Exchange Student of the European Union (ERASMUS).

Philipps-University Marburg, Marburg, Germany

1997 – 2003

Diplom in Biology (M. Sc. in Biology), Microbiology, Genetics, Virology
Thesis: Knock out analysis of the albA gene in Methanococcus voltae
Professor Albrecht Klein, Advisor.

Technical Skills

Molecular biological techniques

Strain manipulation of model and non-model organisms including:

Homologous recombination
Construction and complementation of in-frame deletion mutants
Construct design (traditional as well as SLIC and CPEC based cloning methods) and implementation
Directed (Tn7) and random (Tn5) mutagenesis
Transformation via conjugation
Transformation via electroporation

Molecular biology fundamentals (nucleic acid gels, PCR, primer design, cloning/subcloning, sequencing, etc.)
Reporter design (*gfp* and *lacZ* fusions) and construction for microscopy and FACS
Southern blot
Primer Extension
Microarray expression profiling
Quantitative RT-PCR

Microbiology

Cultivation of strict anaerobic and autotrophic microorganisms
Biofilm growth and characterization in flow chamber systems
Biofilm growth and characterization in 96-well plates
Phenotypic arrays (BIOLOG)
Media design

Analytcs

GC/MS analysis
Flow cytometry
Colorimetric assays (Pyruvate, LacZ)
Western blot

Biochemistry

Purification of tagged proteins
Native and SDS-PAGE electrophoresis
Extraction and analysis of aliphatic hydrocarbons
Extraction and analysis of polyhydroxybutyrate (PHB)
Fatty acid methyl ester (FAME) analysis
Electrophoretic mobility shift assay (EMSA)
Lipopolysaccharides (LPS) extraction and detection

Cell Biology of Prokaryotes

Confocal Laser Scanning Microscopy and Matlab-based image analysis program (COMSTAT)
Flow cytometry

Computer

Expert use of common desktop platforms (MacOS, Windows) and productivity packages (VectorNTI, MS Office, LaTeX, Adobe Photoshop)

Hazardous Materials Handling

Pathogens (BSL-2)
Radiation (³²P)

Publications/ Patents

Hybrid organic-inorganic system for producing biofuels. Filed on 08-Nov-2011.

U.S. patent application serial no. **61/557,357**

Jana Müller, Yi-Chun Yeh, Harry R. Beller, Steven W. Singer, and Swapnil Chhabra

Changhao Bi, Peter Su, Jana Müller, Yi-Chun Yeh, Swapnil R. Chhabra, Harry R. Beller, Steven W. Singer and Nathan J. Hillson. **Development of a broad-host synthetic biology toolbox for *Ralstonia eutropha* and its application to engineering hydrocarbon biofuel production.** Microb. Cell. Fact., 2013. 12:107

Jana Müller, Daniel MacEachran, Helcio Burd, Noppadon Sathitsuksanoh, Changhao Bi, Yi-Chun Yeh, Taek Soon Lee, Nathan J. Hillson, Swapnil R. Chhabra, Steven W. Singer, and Harry R. Beller. **Engineering of *Ralstonia eutropha* H16 for Autotrophic and Heterotrophic Production of Methyl Ketones.** Appl. Environ. Microbiol., 2013. 79(14).

Jana Müller, Soni Shukla, Kathinka A. Jost, and Alfred M. Spormann. **The *mxl* operon in *Shewanella oneidensis* MR-1 is induced in response to starvation and is regulated by ArcS/ArcA and BarA/UvrY.** BMC Microbiol., 2013. 13:119.

Yi-Chun Yeh, Jana Müller, Changhao Bi, Nathan J. Hillson, Harry R. Beller, Swapnil R. Chhabra, and Steven W. Singer. **Functionalizing Bacterial Cell Surfaces with a Phage Protein.** Chem Commun (Camb)., 2013. 49 (9):p. 910-12.

Jana Müller, Michael C. Miller, Alex T. Nielsen, Gary K. Schoolnik and Alfred M. Spormann. **VpsA- and luxO-independent biofilms of *Vibrio cholerae*.** FEMS Microbiol Lett., 2007. 275(2):p. 199-206.

Isabell Heinike, Jana Müller, Markus Pittelkow and Albrecht Klein. **Mutational analysis of genes encoding chromatin proteins in the archaeon *Methanococcus voltae* indicates their involvement in the regulation of gene expression.** Mol Genet Genomics, 2004. 272(1):p. 76-87.