Paul Jaschke

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Summary

Biological engineer with diverse research experience ranging from chlorophyll biosynthesis to building synthetic virus genomes. Proven track record in scientific publications, mentoring and leadership. Secured over $154,000 in awards over the duration of my career.

Education

Ph.D. in Microbiology 2010
University of British Columbia, Vancouver, Canada
Advisor: JT Beatty
Dissertation: Discovery and characterization of a new zinc chlorophyll biosynthetic pathway and photosystem in a magnesium-chelatase mutant

B.Sc. First-Class Honors Biochemistry 2003
University of Alberta, Edmonton, Canada
Research Advisor: Marek Michalak
Thesis: The role of calreticulin in cardiomyocyte differentiation

Research Experience

Endy Laboratory, Bioengineering Department 2010-present
Stanford University, USA
Postdoctoral Researcher
• Developed method to assemble synthetic virus genomes inside yeast cells
• Designed, built, and tested fully decompressed virus genome

Beatty Laboratory, Microbiology & Immunology Department 2004-2010
University of British Columbia, Canada
Ph.D. Student
• Discovered a novel chlorophyll biosynthesis pathway
• Purified and studied spectral characteristics of novel zinc chlorophyll photosynthesis protein complexes

Garson Laboratory, Chemistry Department 2004
University of Queensland, Brisbane, Australia
Research Technician
• Studied chemical biology of sea sponges for novel therapeutic discovery

Michalak Laboratory, Biochemistry Department 2003
University of Alberta, Canada
Summer Student Research Assistant
• Determination of the effects of calreticulin deficiency on cardiomyocyte development

Casey Laboratory, Biochemistry Department 2002
University of Alberta, Canada
Summer Student Research Assistant
• Investigation of the structure and function of human NBC3 sodium-bicarbonate co-transporter membrane protein
• Resulted in co-authorship in a peer-reviewed publication

Refereed Publications

Jaschke PR, Lieberman EK, Rodriguez J, Sierra A, Endy D. (2012). A fully decompressed synthetic bacteriophage øX174 genome assembled and archived in yeast. *Virology*, in press. doi: 10.1016/j.virol.2012.09.020

Neupane B, Jaschke P, Saer R, Beatty JT, Reppert M, Jankowiak R. (2012). Electron transfer in *Rhodobacter sphaeroides* reaction centers containing Zn-bacteriochlorophylls: a hole-burning study. *J Phys Chem* B. 116(10):3457-66.

Jaschke PR, Hardjasa A, Digby EL, Hunter CN, Beatty JT. (2011). A *bchD* (Mg-chelatase) mutant of *Rhodobacter sphaeroides* synthesizes zinc bacteriochlorophyll through a novel zinc-containing pathway. *J Biol Chem*. 286(23):20313-22.

Lin S, Jaschke PR, Wang H, Paddock M, Tufts A, Allen JP, Rosell FI, Mauk GA, Woodbury NW, Beatty JT. (2009). Electron transfer in the *Rhodobacter sphaeroides* reaction center assembled with zinc bacteriochlorophyll. *Proc Natl Acad Sci USA*. 106(21): 8537-42. **Research featured on Sciencedaily.com**

Jaschke PR, Drake I, Beatty JT. (2009). Modification of a French pressure cell to improve microbial cell disruption. *Photosynth Res*. 102(1): 95-7.

Jaschke PR, LeBlanc HN, Lang AS, Beatty JT. (2008). The PucC protein of *Rhodobacter capsulatus* mitigates an inhibitory effect of light-harvesting 2 alpha and beta proteins on light-harvesting complex 1. *Photosynth Res*. 95(2-3): 279-84.

Jaschke PR, Beatty JT. (2007). The photosystem of *Rhodobacter sphaeroides* assembles with zinc bacteriochlorophyll in a *bchD* (magnesium chelatase) mutant. *Biochemistry*. 46(43): 12491-500.

Loiselle FB, Jaschke P, Casey JR. (2003). Structural and functional characterization of the human NBC3 sodium/bicarbonate co-transporter carboxyl-terminal cytoplasmic domain. *Mol Membr Biol*. 20(4): 307-17.

Book Chapters

Jaschke PR, Saer RG, Noll S, Beatty JT. (2011). Modification of the genome of *Rhodobacter sphaeroides* and construction of synthetic operons. *Meth Enzymol*. Ch 23. 497:519-38.

Honors and Awards

SB5.0 International Conference Travel Award ($250)	2011
Natural Sciences & Engineering Research Council Postdoctoral Fellowsip ($80,000)	2010
Recognized at the UBC Student Leader Reception	2010
Sigma-Aldrich Award for Best Presentation at Life Sciences Institute Conference ($100)	2009
The Pacific Century Graduate Scholarship ($10,000)	2008
University of BC Graduate Fellowship ($7,000)	2008
Beverley Green Award for Best Presentation at Western Photosynthesis Conference ($500)	2008
John Richard Turner Fellowship in Microbiology ($9,000)	2007
University of BC Graduate Fellowship ($16,000)	2006
Natural Sciences & Engineering Research Council Postgraduate Scholarship ($19,100)	2005
Canadian Institutes of Health Research Presentation Award ($100)	2003
Alberta Heritage Foundation for Medical Research Summer Studentship ($5,300)	2002/03
Jason Lang Scholarship ($2,000)	2000/02
Peace River High School Valedictorian	1998

Mentoring Experience

San Mateo Biotechnology Career Pathway Internship Program Mentor 2011-2012
Stanford University, USA

Bioengineering Research Experience for Undergraduate (REU) Program 2012
Undergraduate Research Project Supervisor
Stanford University, USA

BioE 44: Synthetic Biology Lab 2011
Undergraduate Research Project Supervisor
Stanford University, USA

MICB 448: Directed Research 2009-2010
Undergraduate Research Project Supervisor
University of British Columbia, Canada

UBC iGEM Team 2009
Advisor and Research Supervisor
University of British Columbia, Canada

UBC Graduate School Information Events 2010
Incoming Student Mentor
University of British Columbia, Canada

MICB 448: Directed Research 2007
Undergraduate Research Project Supervisor 2009-2010
University of British Columbia, Canada

Teaching Experience

Bacteriophage capture and release from yeast 2012
BioCurious, community biolab, Sunnyvale, CA
Course Designer and Instructor
• Introductory synthetic biology and bacteriophage class for non-scientists
• Developed and taught class where students assembled a bacteriophage genome inside yeast, then purified and re-infected the original *E. coli* host, thus showing the genome was still functional after its journey through yeast.

GFP expression in *E. coli*: Make cells glow! 2011-2012
BioCurious, community biolab, Sunnyvale, CA
Instructor
• Introductory molecular biology class for non-scientists
• Taught students about bacterial transformation, central dogma of molecular biology, fluorescent proteins, antibiotic resistance as a selection tool, and practical and ethical concerns when using recombinant DNA technology.

MICB405 Bioinformatics 2005-2008
University of British Columbia, Canada
Teaching Assistant
• Created and modified existing lessons
• Taught and organized recitation sections using bioinformatic tools in topics such as: BLAST, genome browsers, multiple sequence alignments, phylogenetic trees, and protein structure prediction and exploration.

Professional Activities

Reviewer for *PLoS ONE* and *Journal of Proteome Research*
American Association for the Advancement of Science (AAAS) member
Project Management Workshop
Grant Writing for Funding and Research Development Workshop
Elected graduate student representative to Microbiology Department faculty meetings
Elected Biochemistry Student Association executive member

Presentations

Jaschke PR. (2012). Design and construction of a fully decompressed bacteriophage øX174 genome. *University of British Columbia Microbiology and Immunology Seminar Series*. Vancouver, BC, Canada (Invited Speaker)

Jaschke PR. (2012). Design and construction of bacteriophage genomes in yeast. *DuPont Genencor Science*. Palo Alto, CA (Invited Speaker)

Jaschke PR, Rodriguez J, Sierra A, Endy D. (2011). Redesign and construction of bacteriophage genomes in yeast. *Synthetic Biology Engineering Research Center Retreat*. University of California, Berkeley, Berkeley, CA (Poster)

Jaschke PR, Rodriguez J, Sierra A, Endy D. (2011). Finishing the genetics of the small phage øX174. *Stanford University Bioengineering Department Retreat*. Santa Cruz, CA (Poster)

Jaschke PR and Endy D. (2011). Construction and characterization of redesigned phage genomes. *Synthetic Biology Engineering Research Center Retreat*. Emmeryville, CA. (Poster)

Jaschke PR. (2009). Out of the Blue: a new beginning to the chlorophyll synthesis pathway discovered in a Mg-chelatase mutant. *Interview Seminar*. Stanford University, Stanford, CA (Oral Presentation)

Jaschke PR. (2009). Out of the Blue: characterizing a *bchD* (Mg-chelatase) mutant producing Zn-bacteriochlorophyll. *9th International Conference on Tetrapyrrole Photoreceptors of Photosynthetic Organisms*. Asilomar Conference Grounds, Pacific Grove, CA (Oral Presentation)

Jaschke PR. (2009). Out of the Blue: the discovery of a new chlorophyll in the purple non-sulfur bacterium *Rhodobacter sphaeroides. University of British Columbia Microbiology and Immunology Seminar Series*. Vancouver, BC, Canada (Invited Speaker)

Jaschke PR. (2009). Investigation of the structure and function of a zinc bacteriochlorophyll photosystem in *Rhodobacter sphaeroides. 3rd Life Sciences Institute-Graduate Student Association Conference*. University of British Columbia, Vancouver, BC, Canada (Oral Presentation)

• Won Sigma-Aldrich award ($100) for best presentation of conference

Lin S, Jaschke PR, Wang H, Paddock M, Tufts A, Allen JP, Rosell FI, Mauk AG, Woodbury NW, Beatty JT. (2009). Kinetics and energetics of electron transfer reactions in a photosynthetic bacterial reaction center assembled with zinc bacteriochlorophylls. *53rd Biophysical Society Meeting*. Boston, MA (Poster)

Jaschke PR. (2008). Investigation of the structure and function of a zinc bacteriochlorophyll photosystem in *Rhodobacter sphaeroides. 17th Western Photosynthesis Conference*. Asilomar Conference Grounds, Pacific Grove, CA (Oral Presentation)

• Won Beverley Green award ($300) for outstanding work in photosynthesis research

Jaschke PR, LeBlanc HN, Beatty JT. (2007). Assembly of purple bacterial photosynthetic complexes. *14th International Congress of Photosynthesis*. Glasgow, Scotland (Poster)

Jaschke PR, and Beatty JT (2007). Discovery of a novel form of chlorophyll in *Rhodobacter sphaeroides. American Society for Microbiology-Northwest Branch*. Seattle, WA (Poster)

Jaschke PR. (2003). The role of calreticulin in cardiomyocyte differentiation. *Canadian Institutes of Health Research and Alberta Heritage Foundation for Medical Research Summer Student Symposium*. University of Alberta, Edmonton, Canada (Oral Presentation)

• Won award for outstanding presentation ($100)

Jaschke PR. (2002). Structural and functional characterization of the human NBC3 sodium/bicarbonate co-transporter carboxyl-terminal cytoplasmic domain. *Canadian Institutes of Health Research and Alberta Heritage Foundation for Medical Research Summer Student Symposium*. University of Alberta, Edmonton, Canada (Oral Presentation)

References

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