

## Carrie A. Eckert

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### Education

- University of Colorado Health Sciences Center, Aurora, CO (8/01-8/06), Ph.D. Molecular Biology
- University of South Dakota, Vermillion, SD (9/95-5/99), B.S. Biology, Magna Cum Laude

### Academic and Professional Memberships, Activities, and Awards

- Society for Industrial Microbiology and Biotechnology (SIMB) Annual meeting Session Chair, Synthetic Biology Tools and Applications (2017)
- American Chemical Society (ACS) Biochemical Technology Division Meeting Area Coordinator, Bio-products (2017)
- American Chemical Society (ACS) Biochemical Technology Division Meeting Session Chair, Synthetic Biology for Biofuels (2016)
- Mentor, Women in Science and Engineering (WiSE) (2015-present)
- Thesis committee member for Anna Cortes (University of Colorado, Boulder Doctoral candidate, Ryan Gill, PI) (2015-present)
- Editor, Elsevier book, *Biotechnologies for Biofuel Production and Optimization* (publication date January 2016)
- Participant on NSF Biofuel review panel, Biofuels (2015)
- NREL President's Award (2015)
- American Chemical Society (ACS) Biochemical Technology Division Meeting Area Coordinator, Biofuels (2015)
- American Chemical Society (ACS) Biochemical Technology Division Meeting Area Coordinator, Biofuels (2014)
- C2B2 REU Career Panel Participant (2013)
- NREL Outstanding Mentor Award (2013)
- Member of the Society for Industrial Microbiology (2013-present)
- Thesis Committee Member for Joshua Stepanek (University of Colorado, Boulder Doctoral candidate) (2012-2016)
- American Chemical Society Presidential Climate Science Challenge Grant Proposal Lead Author (to fund a minisymposium on Climate Science and Biotechnology) (2013)
- American Chemical Society (ACS) Biochemical Technology Division Meeting Area Coordinator (2013)
- Member of the American Chemical Society (2012-present)
- Reviewer for Biotechnology and Bioengineering Journal (5 years)
- Reviewer for the Journal of Biological Chemistry (5 years)
- Reviewer for Metabolic Engineering Journal (1 year)
- Member of the American Society of Biochemistry and Molecular Biology (2012-present)
- RASEI Search Committee Panel Member (2013-present)
- NREL President's Award (2011)
- Member of the American Society for Microbiology (2010-present)
- NREL Staff Council (10/08-10/11)

### Professional Experience/Funding Record

*Renewable and Sustainable Energy Institute (RASEI), University of Colorado, Boulder, CO (04/16-present), Director, Biodesign Works Center*

- A Platform for Combinatorial Genome Engineering, Submitted
  - Co-PI, NSF PD 16-1491, PI: Ryan Gill (CU, Boulder)
- Center for BioEnergy Innovation, Submitted
  - Co-PI and Rapid Genetics Team lead, DOE BER Center proposal, PI: Gerald Tuskan (ORNL)

*National Renewable Energy Laboratory, Golden, CO (3/11-present), Scientist IV, Photobiology group*

- Biological conversion of Syngas to Terpenes in *Chloroflexus aurantiacus*, 10/15-9/17
  - Co-PI, BETO Incubator grant PI: Kiverdi, Inc., Berkeley, CA

- Probing an O<sub>2</sub>-tolerant hydrogenase, 9/13-3/16
  - o Team member, DOE Office of Fuel Cell technologies, PI: Pin-Ching Maness
- Genome scale design of biofuel production strains in *E. coli*, 9/12-9/17
  - o NREL Co-PI, DOE Office of Science Biological and Environmental Research (BER) program grant, PI: Ryan Gill (University of Colorado, Boulder)
- Improvement of H<sub>2</sub> and CO<sub>2</sub> uptake in *Ralstonia eutropha* for autotrophic production of fatty acids, 10/10-10/13
  - o Team member, ARPA-E Electrofuels grant PI: OPX Biotechnologies, Boulder, CO

National Renewable Energy Laboratory, Golden, CO (3/08-3/11), Postdoctoral fellow, P.I. PinChing Maness and Jianping Yu, Photobiology group

- Genetic manipulation and phenotypic analysis of the bidirectional hydrogenase in the cyanobacteria *Synechocystis* sp. PCC 6803
  - o Laboratory Directed Research and Development (LDRD) grant, PI: Pin-Ching Maness, Jianping Yu HHMI/UCDHSC, Aurora, CO (10/06-3/08), Postdoctoral fellow, P.I. James Maller, Department of Pharmacology

UCDHSC, Aurora, CO (8/01-10/06), Graduate student, Molecular Biology program, Paul Megee, Mentor

- Meiotic regulation in *Xenopus laevis* oocytes
  - o UCDHSC Molecular Biology program's NIH Training Grant (2003-05)

University of South Dakota, Vermillion, SD (8/98-8/99), Laboratory assistant, P.I. Zoran Ristic

- Heat Shock proteins in *Zea mays*
  - o HHMI undergraduate training grant

### **Publications/Oral Presentations**

1. Eckert C.A., K. Warousek, S. Noble, J. Yu, and P.C. Maness. Genetic analysis of CO and H<sub>2</sub> metabolism in *Rubrivivax gelatinosus* CBS. In preparation.
2. Wang B., J. Yu, C.A. Eckert. Analysis of natural and synthetic promoters for the expression of single genes and operons in *Synechocystis* sp. PCC6803. In preparation.
3. Sullivan R., C.A. Eckert, J. Yu, and P.C. Maness. Genetic dissection and analysis of CO<sub>2</sub> uptake in *Ralstonia eutropha*. In preparation.
4. S. Smolinski, P.C. Maness, S. Davis-Lopez, J. Reed, G. Rudenko, and C.A. Eckert. 2016. Oral Presentation. Development and analysis of novel microbial platforms for Syngas to biofuels and high value chemicals. Annual SIMB Meeting and Exposition.
5. Eckert C.A. 2016. Oral Presentation. Analysis of a novel CO-linked, O<sub>2</sub>-tolerant hydrogenase from *Rubrivivax gelatinosus* CBS and it's engineering in *Synechocystis* sp. PCC6803. 25<sup>th</sup> Western Photosynthesis Conference.
6. Lynch S., C.A. Eckert, J. Yu, R.T. Gill, and P.C. Maness. 2016. Overcoming substrate limitations for improved production of ethylene in *E. coli*. *Biotechnology for Biofuels*. 9:3.
7. K. Wawrousek, J. Korlack, S. Noble, J. Chin, C. Eckert, J. Yu, and P.C. Maness. 2014. Annotation of the genome of the purple non-sulfur photosynthetic bacteria *Rubrivivax gelatinosus* CBS reveals insight into its CO and H<sub>2</sub> metabolism. *PLOS One* 9(12):e114551.
8. Burroughs N.J., M. Boehm, C. Eckert, E.M. Spence, J. Yu, P.J. Nixon, J. Appel, C.W. Mullineaux, and S.J. Bryan. 2014. Solar powered biohydrogen production requires specific localization of the hydrogenase. *Energy and Environmental Science*. 7: 3791-3800.
9. Noble S., K. Wawrousek, C.A. Eckert, J. Yu, and P.C. Maness. 2014. ACS 247<sup>th</sup> National Meeting, Oral Presentation (BIOT Division, Biofuels and Sustainable Energy): Genetic engineering in *Synechocystis* sp. PCC 6803 for solar hydrogen production.
10. Eckert C.A., W. Xu, W. Xiong, S. Lynch, J. Ungerer, L. Tao, R.T. Gill, P.C. Maness, and J. Yu. 2014. Ethylene forming enzyme and bio-ethylene production. *Biotechnology for Biofuels*. 7(1):33
11. Ghirardi M.L., P.W. King, D.W. Mulder, C. Eckert, A. Dubini, P.C. Maness and J. Yu. 2014. Hydrogen production by water biophotolysis, in Zannoni D. and DePhillips R. (Eds.) Microbial BioEnergy, Springer Netherlands.
12. Lynch S., C.A. Eckert, J. Yu, P.C. Maness, and R.T. Gill. 2013 Society of Industrial Microbiology Annual Meeting, Oral Presentation: A strategy for genome design, redesign, and optimization of ethylene production in *E. coli*.
13. Eckert C.A., R. Sullivan, C. Johnson, J. Yu, and P.C. Maness. 2013. ACS 245<sup>th</sup> National Meeting, Oral Presentation (BIOT Division, Biofuels and Sustainable Energy): Targeted enhancement of H<sub>2</sub> and CO<sub>2</sub> uptake for autotrophic production of biodiesel in the lithoautotrophic bacterium *Ralstonia eutropha*.

14. Eckert, C.A., Colorado Center for Biorefining and Biofuels (C2B2) 2013 Semi-annual Meeting Oral Presentation: Metabolic engineering for optimizing biofuel production in diverse microorganisms.
15. Eckert C., M. Boehm, D. Carrieri, J. Yu, A. Dubini, P. Nixon, and P.C. Maness. 2012. Genetic Analysis of the Hox Hydrogenase in the Cyanobacterium *Synechocystis* sp. PCC 6803 Reveals Subunit Roles in Association, Assembly, Maturation, and Function. *Journal of Biological Chemistry*, 287(52):43502-15.
16. Eckert, C.A. Dubini, J. Yu, P. King, M. Ghirardi, M. Seibert, and P.C. Maness. 2012. Hydrogenase Genes and Enzymes Involved in Solar Hydrogen Production In Levin, D. and N. Azbar (Eds.), State of the Art and Progress in Production of Biohydrogen, Bentham Science Publishers, p. 8-24 (17)
17. Carrieri D., K. Wawrousek, C.A. Eckert, J. Yu, and P.C. Maness. 2011. The role of the bidirectional hydrogenase in cyanobacteria. *Bioresour Technol.*, 2011. 102(18): p. 8368-77.
18. Eckert C.A., J. Yu, and P.C. Maness. 2011. 19<sup>th</sup> Western Photosynthesis Conference, Oral presentation: Molecular analysis of the bidirectional Hox hydrogenase in the unicellular cyanobacterium, *Synechocystis* sp. PCC 6803.
19. Eckert C.A., J. Yu, and P.C. Maness. 2010. 10<sup>th</sup> Cyanobacterial Molecular Biology Workshop, Oral presentation: Analysis of the bidirectional Hox hydrogenase in the unicellular cyanobacterium, *Synechocystis* sp. PCC 6803.
20. English C.M., C. Eckert, K. Brown, M. Seibert, & P.W. King. 2009. Recombinant and in vitro expression systems for hydrogenases: new frontiers in basic and applied studies for biological and synthetic H<sub>2</sub> production. *Dalton Trans.* (45):9970-8.
21. Maness P.C., J. Yu, C. Eckert, and M.L. Ghirardi. 2009. Photobiological Hydrogen Production – Processes and Challenges. *Microbe*. 4(6): 275-80.
22. Eckert C.A., J. Yu, and P.C. Maness. 2009. 18<sup>th</sup> Western Photosynthesis Conference, Oral presentation: Photobiological H<sub>2</sub> production in the cyanobacteria *Synechocystis* sp. PCC 6803.
23. Eckert C.A., D. Gravadahl, & P.C. Megee. 2007. The enhancement of pericentric cohesin association by conserved kinetochore components promotes high fidelity chromosome segregation and is sensitive to microtubule-based tension. *Genes Dev.* 21(3): 278-91.
24. Eckert C.A. 2006 CSHL Cell Cycle Meeting Oral presentation: Kinetochore-microtubule attachments alter pericentric cohesin binding in budding yeast.