

## **Jason Raymond**

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### **Educational Background**

- 2000-2003      Ph.D. Chemistry, Arizona State University (dissertation title: Genomic Analysis of Photosynthetic Bacteria and the Natural History of Nitrogen Fixation, primary advisor: Robert E. Blankenship)
- 1994-1998      B.S. Biophysics, B.A. Chemistry (*cum laude*), Southwestern Oklahoma State University

### **Professional Experience**

- 2007-Present      Assistant Professor, School of Natural Sciences, University of California, Merced
- 2004-2007      E.O. Lawrence Postdoctoral Fellow, Lawrence Livermore National Laboratory (w/ Elbert Branscomb)
- 2004      Postdoctoral research associate, Dept. of Chemistry and Biochemistry, Arizona State University (w/ Robert Blankenship)
- 2001-2003      Teaching assistant (fall semesters), Biophysical Chemistry, Dept. of Chemistry and Biochemistry, Arizona State University

### **Research Interests**

Function and evolution of metabolism/biological energy transduction, geobiology/microbe-environment interactions, comparative genomics and metagenomics, microbial diversity and taxonomy, origin & evolution of life

### **Recent awards/honors**

- LLNL Biosciences Directorate Gold Publication of the Year Award (2006)
- Who's Who in America (2006-), Who's Who in Science and Engineering (2007-)
- Ernesto O. Lawrence Fellowship at Lawrence Livermore National Laboratory (2004-2007)
- Young Investigator Plenary Lecture, International Photosynthesis Congress, Montreal (2004)
- ASU Chemistry Department Outstanding Graduate Research Assistant (2004)
- Harry S. Truman Research Fellowship (Sandia National Labs, 2004; declined)
- ASU Chemistry Department Outstanding Teaching Assistant Award (2003)
- NASA Astrobiology Institute Director's Scholarship (2002-3)
- NASA Space Grant (Summer 2002)
- NASA Astrobiology Institute Research Assistantship (2000-1)
- Gordon Research Conference in Photosynthesis Young Investigator co-recipient (2002)
- 2002 NASA Astrobiology Conference 2<sup>nd</sup> Place poster
- ASU Regents Scholarship (2000-2003)

### **Professional society membership**

Sigma Pi Sigma (Physics honorary), American Association for the Advancement of Science, International Society of Photosynthesis Research

## Ad hoc reviewing

Molecular Biology and Evolution, Journal of Molecular Evolution, Geology, International Journal of Evolutionary and Systematic Biology, Geobiology, Nucleic Acids Research, Space Science Reviews, Physiological Genomics, Photosynthesis Research

## Successful proposals

2007-2009 CoI w/ Gary Suizdak (PI, Scripps Research Institute) DOE Genomes to Life “Gene Annotation Validation through Metabolomics and Proteomics by Mass Spectrometry”, \$1.4M/3 years

2007 DOE Laboratory Sequencing Program: “Connecting functional versatility and microbial diversity in a hypersaline microbial mat”, Jason Raymond PI (funding for metagenome sequencing)

2005 Co-I w/ Everett L. Shock (PI; Arizona State), D’Arcy Meyer-Dombard (MIT), DOE Microbial Genome Program, “The First Metagenomic Tests of Geochemical Predictions in Hydrothermal Ecosystems”

2004 Co-PI w/ Donald A. Bryant (PI; Penn State), DOE Microbial Genome Program “Genome sequence analysis of seven strains of Chloroflexi: filamentous anoxygenic phototrophs”

## Publications

25. Raymond, J. and Swingley, W.D. (2008) Phototroph Genomics: Ten Years On. *Photosynthesis Research*, accepted.
24. Raymond, J. (2008) Coloring in the tree of life. *Trends in Microbiology*, in press.
23. Swingley W.D., Chen M., Cheung P.C., Conrad A.L., Dejesa L.C., Hao J., Honchak B.M., Karbach L.E., Kurdoglu A., Lahiri S., Mastrian S.D., Miyashita H., Page L.E., Ramakrishna P., Satoh S., Sattley W.M., Shimada Y., Taylor H.L., Tomo T., Tsuchiya T., Wang Z.T., Raymond J., Mimuro M., Blankenship R.E. and Touchman J.W. (2008) Niche adaptation and genome expansion in the chlorophyll d-producing cyanobacterium *Acaryochloris marina*. *Proceedings of the National Academy of Sciences*, in press.
22. Swingley, W.D., Blankenship, R.E. and Raymond, J., (2008) Using automated Markov clustering to reconstruct the cyanobacterial species tree from conserved protein families. *Molecular Biology and Evolution*, in press.
21. Swingley, W.D., Blankenship, R.E., and Raymond, J. (2008) Insights into cyanobacterial evolution from comparative genomics. *The Cyanobacteria: Molecular Biology, Genomics and Evolution*, A. Herrero and E. Flores, eds., in press.
20. Raymond, J. and Blankenship, R.E. (2008) The Origin of the Oxygen Evolving Complex. *Coordination Chemistry Reviews*, in press.
19. Staples, C.R., Lahiri, S., Raymond, J., Von Herbulis, L., Mukhopadhyay, B., and Blankenship, R.E. (2007) The Expression and Association of Group IV Nitrogenase NifD and NifH hHomologs in the Non-Nitrogen Fixing Archaeon *Methanocaldococcus jannaschii*. *Journal of Bacteriology*, **189**, 7392-8.
18. Blankenship, R.E., Raymond, J., Staples, C., and Mukhopadhyay, B. (2007) Evolution of functional diversity in nitrogenase homologs. *Proceedings of the 15<sup>th</sup> International Conference on Nitrogen Fixation*, in press.
17. Blankenship, R.E., Sadekar, S., and Raymond, J. (2007) The Evolutionary Transition from Anoxygenic to Oxygenic Photosynthesis. In: Falkowski, P.G. and Knoll, A.H. (Eds.) *Evolution of Aquatic Phototrophs*, Elsevier, Amsterdam, pp. 22-37.

16. Raymond, J. and Segré, D. (2006) The effect of oxygen on biochemical networks and the evolution of complex life. *Science*, **311**, 1724-5.
15. Mix, L.J., Armstrong, J., Mandell, A., Moiser, A., Raymond, J., Raymond, S., Steward, F., von Braun, K., and Zhaxybayeva, O. (2006) The Astrobiology Primer: An Outline of General Knowledge. *Astrobiology*, **6**, 735-813.
14. Sadekar, S., Raymond, J., and Blankenship, R.E. (2006) Conservation of Distantly Related Membrane Proteins: Photosynthetic Reaction Centers Share a Common Structural Core. *Molecular Biology and Evolution*, **23**, 2001-7.
13. Raymond, J. (2006) Oxygen and the evolution of complex life. *McGraw-Hill Encyclopedia of Science and Technology*. NY: McGraw-Hill.
12. Raymond, J. and Blankenship, R.E. (2006) How did the Photosystem I Reaction Center Evolve? In: *Photosystem I: The Plastocyanin:Ferredoxin Oxidoreductase*. John H. Golbeck, Ed., Springer, Dordrecht, 669-682.
11. Raymond, J. (2005) The Evolution of Biological Carbon and Nitrogen Cycling—a Genomic Perspective. *Reviews in Mineralogy & Geochemistry*, **59**, 211-31.
10. Raymond, J. and Blankenship, R.E. (2004) Biosynthetic Pathways, Gene Replacement and the Antiquity of Life. *Geobiology*, **2**, 1472-4.
9. Raymond, J., Siefert, J.L., Staples, C.R., and Blankenship, R.E. (2004) The Natural History of Nitrogen Fixation. *Molecular Biology and Evolution*, **21**, 541-54.
8. Zhaxybayeva, O., Hamel, L., Raymond, J., and Gogarten, J.P. (2004) Visualization of Phylogenetic Content of Five Genomes with Dekapentagonal Maps. *Genome Biology*, **5**(3):R20.
7. Raymond J., and Blankenship, R.E. (2004) The evolutionary development of the protein complement of Photosystem II. *Biochimica et Biophysica Acta*, **1655**, 133-9. (R, IR)
6. Olson, J.M. and Raymond, J. (2003) The FMO-protein is related to PscA in the reaction center of green sulfur bacteria. *Photosynthesis Research*, **75**, 277-285.
5. Raymond, J. and Blankenship, R.E. (2003) Horizontal gene transfer in eukaryotic algal evolution. *Proceedings of the National Academy of Sciences*, **100**, 7419-7420.
4. Raymond, J., Zhaxybayeva, O., Gogarten, J.P., and Blankenship, R.E. (2003) Evolution of photosynthetic prokaryotes: a maximum likelihood mapping approach. *Philosophical Transactions of the Royal Society of London B*, **358**, 223-230.
3. Raymond, J., Zhaxybayeva, O., Gogarten, J.P., and Blankenship, R.E. (2002) Whole genome analysis of photosynthetic prokaryotes, *Science*, **298**, 1616-1620.
2. Blankenship, R.E., Raymond, J., Lince, M., Larkum, A.W.D., Jermiin, L.S., Lockhart, P.J., Zhaxybayeva, O., and Gogarten, J.P. (2001) Evolution of photosynthetic antennas and reaction centers. *Proceedings of the 12<sup>th</sup> International Congress of Photosynthesis*, CSIRO Publishing, Collingwood, Victoria, Australia.
1. Raymond, J. and Olson, J.M. (2001) Is FMO protein related to PscA in the reaction center of green sulfur bacteria? *Proceedings of the 12<sup>th</sup> International Congress of Photosynthesis*, CSIRO Publishing, Collingwood, Victoria, Australia.