

## **Dr. Robert A. Edwards, B. Sc. D. Phil.**

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### **Positions and affiliations**

*Associate Professor, Department of Computer Science, San Diego State University*  
*Associate Professor, Department of Biology, San Diego State University*  
*Visiting Scientist, Math and Computer Science Division, Argonne National Laboratory*

### **Education, Positions, And Employment Experience**

<b>Year</b>	<b>Position</b>
2011-	Associate Professor, Department of Computer Science, San Diego State University
2011-	Associate Professor, Department of Biology, San Diego State University
2010-	Visiting Scholar, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil
2007-2011	Assistant Professor, Department of Computer Science, San Diego State University
2007-2011	Assistant Professor, Department of Biology, San Diego State University
2007-	Visiting Scientist, Argonne National Laboratory, Argonne, IL
2004-	Fellow, Fellowship for Interpretation of Genomes
2004-2007	Adjunct Assistant Professor, Department of Biology, San Diego State University
2005-2007	Adjunct Assistant Professor, Computational Sciences Research Center, San Diego State University, San Diego, CA
2004-2008	Adjunct Assistant Professor, The Burnham Institute for Medical Research, San Diego, CA
2003-2004	Assistant Facility Manager, University of Tennessee BSL3 Laboratory
2001-2004	Director Bioinformatics, University of Tennessee Medical Resource Center
2001-	Fellow, Center for Microbial Sciences, San Diego, CA
2000-2004	Assistant Professor of Microbiology. Department of Molecular Sciences, University of Tennessee Health Sciences Center, Memphis, TN.
1999-2002	Consultant, Integrated Genomics, Inc, Chicago, IL
1997-2000	Postdoctoral Researcher at the University of Illinois. Genetic and pathogenic studies on <i>Salmonella enterica</i> serovar Enteritidis
1994-1997	Postdoctoral Researcher at the University of Pennsylvania, Philadelphia. Molecular genetic studies on the 987P fimbriae of enterotoxigenic <i>E. coli</i> .
1991-1994	D. Phil. Microbial Genetics. University of Sussex, Brighton, England.

1987-1991 B. Sc. Science and the Environment, De Montfort University, Leicester, England

## **Professional Activities**

### **Extramural Grants:**

- 2011 USGS – Development of an interface of Prosilica GigE Cameras
- 2010 Dept. Education – FIPSE-CAPES San Diego-Brazil Consortium on Marine Sciences (PI)  
\$250,000 direct costs.
- 2010 NSF – TUES: Microbes, Metagenomes and Marine Mammals: Enabling the Next Generation of Scientists to Enter the Genomic Era (Co-PI) \$200,000 direct costs.
- 2010 NSF – Dimensions: Shedding Light on Viral Dark Matter - Genetic, Taxonomic, and Functional Diversity of Coral Reef Viromes (Co-PI) \$2,999,783 direct costs.
- 2009 NSF – Collaborative Research: PHANTOME: PHage ANnotation TOols and Methods (PI)  
\$873,111 direct costs.
- 2004 NSF – GE:GenEn: Solar Saltern Extremophage: Genomics and Population Modeling (Co-PI)  
\$1,652,581 direct costs.

### **Awards:**

- 2011 Kavli Frontiers Fellow, National Academy of Sciences
- 2009 SDSU Most Influential Faculty Member
- 2008 SDSU Teacher/Scholar Award
- 2004 UTHSC Award for Outstanding Teacher in the Graduate Health Sciences Program

### **Meeting Organizer:**

- 2002 Microbes: Invisible Invader...Amazing Allies. Public Exhibition. Pink Palace Museum, Memphis
- 2002 UT Bioinformatics Retreat
- 2000 Salmonella Genome Annotation Meeting, University of Illinois
- 1999 Advanced Bacterial Genetics Conference for Young Investigators. With Dr. Mike Laird, Genentech

### **Invited Advisor:**

- 2009 USDA Panel on Metagenomics, Maryland
- 2007 US/EU Workshop on Marine Genomics. Washington, DC.
- 2005 US/EU Workshop on Marine Genomics. Bremen, Germany
- 2005 National Academy of Sciences Panel on Metagenomics, Washington, DC.
- 2004 NIH review and update of the BMBL Handbook. NIH, Bethesda, Maryland
- 2003 American Society of Microbiology, Washington, DC

**Peer Reviewer (2000-present):**

**Journals/Books:**

ASM Press	Int. J. of Mol. Sci.	Nature Publishing
BMC Bioinformatics	Infection and Immunity	Nucleic Acid Res.
BMC Genomics	Journal of Bacteriology	PLoS Journals
BioTechniques	Microbial Ecology	PLoS One
Drug Discovery	Mol. Biol. Evol.	PNAS
Environmental Microbiology	Molecular Microbiology	Res. Microbiology
Genome Research	Nucleic Acids Research	Trends in Microbiology

**Grant Reviews:**

Am. Assoc. Advancement of Science	National Science Foundation
American Cancer Society	US Dept. of Agriculture
National Institutes of Health	Dept. of Energy

**Member, Professional Societies:**

American Society for Microbiology  
International Society for Computational Biology  
Society for General Microbiology (UK)  
American Association for the Advancement of Science  
Sigma Xi  
Association of Computing Machinery  
Institute of Electrical and Electronic Engineers

**Other:**

2007 Participant in the Line Islands Expedition, Rediscovering the Coral Reefs.  
2005 Participant in the Line Islands Expedition, Rediscovering the Coral Reefs  
2003 Registered with the FBI and CDC to ship, receive, and handle Select Agents and other pathogens  
2003 Certified to work in BSL-3 laboratory conditions.  
2000 Interviewed on NPR about Salmonella infections.

**Peer-Reviewed Publications**

**Journal Manuscripts:**

1. Cristiane C. Thompson, C.C., Marin, M.A., Dias, G.M., Dutilh, B.E., **Edwards, R.A.**, Iida, T. Thompson, F.L. and Vicente, A.C.P. 2011. Genome sequence of the human pathogen *Vibrio*

- cholerae Amazonia . J. Bacteriol.
2. Berg-Miller, M., **Edwards, R.A.**, and White, B. 2011. Phage-Bacteria Relationships and CRISPR Elements Revealed by a Metagenomic Survey of the Rumen Microbiome. *Environmental Microbiology and Environmental Microbiology Reports*.
  3. Schmieder, R.<sup>§</sup> and **Edwards, R.A.** 2011. Fast identification and removal of sequence contamination from genomic and metagenomic datasets. *PLoS One*. 6:e17288. PMID: PMC3052304
  4. Schmieder, R.<sup>§</sup> and **Edwards, R.A.** 2011. Quality control and preprocessing of metagenomic datasets. *Bioinformatics*. 27:863-864. PMID: PMC3051327
  5. Henry, C.S., Overbeek, R.A., Xia, F., Best, A.A., Glass, E. Gilbert, J.A., Larsen, P.E., **Edwards, R.A.**, Disz, T., Meyer, F., Vonstein, V., DeJongh, M., Bartels, D., Desai, M., D'Souza, M., Devoid, S., Keegan, K.P., Olson, R., Wilke, A., Wilkening, J., Stevens, R.L. 2011. Connecting Genotype to Phenotype in the Era of High-throughput Sequencing. *Biochem. Biophys. Acta*. doi:10.1016/j.bbagen.2011.03.010
  6. F.L. Thompson, Rodrigues, T.B., Gonzalez, A., Cardoso, A. Clementino, M., Costagliola, M., Hozbor, C., Otero, E., Paranhos, R., Piccini, C., Peressutti, S., *Schmieder, R.<sup>§</sup>*, **Edwards, R.**, Smith, M., Takiyama, L.R., Vieira, R., Artigas, L.F. 2010. Coastal bacterioplankton community diversity along a latitudinal gradient in Latin America by means of V6-tag pyrosequencing. 2010. *Arch. Microbiol.* doi:10.1007/s00203-010-0644-y
  7. T. D. Matthews, **R. Edwards**, and S. Maloy. 2010. Chromosomal Rearrangements Formed by *rrn* Recombination Do Not Improve Replichore Balance in Host-specific Salmonella enterica Serovars. *PLoS One*. doi:10.1371/journal.pone.0013503 2009 journal impact factor: 4.35
  8. Schmieder R.<sup>§</sup>, Lim Y.W.<sup>§</sup>, Rohwer F., **Edwards R.** 2010. TagCleaner: Identification and removal of tag sequences from genomic and metagenomic datasets. *BMC Bioinformatics* 11:341-355. 2009 journal impact factor: 3.43
  9. Disz, T., Akhter, S.<sup>§</sup>, Cuevas, D.<sup>u</sup>, Olson, R., Overbeek, R., Vonstein, V., Stevens, R., and **R.A. Edwards**. 2010. Accessing the SEED genome databases via Web services API: Tools for Programmers. *BMC Bioinformatics* 11:319-330. 2009 journal impact factor: 3.43
  10. Aziz, R.<sup>p</sup>, Breitbart, M., and **Edwards, R.** 2010. Transposases are the most abundant, most ubiquitous genes in nature. *Nucl. Acids Research* 2010 Online March 9th. . 2009 journal impact factor: 7.48
  11. Rodriguez-Brito, B.<sup>§</sup>, Li, L.<sup>§</sup>, Wegley, L.<sup>§</sup>, Furlan, M.<sup>§</sup>, Angly, F.<sup>§</sup>, Breitbart, M., Buchanan, J., Desnues, C.<sup>p</sup>, Dinsdale, E., **Edwards, R.A.**, Felts, B., Wilner, D.<sup>§</sup>, Haynes, M., Liu, H., Lipson, D., Mahaffy, J., Martin-Cuadrado, A.B., Mira, A., Nulton, J., Pasic, L., Rayhawk, S.<sup>§</sup>, Rodriguez-Mueller, J., Rodriguez-Valera, F., Salamon, P., Srinagesh, S.<sup>§</sup>, Thingstad, T., Tran, T.<sup>§</sup>, Vega Thurber, R.<sup>p</sup>, Youle, M., Rohwer, F. 2010 Viral and microbial community dynamics in four aquatic environments. *ISME J.* 1-13. 2009 journal impact factor: 6.4
  12. Mobberley, J.<sup>§</sup>, Authement, R.N.<sup>§</sup>, Segall, A.M., **Edwards, R.A.**, Slepecky, R.A., and Paul, J.H. 2010. Lysogeny and Sporulation in Bacillus Isolates from the Gulf of Mexico. *Appl. Env. Microbiol.* 76:829-842. . 2009 journal impact factor: 3.69
  13. Vega Thurber R.<sup>§</sup>, Willner-Hall D.<sup>§</sup>, Rodriguez-Mueller B.<sup>§</sup>, Desnues C.<sup>p</sup>, **Edwards RA**, Angly F.<sup>§</sup>, Dinsdale E., Kelly L.<sup>§</sup>, Rohwer F 2009. Metagenomic analysis of stressed coral holobionts. *Environ Microbiol.* 1:2148-63. 2009 journal impact factor: 4.91
  14. Wagner, C.<sup>u</sup>, Salamon, A.<sup>§</sup>, **Edwards, R.A.**, Rohwer, F., and P. Salamon. 2009. Deviations from Ultrametricity in Phage Protein Distances. *Open Systems & Information Dynamics* 16:75–

- 84 . 2009 journal impact factor: 0.94
15. Angly FE.<sup>§</sup>, Willner D.<sup>§</sup>, Prieto-Davó A.<sup>p</sup>, **Edwards RA**, Schmieder R.<sup>§</sup>, Vega-Thurber R.<sup>§</sup>, Antonopoulos DA, Barott K.<sup>§</sup>, Cottrell MT, Desnues C.<sup>p</sup>, Dinsdale EA, Furlan M.<sup>§</sup>, Haynes M, Henn MR, Hu Y, Kirchman DL, McDole T.<sup>§</sup>, McPherson JD, Meyer F, Miller RM, Mundt E, Naviaux RK, Rodriguez-Mueller B.<sup>§</sup>, Stevens R, Wegley L, Zhang L, Zhu B, Rohwer F. 2009. The GAAS metagenomic tool and its estimations of viral and microbial average genome size in four major biomes. *PLoS Comput. Biol* 5:e1000593. 2009 journal impact factor: 5.76
  16. Brulc, J.M.<sup>§</sup>, Antonopoulos, D.A.<sup>p</sup>, Berg Miller, M.E., Wilson, M.K., Yannarell, A.C., Dinsdale, E.A., **Edwards, R.A.** Frank, E.D., Emerson, J.B., Wacklin, P., Coutinho, P.M., Henrissat, B., Nelson, K.E., and White, B.A.. 2009 Gene-centric metagenomics of the fiber-adherent bovine rumen microbiome reveals forage specific glycoside hydrolases. *Proc Natl Acad Sci USA*. 106:1948 –1953. 2009 journal impact factor: 10.31
  17. Breitbart, M., Hoare, A., Nitti, A., Siefert, J., Haynes, M., Dinsdale, E., **Edwards, R.**, Souza, V., Rohwer, F., and Hollander, D. 2009. Metagenomic and Stable Isotopic Analyses of Modern Freshwater Microbialites in Cuatro Ciénegas, Mexico. *Env. Microbiol.*11:16-34. 2009 journal impact factor: 4.91
  18. Dinsdale, E.A., **Edwards, R.A.**, Hall, D.<sup>§</sup>, Angly, F.<sup>§</sup>, Breitbart, M., Brulc, J.<sup>§</sup>, Chau, B.<sup>§</sup>, Furlan, M.<sup>§</sup>, Desnues, C.G.<sup>p</sup>, Haynes, M., Li, L.<sup>§</sup>, McDaniel, L., Moran, M.A., Nelson, K.E., Nilsson, C., Olson, R., Paul, J., Rodriguez-Brito, B.<sup>§</sup>, Swan, B.<sup>§</sup>, Stevens, R., Valentine, D., Vega-Thurber, R.<sup>p</sup>, Wegley, L.<sup>§</sup>, White, B., and F. Rohwer. 2008. Functional Metagenomic Profiling of Nine Biomes. *Nature* 452:629-632 . 2009 journal impact factor: 32.91 DOI 10.1038/nature06810
  19. Dinsdale, E. A., Pantos O.<sup>p</sup>, Smriga, S.<sup>§</sup>, **Edwards, R.A.**, Angly, F.<sup>§</sup>, Wegley, L.<sup>§</sup>, Hatay, M., Hall, D.<sup>§</sup>, Brown, E.<sup>§</sup>, Haynes, M., Krause, L.<sup>§</sup>, Sala, E., Sandin, S.A., Thurber, R. V., Willis, B.L., Azam, F., Knowlton, N., and Rohwer, F. 2008. Microbial ecology of four coral atolls in the northern line islands. *PLoS ONE* 3:e1584. 2009 journal impact factor: 4.35
  20. Desnues, C.G.<sup>p</sup>, Rodriguez-Brito, B.<sup>§</sup>, Rayhawk, S.<sup>§</sup>, Kelley, S., Tran, T.<sup>§</sup>, Haynes, M., Liu, H., Hall, D.<sup>§</sup>, Angly, F.E.<sup>§</sup>, **Edwards, R.A.**, Vega, R.<sup>p</sup>, Breitbart, M., Siefert, J., Souza, V., Reid, P., Rohwer, F. 2008. Biodiversity and biogeography of phages in modern stromatolites and thrombolites. *Nature* 20;452(7185):340-343 . 2009 journal impact factor: 32.91
  21. Mou, X.<sup>p</sup>, Sun, S., **Edwards, R.**, Hodson, R., and Moran, M.A. 2008. Bacterial Carbon Processing by Generalist Species in the Coastal Ocean. *Nature*. 451:709-711 . 2009 journal impact factor: 32.91
  22. Meyer, F. Paarmann, D., D'Souza, M., Olson, R.D., Glass, E.M., Kubal, M., Paczian, T., Rodriguez, A., Stevens, R., Wilke, A., Wilkening, J. and **R.A. Edwards**. 2008. The metagenomics RAST server - a public resource for the automatic phylogenetic and functional analysis of metagenomes. *BMC Bioinformatics* 9:386 . 2009 journal impact factor: 3.43
  23. Breitbart M, Haynes M, Kelley S, Angly F<sup>§</sup>, **Edwards RA**, Felts B, Mahaffy JM, Mueller J, Nulton J, Rayhawk S<sup>§</sup>, Rodriguez-Brito B<sup>§</sup>, Salamon P, Rohwer F. 2008. Viral diversity and dynamics in an infant gut. *Res. Microbiol* 159:367-373. 2009 journal impact factor: 2.15
  24. **R A Edwards**. 2008. The smallest cells pose the biggest problems: high-performance computing and the analysis of metagenome sequence data. *J. Phys.: Conf. Ser.* 125 012050
  25. Wu, W., **Edwards, R.A.**, Judson, I. R., Papka, M. E., Thomas, M., and Stevens, R. 2008. TeraGrid Open Life Science Gateway. Proceedings of the 3rd annual TeraGrid Conference, TeraGrid '08.

26. Gilbert, J.A., Field, D., Huang, Y., **Edwards, R.**, Li, W., Gilna, P., and I. Joint. 2008. Detection of Large Numbers of Novel Sequences in the Metatranscriptomes of Complex Marine Microbial Communities. *PLoS ONE* 3(8): e3042. 2009 journal impact factor: 4.35
27. Qu, A.<sup>§</sup>, Brulc, J. M.<sup>§</sup>, Wilson, M.K., Law, B.F., Theoret, J.R., Joens, L.A., Konkel, M.A., Angly, F.<sup>§</sup>, Dinsdale, E.A., **Edwards, R.A.**, Nelson, K.E., and White, B.A. 2008. Comparative Metagenomics Reveals Host Specific Metavirulomes and Horizontal Gene Transfer Elements in the Chicken Cecum Microbiome. *PLoS One*, 3(8):e2945. 2009 journal impact factor: 4.35
28. Marhaver, K.L.<sup>§</sup>, **Edwards, R.A.**, and F. Rohwer. Viral communities associated with healthy and bleaching corals. 2008. *Env Microbiol.* 10:2277-2286. 2009 journal impact factor: 4.91
29. Krause, L.<sup>§</sup>, Diaz, N. N., **Edwards, R.A.**, Gartemann, K-H., Krömeke, H., Neuweger, H., Pühler, A., Runte, K., Schlüter, A., Stoye, J., Szczepanowski, R., Tauch, A., and Goesmann, A. 2008. Taxonomic composition and gene content of a methane-producing microbial community isolated from a biogas reactor. *J. Biotechnology*, 136:91-101. 2009 journal impact factor: 2.88
30. Krause L.<sup>§</sup>, Diaz NN.<sup>§</sup>, Goesmann A, Kelley S, Nattkemper TW, Rohwer F, **Edwards RA**, and Stoye J. 2008. Phylogenetic classification of short environmental DNA fragments. *Nucleic Acids Res.* 36(7):2230-9. 2009 journal impact factor: 7.48
31. Field, D., Garrity, G., Gray, T., Morrison, N., Selengut, J., Sterk, P., Tatusova, T., Thomson, N., Allen, M.J., Ashburner, M., Baldauf, S., Ballard, S., Boore, J., Cochrane, G., Cole, J., dePamphilis, C., **Edwards, R.**, Faruque, N., Feldman, R., Glockner, F-O., Haft, D., Hancock, D., Hermjakob, H., Hertz-Fowler, C., Hugenholtz, P., Joint, I., Kane, M., Kennedy, J., Kowalchuk, G., Kottmann, R., Kolker, E., Kyrpides, N., Leebens-Mack, J., Lewis, S.E., Liste, A., Lord, P., Maltsev, N., Markowitz, V., Martiny, J., Methe, B., Moxon, R., Nelson, K., Parkhill, J., Sansone, S-A., Spiers, A., Stevens, R., Swift, P., Taylor, C., Tateno, Y., Tett, A., Turner, S., Ussery, D., Vaughan, B., Ward, N., Whetzl, T., Wilson, G., and Wipat, A., 2008. Towards a richer description of our complete collection of genomes and metagenomes: the “Minimum Information about a Genome Sequence” (MIGS) specification. *Nature Biotechnology*, 26:541-547. 2009 journal impact factor: 29.5
32. Aziz. R. K.<sup>p</sup>, Bartels. D., Best. A. A., DeJongh. M., Disz. T., **Edwards. R. A.**, Formsma. K., Gerdes. S., Glass. E. M., Kubal. M., Meyer. F., Olsen. G. J., Olson. R., Osterman. A. L., Overbeek. R. A., McNeil. L. K., Paarmann. D., Paczian. T., Parrello. B., Pusch. G. D., Reich. C., Stevens. R., Vassieva. O., Vonstein. V., Wilke. A., Zagnitko. O. 2008. Rapid Annotations using Subsystems Technology. *BMC Genomics* 9:75. 2009 journal impact factor: 3.76
33. Gupta, N., Tanner, S., Jaitly, N., Adkins, J., Lipton, M., **Edwards, R.**, Romine, M., Osterman, A., Bafna, V., Smith, R.D., and Pevzner P. 2007. Whole proteome analysis of post-translational modifications: applications of mass-spectrometry for proteogenomic annotation. *Genome Research.* 17:1362-1377. 2009 journal impact factor: 11.34
34. **Edwards, R.A.** and Dinsdale, E.A. 2007. Marine Environmental Genomics: Unlocking the Ocean’s Secrets. *Oceanography.* 20:56-61. 2009 journal impact factor: 2.11
35. Wegley, L.<sup>§</sup>, **Edwards, R.A.**, Rodriguez-Brito, B.<sup>§</sup>, Liu, H.<sup>§</sup>, and Rohwer, F. 2007. Metagenomic analysis of the microbial community associated with the coral *Porites astreoides*. *Environ Microbiol.* 9:2707-2719. 2009 journal impact factor: 4.91
36. McNeil, L., Reich, C., Aziz, R.<sup>p</sup>, Disz, T., Cohoon, M., **Edwards, R.**, Gerdes, S., Hwang, K., Kubal, M., Margaryan, G., Olsen, G., Olson, R., Osterman, A., Parrello, B., Vassieva, O., Vonstein, V., Xia, F., Zagnitko, O., Overbeek, R., and Stevens, R. 2007. The National Microbial Pathogen Database Resource (NMPDR): A genomics platform based on subsystem

- annotation. Nucl. Acids Research 35:D347-353. 2009 journal impact factor: 7.48
37. Joyce, A.R.<sup>§</sup>, Reed, J.L.<sup>§</sup>, White, A., **Edwards, R.**, Osterman, A., Baba, T., Mori, H., Lesely, S.A., Palsson, B.O., Agarwalla, S. 2006. Experimental and computational assessment of conditionally essential genes in *E. coli*. J Bacteriol.. 188:8259-8271. 2009 journal impact factor: 3.94
  38. Angly, F.E.<sup>§</sup>, Felts, B., Breitbart, M., Salamon, P., **Edwards, R.A.**, Carlson, C., Chan, A.M., Haynes, M., Kelley, S., Liu, H., Mahaffy, J.M., Mueller, J.E., Nulton, J., Olson, R., Parsons, R., Rayhawk, S.<sup>§</sup>, Suttle, C.A., and Rohwer, F. 2006. The Marine Viromes of Four Oceanic Regions. PLoS Biology. 4:e368. 2009 journal impact factor: 12.92
  39. Gerdes, S, **Edwards, R.A.**, Kubal, M. Fonstein, M., Stevens, R., and Osterman, A. 2006. Essential genes on metabolic maps. Curr. Opinion Biotech. 17:448-456. 2009 journal impact factor: 7.82
  40. Krause, L., <sup>§</sup> Diaz, N.N., Bartels, D., **Edwards, R.A.**, Pühler, A., Rohwer, F., Meyer, F., and Stoye, J. 2006. Finding Novel Genes in Bacterial Communities Isolated from the Environment. Bioinformatics. 22:e281-9. 2009 journal impact factor: 4.93
  41. Smith, J.E., **Edwards, R.A.**, Obura, D., Pantos, O.<sup>p</sup>, Sala, E., Sandin, S.A., Shaw, M., Smriga, S.<sup>§</sup>, and Rohwer, F. 2006. Indirect effects of algae on coral: algae-mediated, microbe-induced coral mortality. Ecol. Letts. 9: 835. 2009 journal impact factor: 10.32
  42. **Edwards, R.A.**, Rodriguez-Brito, B.<sup>§</sup>, Wegley, L.<sup>§</sup>, Haynes, M., Breitbart, M., Peterson, D.M., Saar, M.O., Alexander, S., Alexander Jr., E.C., and Rohwer, F. 2006. Using pyrosequencing to shed light on deep mine microbial ecology under extreme hydrogeological conditions. BMC Genomics, 7:57. 2009 journal impact factor: 3.76
  43. Madsen, M. L.<sup>§</sup>, Nettleton, D., Thacker, E.L., **Edwards, R.**, and Minion, F.C. 2006. Transcriptional profiling of *Mycoplasma hyopneumoniae* during heat shock using microarrays. Infect Immun 74: 160-6. 2009 journal impact factor: 4.21
  44. Rodriguez-Brito, B.<sup>§</sup>, Rohwer, R., and **Edwards, R.A.** 2006. An application of statistics to comparative metagenomics. BMC Bioinformatics 7:162. 2009 journal impact factor: 3.43
  45. DeLong, E. F., C. M. Preston, T. Mincer, V. Rich, S. J. Hallam, N. U. Frigaard, A. Martinez, M. B. Sullivan, **R. Edwards**, B. R. Brito<sup>§</sup>, S. W. Chisholm and D. M. Karl (2006). Community genomics among stratified microbial assemblages in the ocean's interior. Science 311: 496-503. 2009 journal impact factor: 29.75
  46. Trotter, M., McAuliffe, O. Callanan, M. **Edwards, R.** Fitzgerald, G. F. Coffey, A. and Ross, R. P. 2006. Genome analysis of the obligately lytic bacteriophage 4268 of *Lactococcus lactis* provides insight into its adaptable nature. Gene. 366:189-199. 2009 journal impact factor: 2.42
  47. Overbeek, R., T. Begley, R. M. Butler, J. V. Choudhuri, H. Y. Chuang, M. Cohoon, V. de Crecy-Lagard, N. Diaz, T. Disz, **R. Edwards**, M. Fonstein, E. D. Frank, S. Gerdes, E. M. Glass, A. Goesmann, A. Hanson, D. Iwata-Reuyl, R. Jensen, N. Jamshidi, L. Krause, M. Kubal, N. Larsen, B. Linke, A. C. McHardy, F. Meyer, H. Neuweger, G. Olsen, R. Olson, A. Osterman, V. Portnoy, G. D. Pusch, D. A. Rodionov, C. Ruckert, J. Steiner, R. Stevens, I. Thiele, O. Vassieva, Y. Ye, O. Zagnitko and V. Vonstein (2005). The subsystems approach to genome annotation and its use in the project to annotate 1000 genomes. Nucleic Acids Res 33: 5691-702. 2009 journal impact factor: 7.48
  48. Musumeci, L., C. Bongiorno, L. Tautz, **R. A. Edwards**, A. Osterman, M. Perego, T. Mustelin and N. Bottini (2005). Low-Molecular-Weight Protein Tyrosine Phosphatases of *Bacillus subtilis*. J Bacteriol 187: 4945-56. 2009 journal impact factor: 3.94

49. **Edwards, R.A.** and Rohwer, F. 2005. Viral Metagenomics. *Nature Rev. Microbiol.* 3:504-511. 2009 journal impact factor: 17.64
50. Aziz, R.K.<sup>§</sup>, **Edwards, R.A.**, Taylor, W.W., Low, D.E., McGeer, A., and Kotb. M. 2005. Mosaic Prophages with Horizontally Acquired Genes Account for the Emergence and Diversification of the Globally Disseminated M1T1 Clone of *Streptococcus pyogenes*. *J. Bacteriol.* 187: 3311-3318. 2009 journal impact factor: 3.94
51. Mijakovic, I., Musumeci, L., Tautz, L., Petranovic, D., **Edwards, R.A.**, Jensen, P.R., Mustelin, T., Deutscher, J., and Bottini, N.. In Vitro Characterization of the *Bacillus subtilis* Protein Tyrosine Phosphatase YwqE. *J. Bacteriol.* 187: 3384-3390. 2009 journal impact factor: 3.94
52. Purdy A., Rohwer F., **Edwards R.**, Azam F., and Bartlett DH. 2005. A Glimpse into the Expanded Genome Content of *Vibrio cholerae* through Identification of Genes Present in Environmental Strains. *J Bacteriol.* 187:2992-3001. 2009 journal impact factor: 3.94
53. **Edwards R.A.**, Breitbart M.<sup>§</sup>, and Rohwer F.L. 2004. Hidden messages within the genetic code. *ASM news.*
54. O'Flaherty S., Ross R.P., **Edwards R.**, Meaney W., Fitzgerald G.F., and Coffey A. 2004. The 127kb genome of staphylococcal phage K contains a large structural module resembling *Listeria* phage A511 and introns in both the polymerase and lysin genetic determinants. *J. Bacteriol.* 186:2862-2871. 2009 journal impact factor: 3.94
55. Bhattacharyya A, Stilwagen S, Reznik G, Feil H, Feil WS, Anderson I, Bernal A, D'Souza M, Ivanova N, Kapatral V, Larsen N, Los T, Lykidis A, Selkov E Jr, Walunas TL, Purcell A, **Edwards RA**, Hawkins T, Haselkorn, R, Overbeek R, Kyrpides NC, and Predki PF. (2002) Draft Sequencing and Comparative Genomics of *Xylella fastidiosa* Strains Reveal Novel Biological Insights. *Genome Res.* 12:1556-63. 2009 journal impact factor: 11.34
56. Rohwer, F.L. and **Edwards, R.A.** 2002. The Phage Proteomic Tree: A Genome-Based Taxonomy for Phage J. *Bacteriol.* 184:4529-35. 2009 journal impact factor: 3.94
57. **Edwards, R.A.**, G.J. Olsen, and S.R. Maloy. 2002. The importance of complete genome sequences. *Trends Microbiol.* 10:220. 2009 journal impact factor: 6.89
58. **Edwards, R.A.**, G.J. Olsen, and S.R. Maloy. 2002. Comparative genomics of closely related bacteria. *Trends Microbiol.* 10:94-99. 2009 journal impact factor: 6.89
59. Townsend, S.M., Kramer, N.E. **Edwards, R.A.**, Baker, S., Hamlin, N., Simmonds, M., Stevens, K., Maloy, S.R., Parkhill, J. And Bäumler, A. J. 2001. *Salmonella enterica* serotype Typhi possesses a unique repertoire of fimbrial genes. *Infect Immun* 69:2894-901. 2009 journal impact factor: 4.21
60. **Edwards, R.A.** 2001. Microbial Genome Sequencing. *ASM News.* 67:121.
61. **Edwards, R.A.**, Matlock, B.C., Heffernan, B.J., and Maloy, S.R. 2001. Genomic Analysis and Growth Phase Dependent Regulation Of The SEF14 Fimbriae of *Salmonella enterica* Serovar Enteritidis. *Microbiology.* 147:2705-2715. 2009 journal impact factor: 3.03
62. **Edwards, R.A.** and S.R. Maloy. 2001. Inside or Outside: Determining the location of intracellular pathogens. *BioTechniques* 30:304-311. 2009 journal impact factor: 2.55
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64. **Edwards, R.A.**, R.A. Helm and S.R. Maloy. 1999. Increasing DNA transfer efficiency by temporary inactivation of host restriction. *BioTechniques* 26: 892-900. 2009 journal impact factor: 2.55



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67. **Edwards, R.A.**, and D.M. Schifferli. 1997. Differential regulation of *fasA* and *fasH* expression of *Escherichia coli* 987P fimbriae by environmental cues. *Mol. Microbiol.* 25: 797-809. 2009 journal impact factor: 5.36
68. **Edwards, R.A.**, J. Cao, and D.M. Schifferli. 1996. Identification of major and minor chaperone proteins involved in the export of 987P fimbriae. *J. Bacteriol.* 178: 3426-3433. 2009 journal impact factor: 3.94
69. Merrick, M.J., and **R.A. Edwards**. 1995. Nitrogen control in bacteria. *Microbiol. Mol. Biol. Rev.* 59:604-622. 2009 journal impact factor: 12.49
70. **Edwards, R.A.**, and M.J. Merrick. 1995. The role of uridylyltransferase in the control of *Klebsiella pneumoniae* *nif* gene regulation. *Mol. Gen. Genet.* 247: 189-198. 2009 journal impact factor: 2.58

<sup>p</sup>Denotes postdoctoral researcher

<sup>g</sup>Denotes graduate student.

<sup>u</sup>Denotes undergraduate student

### Published Meeting Abstracts:

1. R.K. Aziz, Dwivedi, B., Breitbart, M., and Edwards, R.A. 2011 Phage Eco-Locator: a web tool for visualization and analysis of phage genomes in metagenomic data sets *BMC Bioinformatics* 12:A9doi:10.1186/1471-2105-12-S7-A9

### Published Meeting And Book Reviews:

1. Farris, L.A. and R.A. Edwards. 2001. An old dog learns new tricks. *Trends. Microbiol.* 95:243
2. Edwards, R.A., and S.R. Maloy. 2000. Microbial genomics and evolution. *Trends Genet* 16:115.
3. Edwards, R.A. 2000. Big bugs need little bugs to help them bite. *Trends. Microbiol* 8:384-385
4. Maloy, S.R., and R.A. Edwards. 1999. Eye of newt and toe of frog. *Trends Genet* 15:250.
5. Edwards, R.A., and S.R. Maloy. 1998. Examining *E. coli*. *Bioscience* 48:323-324.

### World Wide Web Sites:

1. The Salmonella Source: <http://www.salmonella.org/>. Reviewed in *Science* 2001 293(5532):1019
2. SCUMS: <http://scums.sdsu.edu/> The San Diego Center for Universal Microbial Sequencing.
3. Edwards Lab: <http://edwards.sdsu.edu/labsite>
4. PhAnToMe: <http://www.phantome.org/>

5. The Phage SEED: <http://www.phantome.org/PhageSeed/>

### ***Invited Presentations (Since 2000):***

1. Bioinformatics Two Day Course, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, Mexico 11/201
2. Computational and Comparative Genomics, Cold Spring Harbor, NY 11/2010
3. Computational Genomics, Cuernavaca, Mexico, 10/2010
4. FIPSE-CAPES directors meeting, Florianopolis, Brazil, 9/2010
5. Molecular Genetics of Bacteria and Phages, Cold Spring Harbor Laboratory, NY, 8/2010
6. 5th Workshop on Comparative Microbial Genomics and Taxonomy, Rio de Janeiro, Brazil 8/2010
7. Advanced Bacterial Genetics Course, Cold Spring Harbor, NY 6/2010
8. American Society for Microbiology, San Diego, CA 5/2010
9. Roche Asia User Group Meeting, Hong Kong, 5/2010
10. Scripps Institution of Oceanography, San Diego, CA 4/2010
11. University of California, Santa Barbara, CA, 4/2010
12. Centro de Investigación Científica y de Educación Superior de Ensenada, BC, Mexico 4/2010
13. First Mexican Congress on Microbiology and Biochemistry, Pachuca, Mexico, 3/2010
14. Rocky 2009, Snowmass, CO, 12/2009
15. Mexican National Congress of Virology, Merida, Mexico, 11/2009
16. University of Florida, Gainesville, FL 10/2009
17. Florida Branch of the American Society for Microbiology, Key West, FL 10/2009
18. Computational Sciences Research Center, San Diego, 9/2009
19. San Diego Consortium for Systems Biology, Salk Institute, San Diego, 8/2009
20. DOE Computing in the Extreme, Chicago IL 8/2009
21. Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil 8/2009
22. 4th Workshop on Comparative Microbial Genomics and Taxonomy, Petropolis, Brazil 8/2009
23. C-MORES Workshop on Marine Microbiology, Honolulu, Hawai'i, 5/2009
24. American Society of Microbiology, Philadelphia, PA 5/2009
25. Autonomous University of Mexico, Cuernavaca 03/2009
26. CHI New Genomics Workshop, San Diego, CA 03/2009
27. Collabrx, Palo Alto, CA 03/2009
28. United States Department of Agriculture, Washington DC 02/2009
29. University of California, Santa Barbara 02/2009
30. University of California, Los Angeles 01/2009
31. Rocky Mountain Bioinformatics Meeting, Snowmass, CO 12/2008
32. Roche 454, New Haven, CT 9/2008
33. Scientific Discoveries Through Advanced Computing, Seattle, WA 7/2008
34. International Coral Reef Society Meeting, Fort Lauderdale, FL 7/2008
35. Advanced Bacterial Genetics Course, Cold Spring Harbor, NY 6/2008
36. American Society of Microbiology (ASM), Boston, MA 06/2008
37. Rocky Mountain Bioinformatics Meeting, Snowmass, CO 12/2007

38. US/EU Conference on CyberInfrastructure, Washington, DC 10/2007
39. American Society of Microbiology (ASM), Toronto, Canada 06/2007
40. CHI New Genomics Workshop, San Diego, CA 05/2007
41. Argonne National Labs, Argonne, IL. 03/2007
42. Metagenomics 2006, San Diego, CA 10/2006
43. Joint Genome Institute, Walnut Creek, CA. 09/2006
44. Genome Standard Consortium, Cambridge, England. 09/2006
45. California Metagenomics Workshop, Berkeley, CA. 09/2006
46. ASM/NCBI Genome Annotation Workshop, NIH Bethesda, MD. 08/2006
47. Scientific Committee on Oceanographic Research (SCOR), Vancouver, Canada. 06/2006
48. Scripps Institute of Oceanography 06/2006
49. The Sanger Center, Cambridge, England. 05/2006
50. Society for General Microbiology, Warwick, England. 05/2006
51. San Diego State University Computational Sciences Research Center. 03/2006
52. American Society of Limnology and Oceanography (ASLO), Session Organizer and Chair, HI 02/2006
53. Argonne National Labs, Argonne, IL. 01/2006
54. Analytical Genetics, San Diego, CA. 10/2005
55. Barcode of Life Meeting, Panama. 09/2006
56. American Society of Microbiology (ASM), Session Organizer and Chair. 06/2005
57. San Diego Microbiology Group, San Diego, CA. 05/2005
58. US/EU Conference on Marine Genomics, Bremen, Germany. 05/2005
59. The Burnham Institute for Medical Research, San Deigo, CA. 07/2004
60. The New Phage Meeting, Key Biscayne, FL. 06/2004
61. American Society of Microbiology (ASM), 05/2004
62. The University of Memphis, Memphis, TN 11/2003
63. The VA Hospital, Memphis, TN 07/2003
64. University of Oxford, England, 02/2003
65. University of Missouri, Columbia, MO 01/2003
66. San Diego State University, San Diego, CA 11/2002
67. South East Regional Bioterrorism Workshop, Memphis TN 07/2003
68. Centre National de la Recherche Scientifique, Gif-sur-Yvette, France,10/2002
69. Analytical Genetics, Santorini, Greece 10/2002
70. The University of Sheffield, England 9/2002
71. American Society of Microbiology (ASM) (session chair), 05/2002
72. Southern Illinois University, Carbondale, IL 04/2002
73. Institute of Biotechnology, Cuernavaca, MX 01/2002
74. Furman College, Greenville, SC 11/2001
75. Oak Ridge National Laboratory, 10/2001
76. Molecular Genetics of Bacteria and Phage, Cold Spring Harbor, 09/2001.
77. Iowa State University, Ames, IA. 04/2001
78. The Center for Ecology and Hydrology, Oxford University, England, 03/2001
79. Veterinary School, Autonomous University of Mexico, Mexico, MX 01/2001
80. Institute of Biotechnology, Cuernavaca, MX 01/2001
81. Midwest Pathogenesis Meeting, Columbus, OH 10/2000

82. Molecular Genetics of Bacteria and Phage, Madison, WI, 09/2000.
83. The VA Hospital, Memphis, TN 07/2000
84. Salmonella Genomics Meeting, St. Louis MO 04/2000
85. Midwest Prokaryotic Molecular Biology Meeting, Chicago IL 01/2000

## **Teaching:**

### **San Diego State University:**

#### *Primary instructor*

2010	Spring	CS Advanced Topics: Computational Genomics, CS596. This class is being taught in collaboration with Dr. Rosy Guiterrez at the Autonomous University of Mexico, Cuernavaca, Mexico, using the SDSU distance learning technology (video conferencing).
2010	Fall	Computational Sciences Interdisciplinary Approaches, COMP 800
2010	Fall	Data Structures, CS310
2009	Spring	Data Structures, CS310
2009	Spring	CS Advanced Topics: Genome Annotation and Analysis, CS696
2009	Fall	Scientific Data Base Techniques, CS503
2008	Spring	Data Structures, CS310
2008	Fall	Scientific Data Base Techniques, CS503

#### *Guest instructor*

2010	Summer	Bridges to the Baccalaueate Program
2010	Spring	Microbial genetics and physiology BIOL 549
2010	Spring	Ecological metagenomics, BIOL 596
2010	Spring	Advanced topics in molecular biology, MBIO610
2009	Summer	Bridges to the Baccalaueate Program
2009	Summer	Research Experience for Undergraduates
2009	Spring	Advanced topics in computational science COMP 670
2009	Spring	Microbial genetics and physiology BIOL 549
2008	Summer	Bridges to the Baccalaueate Program
2008	Spring	Microbial genetics and physiology BIOL 549
2007	Summer	Bridges to the Baccalaueate Program
2007	Spring	Microbial genetics and physiology BIOL 549

### **University of Tennessee Health Sciences Center:**

2004	Molecular Biology, MSCI816
2004	Bioinformatics, MSCI814, course director
2003	Molecular Biology, MSCI816
2002	Bacterial Pathogenesis, MSCI700, course designer and director

- 2002 Bioinformatics, MSCI814, course director
- 2002 Molecular Biology, MSCI816
- 2002 Bioinformatics, MSCI815
- 2001 Molecular Techniques, MSCI929

### **Workshops:**

#### *Instructor*

- 2010 CICESE Two-day course in Bioinformatics and Computational Biology.
- 2010 Computational Genomics, Cold Spring Harbor Laboratory, NY
- 2010 Advanced Bacterial Genetics, Cold Spring Harbor Laboratory, NY
- 2010 UCSB Special Workshop on metagenomics. A two day workshop for 15 students and faculty members of the bioinformatics of metagenomics data.
- 2010 Microbial genomics and metagenomics workshop, Rio de Janeiro, Brazil. An invited lecturer in a week long workshop on microbial genomics, metagenomics, and taxonomy.
- 2009 Metagenomics Workshop, Argonne National Laboratory, Argonne IL,
- 2009 Microbial genomics and metagenomics workshop, Petropolis, Brazil. An invited lecturer in a week long workshop on microbial genomics, metagenomics, and taxonomy.
- 2009 C-MORES Workshop on Marine Biology. An invited lecturer in this week-long workshop to teach metagenomics and bioinformatics.
- 2008 Metagenomics Workshop, Argonne National Laboratory, Argonne IL,
- 2008 Advanced Bacterial Genetics, Cold Spring Harbor Laboratory, NY
- 2007 Metagenomics Workshop, Argonne National Laboratory, Argonne IL,
- 2005 Second International Minicourse on Genetics, Genomics, and Epidemiology of Salmonella, Nanning, China. November
- 2004 First International Minicourse on Genetics, Genomics, and Epidemiology of Salmonella, Cuernavaca, Mexico. November

#### *Participant*

- 1999 NSF/DOE sponsored participant in the 7th Conference on Small Genomes, Arlington VA
- 1995 Participant in the Advanced Bacterial Genetics Course, Cold Spring Harbor Laboratory 06/1995

### **Trainees:**

#### **Postdoctoral Researchers**

- Aziz, Ramy 5/2008-
- Matthews, Dave 9/2010-

#### **Ph.D. Students**

- Akhter, Sajia 9/2007-

Bose, Promita 9/2006-9/2008  
Farris, Leigh 01/2001-06/2004  
Schmieder, Robert 9/2008-  
Seguritan, Victor 9/2008-10/2009

### **M.Sc. Students**

Cheng, Carny 4/2008-5/2010  
Grant, Matthew 7/2008-12/2009  
Hull, Brad 10/2009-  
McNair, Kate 9/2008-  
Naoman, Amna 7/2008-11/2009  
Park, Songduk 7/2008-11/2009  
Soury, Rima 5/2010-  
Williams, Steve 2/2010-  
Wright, Sheridan 1/2010-

### **Undergraduate Students**

Blanco, Andres 7/2010-  
Celms, Nick 7/2008-  
Cuevas, Daniel 5/2009-  
Hagen, Matthew 2/2009-5/2010  
Hoffman, Josh 1/2009-4/2010  
Kamikislian, Vasken 1/2009-7/2009  
Seitz, Matt 1/2009-7/2009  
Wright, Sheridan 9/2008-12/2008

### **High School Students**

Baxi, Ankita, AP Biology Research Intern 11/2000-05/2001  
Klimkowsky, Miron High School Summer Student, 5/2004-6/2004  
St. Bernard, Nashan. McNair Summer Student, 5/2003-7/2003  
Davis, Shanita McNair Summer Student, 5/2004-6/2004  
Holmes, Stacy McNair Summer Student, 5/2002-7/2002

### **SDSU Committees:**

Bioinformatics and Medical Informatics Curriculum Committee  
Computational Sciences Research Center Advisory Committee  
Diving Safety Committee