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Mobile Technology Bioinformatics: <http://www.kelleybioinfo.org/>

Affiliations:

Cell and Molecular Biology Program

Evolutionary Biology Program

Center for Microbial Sciences

Alexander von Humboldt Foundation (Humboldt Scholar)

Alfred P. Sloan Foundation

Human Microbiome Project

Microbiology of the Built Environment Network

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## EDUCATION

1987-1991 B.A., *Magna cum laude*, Cornell University  
Department of Neurobiology and Behavior  
**Honors Thesis: The regulation of comb building in honeybee colonies**  
Thesis Advisor: Thomas D. Seeley

1993-1998 Ph.D., University of Colorado  
Department of Environmental, Population and Organismal Biology  
**Dissertation: Resource use in the bark beetle genus *Dendroctonus*:  
Historical patterns and contemporary processes**  
Thesis Advisors: Brian D. Farrell, Ph.D. and Jeffrey B. Mitton, Ph.D.

## PROFESSIONAL EXPERIENCE

1991-1992 Elementary School Teacher, Houston, Texas  
1992-1993 Research Technician, Cornell University, Ithaca, New York  
1993-1996 Graduate Teaching Assistant, University of Colorado, Boulder  
1998-2002 Postdoctoral Fellow, University of Colorado, Boulder  
2002-2008 Assistant Professor, San Diego State University  
2008-2012 Associate Professor, San Diego State University  
2012-Present Professor, San Diego State University

**PUBLICATIONS**

Peer-Reviewed Papers (*h*-index = 31; *i10*-index=48, as of October 2015)

1. **Kelley, S.T.** and B.D. Farrell. (1998) Is specialization a dead-end?: The phylogeny of host use in *Dendroctonus* bark beetles (Coleoptera: Scolytidae). *Evolution* 52: 1731-1743.
2. **Kelley, S.T.** and J.B. Mitton. (1998) Strong differentiation in mitochondrial DNA of *Dendroctonus brevicomis* (Coleoptera: Scolytidae). *Annals of the Entomological Society of America* 92: 193-197.
3. **Kelley, S.T.** and R.G. Latta. (1998) Evidence for high rates of self-fertilization in the alpine herb *Epilobium anagallidifolium* (Onagraceae). *Canadian Journal of Botany* 76: 1978-1980.
4. **Kelley, S.T.** and V.G. Thackray. (1999) Phylogenetic analyses reveal ancient duplication of estrogen receptor isoforms. *Journal of Molecular Evolution* 49: 609-614.
5. Akmaev, V.R., **S.T. Kelley** and G.D. Stormo. (1999) A phylogenetic approach to RNA structure prediction. *Intelligent Systems for Molecular Biology 1999 Proceedings*: 10-7.
6. Ramey, R.R., **S.T. Kelley**, W.M. Boyce and B.D. Farrell. (2000). Phylogeny and host specificity of Psoroptic mange mites (Acarina: Psoroptidae) as indicated by ITS sequence data. *Journal of Medical Entomology* 37: 791-6.
7. **Kelley, S.T.**, B.D. Farrell and J.B. Mitton. (2000) Effects of specialization on genetic differentiation in sister species of bark beetles. *Heredity* 84: 218-227.
8. Scott, V.L., **S.T. Kelley** and K. Strickler. (2000) Reproductive biology of two *Coelioxys* parasites in relation to their *Megachile* hosts (Hymenoptera: Megachilidae). *Annals of the Entomological Society of America* 93: 941-948.
9. Akmaev, V.R., **S.T. Kelley** and G.D. Stormo. (2000) Phylogenetically enhanced statistical tools for RNA structure prediction. *Bioinformatics* 16: 501-512.
10. **Kelley, S.T.**, V.R. Akmaev and G.D. Stormo. (2000) Improved statistical methods reveal direct interactions between 16S and 23S ribosomal RNA. *Nucleic Acids Research* 28: 4938-4943.
11. **Kelley, S.T.**, J.K. Harris and N.R. Pace. (2001) Evaluation and refinement of tmRNA structure using gene sequences from natural microbial communities. *RNA* 7: 1310-1316.

12. J.K. Harris, **S.T. Kelley**, G.B. Spiegelman and N.R. Pace. (2003) The genetic core of the universal ancestor. *Genome Research* 13: 407-412.
13. **Kelley, S.T.**, U. Theisen, L.T. Angenent, A. St Amand and N.R. Pace. (2004) Molecular analysis of shower curtain biofilm microbes. *Applied and Environmental Microbiology* 70: 4187-92.
14. Harris, J.K., **S.T. Kelley** and N.R. Pace. (2004) New perspective on uncultured bacterial phylogenetic division OP11. *Applied and Environmental Microbiology* 70: 845-9.
15. Breitbart, M., B. Felts, **S.T. Kelley**, J.M. Mahaffy, J. Nulton, P. Salamon and F. Rohwer. (2004) Diversity and population structure of a near-shore marine-sediment viral community. *Proceedings of the Royal Society of London Series B Biological Science* 271: 565-74.
16. Angenent, L.T., **S.T. Kelley**, A. St. Amand, N.R. Pace and M.T. Hernandez. (2005) Molecular identification of potential pathogens in water and air of a hospital therapy pool. *Proceedings of the National Academy of Sciences USA* 102: 4860-65.
17. Marquez, S.M., J.K. Harris, **S.T. Kelley**, J.W. Brown, S.C. Dawson, E.C. Roberts, and N.R. Pace. (2005) Structural implications of novel diversity in eucaryal RNase P RNA. *RNA* 11: 739-751.
18. McManus, C.J. and **S.T. Kelley**. (2005) Molecular survey of aeroplane bacterial contamination. *Journal of Applied Microbiology* 99: 502-6.
19. Jensen J.L., A.J. Bohonak and **S.T. Kelley**. (2005) Isolation by Distance, Web Service. *BMC Genetics* 6: 13-6.
20. Ellis, D.G., R.W. Bizzoco, Y. Maezato, J.N. Baggett, J.N. and **S.T. Kelley**. (2005) Microscopic Examination of Acidic Hot Springs of Waiotapu, North Island, New Zealand. *New Zealand Journal of Marine and Freshwater Research* 39: 1001-11.
21. **Kelley, S.T.**, E.F. Cassirer, G.C. Weiser and S. Safae. (2006) Phylogenetic Diversity of Pasteurellaceae and Horizontal Gene Transfer of Leukotoxin in Wild and Domestic Sheep. *Infection, Genetics and Evolution*, 7: 13-23.
22. Nguyen, T.X., E.R. Alegre and **S.T. Kelley**. (2006) Analysis of General Bacterial Porins: A Phylogenomic Case Study. *Journal of Molecular Microbiology and Biotechnology*, 11: 291-301.
23. Safae, S., G.C. Weiser, E.F. Cassirer, R.R. Ramey and **S.T. Kelley**. (2006) Microbial diversity in bighorn sheep revealed by culture-independent methods. *Journal of Wildlife Diseases*, 42: 545-555.

24. Angly, F.E., Felts, B., Breitbart, M., Salamon, P., Edwards, R.A., Carlson, C., Chan, A.M., Haynes, M., **S.T. Kelley**, Liu, H., Mahaffy, J.M., Mueller, J.E., Nulton, J., Olson, R., Parsons, R., Rayhawk, S., Suttle, C.A. and F. Rohwer. (2006) Marine Viromes of Four Oceanic Regions. *Public Library of Science (PLoS) Biology*, 11: 2121-2131.
25. Lozupone, C.A., M. Hamady, **S.T. Kelley** and R. Knight. (2007) Quantitative and qualitative beta diversity measures lead to different insights into factors that structure microbial communities. *Applied and Environmental Microbiology*, 73: 1576-1585.
26. Mathur, J., R.W. Bizzoco, D.G. Ellis, D.A. Lipson, A. Poole, R. Levine and **S.T. Kelley**. (2007) Effects of abiotic factors on the phylogenetic diversity of bacterial communities in acidic thermal springs. *Applied and Environmental Microbiology*, 73: 2612-2623.
27. Lee, L., S. Tin and **S.T. Kelley**. (2007) Culture-independent analysis of bacterial diversity in a child-care facility. *BMC Microbiology*, 7: 27.
28. Thackray, L.B., C.E. Wobus, K.A. Chachu, B. Liu, E.R. Alegre, K.S. Henderson, **S.T. Kelley** and H.W. Virgin. (2007) Murine noroviruses comprising a single genogroup exhibit biological diversity despite limited sequence divergence. *Journal of Virology*, 81: 10460-10473.
29. Townsend T.M., E.R. Alegre, **S.T. Kelley**, J.J. Wiens, T.W. Reeder. (2008) Rapid Development of Multiple Nuclear Loci for Phylogenetic Analysis Using Genomic Resources. *Molecular Phylogenetics and Evolution*, 47: 129-142. [MOST CITED MPE ARTICLE 2008 - 2010]
30. Ellis, D., R.W. Bizzoco, and **S.T. Kelley**. (2008) Halophilic Archaea identified in fumarole steam vapor from vents around the world. *Environmental Microbiology*, 10: 1582-1590. **ISSUE COVER PAGE**.
31. Desnues, C.D., B. Rodriguez-Brito, S. Rayhawk, **S.T. Kelley**, T. Tran, Matthew Haynes, H. Liu, D. Hall, F.E. Angly, R.A. Edwards, R.V. Thurber, P. Reid, J. Siefert, V. Souza, M. Breitbart, and F. Rohwer. (2008) Endemism of phages in modern stromatolites and thrombolites. *Nature*, 452: 340-343.
32. Lutz, K., N. Diaz, R.A. Edwards, F. Rohwer, **S.T. Kelley**, and J. Stoye. (2008) Taxonomic classification of short environmental DNA fragments. *Nucleic Acids Research*, 36: 2230-2239.
33. Breitbart, M., M. Haynes, **S.T. Kelley**, F. Angly, R.A. Edwards, B. Felts, J.M. Mahaffy, J. Mueller, J. Nulton, S. Rayhawk, B. Rodriguez-Brito, P. Salamon, and F. Rohwer. (2008) Viral diversity and dynamics in an infant gut. *Research in Microbiology*, 5: 367-373.

34. **Kelley, S.T.**, C. Alger, and D. Deutschman. (2009) Extreme Programming in a Bioinformatics Class. *Bioscene*, 35:58-65.
35. Holzman, J.P., A.J. Bohonak, L.R. Kirkendall, and **S.T. Kelley**. (2009) Inbreeding variability and population structure in the haplodiploid palm-seed borer beetle (*Coccotrypes dactyliperda*). *Journal of Evolutionary Biology*, 22:1076-1087.
36. Turner, J. L., **S.T. Kelley**, J.S. Otto, F. Valafar, and A.J. Bohonak. (2009) Parallelization and optimization of genetic analyses in isolation by distance web service. *BMC Genetics*, 10: 28.
37. Gottlieb, D., J.P. Holzman, Y. Lubin, A. Bouskila, **S.T. Kelley**, and A.R. Harari. (2009) Evidence for an evolutionarily stable mixed mating system in a scolytid beetle. *Journal of Evolutionary Biology*, 22: 1526-1534.
38. Caporaso, J.G., J. Kuczynski, J. Stombaugh, K. Bittinger, F.D. Bushman, E.K. Costello, N. Fierer, A. Gonzalez Peña, J.K. Goodrich, J.I. Gordon, G.A. Huttley, **S.T. Kelley**, D. Knights, J.E. Koenig, R.E. Ley, C.A. Lozupone, D. McDonald, B. D. Muegge, M. Pirrung, J. Reeder, J.R. Sevinsky, P.J. Turnbaugh, W.A. Walters, J. Widmann, T. Yatsunenko, J. Zaneveld, and R. Knight. (2010) QIIME allows analysis of high-throughput community sequencing data. *Nature Methods*, 7: 335–336.
39. J. Kuczynski, E.K. Costello, D.R. Nemergut, J. Zaneveld, C.L. Lauber, D. Knights, O. Koren, N. Fierer, **S.T. Kelley**, R.E. Ley, J.I. Gordon, R. Knight. (2010) Direct sequencing of the human microbiome readily reveals community differences. *Genome Biology*, 11:210.
40. Casas, V., J. Magbanua, G. Sobrepena, **S.T. Kelley** and S. Maloy. (2010) Reservoir of Bacterial Exotoxin Genes in the Environment. *International Journal of Microbiology*, DOI:10.1155/2010/754368.
41. **Kelley, S.T.** and S. Dobler. (2011) Comparative analysis of gut microbial community diversity in *Longitarsus* flea beetles (Coleoptera: Chrysomelidae). *Genetica*, 139:541-550.
42. Knights D., J. Kuczynski, O. Koren, R.E. Ley, D. Field, R. Knight, T.Z. DeSantis, and **S.T. Kelley**. (2011) Supervised classification of microbiota mitigates mislabeling errors. *The ISME Journal*, 5:570-573.
43. Benson, C.A., R.W. Bizzoco, D.L. Lipson, and **S.T. Kelley**. (2011) Microbial diversity in Non-sulfur, Sulfur and Iron geothermal steam vents. *FEMS Microbial Ecology*, 76:74-88.
44. Caporaso, J.G., R. Knight, and **S.T. Kelley**. (2011) Host-Associated and Free-Living Phage Communities Differ Profoundly in Phylogenetic Composition. *PLoS ONE*, 6:e16900.

45. Tin, S., R.W. Bizzoco and **S.T. Kelley**. (2011) Role of the terrestrial subsurface in shaping geothermal spring microbial communities. *Environmental Microbiology Reports*, 3:491-499.
46. Yilmaz, P., ... **S.T. Kelley** (48<sup>th</sup> of 96) ... and F.O. Glöckner. (2011) Minimum information about a marker gene sequence (MIMARKS) and minimum information about any (x) sequence (MIxS) specifications. *Nature Biotechnology*, 29:415-420.
47. Wehausen, J.D., **S.T. Kelley**, R.R. Ramey. (2011) Domestic sheep, bighorn sheep, and respiratory disease: a review of the experimental evidence. *California Fish and Game*, 97:7-24.
48. Knights, D., J. Kuczynski, E.S. Charlson, J. Zaneveld, M.C. Mozer, R. Collman, F. Bushman, R. Knight and **S.T. Kelley**. (2011) Bayesian community-wide culture-independent microbial source tracking. *Nature Methods*, 8:761–763.
49. Benson, C.A., R.W. Bizzoco, D.A. Lipson and **S.T. Kelley**. (2011) Microbial diversity in non-sulfur and iron geothermal steam vents. *Yellowstone Science*, 20: 5-6.
50. Abubucker, S., N. Segata, J. Goll, A.M. Schubert, J. Izard, B.L. Cantarel, B. Rodriguez-Mueller, J. Zucker, M. Thiagarajan, B. Henrissat, O. White, **S.T. Kelley**, B. Methé, P. D Schloss, D. Gevers, M. Mitreva and C. Huttenhower. (2012) Metabolic reconstruction for metagenomic data and its application to the human microbiome. *PLoS Computational Biology*, 8: e1002358.
51. Hewitt, K.M., C.P. Gerba, S.L. Maxwell and **S.T. Kelley**. (2012) Office space bacterial abundance and diversity in three metropolitan areas. *PLoS ONE*, 7: e37849.
52. The Human Microbiome Project Consortium\*. (2012) Structure, function and diversity of the healthy human microbiome. *Nature* 486: 207-214. (\* Contributing Member.)
53. The Human Microbiome Project Consortium\*. (2012) A framework for human microbiome research. *Nature* 486: 215-221. (\* Contributing Member.)
54. Reeve, J.D., F.E. Anderson, and **S.T. Kelley**. (2012) Ancestral State Reconstruction for Dendroctonus Bark Beetles: Evolution of a Tree Killer. *Environmental Entomology* 41: 433-730.
55. Saber, M.H., K. Schwarzberg, F.A. Alonaizan, **S.T. Kelley**, P.P. Sedghizadeh, T.A. Levy, J.H. Simon and J. Slots. (2012) Bacterial Flora of Dental Periradicular Lesions Analyzed by the 454-pyrosequencing Technology. *The Journal of Endodontics*, 38: 1484-1488.

56. Hewitt, K.M., F.L. Mannino, A. Gonzalez, J.H. Chase, J.G. Caporaso, R. Knight, and **S.T. Kelley**. (2013) Bacterial Diversity in Two Neonatal Intensive Care Units (NICUs). *PLoS ONE* 8: e54703.
57. **Kelley, S.T.**, and Gilbert, J.A. (2013) Studying the microbiology of the indoor environment. *Genome Biology* 14: 1-9.
58. Anthony, E.G., Richard, E., Lipkowitz, M.S., **Kelley, S.T.**, Alcaraz, J.E., Shaffer, R.A., and Bhatnagar, V. (2013) Association of phosphodiesterase 4 polymorphism (rs702553) with blood pressure in the African American Study of Kidney Disease and Hypertension Genomics Study. *Pharmacogenetics and Genomics* 23: 442-444.
59. Ramey, E.M., Ramey, R.R., Brown, L.M., and **Kelley, S.T.** (2013) Desert-dwelling African elephants (*Loxodonta africana*) in Namibia dig wells to purify drinking water. *Pachyderm* 53: 66-72.
60. Smith, D., Alverdy, J., Coleman, M., Garcia-Houchins, S., Green, J., Keegan, K. et al. (2013) The Hospital Microbiome Project: Meeting Report for the 1st Hospital Microbiome Project Workshop on sampling design and building science measurements, Chicago, USA, June 7th-8th 2012. *Standards in Genomic Sciences* 8:1.
61. Shogan, B., Smith, D., Packman, A., **Kelley, S.T.**, Landon, E., Bhangar, S. et al. (2013) The Hospital Microbiome Project: Meeting Report for the 2nd Hospital Microbiome Project, Chicago, USA, January 15th, 2013. *Standards in Genomic Sciences* 8:3.
62. Sherman, M.P., Minnerly, J., Curtiss, W., Rangwala, S., and **Kelley, S.T.** (2014) Research on Neonatal Microbiomes: What Neonatologists Need to Know. *Neonatology* 105: 14-24.
63. Schwarzberg, K., Le, R., Bharti, B., Lindsay, S., Casaburi, G., Salvatore, F., Saber, M.H., Alonaizan, F., Slots, J., Gottlieb, R.A., Caporaso, J.G. and **Kelley, S.T.** (2014) The personal human oral microbiome obscures the effects of treatment on periodontal disease. *PLoS One* 9: e86708.
64. Huttenhower, C., Knight, R., Brown, C.T., Caporaso, J.G., Clemente, J.C., Gevers, D. Franzosa, E. A., **Kelley, S.T.**, Knights, D., Ley, R. E., Mahurkar, A., Ravel, J. and White, O. (2014) Advancing the microbiome research community. *Cell*, 159: 227-230.
65. Gibbons, S.M., Schwartz, T., Fouquier, J., Mitchell, M., Sangwan, N., Gilbert, J.A., and **Kelley, S.T.** (2015) Ecological succession and viability of human-associated microbiota on restroom surfaces. *Applied and Environmental Microbiology*, 81: 765-773.

66. Wall, K., Cornell, J., Bizzoco, R.W., and **Kelley, S.T.** (2015) Biodiversity hot spot on a hot spot: novel extremophile diversity in Hawaiian fumaroles. *MicrobiologyOpen*, 4: 267-281. doi: 10.1002/mbo3.236.
67. Lipson, D.A., Raab, T.K., Parker, M., **Kelley, S.T.**, Brislawn, C.J., and Jansson, J. (2015) Changes in microbial communities along redox gradients in polygonized Arctic wet tundra soils. *Environmental Microbiology Reports* (4), 649-657.
68. Fouquier, J., Rideout, J.R., Bolyen, E., Chase, J.H., Shiffer, A. McDonald, D., Knight, R., Caporaso, J.G. and **Kelley, S.T.** (2015) Ghost-tree: creating hybrid-gene phylogenetic trees for diversity analyses. *PeerJ PrePrints* (3), e1354.
69. Torres, P.J., Fletcher, E.M., Gibbons, S.M., Bouvet, M., Doran, K.S., and **Kelley, S.T.** (2015) Characterization of the salivary microbiome in patients with pancreatic cancer. *PeerJ*, doi: 10.7717/peerj.1373

#### Chapters in Refereed Books

Rohwer, F. and **S.T. Kelley.** (2004) Culture-independent analysis of Coral-Associated Microbes. In: *Coral Health and Disease*. E. Rosenberg and Y. Loya (eds). Springer Press, New York. pp. 265-278.

Bizzoco, R.W. and **S.T. Kelley** (2013) Microbial Diversity in Acidic High-Temperature Steam Vents. In: *Polyextremophiles: Cellular Origin, Life in Extreme Habitats and Astrobiology*. Seckbach, J., Oren, A. and Stan-Lotter, H. (eds). Netherlands: Springer, pp. 315-332.

Lipson, D.A. and **S.T. Kelley** (2014) Plant-Microbe Interactions. In: *Ecology and the Environment*. Monson, R. (ed.). Spring Science and Business Media, New York.

#### Textbook Entries

Figure 3.3 In: C.M. Herrera and O. Pellmyr. (2002) *Plant-Animal Interactions: An Evolutionary Approach*. Blackwell Publishing, Oxford, UK.

Special Topic 17.2 Phylogeny of a Shower Curtain Biofilm. In: J.L. Slonczewski and J.W. Foster. (2009) *Microbiology: An Evolving Science*. New York: W.W. Norton & Company, Inc.

Citation (Ellis *et al.* 2008) and description of Halophiles in fumarole steam. In: Ohren, A. (2011) Ecology of Halophiles. *Extremophiles Handbook*. Horikoshi, K. (ed). New York: Springer, p. 346.



INSIDE COVER. *In: J.L. Slonczewski and J.W. Foster. (2014) Microbiology: An Evolving Science (3<sup>rd</sup> Edition). New York: W.W. Norton & Company, Inc.***RESEARCH**

## **FUNDING**

### **Current Research Grants**

Alfred P. Sloan Foundation 2015-2018. Mechanistic modeling of microbial metabolic succession in the built environment. **Co-Investigator** (PI-Jack A. Gilbert). \$880,000.

Alexander Von Humboldt Extended Research Stay. 2015-2016. Development of bioinformatics analysis tools for Next-Generation Sequencing (NGS) studies of environmental fungal communities. **PI**. \$10,000.

Alfred P. Sloan Foundation 2011-2016. Viral metagenomic analysis of workplace environments. **PI**. \$125,000.

University of California School of Medicine Microbiome Seed Grant. 2015-2016  
**Co-Investigator** (PI-Varykina Thackray). \$50,000

### **Pending Research Grants**

National Institutes of Health R01: The Effects of E-Cigarette Aerosol Mixtures on the Oral Microbiome. **MPI** (PD/PI – Georg Matt). \$1,000,000.

National Institutes of Health R21: Dysregulation of the Intestinal Microbiome in Polycystic Ovary Syndrome **Co-Investigator** (PI-Varykina Thackray). \$275,000

### **Completed Research Grants**

National Institutes of Health 2009-2014. R01: Oral flora, periodontitis and vascular dysfunction in young Native Americans. **Co-Investigator** (PI-Roberta Gottlieb). \$1,250,000.

National Institutes of Health: American Recovery & Reinvestment Act 2009-2011. A Quality Assurance: Coordination and Analysis Center for HMP Administrative. **PI**. \$250,000.

National Science Foundation Assembling the Tree of Life (AToL) Proposal 2004-2007. The Deep Scaly Project: Resolving Squamate Phylogeny using Genomic and Morphological Approaches. **Senior Personnel-Bioinformatics**. (PI-Tod Reeder) \$645,700

National Science Foundation Cyberinfrastructure Partnership (CIP) Teragrid Award 2008. Novel Application of Positional Weight Matrices for Transcription Factor Binding Site Discovery. 24,000 CPU hours.

Department of Energy CSP 2008-2009. Development of comprehensive EST sequence library for the tree-killing southern pine beetle, *Dendroctonus frontalis*. **PI**. \$150,000.

Alfred P. Sloan Foundation 2012-2014. Modeling Establishment of Microbial Communities Over Time on Different Office Surface Materials in Different Climates. **Co-Investigator** (PI-J. Greg Caporaso). \$250,000.

Clorox Corporation Research Award 2011-2014. Periodontal therapy using a diluted sodium hypochlorite mouth rinse. **PI**. \$86,000

Clorox Corporation Research Award 2004-2009. Microbial diversity in the arena of public health. \$160,000. **PI**.

Alexander Von Humboldt Fellowship for Experienced Researchers 2008-2011. Effects of evolutionary history, host-plant use and secondary chemistry on gut microbial community diversity of *Longitarsus* flea-beetles. **PI**. \$100,000.

Max Planck Institute, Germany 2009. Genome sequencing of the bacterial endosymbiont of two cocoon-forming leaf beetles (Chrysomelidae: Donaciinae). **Co-PI** (PI-Gregor Koelsch). \$20,000.

California State University Program for Research in Biotechnology (CSUPERB) Award 2003. Development of Bark Beetle Biocontrol. \$10,000

California State University Program for Research in Biotechnology (CSUPERB) Award 2006. Design and Development of Broad-Spectrum Bacterial Vaccine. \$10,000

Wildlife Domestic Animal Disease Research Award 2003. Evolutionary Genetics and Virulence of *Pasteurella haemolytica* and *P. trehalosi* in Wild and Domestic (*Ovis*) Sheep and Domestic Goats (*Capra*). \$7,820

Wildlife Domestic Animal Disease Research Award 2003. Non-culture Detection of *Pasteurella* Bacteria in Bighorn and Domestic Sheep. \$4,660

#### Internal Grants (SDSU)

Research and Scholarly Creative Activity Award 2002. Effects of Bark Beetle Ecology and Behavior on Symbiotic Microbial Diversity. \$2,835

Faculty Grants in Aid of Research Award 2002. Approaches for Improving RNA Structure Prediction, Sequence Alignment and Phylogenetic Analysis: An Iterative Approach. \$7,779

Research and Scholarly Creative Activity Award 2003. Connecting pattern to process: The effects of host-plant use on species diversification in bark beetles. \$4,200

**AWARDS AND HONORS**

- 1996-1999 NSF Dissertation Research Award 9623763 Evolution of Resource Specialization in the Bark Beetle Genus *Dendroctonus*.
- 1999-2002 NIH National Research Service Award F32GM020013  
Computational methods for molecular structure prediction.
- 2005-2006 Outstanding Faculty Service Award, Mortar Board National Honor Society, SDSU Chapter
- 2009-2011 Alexander von Humboldt Research Fellowship for Experienced Researchers, Germany
- 2015-2016 Alexander Von Humboldt Extended Research Stay, Germany

**PROFESSIONAL ACTIVITIES**Professional Societies

Member, American Society for Microbiology

Board of Directors, American Friends of the Alexander von Humboldt Research Foundation

Scientific Advisory Board Member

Clorox Corporation

Peer Review*Journal Review*

Annals of the Entomological Society of America

Biological Journal of the Linnaean Society

BMC Bioinformatics

BMC Microbiology

BMC Oral Biology

Environmental Microbiology

FEMS Microbiology Letters

Frontiers in Microbiology

Genome Biology

Hereditas

International Society Molecular Ecology (ISME J)

Intelligent Systems for Molecular Biology (ISMB)

Journal of Applied Entomology

Journal of Applied Microbiology

Journal of Clinical Microbiology

Journal of Molecular Evolution

Journal of Wildlife Diseases

Microbial Ecology

Microbiome

Molecular Ecology

mSystems

Nature Communications  
 Nucleic Acids Research  
 Proceedings of the National Academy of Sciences  
 Public Library of Science (PLoS) ONE  
 Psyche  
 RNA

*Grant Reviews*

California State University Program for Research in Biotechnology (CSUPERB), Ad-hoc Reviewer, 2005  
 CSUPERB, Grant Panel 2006  
 National Institutes of Health, National Institute of General Medical Sciences, SCORE Program, 2007  
 National Science Foundation, Division of Environmental Biology, Ecological Biology Cluster, Ad-hoc Reviewer, 2007  
 National Science Foundation, International Research Fellowship Program, Ad-hoc Reviewer, 2007  
 National Science Foundation, Emerging Frontiers Program, Ad-hoc Reviewer, 2008  
 National Science Foundation, Division of Environmental Biology, Ad-hoc Reviewer, 2009  
 National Science Foundation, Systematic Biology and Biodiversity Inventories, Ad-hoc Reviewer, 2010  
 TEDDY (The Environmental Determinants of Diabetes in the Young) Microbiome and Viral Metagenomics Lab Proposal Review, Committee Member, 2012  
 Research Council for Natural Sciences and Engineering, Academy of Finland, 2014  
 Fulbright Research Scholarship, 2014  
 Austria Science Fund, Ad-hoc Reviewer, 2015

Media Coverage

Interviewed in New York Times Science Section article, “It's Wild vs. Domestic Sheep as Groups Lock Horns Over Grazing Area”, Sept. 20, 2005  
 Newspaper article on research in San Diego Union - Tribune entitled, “Shower study finds what's been lurking behind the curtain”, May 2, 2004  
 Interviewed by local TV news stations about research, May 2004  
 Article on research in San Diego State publication, SDSUniverse, entitled, “Pulling Back Shower Curtains Reveals Microbial Mayhem”, May 3, 2004  
 Newspaper article on research in San Diego Union - Tribune entitled, “Germs hitch ride in plane bathrooms”, Dec 26, 2005  
 Featured Article, San Diego State University Web Site entitled, “Germ Hunters: Searching for bugs that harm and help”, June 2007  
 Interviewed by local Fox TV affiliate about office bacterial contamination, Sept. 30, 2009  
 Interviewed by Medstar TV on “5-second Rule”, February, 2010  
 Interviewed by San Diego Union-Tribune, December 2010

**Worldwide Media Coverage of Hewitt et al. (2012) PLoS ONE Article:**

Television: CBC (Canada). Radio: NPR, New Zealand, Germany, USA (San Francisco, Sacramento). Print/Internet: Hundreds of stories including pieces in the New York Times, Time Magazine, ABC News, International Business Daily (UK),

The Telegraph (India), Der Spiegel (Germany), The Irish Independent (Ireland), YNet (Israel), Associated Press (USA), The Canadian Press (Canada), Sydney Morning Herald (Australia).

Featured Article, San Diego State University Web Site entitled, "Saving African Elephants", December 2013

#### Other Professional Activities

Organizer, University of Colorado Department of Environmental, Population and Organismal Biology Seminar Series

Member, Biotechnology Board of Directors, High Tech High School of San Diego

Invited Advisor, Respiratory Disease in Mountain Sheep: Knowledge Gaps and Future Research, University of California, Davis, Spring 2007

Instructor, NIH Program Bridges to the Future: Transition program for minority students entering SDSU from local community colleges.

Instructor, NSF Program: SDSU Mathematics Research Experience for Undergraduates and Teachers. Summer 2007

Instructor, NSF Program: Cyberbridge - Collaborative project between University of California, San Diego and San Diego State University to expand use of media and cyber-infrastructure in K-12 science classrooms. Summer 2008

#### **INVITED SPEAKER**

San Diego State University, Fall 2002

University of California, San Diego, Spring 2003

Biosymposium, San Diego State University, Spring 2004

Department of Biology, University of California, San Diego, Spring 2006

Conservation and Research for Endangered Species (CRES), San Diego, Spring 2006

Michael Smith Laboratories, University of British Columbia, Summer 2006

Pace Symposium, University of Colorado, Boulder, Fall 2007

Centre for Microbial Diversity & Evolution, University of British Columbia, Spring 2008

University of Hamburg, Germany, Spring 2009

University of California, Riverside, Spring 2010

Cornell University, Summer 2010

University of Colorado, Boulder, Fall 2010

11<sup>th</sup> Annual Thermophiles Conference, Big Sky, Montana, Fall 2011

Rice University, Spring 2012

13<sup>th</sup> Meeting Genomic Standards Consortium, Shenzhen, China, Spring 2012

Preliminary Meeting of the Hospital Microbiome Project, U. Chicago, Summer 2012

First Annual Conference on the Microbiology of the Built Environment, Summer 2013

Clorox Corporation Scientific Advisory Board, San Francisco, California, Fall 2013

AAAS: Microbiomes in the Built Environment, Washington D.C., Spring 2014

MVCAC Laboratory Technologies Workshop, San Diego, California, Spring 2014

Second Annual Conference on the Microbiology of the Built Environment, Summer 2014

San Diego Medical Genomics Summit, Carlsbad, California, Summer 2015

Third Annual Conference on the Microbiology of the Built Environment, Summer 2015

**PRESENTATIONS AT SCIENTIFIC MEETINGS (SINCE 2004)**

(\*Indicates presenter)

**S. T. Kelley**\*, E. F. Cassirer, G. C. Weiser, and S. Safaee. (2004) Phylogenetic Diversity of Pasteurellaceae and Horizontal Gene Transfer of Leukotoxin in Wild and Domestic Sheep and Domestic Goats. Society for the Study of Evolution Annual Meeting, Fort Collins, Colorado. Oral Presentation.

Holzman, J.\* and **S.T. Kelley**. (2004) Direct comparison of microsatellites and ISSRs for assessing genetic structure of palm beetles. Society for the Study of Evolution Annual Meeting, Fort Collins, Colorado. Poster Presentation.

**S. T. Kelley**\*, E. F. Cassirer, G. C. Weiser, and S. Safaee. (2004) Phylogenetic Diversity of Pasteurellaceae and Horizontal Gene Transfer of Leukotoxin in Wild and Domestic Sheep and Domestic Goats. American Society of Microbiology General Meeting, New Orleans, Louisiana. Poster Presentation. Poster Presentation.

Safaee, S., G.C. Weiser, E.F. Cassirer, C. McManus and **S.T. Kelley**\*. (2005) Culture-independent analysis of microbial diversity in bighorn sheep respiratory tracts. American Society of Microbiology Conference on the Pasteurellaceae, Kohala Coast, Big Island, Hawaii. Poster Presentation.

Ellis, D.\* , R. Bizzoco and **S.T. Kelley**. (2005) Sampling acidic thermal springs in Yellowstone National Park. American Society of Microbiology General Meeting, Atlanta, Georgia. Poster Presentation.

Mathur, J.\* , R. Bizzoco, D. Ellis and **S.T. Kelley**. (2005) The effects of environmental and evolutionary forces on microbial diversity in acidic thermal springs. American Society of Microbiology General Meeting, Atlanta, Georgia. Poster Presentation.

Safaee, S., G.C. Weiser, E.F. Cassirer, R.R. Ramey and **S.T. Kelley**\*. (2005) Culture-independent analysis of microbial diversity in bighorn sheep respiratory tracts. American Society of Microbiology General Meeting, Atlanta, Georgia. Poster Presentation.

**Kelley, S.T.**\* (2006) Microbial diversity of *Dendroctonus* bark beetles. Third Workshop on Genetics of Bark Beetles, Asheville, North Carolina. Oral Presentation.

Ellis, D., R. Bizzoco and **S.T. Kelley**\* (2007) Halophilic Archaea isolated from geothermal steam vents. Gordon Research Conference: Archaea: Ecology, Metabolism & Molecular Biology, Proctor Academy, Andover, New Hampshire. Poster Presentation.

Tin, S., R.W. Bizzoco and **S.T. Kelley**\*. (2008) Evidence for deep subsurface sources and geographic isolation in geothermal microbial communities. 3<sup>rd</sup> Annual Research Coordination Network, Yellowstone National Park. Poster Presentation.

**Kelley, S.T.\*** and S. Dobler. (2009) Effects of host-plant use and secondary chemistry on insect gut microbial diversity. Network Meeting of the Alexander von Humboldt Foundation Bonn, Germany. Poster Presentation.

**Kelley, S.T.\*** and S. Dobler. (2009) Effects of host-plant use and secondary chemistry on insect gut microbial diversity. Symposium: Communication and Host-Microbe Interactions. Universität Osnabrück, Germany. Oral Presentation.

Hewitt, K., Mannino, F.L., Hamady, M. Knight, R. and **S.T. Kelley\***. (2009) High-throughput sequencing reveals extensive bacterial diversity in Newborn Intensive Care Units. FEMS, Gothenburg, Sweden. Poster Presentation.

**Kelley, S.T.\*** and S. Dobler. (2010) Influence of evolutionary history and host-plant chemistry on the flea beetle gut microbiome. San Diego Microbiology Group Annual Meeting, University of California, San Diego. Oral Presentation.

Rodriguez-Mueller, B.\* and **S.T. Kelley** (2010) Phylogenetic Approach to Improving the Annotation of Membrane Proteins. American Society of Microbiology, San Diego. Poster Presentation.

Benson, C.\*, Bizzoco, R. and **S.T. Kelley** (2010) Archaeal diversity in geothermal steam vents. American Society of Microbiology, San Diego. Poster Presentation.

Schwarzberg, K.\*, Saber, M., Alonaizan, F., Furlan, M., Slots J., and **S.T. Kelley** (2011) Endodontic Infections: a Metagenomics Approach, San Diego Microbiology Group, Poster Presentation.

Cornell, J.B.\*, Wall, K.M., Bizzoco, R. and **S.T. Kelley** (2011) Using a Phylogenetic Statistics-based Approach to Determine the Source of Extremophile Microbial Communities, San Diego Microbiology Group. Poster Presentation.

Rodriguez-Mueller, B.\* and **S.T. Kelley** (2011) Fine-grained metabolic functional diversity across human samples, San Diego Microbiology Group. Poster Presentation.

J.B. Cornell\*, K.M. Wall, R.W. Bizzoco, and **S.T. Kelley** (2011) Determining the Origin of Extremophile Microbial Communities: New Insight Using a Phylogenetic-based Statistics Approach. American Society of Microbiology - Southern California Chapter, La Jolla, CA. Poster Presentation.

K. Schwarzberg\*, M. Saber, F. Alonaizan, M. Furlan, J. Slots and **S. T. Kelley** (2011) Bacteria Associated with Endodontic Infections. American Society of Microbiology - Southern California Chapter, La Jolla, CA. Poster Presentation.

J.B. Cornell\*, K.M. Wall, R.W. Bizzoco, and **S.T. Kelley** (2011) Extremophile Microbial Communities: Where do they come from? A Phylogenetic Approach. Society for the Study of Evolution, Norman, Oklahoma. Poster Presentation.

J.B. Cornell\*, K.M. Wall, R.W. Bizzoco, and **S.T. Kelley** (2011) Using a Phylogenetic Statistics-based Approach to Determine the Source of Extremophile Microbial Communities. San Diego Microbiology Group, La Jolla, California. Poster Presentation.

K. Schwarzberg\*, M. Saber, F. Alonizan, M. Furlan, J. Slots and **S.T. Kelley** (2012) Bacteria Associated with Endodontic Infections. Student Research Symposium, San Diego State University, California. Poster Presentation.

J.B. Cornell\*, K.M. Wall, R.W. Bizzoco, and **S.T. Kelley** (2012) Determining the Origin of Extremophile Microbial Communities: New Insight Using a Phylogenetic-based Statistics Approach. Division of Research Affairs - San Diego State University, San Diego, California. Poster Presentation.

**Kelley, S.T.**\* (2012) The Indoor Virome: Bacterial and viral metagenomic approaches for studying the Built Environment. The 13th Workshop of the Genomic Standards Consortium, Shenzhen, China. Oral Presentation.

Schwartz, T.\* J. Gilbert, and **S.T. Kelley** (2012) Temporal Dynamics of Bacterial and Viral Communities in Public Restrooms. San Diego Microbiology Group. Poster Presentation.

Schwartz, T.\* J. Gilbert, and **S.T. Kelley** (2012) Temporal Dynamics of Bacterial and Viral Communities in Public Restrooms. American Society of Microbiology, San Francisco. Poster Presentation.

Le, R.\*, K. Schwarzberg, M. Furlan, J. Slots, and **S.T. Kelley** (2012) Identification of Eukaryotic Viruses in the Oral Cavity Using Density Gradient Centrifugation and Virochip Analysis. American Society of Microbiology, San Francisco. Poster Presentation.

Schwarzberg, K.\*, R. Le, B. Bharti, R. Gottlieb, and **S.T. Kelley** (2012) Association Between Microbial Diversity in Periodontal Disease and Vascular Function American Society of Microbiology, San Francisco. Poster Presentation.

Fletcher, E.\* , P.J. Torres\*, **S.T. Kelley**, K.S. Doran. (2012) Analysis of Oral Microbiota in Human Cancer Subjects. CSUPERB, Anaheim. Poster Presentation

Torres, P.J.\* , E. Fletcher, K.S. Doran, **S.T. Kelley**. (2012) Analysis of Oral Microbiota in Human Cancer Subjects. San Diego Microbiology Group, San Diego. Poster Presentation.

Torres, P.J.\* , E. Fletcher, M. Watcher, **S.T. Kelley**, M. Bouvet, K.S. Doran. (2013) Analysis of Oral Microbiota in Human Cancer Subjects. U54 Annual Poster Presentation, San Diego. Poster Presentation.



Torres, P.J.\*, E. Fletcher, M. Watcher, M. Bouvet, K.S. Doran, **S.T. Kelley**. (2013) Analysis of Oral Microbiota in Human Cancer Subjects. Southern California American Society of Microbiology, San Diego. Poster Presentation.

Torres, P.J.\*, E. Fletcher, M. Watcher, M. Bouvet, **S.T. Kelley**, K.S. Doran. (2013) Analysis of Oral Microbiota in Human Cancer Subjects. San Diego Microbiology Group, San Diego. Poster Presentation.

Cohen, C.\*, M. Galban, S. Gonzalez, B. Le, I. Wu, S. Owens, S. Gibbons, M. Paine, S. Rich, **S.T. Kelley** and J. Slots (2013) Illumina® Sequencing Differences Between Supragingival and Subgingival Plaque In Periodontitis. 2013 USC Herman Ostrow School of Dentistry Research Day, University of Southern California. Poster Presentation.

**Kelley, S.T.** \* (2013) Virus tracking and persistence in indoor environments. The Second Annual Conference on the Microbiology of the Built Environment. University of Colorado, Boulder. Oral Presentation.

Fouquier, J.\*, T. Schwartz, **S.T. Kelley** (2013) The Public Restroom Mycobioime. The Second Annual Conference on the Microbiology of the Built Environment. University of Colorado, Boulder. Poster Presentation.

Fouquier, J.\*, T. Schwartz, **S.T. Kelley** (2014) The Public Restroom Mycobioime. CSU Biotechnology Symposium, Santa Clara, CA. Poster Presentation.

Mahnaz, Z.\*, J. Caporaso, J. Chase, **S.T. Kelley**, J. Fouquier, J. Siegel (2014) Impact of Building Science Parameters on Fungal Communities on Indoor Surfaces. Indoor Air 2014, Hong Kong, China. Poster Presentation.

Fouquier, J.T.\*, T.M. Schwartz, M.Q. Mitchell, **S.T. Kelley** (2014) American Society of Microbiology General Meeting, Boston, MA. Characterizing the Public Restroom Mycobioime Using the Internal Transcribed Spacer. Oral presentation.

Fouquier, J.T.\*, M.Q. Mitchell, T.M. Schwartz, **S.T. Kelley** (2014) San Diego State University Student Research Symposium, San Diego, CA. Characterizing the Public Restroom Mycobioime Using the Internal Transcribed Spacer. Oral presentation.

Mitchell, M.Q.\*, J.T. Fouquier, J. Bell, T.M. Schwartz, **S.T. Kelley** (2014) San Diego State University Student Research Symposium, San Diego, CA. Bacterial Growth Patterns in a Public Restroom Environment. Oral presentation.

Torres, P.J.\*, E. Fletcher, K.S. Doran, **S.T. Kelley** (2014) American Society of Microbiology General Meeting, Boston, MA. Characterization of the Oral Microbiome in Patients with Pancreatic Cancer. Poster Presentation.

Torres, P.J.\*, E. Fletcher, K.S. Doran, **S.T. Kelley** (2014) San Diego State University Student Research Symposium, San Diego, CA. Oral Presentation.

Fouquier, J.T.\*, **S.T. Kelley** 27<sup>th</sup> Annual California State University Biotechnology Symposium (CSUPERB), Santa Clara, CA. Exploring the Unseen World of Fungal Biodiversity: A Hybrid-Gene Bioinformatics Approach to Creating Phylogenetic Trees. Poster presentation.

Didulo, D.\*, **S.T. Kelley** (2015) 27<sup>th</sup> Annual California State University Biotechnology Symposium (CSUPERB), Santa Clara, CA. Mobile Bioinformatics Training Apps for Biotechnology. Poster Presentation.

Torres, P.J.\*, E. Fletcher, K.S. Doran, **S.T. Kelley** (2015) 27<sup>th</sup> Annual California State University Biotechnology Symposium (CSUPERB), Santa Clara, CA. Characterization of the Oral Microbiome in Patients with Pancreatic Cancer. Poster Presentation.

**Kelley, S.T.** and V.G. Thackray (2015) San Diego Medical Genomics Summit, Carlsbad, CA. Letrozole treatment alters the gut microbiome in a polycystic ovary syndrome mouse model. Oral Presentation.

Fouquier, J.T., J. R. Rideout, E. Bolyen, J. Chase, A. Shiffer, D. McDonald, R. Knight, J. G. Caporaso and **S.T. Kelley\*** (2015) ghost-tree: creating hybrid-gene phylogenetic trees for diversity analyses. The Fourth Annual Conference on the Microbiology of the Built Environment. University of Colorado, Boulder. Poster presentation.

Kosnicki, K.\*, A. Zuazo, J. Penprase, P. Cintora, O. Medrano, D. Erwin, S.M. Brassler, G.L. Harris, S.T. Kelley (2015) The 4th Annual Conference on the Microbiology of the Built Environment, Boulder, CO, Alcohol Consumption and Its Effect on the Gut Microbiome, Poster Presentation.

Kosnicki, K.\*, A. Zuazo, J. Penprase, P. Cintora, O. Medrano, D. Erwin, S.M. Brassler, G.L. Harris, S.T. Kelley (2015) Southern California American Society for Microbiology Annual Meeting, La Jolla, CA, Alcohol Consumption and Its Effect on the Gut Microbiome, Poster Presentation.

## TEACHING

### Courses

Biology 568, Bioinformatics Lecture, Spring 2004-2007, Fall 2009-2015

Biology 568, Bioinformatics Lab, Spring 2004-2007, Fall 2009-2015

Biology 350, General Microbiology, Fall 2007, Fall and Spring 2009-2015

Biology 600, Seminar in Molecular Biology, Fall 2007, Spring 2010-2015

Biology 601, Graduate Seminar Molecular and Cellular Biology, Fall 2007, Spring 2010

Biology 100, Non-majors general biology Fall 2004-2006

Biology 567, Biochemistry, Cell and Molecular Biology III, Fall 2003-2006

Curriculum Development and Teaching Innovations:

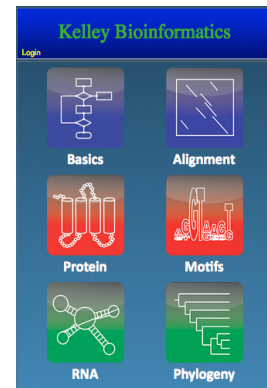
Developed Interactive Bioinformatics Algorithms for Mobile Devices: Accessible worldwide at [www.kelleybioinfo.org](http://www.kelleybioinfo.org)

Developed active learning approaches for Bioinformatics, Biology 568

Developed Group Learning approaches for dissection of scientific papers in Biology 567

Cyberbridge Course (NSF Funded project): Integrating computational skills into high school curricula.

Developed Bioinformatics Programming Course for biologists at University of Colorado  
Participant in Center for Teaching and Learning Workshops, University of Colorado

**MENTORING**Masters of Science (Thesis Chair or Co-Chair)

Shirin Safaee, BS in Biology, Tarbiat Moalem University, Iran  
Cell and Molecular Biology Program, Graduated Spring 2005

Thesis: Non-culture detection of *Pasteurella* bacteria and horizontally-transferring toxin genes.

Jayanti Mathur, Andhra University, Visakhapatnam, India  
Cell and Molecular Biology Program, Graduated Fall 2005

Thesis: Analysis of microbial diversity along a sulfur rich thermal gradient.

Jason Holzman, BS in Biology, University of Wisconsin  
Evolutionary Biology Program, Graduated Spring 2006

Thesis: Population genetics of inbreeding seed beetle sister-species.

Eric Ngan, BS in Computer Science, San Diego State University  
Computational Sciences Program, Graduated Fall 2006

Thesis: Isolation by distance web service with incorporation of DNA data sets.

Dean Ellis, BS in Biology, James Cook University, Australia  
Cell and Molecular Biology Program, Graduated Fall 2006

Thesis: Archaeal diversity of geothermal steam vents.

Alexander Poole, BS in Biology, University of Colorado  
Cell and Molecular Biology Program, Graduated Spring 2007

Thesis: Phylogenetic methods for the detection of gene regulatory modules.

Sara Tin, BS in Biology, UC California, Berkeley  
Evolutionary Biology Program, Graduated Spring 2007

Thesis: Prokaryotic Methods of Dispersal Within and Among Geothermal Habitats

Julia Turner, BS in Biology, Metropolitan State College of Denver

Computational Sciences Program, Graduated Fall 2007

Thesis: A parallel implementation of the Isolation by Distance Web Service.

Lesley Lee, BA in Chemistry and BS in Biology, Florida Atlantic University

Cell and Molecular Program, Graduated Spring 2008

Thesis: Combined culture and culture-independent analysis of microbial diversity in a childcare center.

Sujata Sovani, BS in Chemical Engineering, Laxminarayan Institute of Technology,  
Nagpur, India

Cell and Molecular Program, Graduated Spring 2008

Thesis: Design and development of broad-spectrum bacterial vaccine.

Kranthi Kumar, BS in Biology, Jawaharlal Nehru Technological University, India

Cell and Molecular Program, Graduated Spring 2011

Thesis: Phylogeny and molecular identification of Pasteurellaceae of the basis of multilocus sequence analysis.

Kate Wall, BA, Mount Holyoke College

Cell and Molecular Program, Graduated Summer 2011

Thesis: Microbial diversity of Hawaiian Fumaroles.

Yoko Suzuki, BS, San Diego State University

Computational Sciences Program, Graduated Summer 2011

Thesis: Implementation of GIS information for Isolation by Distance Web Service.

Krissi Hewitt, BS in Biology, University of California, San Diego

Cell and Molecular Program, Graduated Spring 2012

Thesis: Molecular analysis of bacterial diversity in neonatal intensive care units using 16S rRNA pyrosequencing.

Debashree Das, BS, University of North Bengal; MS University of Calcutta

Cell and Molecular Program, Graduated Spring 2012

Thesis: Diversity of Archaea in geothermal springs and spring sediments.

Matthew Munoz, BS, University of California, Davis

Bioinformatics and Medical Informatics, Graduated Spring 2012

Thesis: Evolutionary genomics of gene order and regulation in microbes.

Jennifer Cornell, BS, San Diego State University

Evolutionary Biology Program, Graduated Summer 2012

Thesis: Origin and evolution of fumarole microbial communities: A phylogenetic approach.

Paul Fryling, BS, San Diego State University  
Bioinformatics and Medical Informatics, Graduated Spring 2013  
Thesis: Application of Ancestral Sequences to Bacterial Phylogenetic Analysis.

Rosalin Le, BA, UCLA  
Cell and Molecular Program, Graduated Fall 2013  
Thesis: Microbial diversity associated with periodontal disease and heart disease.

Tara Schwarz, BS, St. Mary's College  
Cell and Molecular Program, Graduated Spring 2014  
Thesis: Viral Metagenomics of Indoor Environments.

Iryna Dzieciuch, BS, Ukraine  
Bioinformatics and Medical Informatics, Graduated Fall 2014  
Project: Metagenomic analysis of periodontal disease.  
Pedro J. Torres, BS, University of California, Santa Barbara  
Cell and Molecular Program, Graduated Spring 2015  
Thesis: Salivary microbiota associated with pancreatic cancer.

Jennifer Fouquier, BS, University of California, San Diego  
Bioinformatics and Medical Informatics, Graduated Spring 2015  
Thesis: Molecular analysis of indoor fungal diversity.

John Thompson, BA, University of California, San Diego  
Bioinformatics and Medical Informatics, Graduated Summer 2015  
Thesis: Determining Phylogeny via Multiple Reference Proteins.

Kassi Kosnicki, BS, University of Wisconsin, Milwaukee  
Bioinformatics and Medical Informatics Graduate Student  
Thesis: Effects of Alcohol Consumption on the Gut Microbiome

Sharon Zhang, BA, University of Texas, Austin  
Bioinformatics and Medical Informatics Graduate Student  
Thesis: Molecular Analysis of NICU (Neonatal Intensive Care Unit) microbe

Jason Dulin, BS, University of Illinois-Urbana/Champaign  
Molecular and Cellular Biology, Graduated December 2013  
Project: Molecular Analysis of Fungal Diversity using GhostTree

Vibhu Chandrashekhar, BA, Rutgers University  
Bioinformatics and Medical Informatics Graduate Student  
Thesis: Metagenomic functional gene analysis of letrozole-induced polycystic ovary syndrome

Prathik Korategere Vijay Kumar, BE (Biotechnology), New Horizon College of Engineering, India

Bioinformatics and Medicinal informatics graduate student  
Thesis: Metagenomic analysis of periodontal disease

#### Ph.D. Students

Karen Schwarzberg, BS, Hebrew University of Jerusalem; MS, UC Davis.  
Joint Doctoral Program in Cell and Molecular Biology (SDSU/UCSD)  
Graduated Spring 2013  
Dissertation: Microbial diversity associated with periodontal disease and vascular dysfunction.

Nikos Gurfield, BS, University of California, Los Angeles; DVM University of California, Davis  
Joint Doctoral Program in Cell and Molecular Biology (SDSU/UCSD)  
Dissertation: Endosymbionts, pathogens and microbial diversity in arthropods

Pedro J. Torres, BS, University of California, Santa Barbara; MS, SDSU.  
Joint Doctoral Program in Cell and Molecular Biology (SDSU/UCSD)  
Dissertation: Microbial communities and their impact on human health and disease.

#### Post-Doctoral Fellow

Beltran Rodriguez-Mueller, Ph.D. Computational Sciences, San Diego State University  
Project: Bioinformatics analysis of metagenomic data associated with the Human Microbiome.

#### PREP (Post-Baccalaureate Biomedical Research Education Program – NIH/NIGMS)

Eric Alegre, BS Biology, SDSU.  
Project: PHAT: Phylogenetic Annotation Tool. Eric developed a Bioinformatics approach to improve the accuracy of gene sequence annotations, a critical aspect of genomic research. Eric was accepted into a Bioinformatics graduate program at Arizona State University.

#### Biotechnology Certificate Program

Aruna Binuraj, BS in Zoology, MS in Microbiology, Mahatma Gandhi University, India  
Summer 2006-Fall 2006  
Project: Substrate-use profiling and molecular analysis of bark beetle microbes.

#### Undergraduate Researchers

Collin McManus, BS Biology, SDSU (Spring 2003) – continued as technician.  
Project: Development of non-culture molecular methods for analysis of microbial communities.

Adam Navidi, BS Biology, SDSU (Fall 2003).

Project: Population genetics of *Dendroctonus* bark beetles in relation to host-plants.

Omar Alemi, BS Biology, SDSU (Spring 2004).

Project: Development of PCR strategies to amplify insect nuclear genes.

Cecelia Dahl, BS Biology, SDSU (Fall 2004).

Project: Strain specific genetic analysis of Pasteurellaceae bacteria.

Diana Buenrosto, BS Biology, SDSU (Fall 2004).

Project: Bioinformatics: Sequence analysis of ribosomal RNA sequences.

Eric Alegre, BS Biology, SDSU (Spring 2005) – continued as PREP student.

Project: Development of software for analyzing microbial sequence data.

Chris Reid, BS Biology, SDSU (Fall 2005).

Project: Effects of resource specialization on genetic structure of bark beetles populations.

Kenneth Zitnik, BS Biology, SDSU (Spring 2008)

Project: Molecular analysis of bacterial diversity in office settings using pyrosequencing technology.

Sylvia Marzec, BS Biology, University of Hamburg (Spring 2009)

Project: Effects of host-plant switching on gut microbial diversity in two flea-beetle species.

Aisha Ahmed, BS Biology, SDSU (Spring 2010)

Project: Novel PCR primers for bacterial community diversity analysis of periodontal disease.

Arman Majidi, BS Biology, SDSU (Spring 2010)

Project: Novel PCR primers for bacterial community diversity analysis of periodontal disease.

Kelley Christian, BS Biology, SDSU (Spring 2010)

Project: DNA extraction and PCR of fumarole-associated vent communities.

Chris Wilde, BS Biology, SDSU (Spring 2011)

Project: Bacterial strain identification in root canal and other oral diseases.

Maria Angle, BS Biology, SDSU (Fall 2011-Spring 2012)

Project: Bacterial strain identification in root canal and other oral diseases.

Mariam Asper, BS Biology, SDSU (Fall 2011-Spring 2012)

Project: Bacterial strain identification indoor microbial communities.

Bonnie Le, BS Biology, UCLA (Volunteer Fall 2011-Spring 2012)

Project: Primer optimization for novel gene markers in oral microbial communities.

Pascal Reyes, Major Undeclared, SDSU (Fall 2012-Fall 2013)

Project: Effects of third-hand smoke on microbial diversity of bed linens.

Michelle Mitchell, BS Biology, SDSU (Fall 2013-Spring 2014)

Project: Establishment and viability of microbial communities on restroom surfaces.

Julia Bell, BS Biology, SDSU (Spring 2014)

Project: Establishment and viability of microbial communities on restroom surfaces.

Brandon Villar, BS Biology, SDSU (Spring 2014)

Project: Real-time PCR analysis of bacterial abundance in pancreatic cancer patients.

Artemisia Zuazo, BS Biology, SDSU (Spring, Summer 2015)

Project: Analysis of gut microbial diversity under moderate alcohol consumption.

#### Biotechnology Interns (High Tech High School)

Jeff Jensen (Spring 2004)

Ryan Thomas (Spring 2004)

Clark Schulman (Spring 2007)

Christopher Mitchell (Spring 2007)

Brad Jensen (Spring 2008, Summer 2009)

Alex Pardes (Spring 2008, Summer 2009)

#### **UNIVERSITY SERVICE**

##### Committee Assignments:

1. Member, Cell and Molecular Biology Curriculum Committee, Fall 2004-Present. This committee is charged with developing and maintaining the high standards of courses for our students in the Biology program.
2. Member, Bioinformatics and Medical Informatics Admission Committee, Fall 2004-Present. The purpose of this committee is to evaluate the applications of prospective graduate students and decide who is best suited for the program.
3. Member, Retention, Tenure and Promotion (RTP) Committee, Fall 2010-2015. The purpose of this committee is to evaluate faculty in the Biology Department and recommend retention, tenure or promotion to the College and University.
4. Member, Cell and Molecular Biology Joint-Doctoral Ph.D. Committee, Spring 2011-Present. The purpose of this committee is to evaluate the applications of prospective graduate students and decide who is best suited for the program.



5. Member, Cell and Molecular Biology Master's Committee, Fall 2004-2009. The purpose of this committee is to evaluate the applications of prospective graduate students and decide who is best suited for the program.
6. Advisory Member, Distributed Computing Committee, Fall 2004-2008. This committee involved the cooperation of a number of faculty interested in a distributed computer network on campus. Using specialized software, distributed computing aims to utilize unused processor cycles for scientific calculations.
7. Member, Department of Computer Science Search Committee, Spring 2007. I served on the search committee as the outside department member for a Bioinformatics position. We successfully recruited a new colleague from this search.
8. Member, Department of Biology Search Committee, Spring 2011. I served on the search committee to recruit an Evolutionary Geneticist. The search was cancelled due to projected budget cuts.

Additional University Service:

1. Provided lectures for the Bridges to the Future Program, Summer 2006 and 2007. Bridges to the Future is a joint program with local community colleges that helps minority undergraduate students transition into the sciences as they prepare to start classes at San Diego State University. For two summers, I taught classes for the Bridges program at the behest of Dr. Paul Paolini. This class included a two hour Bioinformatics lab.
2. Research Experiences for Undergraduates (REU-NSF), Summer 2007. This interesting and innovative program, entitled "Mathematics Research Experience for Undergraduates and Teachers", brought together mathematicians, statisticians and biologists to give students and teachers enough background that they might perform hands-on research in mathematical biology. My role was to teach the students basic biology, Bioinformatics and phylogenetic theory so that they might research bacteriophage evolution.
3. Volunteered two weeks of teaching time (4 lectures) for Biology 610: Advanced Topics in Molecular Biology in the spring semesters of 2003-2007.
4. Participated in Laboratory Talk/Tours with the Evolutionary Biology Program Area.
5. Presented lectures on microbial diversity and evolution in Dr. Marshal Hedin's graduate seminar class.
6. Worked on discussion group assignments with graduate students in Dr. Andrew Bohonak's Biology 770 class Spring and Fall 2006.

7. Presented biology lectures for Computational Science Bioinformatics course taught by Dr. Faramarz Valafar.
8. Presented two lectures on the BLAST algorithm to the Biology 467 Lab course taught by Dr. Forest Rohwer in Spring 2005.
9. Mentored two IRACDA Postdoctoral fellows in Biology 350: General Microbiology Spring 2012.

### **COMMUNITY SERVICE/OUTREACH**

1. Presented several lectures at UCSD in the Metagenomics in the Integrated Microbiology Course taught by Dr. Doug Bartlett and Dr. Joe Pogliano, Spring 2010-2012. I also presented lectures for Dr. Milton Saier's class.
2. San Diego's High Tech High School runs an innovative Biotechnology internship program. I mentored six students through this program from 2004-2009 and I am a member of the Biotechnology Board of directors.
3. Assisted the science program at Albert Einstein Academy Charter Elementary and Middle Schools from Fall 2010-Present. I designed and taught a Bioinformatics lab in three 7<sup>th</sup> grade classes. I helped design science curriculum for the elementary school IB program and obtained equipment for the middle school science labs. I taught hands-on, inquiry based science in 1<sup>st</sup>-5<sup>th</sup> Grade.
4. Co-organized and designed a Family Science Night at Albert Einstein Academy Charter Elementary School. Attended by more than 300 children and their families in Spring 2013-2015.