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Cell and Molecular Biology Program

Evolutionary Biology Program

Alexander von Humboldt Foundation (Humboldt Scholar)

Alfred P. Sloan Foundation

Human Microbiome Project

Microbiology of the Built Environment Network

Viral Information Institute

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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*  
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 = 44; *i10*-index=80, as of Dec 2020)

1. **Kelley ST**, Farrell BD. 1998. Is specialization a dead end? The phylogeny of host use in *Dendroctonus* bark beetles (Scolytidae). *Evolution* (N Y) 52:1731–1743.
2. **Kelley ST**, Latta RG. 1998. Evidence for high rates of self-fertilization in the alpine herb *Epilobium anagallidifolium* (Onagraceae). *Can J Bot* 76:1978–1980.
3. **Kelley ST**, Thackray VG. 1999. Phylogenetic Analyses Reveal Ancient Duplication of Estrogen Receptor Isoforms. *J Mol Evol* 49:609–614.
4. **Kelley ST**, Farrell BD. 1999. Phylogenetic Analysis of Resource Use and Specialization in *Dendroctonus* (Coleoptera: Scolytidae) UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE GENERAL TECHNICAL REPORT PNW. US DEPARTMENT OF AGRICULTURE.
5. **Kelley ST**, Mitton JB, Paine TD. 1999. Strong Differentiation in Mitochondrial Dna of *Dendroctonus brevicomis* (Coleoptera: Scolytidae) on Different Subspecies of Ponderosa Pine. *Ann Entomol Soc Am* 92:193–197.
6. Akmaev VR, **Kelley ST**, Stormo GD. 1999. A phylogenetic approach to RNA structure prediction., p. 10–17. *In* ISMB.
7. Scott VL, **Kelley ST**, Strickler K. 2000. Reproductive Biology of Two Coelioxys Cleptoparasites in Relation to Their Megachile Hosts (Hymenoptera: Megachilidae). *Ann Entomol Soc Am* 93:941–948.
8. Akmaev VR, **Kelley ST**, Stormo GD. 2000. Phylogenetically enhanced statistical tools for RNA structure prediction. *Bioinformatics* 16:501–512.
9. **Kelley ST**, Akmaev VR, Stormo GD. 2000. Improved statistical methods reveal direct interactions between 16S and 23S rRNA. *Nucleic Acids Res* 28:4938–4943.
10. **Kelley ST**, Farrell BD, Mitton JB. 2000. Effects of specialization on genetic differentiation in sister species of bark beetles. *Heredity* (Edinb) 84:218.
11. Ramey RR, **Kelley ST**, Boyce WM, Farrell BD. 2000. Phylogeny and Host Specificity of Psoroptic Mange Mites (Acarina: Psoroptidae) as Indicated by ITS Sequence Data. *J Med Entomol* 37:791–796.
12. **Kelley ST**, Harris JK, Pace NR. 2001. Evaluation and refinement of tmRNA structure using gene sequences from natural microbial communities. *RNA* 7:1310–1316.
13. Breitbart M, Felts B, **Kelley S**, Mahaffy JM, Nulton J, Salamon P, Rohwer F. 2003. Diversity and population structure of uncultured marine viral communities. *Oceans Conference Record* (IEEE).
14. Harris JK, **Kelley ST**, Spiegelman GB, Pace NR. 2003. The genetic core of the universal ancestor. *Genome Res* 13:407–12.
15. Harris JK, **Kelley ST**, Pace NR. 2004. New perspective on uncultured bacterial phylogenetic division OP11. *Appl Environ Microbiol* 70:845–9.
16. **Kelley ST**, Theisen U, Angenent LT, St Amand A, Pace NR. 2004. Molecular analysis of shower curtain biofilm microbes. *Appl Environ Microbiol* 70:4187–92.
17. Rohwer F, **Kelley S**. 2004. Culture-Independent Analyses of Coral-Associated Microbes, p. 265–277. *In* *Coral Health and Disease*. Springer Berlin Heidelberg, Berlin, Heidelberg.

18. Harris JK, **Kelley ST**, Pace NR. 2004. New Perspective on Uncultured Bacterial Phylogenetic Division OP11. *Appl Environ Microbiol* 70.
19. Breitbart M, Felts B, **Kelley S**, Mahaffy JM, Nulton J, Salamon P, Rohwer F. 2004. Diversity and population structure of a near-shore marine-sediment viral community. *Proc R Soc London Ser B Biol Sci* 271:565–574.
20. McManus CJ, **Kelley ST**. 2005. Molecular survey of aeroplane bacterial contamination. *J Appl Microbiol* 99:502–508.
21. Angenent LT, **Kelley ST**, St Amand A, Pace NR, Hernandez MT. 2005. Molecular identification of potential pathogens in water and air of a hospital therapy pool. *Proc Natl Acad Sci U S A* 102:4860–5.
22. Ellis DG, Bizzoco RLW, Maezato Y, Baggett JN, **Kelley ST**. 2005. Microscopic examination of acidic hot springs of Waiotapu, North Island, New Zealand. *New Zeal J Mar Freshw Res* 39:1001–1011.
23. Marquez SM, Harris JK, **Kelley ST**, Brown JW, Dawson SC, Roberts EC, Pace NR. 2005. Structural implications of novel diversity in eucaryal RNase P RNA. *RNA* 11:739–51.
24. Jensen JL, Bohonak AJ, **Kelley ST**. 2005. Isolation by distance, web service. *BMC Genet* 6:13.
25. Nguyen TX, Alegre ER, **Kelley ST**. 2006. Phylogenetic Analysis of General Bacterial Porins: A Phylogenomic Case Study. *J Mol Microbiol Biotechnol* 11:291–301.
26. Angly FE, Felts B, Breitbart M, Salamon P, Edwards RA, Carlson C, Chan AM, Haynes M, **Kelley S**, Liu H, Mahaffy JM, Mueller JE, Nulton J, Olson R, Parsons R, Rayhawk S, Suttle CA, Rohwer F. 2006. The Marine Viromes of Four Oceanic Regions. *PLoS Biol* 4:e368.
27. Safae S, Weiser GC, Cassirer EF, Ramey RR, **Kelley ST**. 2006. Microbial diversity in bighorn sheep revealed by culture-independent methods. *J Wildl Dis* 42:545–555.
28. **Kelley ST**, Cassirer EF, Weiser GC, Safae S. 2007. Phylogenetic diversity of Pasteurellaceae and horizontal gene transfer of leukotoxin in wild and domestic sheep. *Infect Genet Evol* 7:13–23.
29. Lee L, Tin S, **Kelley ST**. 2007. Culture-independent analysis of bacterial diversity in a child-care facility. *BMC Microbiol* 7:27.
30. Mathur J, Bizzoco RW, Ellis DG, Lipson DA, Poole AW, Levine R, **Kelley ST**. 2007. Effects of abiotic factors on the phylogenetic diversity of bacterial communities in acidic thermal springs. *Appl Environ Microbiol* 73:2612–23.
31. Thackray LB, Wobus CE, Chachu KA, Liu B, Alegre ER, Henderson KS, **Kelley ST**, Virgin HW. 2007. Murine noroviruses comprising a single genogroup exhibit biological diversity despite limited sequence divergence. *J Virol* 81:10460–73.
32. Lozupone CA, Hamady M, **Kelley ST**, Knight R. 2007. Quantitative and qualitative beta diversity measures lead to different insights into factors that structure microbial communities. *Appl Environ Microbiol* 73:1576–85.
33. Desnues C, Rodriguez-Brito B, Rayhawk S, **Kelley S**, Tran T, Haynes M, Liu H, Furlan M, Wegley L, Chau B, Ruan Y, Hall D, Angly FE, Edwards RA, Li L, Thurber RV, Reid RP, Siefert J, Souza V, Valentine DL, Swan BK, Breitbart M, Rohwer F. 2008. Biodiversity and biogeography of phages in modern stromatolites

- and thrombolites. *Nature* 452:340–343.
34. Krause L, Diaz NN, Goesmann A, **Kelley S**, Nattkemper TW, Rohwer F, Edwards RA, Stoye J. 2008. Phylogenetic classification of short environmental DNA fragments. *Nucleic Acids Res* 36:2230–2239.
  35. Ellis DG, Bizzoco RW, **Kelley ST**. 2008. Halophilic Archaea determined from geothermal steam vent aerosols. *Environ Microbiol* 10:1582–1590.
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  39. **Kelley S**, Alger C, Deutschman D. 2009. “ Extreme Programming” in a Bioinformatics Class. *Bioscene J Coll Biol Teach* 35:58–65.
  40. Turner JL, **Kelley ST**, Otto JS, Valafar F, Bohonak AJ. 2009. Parallelization and optimization of genetic analyses in isolation by distance web service. *BMC Genet* 10:28.
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  43. Casas V, Magbanua J, Sobrepeña G, **Kelley ST**, Maloy SR. 2010. Reservoir of bacterial exotoxin genes in the environment. *Int J Microbiol* 2010:754368.
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  46. Benson CA, Bizzoco RW, Lipson DA, **Kelley ST**. 2011. Microbial diversity in nonsulfur, sulfur and iron geothermal steam vents. *FEMS Microbiol Ecol* 76:74–88.
  47. Caporaso JG, Knight R, **Kelley ST**. 2011. Host-Associated and Free-Living Phage Communities Differ Profoundly in Phylogenetic Composition. *PLoS One* 6:e16900.
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50. Knights D, Kuczynski J, Charlson ES, Zaneveld J, Mozer MC, Collman RG, Bushman FD, Knight R, **Kelley ST**. 2011. Bayesian community-wide culture-independent microbial source tracking. *Nat Methods* 8:761–763.
51. Yilmaz P, Kottmann R, Field D, Knight R, Cole JR, Amaral-Zettler L, Gilbert JA, Karsch-Mizrachi I, Johnston A, Cochrane G, Vaughan R, Hunter C, Park J, Morrison N, Rocca-Serra P, Sterk P, Arumugam M, Bailey M, Baumgartner L, Birren BW, Blaser MJ, Bonazzi V, Booth T, Bork P, Bushman FD, Buttigieg PL, Chain PSG, Charlson E, Costello EK, Huot-Creasy H, Dawyndt P, DeSantis T, Fierer N, Fuhrman JA, Gallery RE, Gevers D, Gibbs RA, Gil IS, Gonzalez A, Gordon JI, Guralnick R, Hankeln W, Highlander S, Hugenholtz P, Jansson J, Kau AL, **Kelley ST**, Kennedy J, Knights D, Koren O, Kuczynski J, Kyrpides N, Larsen R, Lauber CL, Legg T, Ley RE, Lozupone CA, Ludwig W, Lyons D, Maguire E, Methé BA, Meyer F, Muegge B, Nakielny S, Nelson KE, Nemergut D, Neufeld JD, Newbold LK, Oliver AE, Pace NR, Palanisamy G, Peplies J, Petrosino J, Proctor L, Pruesse E, Quast C, Raes J, Ratnasingham S, Ravel J, Relman DA, Assunta-Sansone S, Schloss PD, Schriml L, Sinha R, Smith MI, Sodergren E, Spor A, Stombaugh J, Tiedje JM, Ward D V, Weinstock GM, Wendel D, White O, Whiteley A, Wilke A, Wortman JR, Yatsunenko T, Glöckner FO. 2011. Minimum information about a marker gene sequence (MIMARKS) and minimum information about any (x) sequence (MIXS) specifications. *Nat Biotechnol* 29:415–420.
52. Wehausen JD, **Kelley ST**, Ramey RR. 2011. Domestic sheep, bighorn sheep, and respiratory disease: a review of the experimental evidence. *Calif Fish Game* 97:7–24.
53. Tin S, Bizzoco RW, **Kelley ST**. 2011. Role of the terrestrial subsurface in shaping geothermal spring microbial communities. *Environ Microbiol Rep* 3:491–499.
54. **Kelley ST**, Dobler S. 2011. Comparative analysis of microbial diversity in Longitarsus flea beetles (Coleoptera: Chrysomelidae). *Genetica* 139:541–550.
55. Hewitt KM, Gerba CP, Maxwell SL, **Kelley ST**. 2012. Office Space Bacterial Abundance and Diversity in Three Metropolitan Areas. *PLoS One* 7:e37849.
56. Consortium THMP, Huttenhower C, Gevers D, Knight R, Abubucker S, Badger JH, Chinwalla AT, Creasy HH, Earl AM, FitzGerald MG, Fulton RS, Giglio MG, Hallsworth-Pepin K, Lobos EA, Madupu R, Magrini V, Martin JC, Mitreva M, Muzny DM, Sodergren EJ, Versalovic J, Wollam AM, Worley KC, Wortman JR, Young SK, Zeng Q, Aagaard KM, Abolude OO, Allen-Vercoe E, Alm EJ, Alvarado L, Andersen GL, Anderson S, Appelbaum E, Arachchi HM, Armitage G, Arze CA, Ayvaz T, Baker CC, Begg L, Belachew T, Bhonagiri V, Bihan M, Blaser MJ, Bloom T, Bonazzi V, Brooks JP, Buck GA, Buhay CJ, Busam DA, Campbell JL, Canon SR, Cantarel BL, Chain PSG, Chen I-MA, Chen L, Chhibba S, Chu K, Ciulla DM, Clemente JC, Clifton SW, Conlan S, Crabtree J, Cutting

- MA, Davidovics NJ, Davis CC, DeSantis TZ, Deal C, Delehaunty KD, Dewhirst FE, Deych E, Ding Y, Dooling DJ, Dugan SP, Dunne WM, Durkin AS, Edgar RC, Erlich RL, Farmer CN, Farrell RM, Faust K, Feldgarden M, Felix VM, Fisher S, Fodor AA, Forney LJ, Foster L, Francesco V Di, Friedman J, Friedrich DC, Fronick CC, Fulton LL, Gao H, Garcia N, Giannoukos G, Giblin C, Giovanni MY, Goldberg JM, Goll J, Gonzalez A, Griggs A, Gujja S, Haake SK, Haas BJ, Hamilton HA, Harris EL, Hepburn TA, Herter B, Hoffmann DE, Holder ME, Howarth C, Huang KH, Huse SM, Izard J, Jansson JK, Jiang H, Jordan C, Joshi V, Katancik JA, Keitel WA, **Kelley ST**, Kells C, King NB, Knights D, Kong HH, Koren O, Koren S, Kota KC, Kovar CL, Kyrpides NC, Rosa PS La, Lee SL, Lemon KP, Lennon N, Lewis CM, Lewis L, Ley RE, Li K, Liolios K, Liu B, Liu Y, Lo C-C, Lozupone CA, Lunsford RD, Madden T, Mahurkar AA, Mannon PJ, Mardis ER, Markowitz VM, Mavromatis K, McCorrison JM, McDonald D, McEwen J, McGuire AL, McInnes P, Mehta T, Mihindukulasuriya KA, Miller JR, Minx PJ, Newsham I, Nusbaum C, O’Laughlin M, Orvis J, Pagani I, Palaniappan K, Patel SM, Pearson M, Peterson J, Podar M, Pohl C, Pollard KS, Pop M, Priest ME, Proctor LM, Qin X, Raes J, Ravel J, Reid JG, Rho M, Rhodes R, Riehle KP, Rivera MC, Rodriguez-Mueller B, Rogers Y-H, Ross MC, Russ C, Sanka RK, Sankar P, Sathirapongsasuti JF, Schloss JA, Schloss PD, Schmidt TM, Scholz M, Schriml L, Schubert AM, Segata N, Segre JA, Shannon WD, Sharp RR, Sharpton TJ, Shenoy N, Sheth NU, Simone GA, Singh I, Smillie CS, Sobel JD, Sommer DD, Spicer P, Sutton GG, Sykes SM, Tabbaa DG, Thiagarajan M, Tomlinson CM, Torralba M, Treangen TJ, Truty RM, Vishnivetskaya TA, Walker J, Wang L, Wang Z, Ward D V., Warren W, Watson MA, Wellington C, Wetterstrand KA, White JR, Wilczek-Boney K, Wu Y, Wylie KM, Wylie T, Yandava C, Ye L, Ye Y, Yooseph S, Youmans BP, Zhang L, Zhou Y, Zhu Y, Zoloth L, Zucker JD, Birren BW, Gibbs RA, Highlander SK, Methé BA, Nelson KE, Petrosino JF, Weinstock GM, Wilson RK, White O. 2012. Structure, function and diversity of the healthy human microbiome. *Nature* 486:207–214.
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## RESEARCH FUNDING

### Current Research Grants

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**Consortium PI** (PI - Varykina Thackray).

NIH U54 MD012397-01A1 SDSU HealthLINK Center for Transdisciplinary Health Disparities Research. **Co-Leader** Research Infrastructure Core and Investigator Development Core. (PIs - Ayala/Wells).

TRDRP 2017-2019. Effects of Thirdhand Smoke Exposure on the Microbiome of Young Children. **Co-Investigator** (PI - Georg Matt).

National Science Foundation 2016-2019. Active Learning for Big Bio Data: Interactive Bioinformatics Educational Apps for Mobile Technology. **PI**.

### Pending Research Grants

NIH R01 Role of Dietary Fiber and the Gut Microbiome in Women with Polycystic Ovary Syndrome. **Consortium PI** (PI -Varykina Thackray).

### Completed Research Grants

Alfred P. Sloan Foundation 2015-2019. Mechanistic modeling of microbial metabolic succession in the built environment. **Co-Investigator** (PI-Jack A. Gilbert).

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

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

Alfred P. Sloan Foundation 2011-2016. Viral metagenomic analysis of workplace environments. **PI**.

California State University Program for Education and Research in Biotechnology (CSUPERB) 2015. Active Learning for Big Bio Data: Interactive Bioinformatics Educational Apps for Mobile Technology. **PI**.

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

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

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)

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

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

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).

Clorox Corporation Research Award 2011-2014. Periodontal therapy using a diluted sodium hypochlorite mouth rinse. **PI**.

Clorox Corporation Research Award 2004-2009. Microbial diversity in the arena of public health. **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**.

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

California State University Program for Research in Biotechnology (CSUPERB) Award 2003. Development of Bark Beetle Biocontrol. **PI**.

California State University Program for Education and Research in Biotechnology (CSUPERB) Award 2006. Design and Development of Broad-Spectrum Bacterial Vaccine. **PI**.



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*). **PI.**

Wildlife Domestic Animal Disease Research Award 2003. Non-culture Detection of *Pasteurella* Bacteria in Bighorn and Domestic Sheep. **PI.**  
Internal Grants (SDSU)

Research and Scholarly Creative Activity Award 2002. Effects of Bark Beetle Ecology and Behavior on Symbiotic Microbial Diversity. **PI.**

Faculty Grants-in-Aid of Research Award 2002. Approaches for Improving RNA Structure Prediction, Sequence Alignment and Phylogenetic Analysis: An Iterative Approach. **PI.**

Research and Scholarly Creative Activity Award 2003. Connecting pattern to process: The effects of host-plant use on species diversification in bark beetles. **PI.**

## AWARDS AND HONORS

- |           |   |
|-----------|---|
| 1996-1999 | NSF Dissertation Research Award 9623763 Evolution of Resource Specialization in the Bark Beetle Genus <i>Dendroctonus</i> . |
| 1999-2002 | NIH National Research Service Award F32GM020013<br>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  |
| 2019      | Outstanding Faculty (Teacher-Scholar) Award, Department of Biology, San Diego State University                              |

## 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*  
 AMB Express

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  
Indoor Air  
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 Oral Microbiology  
Journal of Wildlife Diseases  
Microbial Ecology  
Microbiome  
Molecular Ecology  
mSystems  
Nature Communications  
Nature Sustainability  
Nucleic Acids Research  
Proceedings of the National Academy of Sciences  
Public Library of Science (PLoS) ONE  
Psyche  
RNA  
Scientific Reports

*Grant Reviews*

California State University Program for Research in Biotechnology (CSUPERB), Ad-hoc Reviewer, 2005  
California State University Program for Research in Biotechnology (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

California State University Program for Research in Biotechnology (CSUPERB), Grant Panel 2016

### **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

The Daily Aztec, “SDSU researcher examines link between gut bacteria and metabolic disease”, March 2016

### **National and International Media Coverage of Chase et al. (2016) mSystems Article:**

NPR, Newsweek, US News & World Report, Washington Post, Daily Mail (UK), NBC, UPI, World Tech Today, The Onion. April 2016

Illumina Webinar on “Characterization of the salivary microbiome in patients with pancreatic cancer”, April 2016. 601 registrants, 269 attendees from 27 countries.

Featured Paper, An Endocrine Society Thematic Issue: Women in Science 2019.

[https://academic.oup.com/endocrinesociety/pages/thematic\\_issue\\_women\\_in\\_endocrinology\\_2019](https://academic.oup.com/endocrinesociety/pages/thematic_issue_women_in_endocrinology_2019)

Paper “Gut Bacterial Composition Correlates with an Improved PCOS Phenotype after Co-Housing,” singled it out for special media attention at annual Research Summaries Book (RSB), ENDO 2019

Research highlighted in Neuroscience News: “Like A Lot of Things, Women’s Gut Microbiomes Appear to Mature Earlier than Men’s.” May, 2019.

Interview for article in Clinical Lab Manager: “Microbiome Profiling Could Improve Early Pancreatic Cancer Diagnosis.” Sept, 2020.

<https://www.clinicallabmanager.com/trends/cancer-diagnostics/microbiome-profiling-could-improve-early-pancreatic-cancer-diagnosis-23693>

### **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

University of British Columbia, Okanagan, Fall 2015  
 Northern Arizona University, Spring 2016  
 St. Paul's Cathedral San Diego, Forum on Science and Religion, Spring 2016  
 Max Planck Institute for Marine Microbiology, Bremen, Germany, Summer 2016  
 Microbiology 2016 Virtual Conference, Fall 2016  
 National Academies of Sciences, Engineering and Medicine, Microbiomes of the Built Environment: From Research to Application, Fall 2017  
Keynote Speaker at ISCA 26<sup>th</sup> International Conference on Software Engineering and Data Engineering, Fall 2017  
 Max Planck Institute for Developmental Biology, Tuebingen, Germany, Summer 2018  
 Presentation to Bioinformatics Group on Sourcetracker, Max Planck Institute for Developmental Biology, Tuebingen, Germany, Summer 2018  
 Presentation to Germ Free Mouse Facility on Bacteria in Built Environments, Max Planck Institute for Developmental Biology, Tuebingen, Germany, Summer 2018  
 Alfred P. Sloan Foundation Workshop on Viruses and the Built Environment, Arlington, Virginia, Spring 2019  
 American Association for Dental Research (AADR), Fall Focused Symposium (FFS) J. Craig Venter Institute (JCVI), La Jolla, California, Fall 2019  
 Research Frontiers and Grand Challenges in Microbial Eukaryote -Omics Workshop, University of California, San Diego, La Jolla, California, Fall 2019

#### **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.

Safaei, 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. Alonaizan, 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 Mycobiome. 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 Mycobiome. 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 Mycobiome 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 Mycobiome 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.

**Kelley, S.T.**, Skarra, D.V., Rivera, A.J., and Thackray, V.G.\* (2016) The Gut Microbiome Is Altered in a Letrozole-Induced Mouse Model of Polycystic Ovary Syndrome. The Endocrine Society Annual Meeting. Boston, Massachusetts. Oral Presentation.

Torres P.J.\*, Skarra D.V., Anvar A.R, **Kelley S.T.**, and V.G. Thackray (2016) Puberty Is Important to Fully Develop the PCOS Metabolic Phenotype. 80<sup>th</sup> Annual Meeting of the Southern California American Society for Microbiology, La Jolla., CA. Poster Presentation.

Torres P.J.\*, Skarra D.V., Anvar A.R, Kelley S.T., and V.G Thackray (2016) Puberty Is Important for Development of the Polycystic Ovary Syndrome Metabolic Phenotype in Female Mice. UCSD Center for Microbial Innovation Changing Microbiomes for Health Symposium, La Jolla, CA. Poster Presentation.

Prathik K Vijay Kumar\*, Roberta A. Gottlieb, Suzanne Lindsay, Nicole Delange, Tanya E. Penn, Dan Calac, **S.T. Kelley**. (2016) Metagenomic analysis uncovers strong relationship between periodontal pathogens and vascular dysfunction in American Indian/Alaskan Native (AIAN) population. 80<sup>th</sup> Annual Meeting of the Southern California American Society for Microbiology, La Jolla, CA. Poster Presentation.

Prathik K Vijay Kumar\*, Roberta A. Gottlieb, Suzanne Lindsay, Nicole Delange, Tanya E. Penn, Dan Calac, **S.T. Kelley** (2017) Metagenomic analysis uncovers strong relationship between periodontal pathogens and vascular dysfunction in American Indian/Alaskan Native (AIAN) population. 29<sup>th</sup> Annual California State University Annual Biotechnology Symposium, Santa Clara, CA. Poster Presentation.

Tandon, R.\*, C. Smurthwaite, and **S.T. Kelley**. (2018) Analysis of microbial community dynamics on building materials using flow cytometry. Seventh Annual SoCal Flow SUMMIT 2018, Beckman Center, UC Irvine, CA. Oral Presentation. *Excellence in Cytometry award*.

Pinkowski, P.\*, K.L. Kosnicki, J.C. Penprase, P. Cintora, P.J. Torres, G.L. Harris, **S.T. Kelley**, S.M. Brassler (2018) Effects of moderate voluntary ethanol consumption on the rat and human gut microbiome. 41<sup>st</sup> Annual Research Society on Alcoholism Scientific Meeting, San Diego, CA. Poster Presentation.

Tandon, R.\*, C. Ancheta, C. Smurthwaite, and **S.T. Kelley**. (2019) Quantitative and FACS analysis of bacterial and fungal communities in indoor environment. 31<sup>st</sup> Annual California State University Annual Biotechnology Symposium, Orange County, CA. Poster Presentation.

Pablo Arroyo\*, Bryan S. Ho, Lillian Sau, **S.T. Kelley**, Varykina G. Thackray (2019) Is hyperandrogenism associated with PCOS organizational or activational?. 31<sup>st</sup> Annual California State University Annual Biotechnology Symposium, Garden Grove, CA. Poster Presentation.

Richa B. Sharma\*, Eunha Hoh, **S.T. Kelley**, Nathan Dodder, William Richardot (2019) Automation of ChromaTOF and software development for non-targeted analysis of contaminants. 31<sup>st</sup> Annual California State University Annual Biotechnology Symposium, Orange County, CA. Poster Presentation.

Thackray, V.G.\*, Torres, P.J., Ho, B., Arroyo, P., Sau, L., Chen, A., and **S.T. Kelley** (2019) Gut Bacterial Composition in a Mouse Model Correlates with an Improved PCOS Phenotype After Co-Housing. *101<sup>th</sup> Annual Meeting of The Endocrine Society*, New Orleans, LA. Oral Presentation.

Ying Xu, Ruby Tandon\*, Chrislyn Ancheta, Pablo Arroyo, Cameron Smurthwaite, Jack A Gilbert, Brent Stephens, and **Scott T. Kelley** (2020) Quantitative Assessment of Indoor Microbial Communities. CYTO 2020. 35th Annual Conference of ISAC. Philadelphia, PA. Poster Presentation.

Matt, G.E.\*, **Kelley, S.T.**, Quintana, P.J.E., Hoh, E., Zakarian, J.M., Dodder, N., Liu, W., Barrowcliff, S. (2020) Effects of Thirdhand Smoke on the Environmental and Human Microbiomes in Young Children. California Tobacco Control Program (CTCP), Tobacco-Related Disease Research Program (TRDRP), and the Office of Tobacco-Use Prevention Education (TUPE). *Joining Forces 2020: Ending The Tobacco Epidemic For All*. June 15-18, 2020, in Palm Desert, CA

Sisk-Hackworth, L.\* and **S.T. Kelley** (2021) The role of puberty, steroid hormones and bile acids on the gut microbiome. *Viral Information Institute Annual Meeting*, San Diego, CA. Oral Presentation.

## TEACHING

### Courses

Biology 668, Advanced Biological Data Analysis, Spring 2017-present  
 Biology 568, Bioinformatics Lecture, Spring 2004-2007, Fall 2009-present  
 Biology 568, Bioinformatics Lab, Spring 2004-2007, Fall 2009-present  
 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:

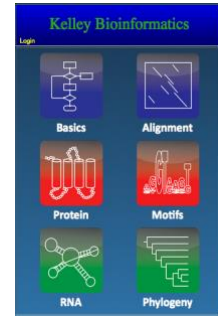
Developed Interactive Bioinformatics Algorithms for Mobile Devices: Accessible worldwide at [www.kelleybioinfo.org](http://www.kelleybioinfo.org)

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, Graduated Fall 2016

Thesis: Effects of Alcohol Consumption on the Gut Microbiome

Jason Dulin, BS, University of Illinois-Urbana/Champaign

Molecular and Cellular Biology, Graduated December 2015

Project: Molecular Analysis of Fungal Diversity using GhostTree

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

Bioinformatics and Medical Informatics, Graduated Spring 2017

Thesis: Metagenomic analysis of periodontal disease

Gabriel Goodney, BA (Biology, Computing and Information Studies), Washington & Jefferson College, Washington PA

Bioinformatics and Medical Informatics, Graduate Spring 2017

Thesis: Developing quantitative abundance metrics for microbial communities

Vibhu Chandrashekhar, BA, Rutgers University

Bioinformatics and Medical Informatics Graduate Student, Graduated December 2017

Thesis: METAgenomic Data EXplorer (METADEX): Differential Abundance in Two Dimensions syndrome

Michael Meyers, BS, San Diego State University  
Bioinformatics and Medical Informatics Graduate Student, Graduated December 2017  
Project: Metagenomic analysis of Archaea and viruses in a PCOS mouse model

Pablo Arroyo, BS, UC San Diego  
Microbiology Graduate Student, Graduated Spring 2019  
Project: Determining the potential organizational effects of letrozole on a mouse model of polycystic ovary syndrome

Ruby Tandon, MS, Indian Institute of Science, India  
Molecular and Cellular Biology, Graduated Fall 2018  
Project: FACS analysis of microbial communities in built environments

Yingfeng Chen, BS Biotechnology, California State University San Marcos  
Bioinformatics and Medical Informatics Graduate Student, Graduated Spring 2019  
Project: Genome assembly and American Gut Project

Jordan McGhee, BS San Diego State University  
Bioinformatics and Medical Informatics Graduate Student, Graduated Spring 2019  
Project: Meta SourceTracker Diagnostics

Richa Sharma  
Bioinformatics and Medical Informatics Graduate Student, Graduated Fall 2019  
Project: Qiime2 analysis of Hospital ICU Microbiome data

Ying Xu  
Bioinformatics and Medical Informatics Graduate Student, Graduated Fall 2019  
Project: QIIME2 data analysis on hospital ICU microbiome data

Basilin Benson  
Bioinformatics and Medical Informatics Graduate Student, Graduated Fall 2020  
Project: Time based linear regression in rat gut microbiome data

Bryan Ho, BS, UC San Diego  
Bioinformatics and Medical Informatics Graduate Student, Graduated Fall 2020  
Project: Metagenomic analysis of PCOS mouse model microbiome

William Liu BS, UCLA  
Bioinformatics and Medical Informatics Graduate Student  
Project: Effects of third hand smoke on human and built environment microbiomes

Daniel Ryback, BS, UC Davis  
Cell and Molecular Biology Graduate Student

Project: Metabolomic analysis of PCOS mouse model microbiome

Christine Olmstead

Bioinformatics and Medical Informatics Graduate Student, Graduated Fall 2020

Project: Alterations in Gut Microbiota Do Not Play a Causal Role in Diet-independent Weight Gain Caused by Ovariectomy

Cayla Manson

Bioinformatics and Medical Informatics Graduate Student

Project: Structure and function of restored agriculture soil metagenomes

Nicholas Allsing, BS SDSU

Bioinformatics and Medical Informatics Graduate Student

Project: Metagenomics analysis and quantitative profiling of Tijuana estuary runoff

#### 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)

Graduated Spring 2016

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)

Graduated Spring 2019

Dissertation: Microbial communities and their impact on human health and disease.

Laura Sisk-Hackworth, BS, Cal Poly, San Luis Obispo

Joint Doctoral Program in Cell and Molecular Biology (SDSU/UCSD)

Research: The role of puberty, steroid hormones and bile acids in shaping the gut microbiome.

#### 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 Ghandi 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.

Crislyn Ancheta, BS Biology, SDSU (Fall 2017-Spring 2018)

Project: Microscopic analysis of microbial communities on building materials.

Sia Frenzel, BS Biology, SDSU (Fall 2018)

Project: Effects of third-hand smoke on infant microbial communities.

Shawn Ogden, BS Biology (Fall 2020)

Project: Effects of wetting and desiccation on formation and stability of built environment microbial communities.

Anthony Griffen, BS Computer Science and Biology (Fall 2020, Spring 2021)

Project: UMAP reanalysis of microbial community diversity

Sarah Kousba, BS Biology (Fall 2020)

Project: QIIME2 analysis of gut microbial diversity associated with PCOS.

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**

Director, Bioinformatics and Medical Informatics Program, Fall 2020-Present.

Leader, Biomedical Methods Group in the SDSU Healthlink NIH U54 funded project. Fall 2018-Present.

Co-Leader, Investigator Development Core in the SDSU Healthlink NIH U54 funded project. Fall 2018-Present.

Coordinator, Cell and Molecular Biology Masters Program, Fall 2016-Spring 2020.

Coordinator, Program Area in Cell and Molecular Biology, Fall 2016-Spring 2020.

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.
9. Member, Department of Biology Search Committee, Spring 2018. I served on the search committee to recruit Computational Biologist. We successfully recruited a new colleague from this search.
10. Served on the University Grants Committee at the College of Sciences level, Fall 2018. We reviewed and ranked applications from faculty members of the departments in the College.
11. Served on the University Grants Committee at the College of Sciences level, Fall 2019. We reviewed and ranked applications from faculty members of the departments in the College.
12. Member, Department of Biology Search Committee, Spring 2021.
13. Chair, College of Sciences Bioinformatics and Medical Informatics Search Committee, Spring 2021.

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 2-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 graduate seminar class.
6. Worked on discussion group assignments with graduate students in 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.
10. Provided lecture and lab exercises for Biostatistics (Biology 215), Spring 2019.
11. Mentored Assistant Professor navigating issues of racist and sexist bias in teaching and RTP issues. Spring and Fall 2019.
12. Lectured on bioinformatics and statistics in Biology 610.
13. Created, organized and advertised virtual seminar series at SDSU: 1<sup>st</sup> International Sofa Seminar Series, Spring 2020.
14. Created, organized and advertised virtual seminar series at SDSU: 2<sup>nd</sup> International Sofa Seminar Series, Spring 2021.
15. Elected College of Sciences Representative to the SDSU Faculty Senate, Fall 2020.

### **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 2013-2017.
5. Presented on the Oral Microbiome, tooth decay, gum disease and oral health, to three 7<sup>th</sup> grade science classes at Albert Einstein Academy Charter Middle School. Spring 2016.
6. Designed, organized and ran Bioinformatics workshop with 7<sup>th</sup> grade science students at Albert Einstein Academy Charter Middle School. Spring 2017.
7. Volunteers at Science Olympiad and ran a Microbiology after school science project at Albert Einstein Academy Charter Middle School. Spring 2018.
8. Taught principles of Sanger DNA sequencing method to 9<sup>th</sup> grade Biology class at San Diego High School. Fall 2018.
9. Designed and instructed Python Programming coding camp for high school students. Fall 2019.
10. Faculty advisor for Green New Deal Climate March at San Diego State. Fall 2019.
11. Designed and instructed Linux and Raspberry Pi coding camps for high school students. Spring 2020.