

Joan E. Strassmann

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Short Biography

Joan E. Strassmann is Charles Rebstock Professor of Biology at Washington University in St. Louis. She earned a B.S. in zoology from the University of Michigan with distinction and honors in zoology in 1974 and a Ph.D. in zoology from the University of Texas at Austin in 1979. Her dissertation research explored theories of social behavior and evolution using individually marked social wasps in wild colonies. In 1980 she joined the faculty at Rice University, eventually becoming department chair and Harry C. and Olga K. Wiess Professor in Natural Sciences in the Department of Ecology and Evolutionary Biology. In 2011 Strassmann and her husband and collaborator, Spencer T. Olin Professor David C. Queller, joined the Biology Department of Washington University in St. Louis.

Strassmann and Queller collaborated on many studies of social insects at field sites in Venezuela, Brazil, and Italy. In particular they explored the tension between conflict and cooperation in families. They pioneered molecular methods to understand specifics of genetic structure underlying the complex social systems of social insects. In 2000, they switched to a new system, the social amoeba *Dictyostelium discoideum*, which has both family level altruism and mutualisms with bacteria. Their current research involves this system and others that will transform our understanding of what it means to be an organism. Their current research explores life cycles, kin recognition, and organismality at genetic, behavioral, and evolutionary levels. Professor Strassmann has published over 180 articles. She is a member of the National Academy of Sciences (2013). She has received a John Simon Guggenheim Memorial Fellowship (2004), was elected a Fellow of the Animal Behavior Society (2002), the American Association for the Advancement of Science (2004), and the American Academy of Arts and Sciences (2008), and served as president of the Animal Behavior Society (2012). She writes a popular blog on the intricacies of academia (http://sociobiology.wordpress.com) and is an award winning teacher who has her students write for Wikipedia.

Strassmann and Queller have three children: Anna, Daniel, and Philip.

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Personal Data:

US Citizen, (Washington D. C., 6 May 1953), married to David C. Queller, 3 adult children, Anna, Daniel, Philip.

Current Position:

Charles Rebstock Professor of Biology, Department of Biology, Washington University in St. Louis.

Research Interests:

Evolution of cooperation and altruism, particularly in *Dictyostelium discoideum* and its bacterial symbionts; major transitions and organismality; virulence to mutualism in eukaryote-bacteria interactions; genomics of social systems, particularly social amoebae, social wasps, and bees.

Education:

Diploma	1970	The International School of Geneva, Switzerland (High School)
		Univ. of Mich. Biological Station, summers 1972, 1973; winter 1973.
B.S.	1974	University of Michigan (with distinction, and honors in Zoology)
		Honors thesis advisor: Richard D. Alexander
Ph.D.	1979	The University of Texas at Austin, Department of Zoology
		Major professors: Lawrence E. Gilbert, Alan R. Templeton

Other Languages: Spanish, Italian, French, and German, conversational, decreasing order

Academic Positions Held:

Charles Rebstock Professor, Biology Department, Washington University in St. Louis July 2013 –

Professor, Biology Department, Washington University in St. Louis July 2011 – 2013. Harry C. & Olga K. Wiess Professor of Ecology and Evolutionary Biology 2005 – 2011.

Chair, Ecology and Evolutionary Biology Dept., 2004 – 2009.

Professor, Rice University, 1993 – 2005.

Associate Professor, Rice University, 1985 – 1993.

Assistant Professor, Biology Department, Rice University, 1980 – 1985.

NSF Postdoctoral Fellow, University of Texas at Austin, 1979 – 1980.

Podcasts:

People behind the science. http://www.aodpod.com/episode-3-joan-strassmann/
Age of discovery podcasts 2 October 2013, http://www.aodpod.com/episode-3-joan-strassmann/

The Weekly Weinersmith 18 July 2013 http://www.weeklyweinersmith.com/?p=667

Lectures available on web:

Distinctive Voices, NAS Beckman Center, Collective behavior: from cells to societies 12 November 2014, https://www.youtube.com/watch?v=zO7oHb_hrJA
Evolution and cooperation: NIH Evolution and Medicine Series 11 April 2007
http://videocast.nih.gov/Summary.asp?File=13752&bhcp=1

Awards, and elected positions:

National Academy of Sciences, elected member April 2013.

Animal Behavior Society, **president**, 2010 – 2013.

American Academy of Arts and Sciences, elected member, April 2008.

Scientia, (an institute for the history of science and culture) elected member, Rice University, 2009 - 2011.

Houston Philosophical Society, elected member, April 2007.

Honorary Member, Associazione Italiana per lo Studio degli Artropodi Sociali e Presociali, 2 Feb. 2005

Fellow, American Association for the Advancement of Science, 2004

John Simon Guggenheim Memorial Fellow, 2004

Fellow, Animal Behavior Society, 2002

Councilor, Society for the Study of Evolution, 2002-2004

N. American Sect., International Union for the Study of Social Insects, **President**, 2001.

Outstanding associate, Wiess College (Rice University Residential College), 2000

Society of National Association Publications Gold Award in the "Scholarly

Journals/Feature Article" category for Kin selection and social insects (1998)

BioScience, 48: 165-175

Julia Mile Chance Prize for Excellence in Teaching, Rice University, May, 1997

Elected to Cambridge Entomological Society, 1984.

Elected to Sigma Xi, 1983.

Phi Kappa Phi, University of Texas at Austin, 1977.

Honors in Zoology, advisor, Richard D. Alexander, Univ. of Michigan, May 1974.

Hopwood Award (for undergraduate fiction), University of Michigan, 1973.

Editorial Boards:

Proceedings of the National Academy of Sciences 2013 – present

Entomologia Editorial Board, 2013 – present

Ecology, Ethology, and Evolution, Editorial Board, 2006 - present

BMC Evolutionary Biology, Editorial Board, 2005 – present

Evolution Editorial Board, 2010 – 2012

Journal of Evolutionary Biology, Editorial Board 2005 –2008

Ecology Letters, Editorial Board, 2004 –2007

Insectes Sociaux, Editorial Board 2000 – 2006

American Naturalist, Editorial Board, 2000 – 2003

Animal Behaviour, Editorial Board, 1995 – 1997

Memberships:

American Academy of Arts and

International Society of Hymenopterists

Sciences

American Association for the

International Union for the Study of Social Insects

Advancement of Science

American Society of Microbiologists

American Society of Naturalists

Animal Behavior Society

Internat. Soc. for Behavioral Ecology

National Association of Biology Teachers

National Academy of Sciences

National Center for Science Education

Sigma XI

Society for the Study of Evolution

Teaching Experience:

Lecture Courses: Animal Behavior, Rice, 1981 to 2011, Graduate Core Course, Eco. Evo. Biology, Rice, 2007 to 2010, Social Evolution and kin selection, Univ. Copenhagen, Sept. 2010, Molecular approaches to kin selection in social insects, Univ. São Paulo, Brazil, 1996.

New format courses: Behavioral Ecology, Wash U, 2012

Field Courses: Field bird biology (co-taught, Rice) 2006 – 2011, Coral reefs and global change (co-taught, Rice) 2003, 2005, 2007, Visiting faculty, Organization for Tropical Studies undergraduate course (USAP) Costa Rica, 2000.

Labs: Animal Behavior Laboratory, Rice 1982 to 2010, Introductory Biology Laboratory, Behavior Section, Rice, 1983 to 1989.

Seminars: Advanced Evolution Rice, 2003 -2007, Advanced Ecology, Rice, 2006, Topics in Evolution, Rice, 1981 to 2010, Topics in Behavioral Ecology, Rice, 1985 to 2011, Coral reefs and global change, Rice, 2003, 2005, 2007, Ford Honors Undergraduate Interdisciplinary Research Seminar, Rice, 1988-1990.

Undergraduate independent research: 110 undergraduate researchers, 1995-2009; 29 publications with undergraduates as co-authors 1980 - present.

Guest Lecturer in: Introductory Biology (population genetics), Rice, 1980 - 1984, A tradition of teaching: recent Rice award winners (Rice Continuing Studies), 1998.

Graduate Teaching Assistant: Intro. Biology, Animal Behavior, Genetics, University of Texas at Austin, 1974-1976.

Field Experience:

University of Michigan Biological Station 1972-1973, 2009; Costa Rica 1974; Texas 1976-2011; Venezuela 1988-2001; Brazil 1996-2000; Italy 1997-2007; Southern Appalachians 2000-present, Ecuador 2009, Mexico 2009, Taiwan 2009.

Grants and Fellowships:

Current:

John Templeton Foundation Grant 43667: Cooperation, Purpose, and the Organism, 1 November 2013, 3 years, (with Queller as PI) \$1,575,050.

NSF IOS-1256416 Kin structure, kin recognition and cooperation in a model system 1 Feb. 2013 – 31 Jan. 2017. (with Queller) \$854,000.

NSF DEB-1146375 Conflict and constraint in multicellular life cycles. 1 July 2012 – 30 June 2016. (with Queller) \$740,000.

Completed:

- NSF IOS-1229439 Meeting: The Future of Research in Animal Behavior, Airlie Center, Warrenton VA, 27 April 1 May 2012, \$90,140 (with Rubenstein and Ryan)
- NSF DEB-1011513 Evolutionary costs and benefits of a newly discovered symbiosis between the social amoeba Dictyostelium, and bacteria. Dissertation improvement grant 06/01/10-11/30/11, \$15,000 (with Brock)
- NSF DEB-0918931 Social interactions and molecular evolution. 15 August 2009 31 July 2013, \$716,412. (with Queller)
- Texas Teacher Quality Grants Program Grant: # 887. TEKS Training for Grades 3-5 Science Teachers 2009, \$509,999 plus matching funds of \$369,000 (Rice, Spring ISD, Cleveland ISD, Cypress-Fairbanks ISD).
- NSF DEB-0816690 Evolution and genetics of kin recognition in a model system. 4 years 9/1/2008-8/31/2012 \$800,000 (with Queller).
- Texas Teacher Quality Grants Program Grant: # 358. Science TEKS Training for Grades 3-5 Teachers 2007, \$86,998 plus matching funds of \$113,910 (Rice and Spring Branch).
- Texas Teacher Quality Grants Program: 405 and 406: Regional Rice Elementary Model Science Lab, \$173,996, plus matching funds of \$207,360, 1 May 2008 31 May 2009.
- Faculty Initiative Fund 2008 (Rice Univ.) \$36,000; Self and kin recognition in a model organism.
- Brown Foundation Grant for innovative teaching (Rice Univ.) 2007 (\$4,800); Wild animal behavior for student-generated hypothesis testing using video uploaded to YouTube and modules on Connexions
- NSF EF 0626963 Comparative sequencing of social amoebae in the Dictyostelidae 2006, 2 years, \$948,738 (with Gibbs, Kuspa, Queller, Weinstock).
- Texas Teacher Quality Grants Program: TEKS Training for Grades 3-5 Science Teachers. #352. 2007, \$86,999 plus matching funds of \$113,750 (Rice and HISD).
- Texas Teacher Quality Grants program: TEKS Training for elementary teachers of science 286. 2006, \$147,448 plus matching funds of \$204,900 (Rice and HISD).
- Texas Teacher Quality Grants Program: TEKS Science training for elementary teachers 287. 2006, \$147,448 plus matching funds of \$204,900 (Rice and HISD).
- DOE Joint Genome Institute agreement to sequence *Dictyostelium purpureum* (with Queller, Kuspa, Sucgang)
- John Simon Guggenheim Memorial Fellowship 2004
- NSF FIBR EF 0328455 The evolution of biological social systems, 2003, 5 years, \$5,000,000 (with Queller, Kuspa, Shaulsky, Shaw).
- NSF DEB-0108478 Cell lineage conflicts in the social amoeba, *Dictyostelium discoideum*, 2001, 3 years, \$390,000 (with Queller).
- NSF DEB-0075581 Cell lineage conflicts in the cellular slime mold, *Dictyostelium discoideum*, 2000, 1 year, \$90,000 (with Queller).
- NSF DBI-0070330 An automated DNA sequencer for microsatellite genotyping of social insects and sequencing in molecular biology, 2000, 1 year, \$108,080, plus cost sharing \$50,916 (with Queller, Bennett, Gomer, and Parry).
- NSF IBN-9975351 Cooperation with and without genetic relatedness, 1999, 3 years, \$240,000 (with Queller).

- NSF IBN 9808809 Conflict over male production in stingless bees, 1998, 3 years, \$225,000 (with Queller).
- Fundação de Amparo e Pesquisa do Estado de São Paulo (FAPESP) Organização colonial e padroes de reprodução em abelhas indigenas (Colony organization and patterns of reproduction in native bees [Meliponinae]), 1998, 3 years, through Universidad de São Paulo (with Vera Lucia Imperatriz Fonseca, Hayo Velthuis, David Queller, Carminda Cruz Landim).
- Fundação de Amparo e Pesquisa do Estado de São Paulo (FAPESP) 1996. Travel grant to visit University of São Paulo, about \$5,000.
- NSF IBN-9507515 Worker control of reproduction in multiple-queen wasp societies. 1995, 3 years, \$250,000 (with Queller).
- NSF DEB-9510126 Genetic relatedness and successional structure in *Polistes*, 1995, 3 years, \$220,000 (with Queller).
- NSF IBN-9210051 Within-colony kin discrimination in a social insect, 1992, 3 years, \$166,000 (with Queller).
- NSF BSR-9021514 Relatedness and sociality in neotropical swarm-founding wasps. 1991, 3 years \$263,000 (with Hughes & Queller).
- Brown Foundation Grant for innovative teaching (Rice Univ.) 1989 (\$3,200); Development of computer simulations of evolutionary and behavioral models for undergraduates.
- NSF BSR88-05915, Demographic advantages of eusociality, 1988, 3 years, \$218,000 (with Queller).
- National Geographic 3897-88, Relatedness and the evolution of sociality in tropical wasps, 1988, one year, \$12,000 (with Hughes & Queller).
- NSF BSR86-05026, Relatedness and inclusive fitness in *Polistes*, 1986, 3 years, \$203,000, (with Queller).
- Brown Foundation Grant for innovative teaching (Rice Univ.) 1985 (\$4,700); Development of field experiments in behavioral ecology for undergraduates at Brazos Bend State Park.
- American Philosophical Association Grant, Nest site constraints and cooperative breeding in the social wasp, *Polistes carolinus*. 1986, 1 year \$2,200.
- Brown Foundation Grant for innovative teaching (Rice Univ.) 1982 (\$1,050); Creation of a behavior laboratory for undergraduates on mate choice, schooling, and aggression using fish in aquaria.
- NSF DEB81-17682, Evolutionary Biology of *Polistes* wasps, 1981, 2 years, \$70,000.
- American Philosophical Association Grant, Hormonal control of dominance behavior in paper wasps, 1980 \$1,000.

Rice University Grant, 1980, \$1,500.

Sigma Xi Grant in Aid, 1980 \$220.

NSF PCM 80-03766, Pheromone-endocrine interactions and the regulation of dominance behavior and ovarian development in the social wasp, *Polistes annularis* 2 years, (subcontract \$16,758).

NSF Postdoctoral Fellowship, 1979.

NIH Genetics Training Grant, 1976 - 1979.

Teaching Assistantship, 1974 - 1976.

Grant in Aid, University of Michigan Biological Station, 1973.

Publications (*undergraduate author):

Books and Edited Volumes:

- Strassmann, J. E. and Queller, D. C. 2014. Hamiltonian biology, from microbes to god. *Animal Behaviour, special issue.*
- Strassmann, J. E., Queller, D. C., Avise, J. C., Ayala, F. J. eds. 2011. *In the light of evolution: Volume V: Cooperation and Conflict.* 449 pages. National Academies Press, Washington D. C. USA
- Strassmann, J.E. and Animal Behavior Class 2009. Mockingbird Tales: Readings in Animal Behavior. Connexions Press, http://cnx.org/content/col11211/latest/

Articles: (* is undergrad co-author)

- *Jones, K., Brock, D. A., Queller, D. C., & Strassmann, J. E. in prep. Are farmer traits evolved characteristics or conferred by bacteria?
- *Cañas, A., *Jones, K., Brock, D. A., Queller, D. C., Strassmann, J. E. in prep. Bacterial concentration does not impact farmer-nonfarmer status in the social amoeba *Dictyostelium discoideum*.
- *Callison, W. E., Brock, D. A., Queller, D. C, & Strassmann, J. E. in prep. Is your immunity compromised by cooperative bacterial interactions? Insights from a social amoeba.
- *Levin, S. R., Brock, D. A., Queller, D. C., Strassmann, J. E. submitted. Concurrent coevolution of intra-organismal cheaters and resisters
- Ostrowski, E.A.1, Shen, Y.2, Tian X.3, Sucgang, R.4, Jiang, H.5, Qu, J.5, Katoh-Kurasawa, M.6, Brock, D.A.7, Dinh, C.4, Lara-Garduno, F.5, Lee, S. 5, Kovar, C.5, Dinh, H.5, Korchina, V. 5, Jackson, L.5, Patil, S.5, Han, Y.5, Chaboub, L.5, Shaulsky, G.6, Muzny, D.M.5, Worley, K.C.5, Gibbs, R.A.5, Richards, S.5, Kuspa, A.4, Strassmann, J.E.7, and D.C. Queller7. in prep. Genomic Signatures of Cooperation and Conflict in the Social Amoeba
- 175. smith, j., Strassmann, J. E., Queller, D. C. 2014. Spatial and behavioral determinants of social structure among cooperative *Dictyostelium* amoebae, submitted
- 174. DiSalvo S., Brock D.A., smith j., Queller D.C., Strassmann J.E. In the social amoeba *Dictyostelium discoideum* density, not farming status, not farming status determines predatory success on unpalatable *Escherichia coli*. *BMC Microbiology* in press
- 173. smith, j. Queller, D. C., and Strassmann J. E. 2014. Fruiting bodies of the social amoeba *Dictyostelium* discoideum increase spore transport by *Drosophila*. *BMC Evolutionary Biology* 14:105. doi:10.1186/1471-2148-14-105

- 172. Strassmann, J.E. and Queller, D.C. 2014. Privatization and property in biology. *Animal Behaviour* 92: 305 311 http://dx.doi.org/10.1016/j.anbehav.2014.02.011.
- 171. Werner. G.D.A, Strassmann, J.E., Ivens, A.B.F., Engelmoer, D.J.P., Verbruggen, E., Queller, D.C., Nöe, R., Johnson, N.C., Hammerstein, P., E. Kiers, E.T. 2014. The evolution of microbial markets. *Proc. Natl. Acad. Sci. USA* 111:1237-1244.
- 170. Tian, X., Strassmann, J.E. and Queller, D.C. 2013. A Conserved Extraordinarily Long Serine Homopolymer in Dictyostelid amoebae. *Heredity* 112:215-218.
- 169. Brock, D.A., Read, S., *Bozhchenko, A., Queller, D.C. and Strassmann, J.E. 2013. Social amoeba farmers carry bacterial weapons to protect and privatize their crop. *Nature Communications* 4:2385 | DOI: 10.1038/ncomms3385
- 168. Queller, D. C. & Strassmann, J. E. 2013. The veil of ignorance can favor biological cooperation. *Biology Letters* 9(6) 10.1098/rsbl.2013.0365
- 167. Stallforth, P. Brock, D. A., Cantley, A. M., Tian, X. Queller, D. C., Strassmann, J. E., Clardy, J. 2013. A bacterial symbiont is converted from an inedible producer of beneficial molecules into food by a single mutation in the gacA gene. *Proc. Natl. Acad. Sci. USA* 100:14528-14533, doi: 10.1073/pnas.1308199110
- 166. Hall, D. W., Fox, S., Strassmann, J. E., Queller, D. C. 2013. The rate and effects of spontaneous mutation on fitness traits in the social amoeba *Dictyostelium discoideum*. *G3:Genes, Genomes, Genetics* 3:1115-1127, doi:10.1534/g3.113.005934
- 165. Douglas, T. E., Brock, D. A., Adu-Oppong, B., Queller, D. C., & Strassmann, J. E. 2013. Collection and cultivation of dictyostelids from the wild. Pp. 113-124 Book chapter in *Methods in Molecular Biology*, *Dictyostelium discoideum Protocols* Humana Press, Totowa, New Jersey, USA
- 164. Buttery N., smith j., Queller D. C., & Strassmann J. E. 2013. Measuring Cheating, Fitness and Segregation in *D. discoideum*. Pp. 231-248. Book chapter in *Methods in Molecular Biology*, *Dictyostelium discoideum Protocols* Humana Press, Totowa, New Jersey, USA
- 163. Tian, X., Strassmann, J.E. and Queller, D.C. 2013. *Dictyostelium* development shows a novel pattern of evolutionary conservation. *Molecular Biology and Evolution* online doi: 10.1093/molbev/mst007, 30: 977-984.
- 162. Santorelli, L., Kuspa, A., Shaulsky, G., Queller, D. C., Strassmann, J. E. 2013. A new social gene in *Dictyostelium discoideum, chtB*, *BMC Evolutionary Biology*. 13:4, doi:10.1186/1471-2148/13/4. Pages 1-9.
- 161. Saxer, G., Havlak, P., Fox, S. A., Quance, M. A., Gupta, S., Fofanov, Y., Strassmann, J. E., Queller, D. C. 2012. Whole genome sequencing of mutation accumulation lines reveals a low mutation rate in the social amoeba *Dictyostelium discoideum*. *PLoS ONE* 7: e46759, doi:10.1371/journal.pone.0046759. pages 1 10.
- 160. Scala, C., Tian, X., Mehdiabadi, N. J., Smith, M. H., *Stevens, K., *Buzombo, P., Strassmann, J. E., & Queller, D. C. 2012 Amino acid repeats cause extraordinary coding sequence variation in the social amoeba *Dictyostelium discoideum*. *PLoS ONE* 7: e46150, doi:10.1371/journal.pone.0046150. pages 1-7

- 159. Seppä, P., Queller, D. C., Strassmann, J. E. 2012. Why wasp foundresses change nests: Relatedness, dominance, and nest quality. *PLoS ONE*, 7 e45386, doi:10.1371/journal.pone.0045386. pages 1-9.
- 158. Gilbert, O. G. Kuzdzal-Fick, J. J., Queller, D. C. Strassmann, J. E. 2012. Mind the gap: a comparative study of migratory behavior in social amoebae. *Behavioral Ecology and Sociobiology* 66:1291-1296.
- 157. Queller, D. C. and Strassmann, J. E. 2012. Experimental evolution of multicellularity using microbial pseudo-organisms. *Biology Letters* doi:10.1098/rsbl.2012.0636 pages 1 4.
- 156. Buttery N. J., Jack, C. N., *Adu-Oppong, B., *Snyder, K. T., Thompson, C. R. L. Queller, D. C. & Strassmann, J. E. 2012 Structured growth and genetic drift raise relatedness in the social amoeba *D. discoideum*. *Biology Letters, Royal Society* 8:794-797, doi: 10.1098/rsbl.2012.0421
- 155. Gilbert O. M., Strassmann J. E., Queller D. C. 2012. High relatedness in a social amoeba: the role of kin-discriminatory segregation. *Proc. Biol. Sci. Royal Soc*, 279: 2619-2624.
- 154. Kuzdzal-Fick, J. J., Strassmann, J. E., & Queller, D. C. 2011. High relatedness is necessary and sufficient to maintain multicellularity in *Dictyostelium*. *Science* 334: 1548-1550. DOI: 10.1126/science.1213272.
- 153. Jack, C. N., *Adu-Oppong, B., *Powers, M., Queller, D. C. & Strassmann, J. E. 2011. Cost of movement in the multicellular stage of the social amoebae *Dictyostelium discoideum* and *D. purpureum*. *Ethology, Ecology, and Evolution*, 23:358-367.
- 152. Douglas, T. E., Kronforst, M. R., Queller, D. C., and Strassmann, J. E. 2011. Genetic diversity in the social amoeba *Dictyostelium discoideum*: Population differentiation and cryptic species, *Molecular Phylogenetics and Evolution* 60:455-462.
- 151. Strassmann, J. E. & D. C. Queller 2011. How social evolution theory impacts our understanding of development in the social amoeba *Dictyostelium*. *Develop. Growth Differ* 53:597-607.
- Strassmann, J. E. & Queller, D. C. Avise, J.C, & Ayala, F.J. 2011. In the light of evolution V: Cooperation and conflict. *Proc. Natl. Acad. Sci. USA* 108:10787-10891.
- 149. Strassmann, J. E. & Queller, D. C. 2011. Evolution of cooperation and control of cheating in a social microbe. *Proc. Natl. Acad. Sci. USA* 108:10855-10862. Reprinted in:
 - Strassmann, J. E. & Queller, D. C. Avise, J.C, & Ayala, F.J. (eds) 2011. *In the Light of Evolution V: Cooperation and Conflict*, National Academies Press, Washington DC, and Olsen, L., Choffnes, E.R., and Mack, A. (rapporteurs) 2012 *The Social Biology of Microbial Communities*. National Academies Press, Washington DC.

- 148. Strassmann, J. E., Gilbert, O. M., & Queller, D. C. 2011. Kin discrimination and cooperation in microbes. *Annual Review of Microbiology* 65:349-367.
- 147. Castillo, D. I., Queller, D. C., & Strassmann, J. E. 2011. Cell condition, competition, and chimerism in the social amoeba *Dictyostelium discoideum*. *Ecology, Ethology, and Evolution* 23: 262-273.
- 146. Strassmann, J. E., Page, Jr., R. E., Robinson, G. E., Seeley, T. D. 2011 Kin selection and eusociality. *Nature*, 471, E5-E6 doi:10.1038/nature09833
- 145. Richard Sucgang, Alan Kuo, Xiangjun Tian, William Salerno, Anup Parikh, Christa L Feasley, Eileen Dalin, Hank Tu, Eryong Huang, Kerrie Barry, Erika Lindquist, Harris Shapiro, David Bruce, Jeremy Schmutz, Asaf Salamov, Petra Fey, Pascale Gaudet, Christophe Anjard, M Madan Babu, Siddhartha Basu, Yulia Bushmanova, Hanke van der Wel, Mariko Katoh-Kurasawa, Christopher Dinh, Pedro M Coutinho, Tamao Saito, Marek Elias, Pauline Schaap, Robert R Kay, Bernard Henrissat, Ludwig Eichinger, Francisco Rivero, Nicholas H Putnam, Christopher M West, William F Loomis, Rex L Chisholm, Gad Shaulsky, Joan E Strassmann, David C Queller, Adam Kuspa, Igor V Grigoriev, 2011 Comparative genomics of the social amoebae *Dictyostelium discoideum* and *Dictyostelium purpureum Genome Biology* 2011, 12:R20
- 144. Kalla, S. E., Queller, D. C., Lasagni, A., Strassmann, J. E. 2011. Kin discrimination and possible cryptic species in the social amoeba *Polysphondylium violaceum*. *BMC: Evolutionary Biology*, 11:31
- 143. Brock, D. A., Douglas, T. E., Queller, D. C., Strassmann, J. E. 2011. Primitive agriculture in a social amoeba. *Nature* 469:393-396.
- 142. Robinson, G. E., Banks, J. A., Padilla, D. K....Strassmann, J. E., Swalla, B. J., Tomanek, L. 2010. Empowering 21st Century Biology. *Bioscience* 60:923-930.
- 141. Tian, X., Strassmann, J. E., Queller, D. C. 2010. Genome nucleotide composition shapes variation in simple sequence repeats. *Molecular Biology and Evolution* 28: 899-909.
- 140. Flowers, J. M., Li, S. I., Stathos, A., Saxer, G., Ostrowski, E., Queller, D. C., Strassmann, J. E., Purugganan, M. D. 2010. Variation, Sex and social cooperation: molecular population genetics of the social amoeba *Dictyostelium discoideum*. *PLoS Genetics* 6 e1001013
- 139. Kuzdzal-Fick, J. J., Queller, D. C., Strassmann, J.E. 2010 An invitation to die: initiators of sociality in a social amoeba become selfish spores. *Biology Letters* 6:800-802. doi: 10.1098/rsbl.2010.0257
- 138. Saxer, G., Brock D. A., Queller, D. C., & Strassmann, J. E. 2010. Cheating does not explain selective differences at high and low relatedness in a social amoeba. *BMC Evolutionary Biology 10:76*
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Book Reviews, Essays, Letters, News and Views, Perspectives, etc.:

- 28. Wray, G. A., Hoekstra, H. E., Futuyma, D. J., Lenski, R. E., Mackay, T. F. C., Schluter, D., Strassmann, J. E. Does evolutionary theory need a rethink? Counterpoint, no all is well. 2014. *Nature*, 514: 161 164.
- 27. Strassmann, J. E. & Queller, D. C. 2014. Hamiltonian biology, from microbes to god. *Animal Behaviour* 92: 239 240.
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- 20. Strassmann, J. E. and Queller, D. C. 2007. Altruism among amoebas. *Natural. History*116:24-29.
- 19. Queller, D. C. and Strassmann, J. E. 2006. Models of Cooperation. *Journal of Evolutionary Biology* 19: 1410-1412.
- 19. Strassmann, J. E. 2006. Social evolution: early production of deadly males by competing queens. *Current Biology* 16: r1023
- 18. Strassmann, J. E. and Queller, D. C. 2004 Sociobiology goes micro *American Society of Microbiologists News* 70:526-532.
- 17. Strassmann, J. E. 2004. Rank Crime and Punishment (News and Views). *Nature* 432:160-162.
- 16. Strassmann, J. E. and Queller, D. C. 2004 Genetic conflicts and intercellular heterogeneity. Commentary, *Journal of Evolutionary Biology*, 17:1189-1191.
- 15. Queller, D. C., and Strassmann, J. E. 2003. Eusociality. *Current Biology 13:* 861-863.
- 14. Queller, D.C., and Strassmann, J.E. 2002. A quick guide to kin selection. *Current Biology* 12: R832.
- 13. Strassmann, J. E., D. C. Queller, D. C., 2001. Selfish responses by clone invaders. *Proc. Natl. Acad. Sci. USA* 98:11839-11841.
- 12. Strassmann, J. E. 2000. Cheaters in bacteria. Nature 406:555-556.
- 11. Bernasconi, G. and J. E. Strassmann 2000. From the laboratory to the field: the advantages of pleometrotic colony founding: reply. *Trends Ecol. Evol.* 15: 117.
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- 8. Strassmann, J. E. & D. C. Queller, 1991. Correspondence on biological nomenclature. *Nature*. 352:100.
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- 6. Strassmann, J. E. 1988. Nest site constraints and cooperative breeding in the social wasp, *Polistes carolinus*. *The American Philosophical Society, Grantees Reports* 1988.
- 5. Strassmann, J.E. 1984. Ecology of social insects (book review). *Ecology* 65:1943.
- 4. Strassmann, J. E. 1982. Hormonal control of dominance behavior in paper wasps. *The American Philosophical Society, Grantees Reports* 1982, pp. 40-41.
- 3. Vawter, L.A.* and J.E. Strassmann. 1982. Juvenile hormone production in polistine wasps. p. 222 IN: *The Biology of Social Insects*. M.D. Breed, C.D. Michener and H.E. Evans (Eds.), Westview Press, Boulder, Colorado.
- Strassmann, J.E. 1982. Sex investment ratios in *Polistes exclamans*. p. 221 IN: *The Biology of Social Insects*. M.D. Breed, C.D. Michener and H.E. Evans (Eds.), Westview Press, Boulder, Colorado.
- 1. Barth, R.H. and J.E. Strassmann. 1980. Hormones and dominance in paper wasps. *American Zoologist* 20:1193.

Professional Presentations: Keynotes, Plenaries, Named Lectures:

- Keynote: National Academy Keck Futures Initiative: Collective behavior: from cells to societies 13 Nov. 2014. Beckman Center Irvine CA
- Guns and butter in microbial farming interactions. Walton Lecture, Mountain Lake Biological Station University of Virginia, 1 July 2014.
- Privatization, veils of interest, and striving for creativity in research. Distinguished Visiting Professor, University of Miami 7 March 2014
- Kin recognition in microbes: what can evolutionary biologists add to an apparently complete molecular story? Distinguished Visiting Professor, University of Miami 5 March 2014
- Women in science: the problem isn't lack of self-promotion, it's the system what to do? Distinguished Visiting Professor, University of Miami 5 March 2014.
- Life's biggest mystery: what constitutes and organism Distinguished Visiting Professor, University of Miami 3 March 2014
- Evolution of agriculture in social amoebae: guns and butter, Distinguished Visiting Professor, University of Miami 3 March 2014
- Cooperation and conflict in social amoebae. Lyceum, Emory and Henry College, 10 Sept. 2012.
- Sociality and agriculture in a soil microbe, *Dictyostelium discoideum*. Dept. of Biological Sciences, University of Pittsburgh, keynote address, annual retreat. 22 Sept. 2012.

- What it means to be an organism with a case study of *Dictyostelium*, a social amoeba, The Michael Perkins Lecture, Department of Zoology, Cambridge University UK, 4 March 2010.
- Evolution of sociality, Plenary Address. Deutsche Zoologische Gesellschaft, 102nd Meeting, Regensburg University 27 September 2009
- Plenary address: Purpose and Cross Purpose in Insect Societies: an evolutionary approach. Lucian Symposium, St. Edward's University, Austin, TX, 28 March 2008.
- Keynote Address: Cooperation and conflict in social amoebae: the challenge of multicellularity through aggregation, 7th Annual Conference in Philosophy and Biology Symposium, Duke University 11 April 2008.
- Genes for cooperating and cheating in the social amoeba, *Dictyostelium*. Behavioral Ecology Research Group (BERG) annual lecture, Department of Biology, Simon Fraser University, Burnaby, BC, Canada, 1 Feb. 2007.
- Behavioral ecology of a social amoeba, Pettingill Lecture, University of Michigan Biological Station, Pellston, MI, 27 June 2006.
- The importance of behavior in a genomic age. Fellows Lecture, Animal Behavior Society, Snowbird UT 10 August 2005.
- Cooperation and conflict among non-relatives of the social amoeba, *Dictyostelium discoideum*, and the social wasp, *Polistes dominulus*, Plenary address Associazione Italiana pel lo studio degli artropodi sociali e presociali, Florence Italy, 1 Feb. 2005.
- Transitions in social evolution: advances based on microsatellites. Invited Plenary Address XIII International Congress of the International Union for the Study of Social Insects, 2 Jan. 1999, Adelaide, Australia
- The maintenance of sociality and genetic relatedness in multiple-queen tropical wasp societies. 9 February 1995. Colorado State University, Graduate Degree Program in Ecology, Distinguished Ecologist Lecture Series.
- Conflicts of interest and social interactions in *Polistes* wasps. 8 Feb. 1995. Colorado State University, Graduate Degree Program in Ecology, Distinguished Ecologist Lecture Series.
- Foundress worker conflict over queen replacement in *Polistes bellicosus*: a model system for teaching large ecology classes without lecturing. 7 Feb. 1995 Colorado State University, Graduate Degree Program in Ecology, Distinguished Ecologist Lecture Series.
- Nepotism and genetic conflicts of interest in wasp colonies. Provost's Lecture, Rice University. 30 Sept. 1991.
- Polygyny and latitude in *Polistes* wasps. Entomological Society of America/IUSSI joint symposium, Detroit, Michigan, 1 December 1983 (featured speaker).

Recent public lectures:

Collective behavior: from cells to societies. 12 Nov. 2014 Distinctive Voices NAS, Irvine CA.

- Life's biggest mystery: what makes up an organism. Saturday Morning Science (public) University of Missouri, Columbia MO 16 Nov. 2013.
- Social insects and evolution, Public Lecture, National Chung Hsing University, Taichung, Taiwan, 30 October 2009.

Professional Presentations, meetings, symposia, departments:

- The geography of cooperation in social amoebae 13 Oct. 2014. HHMI Janelia Farms. Joan E. Strassmann, jeff smith, David C. Queller
- Guns and butter in microbial social interactions. 2 October 2014. Department of Neurobiology and Behavior, Cornell University, Ithaca NY
- The importance of property and privatization in social insect evolution. 15 July 2014. International Union for the Study of Social Insects, IUSSI Cairns Australia.
- Social evolution in microbes. 14 June 2014 Armchair talk in Garda CH course in evolutionary biology for beginning graduate students
- Team-based writing for Wikipedia about Animal Behavior 22 May 2014 Center for the Integration of Research, Teaching and Learning, U W Madison (done on Blackboard)
- Guns and butter in microbial social interactions. Oklahoma State University 3 April 2014.
- Life is a banquet and most people are starving to death (Auntie Mame): Guns and butter in microbial social interactions. University of Mississippi, Oxford MS 14 Feb. 2014
- Who is the queen? Behavior meets genetics. Darwin Day, Wash U 8 Feb. 2014
- Social Evolution. Charles Rebstock Chair Installation talk Wash U. 23 Jan. 2013
- Life's biggest mystery: what makes up an organism. Saturday Morning Science (public) University of Missouri, Columbia MO 16 Nov. 2013.
- Privatization, veils of ignorance, and altruism in micro-organisms. University of Missouri, Columbia MO 15 Nov. 2013
- How to get yourself heard and why you should want to. Women in Science. University of Illinois at Urbana Champaign 31 Oct. 2013
- Guns and butter in a social microbe, Program in Ecology, Evolution and Conservation Biology, University of Illinois at Urbana Champaign 30 Oct. 2013
- The evolution of privatization. Evolution of Social Complexity Colloquia, School of Human Evolution and Social Change, Arizona State University 16 October 2013.
- When is multicellularity organismal? ICREA Institució Catalana de Recerca i Estudis Avançats Conference on the Evolution of Multicellularity, Barcelona, Spain 30 Sept. 2013.
- Guns and butter in a social microbe. Department of Ecology and Evolutionary Biology, University of Kansas, Lawrence KS, 24 September 2013.
- The evolution of property and privatization. Hamilton's 50th Anniversary Presidential symposium. Animal Behavior meeting Boulder Colorado 30 July 2013.
- Guns and butter in a social microbe. Presidential Symposium, Society for the Study of Evolution, Snowbird Utah 24 June 2013.
- Microbial sociality and agriculture: how a stop codon can change your life. Alan R. Templeton Symposium, Washington University in St. Louis MO, 3 June 2013.
- *Dictyostelium:* two kinds of multicellularity. NEScent Catalysis Meeeting on the Evolutionary origins of multicellularity Durham NC, 6-10 May 2013.

- Sociality and agriculture in a social microbe, Instituto Gulbenkian de Ciência, Oeiras, Portugal, 26 April 2013.
- Organismality, social amoebae, and kin recognition, Graduate Course, Instituto Gulbenkian de Ciência, Oeiras, Portugal, 25 April 2013.
- Sociality and agriculture in a social microbe, Biology Department, Trinity University, San Antonio 1 April 2013.
- Sociality and agriculture in a social microbe, Department of Biology, Kansas State University 28 March 2013.
- Sociality and agriculture in a social microbe, Department of Biology, Grand Valley State University 22 March 2013.
- Sociality and agriculture in a social microbe, Center for Evolutionary Psychology, Univ. Calif. Santa Barbara 6 Feb. 2013.
- Agriculture in a social microbe. Evolution group, Ecology, Evolution, and Marine Biology Department Univ. Calif. Santa Barbara. 31 Jan. 2013.
- Challenges in multicellularity solvable with studies of social amoebae. Cooperation and the evolution of multicellularity Program, Kavli Institute for Theoretical Physics, UCSB Santa Barbara CA 29 January 2013.
- Sociality and agriculture in a social microbe. Department of Biological and Environmental Science Ecology and Evolutionary Biology Division University of Jyväskylä, Finland, 31 October 2012.
- Sociality and agriculture in a social microbe. Department of Biosciences, University of Helsinki, Finland, 30 October 2012.
- Evolution in a cooperative microbe: the importance of chimerism and cheating in *Dictyostelium discoideum* (poster). Molecular Microbiology and Microbial Pathogenesis Program retreat, Pere Marquette Lodge, Grafton IL, 14 Sept. 2012.
- Dictyostelium discoideum as a social organism. Annual Dictyostelium Meeting, Madrid, Spain. 2 August 2012.
- Agriculture in social amoebae. Department of Zoology. Oxford University. 27 July 2012.
- Microbes. Symposium: Inclusive fitness: theory and practice. Kavli Royal Society International Centre, Buckinghamshire, United Kingdom. 19 July 2012.
- The importance of controls. Presentation to about 120 undergraduates in BioMedRap, Washington University in St. Louis. 10 July 2012.
- Cooperation and conflict in social amoebae. American Society for Microbiology, San Francisco, 18 June 2012.
- Privatization of agricultural crops. (with D. Brock, J. Postigo, D. Queller) Animal Behavior Society, 14 June 2012.
- Meeting: The Future of Animal Behavior, organized and participated in NSF workshop at Airlie Conference Center 27 April to 1 May 2012.
- Microbial Xenophobia. Workshop on xenophobia, Origins Project, Arizona State University. Also, participant in The Great Debate, popular event, 31 March 2012.
- What can an evolutionary approach add to a clear genetic story on microbial kin recognition? Department of Biology, St. Louis University, 23 March 2012
- Why should we care about microbial sociality? Biology Department, Indiana State University, Terre Haute, IN, 20 March 2012.
- Evolution of cooperation and control of cheating in the social amoeba *Dictyostelium discoideum* Workshop on Social biology of microbial communities. Forum on Microbial Threats, Institute of Medicine. 6 March 2012.

- The promise and threat of microbial sociality: social amoebae. Department of Molecular Biology, University of Wyoming, Laramie, WY 2 March 2012.
- Cooperation and conflict in social amoebae, Tri beta honor society induction dinner talk, Biology Department, Avila University, Kansas City, MO 15 Feb. 2012.
- Evolution of social behavior in amoebas. Tuesday Lunch Seminar, Ecology and Evolutionary Biology, University of Michigan 31 January 2012.
- Why care about microbial altruism? In Extravagant altruism and the origins of complex sociality. Institute for Social Research, University of Michigan 30 January 2012.
- Workshop participant: Multi-Agent Cooperation: Biological Markets and Social Dilemmas, organized by Ronald Noë, Lorentz Institute, Leiden, Netherlands. 16 20 January 2012.
- Evolution of cooperation and control of cheating in a social microbe, University of Texas School of Public Health 21 Feb. 2011
- Control of conflict in the social amoeba, *Dictyostelium discoideum*, Texas State University 14 Feb. 2011.
- Control of conflict in the social amoeba *Dictyostelium discoideum*. In the light of Evolution V: Cooperation. Sackler Colloquium, NAS, Beckman Center, Irvine CA 7 Jan. 2011
- Cooperation and conflict in the social amoeba *Dictyostelium discoideum*. Departments of Biology and Molecular Biology, Copenhagen University 9 Sept. 2010.
- Cooperation, conflict, and a farming symbiosis in the social amoeba *Dictyostelium discoideum*. Max Planck Institute for Evolutionary Biology, Plön, Germany, 2 September 2010.
- Fusion, segregation and genes for kin recognition in a social amoeba (invited) International Union for the Study of Social Insects Copenhagen, 10 August 2010.
- Costs and benefits of social migration in the amoeba *Dictyostelium discoideum* Animal Behavior Society Meeting, College of William and Mary, Williamsburg VA, 27 July 2010.
- A behavioral perspective on organismality in a microbe. Plenary Address. V European Conference on Behavioral Biology, Ferrara, Italy, 17 July 2010
- Microbial Sociality in a Copenhagen University workshop on Evolutionary Genetic Approaches to Social Evolution organized by Mike Wade and Tim Linksvayer, 10 June 2010, Denmark
- A new farming symbiosis between *Dictyostelium* and bacteria. Laboratory of Molecular Biology, Rob Kay's Group, MRC, Cambridge, UK 2 March 2010.
- What it means to be an organism with a case study of *Dictyostelium*, a social amoeba Princeton University 18 February 2010.
- Dictyostelium-bacteria interactions: feeding, farming, fighting. Department of Biology, Washington University, 28 January 2010.
- Evolution of cooperation and conflict in a social amoeba, *Dictyostelium discoideum*. Department of Biology, Washington University, 27 January 2010
- Social evolution and behavior in the microbe *Dictyostelium discoideum*, Minnesota Center for Philosophy of Science, and Department of Ecology, Evolution and Behavior, University of Minnesota 9 Dec. 2009.
- Microbial Social Evolution, Physics Workshop, NCHU, Hui-Sun Forest Station, Taiwan, 1 November 2009.
- Social behavior in insects, Physics Workshop, NCHU, Hui-Sun Forest Station, Taiwan, 31 October 2009.

- Dictyostelium in the environment: symbiosis and social interactions of a soil dwelling amoeba. Academia Sinica, Taipei, Taiwan 28, October 2009
- Social evolution: genomes, organisms and conflict (in Italian) Department of Evolutionary Biology, University of Florence, 22 September 2009.
- The value of a microbial system for understanding cooperation, poster, Evolution of Cooperation meeting IASA, Vienna, Austria, 15 18 September 2009.
- Microbial Evolution Workshop, American Academy of Microbiology, San Cristóbal, Galapagos, Ecuador 26 August 1 September 2009.
- Genetics and Behavior of Kin and Non-Kin Interactions in a Social Amoeba. Gordon Conference in Microbial Population Biology. Andover, NH 21 July 2009.
- Relatedness, conflict, and near organismal cooperation in social wasps and stingless bees. Dawkins Symposium, Animal Behav. Soc. Meeting, Pirenopolis, Brazil, June 2009
- The behavioral ecology of a social amoeba. Daniel Otte Fest Symposium, University of Letheridge, Canada. 16 June 2009
- Kin selection and social wasps. Jatun Sacha Biological Station, Ecuador, 15 May 2009.
- What sociobiology can tell us about social amoebae. University of Michigan, Ann Arbor Michigan, 28 April 2009.
- Genetics and evolution of cooperation in social amoebae, University of Houston, Houston, TX 8 April 2009.
- Origin of eusociality. Origins Inaugural Symposium, Arizona State University 4 April 2009.
- Testing social insect theories in a social amoeba. Pennsylvania State University 6 March 2009.
- Cooperation and conflict in a social amoeba. Oregon State University 9 February 2009.
- Social evolution in microbes: Darwin's and Hamilton's theories in a novel system. University of Sussex, Satellite Meeting on Social Insects. 21 Jan. 2009.
- The challenge of bringing old ideas to a new system: social evolution in amoebae. University of California, Davis, Population Biology Group. 2 Oct 2008.
- Cryptic species, phylogenetics, and sex in four *Dictyostelium* species. International *Dictyostelium* Conference 2008. Tsukuba Japan, 19 Sept. 2008.
- Conflict and Cooperation, Discussion Leader, Genes and Behavior Gordon Conference, Il Ciocco, Lucca, Italy, 25 February 2008.
- The genetic basis of cooperation and conflict in the social amoeba, Division of Biological Sciences, University of Montana, 24 September 2007.
- Cell adhesion and mechanisms of cooperation in social amoebae, Microbial Adhesion & Signal Transduction Gordon Conference Newport RI 23 July 2007.
- Evolution and cooperation, NIGMS NIH, Bethesda MD, 11 April 2007
- Genes for cooperating and cheating in the social amoeba, *Dictyostelium* Univeristy of Wisconsin, Madison WI, 15 March 2007
- Biofilms, disease, and social evolution especially in social amoebae. Dept. of Natural Sciences, University of Houston/Downtown, 16 Feb. 2007.
- Insect societies as divided organisms, the complexities of purpose and cross purpose. Les Ecologistes, Department of Biology, Simon Fraser University, Burnaby, BC, Canada, 1 Feb. 2007.
- Genetics of social interactions in social amoeba. Genetics and Genomics of Social Behavior, NIH workshop, Bethesda MD 4 Jan. 2007.

- Insect societies as divided organisms, the complexities of purpose and cross purpose. In the light of Evolution, National Academy of Sciences, Sackler Colloquium, UC Irvine 1 December 2006.
- Microbial multicellularity and social evolution theory. DARPA Cooperation among Microorganisms Workshop, Park City, UT 25 August 2006.
- Kin recognition in microbes. Dipartimento di Genetica e Biologia Animale, Universita di Firenze, Italy, 21 June 2006.
- The behavioral ecology of a social amoeba. Dipartimento di Genetica e Biologia Animale, Universita di Firenze, Italy, 15 June 2006.
- Genes for conflict and cooperation in a social amoeba. Conflict and Cooperation: The evolution of social interactions symposium, Harvard University, 28 April 2006.
- The behavioral ecology of a social amoeba. Biology Department. University of Utah, 23 March 2006.
- The behavioral ecology of a social amoeba. Biology Department. University of Indiana 18 January 2006.
- The importance of local field stations: wasp sociobiology at BFL. Integrative Biology University of Texas at Austin 4 November 2005.
- Social Amoebae as model systems for genetics and evolution of social interactions International Conference on Systems Biology. Invited speaker. Boston 22 Oct. 2005.
- The importance of behavior in a genomic age. Eco. Evo. Biology Rice U. 12 Sept. 2005
- Kin recognition in *Dictyostelium*. International Dictyostelium Conference, Autrans, France 15 August 2005.
- Organization of work in *Polistes*. *Polistes* paper wasps: the emergence of a model genus, Tufts University European Center, Talloires, France 30 April 2005.
- A genetic approach to cooperation and conflict in the social amoeba, Dictyostelium discoideum. School of Life Sciences, Arizona State University, Tempe AZ 15 April 2005.
- Recognition and Discrimination in *Dityostelium purpureum* and *Polysphondelium violaceum* presented at a workshop: PEET A revisionary study of the eumycetozoans. Dept. of Biological Sciences, University of Arkansas, Fayetteville, 12 March 2005.
- Conflict and Violence in animals *Scientia*, Rice University, 28 Sept. 2004
- Mechanisms of cooperation in the social amoeba *Dictyostelium discoideum*. Insectes Final meeting, Helsinor, Denmark, 3 Sept. 2004.
- Exploiting new terrain: an advantage to sociality in the social amoeba *Dictyostelium discoideum*. International *Dictyostelium* Conference, St. Adéle Quebec, Canada 17 August 2004
- Genes for social behavior in the social amoeba *Dictyostelium discoideum*. Society for the study of evolution meeting, Ft. Collins CO 27 June 2004.
- Social Amoebae as a model system for genetics and evolution of social interactions. Genes and Behavior Gordon Conference, Ventura CA 9 February 2004.
- The nature of altruism and genetic conflict in social amoebae. Department of Genetics, Texas A & M University, State College, TX 29 January 2004.
- Genes for social behavior in social amoebae. Workshop: PEET A revisionary study of the eumycetozoans. Dept. of Biological Sciences, University of Arkansas, Fayetteville, 16 January 2004.

- Mechanisms of kin recognition: a green beard cell adhesion gene in social amoebae and cuticular hydrocarbon profiles in social wasps. EMBL Recognition Symposium, Heidelberg, Germany 22 November 2003.
- The evolution of self non-self recognition, panel discussion chair. European Molecular Biology Laboratory, Recognition Symposium, Heidelberg, Germany 21 November 2003.
- Cell adhesion, cooperation and conflict in the social amoeba *Dictyostelium discoideum*. University of Texas Health Science Center at Houston Medical School Microbiology and Molecular Genetics, Houston TX, 2 Oct. 2003.
- Reinventing the individual. Behavioral Ecology Group, University of Texas at Austin 25 Sept. 2003.
- Altruism and conflict in the social amoeba *Dictyostelium discoideum*. Department of Integrative Biology, University of Texas at Austin, Austin TX 25 Sept. 2003.
- Altruism and conflict in the social amoeba *Dictyostelium discoideum*. International Genetics Congress, Melbourne, Australia, 9 July 2003.
- Dictyostelium discoideum in its natural context. International Dictyostelium meetings, Lorne, Australia, 30 June, 2003.
- Sex and population structure in the social amoeba *Dictyostelium discoideum*. Society for the study of Evolution meetings, Chico, CA 21 June 2003.
- A genetical approach to altruism in the social amoeba *Dictyostelium discoideum*. Biology Department, Spelman College, Atlanta GA, 10 June 2003.
- Cooperation and conflict in the social amoeba *Dictyostelium discoideum*. Program in Ecology, Evolution and Behavior, University of Illinois at Urbana-Champaign, 29 April 2003.
- Cooperation and conflict in the social amoeba *Dictyostelium discoideum*. Population Biology, Ecology and Evolution, Emory University, Atlanta GA, 18 April 2003.
- Evolution of social behavior: lessons from slime molds. Kika de la Garza Subtropical Research Center, USDA, Weslaco TX 6 Feb. 2003
- Cooperation and conflict in the social amoeba, *Dictyosetlium discoideum*, a model organism for major evolutionary transitions. Department of Biology, University of Virginia, Charlottesville, VA 6 December 2002.
- Conflict and cooperation in chimeras of the social amoeba, *Dictyostelium discoideum:* Department of Biological Sciences, Sam Houston State University, Huntsville TX 12 September 2002.
- The genetic structure of natural *D. discoideum* populations: sex, relatedness, dispersal and cooperation. International Dictyostelium Conference 2002, 23 September 2002, Altavilla, Sicily, Italy.
- Conflict and cooperation in chimeras of the social amoeba, *Dictyostelium discoideum*. Department of Biochemistry and Cell Biology, Rice University, 26 August 2002.
- Led Roundtable on social evolution in micro-organisms International Union for the Study of Social Insects XIV Congress, Sapporo, Japan 1 Aug. 2002
- Dominance, relatedness and supercedure among colony foundresses and the cost of losing a queen in *Polistes dominulus*. International Union for the Study of Social Insects XIV Congress, Sapporo, Japan 29 July 2002.
- Cooperation and conflict in chimeras of the social amoeba, *Dictyostelium discoideum*. Society for the study of Evolution. Champaign Illinois 29 June 2002.
- Cooperation and conflict in the social amoeba, *Dictyostelium discoideum*. Symposium in honor of Richard D. Alexander, University of Michigan, 8 June 2002.

- Costs and benefits of chimerism in the social amoeba, *Dictyostelium discoideum*. American Society of Microbiology, Salt Lake City, Utah, 21 May 2002.
- Workshop participant: Microbial communities: advantages of multicellular cooperation, American Academy of Microbiology, Tucson, AZ 3-5 May 2002.
- Caste totipotency and conflict in a large colony social insect. Entomological Society of America, San Diego, 11 December 2001.
- Multicellularity, chimeras, and conflict in the social amoeba, *Dictyostelium discoideum*. Trinity University, San Antonio, TX 29 Oct. 2001.
- Cooperation, conflict, and the evolution of multicellularity in social amoebae. Museum of Comparative Zoology, Harvard University, Cambridge MA 14 Sept. 2001.
- Social conflict in the social amoeba, *Dictyostelium discoideum*. Microbial Population Biology Gordon Conference, Williams College, MA 29 July 2001.
- Social conflict in the cellular slime mold, *Dictyostelium discoideum*. Mountain Lake Biological Station, VA, 28 June 2001.
- What can social amoebae, *Dictyoselium discoideum*, tell us about the organization of life? Department of Biology, University of Nevada at Reno, 8 Feb. 2001.
- Conflicts of interest in the cellular slime mold, *Dictyostelium discoideum*. 8th International Behavioral Ecology Congress, Zurich, Switzerland, 12 August 2000.
- Chimeras and cheater clones in *Dictyoselium discoideum*. Dictyostelium 2000 meeting, University of Dundee, Scotland, 3 August 2000.
- Conflict and genetic bottlenecks in swarm-founding wasps and slime molds. EU-TMR Workshop on Kinship, communication and diseases in social insects. Florence, Italy, 9 July 2000
- The origin of microsatellites. Society for the Study of Evolution meeting. University of Indiana, Bloomington, Indiana, 26 June, 2000.
- Conflict, genetic bottlenecks and the nature of the individual. Department of Biology, Southern Methodist University, 14 April 2000.
- Social insects and the evolution of cooperation, Entomological Society of America, invited talk, 13 Dec. 1999, Atlanta, Georgia.
- Relatedness and the evolution of cooperation. Ecology, Evolution and Behavioral Biology Program, Michigan State University 17 Nov. 1999.
- Mate number, kin selection and social conflicts in stingless bees and honeybees. Instituto de Biociencias, Universidade de São Paulo 14 April 1999.
- Levels of sociality affect the resolution of worker-queen conflict over male production in wasps. International Society for Behavioral Ecology, 28 July 1998, Asilomar, CA
- Queen control or convention in *Polistes* wasps. Istituto di Zoologia, University of Florence, 12 June 1998, Florence, Italy
- El parentesco y conflicto social en las abejas meliponinas y *Apis*. (Relatedness and social conflict in meliponine bees and *Apis*). Departamento de Apicultura, Universidad Autónoma de Yucatán, Mérida, Mexico, 14 May 1998
- Worker-queen conflict in *Polistes*, a small-colony social wasp. Department of Ecology and Evolutionary Biology, University of Chicago, 8 May 1998.
- The Evolution of swarm-founding wasps: collective worker control. Department of Ecology and Evolutionary Biology, University of Chicago, 7 May 1998.
- Genetic structure of wasp colonies. Department of Biological Sciences, Stanford University, 4 May 1998.

- Genetic relatedness in stingless bees: evidence from DNA microsatellites. Meetings of North American Section of the International Union for the Study of Social Insects. Nederland, Colorado, 19 September 1997.
- Collective worker control in swarm-founding wasps. Workshop on Kinship Theory of the European Union TMR network on Social Evolution. Mols, Denmark. 9 June 1997.
- Genetic conflicts of interest in social wasps, Evolution Group, Louisiana State University, 4 April 1997.
- Conflicts of interest in social wasps, Biosciences, Ohio State University, 4 March 1997.
- Genetic conflicts of interest in social wasps, Genetics Program, Texas A & M University, 27 February 1997.
- Conventions and reproductive dominance among colony foundresses of *Polistes carolinus*, 1 October 1996, 6th International Behavioural Ecology Congress, Canberra, Australia
- Worker queen conflicts over sex ratios and reproduction, 8 June 1996, II Encontro Sobre Abelhas, Universidade de São Paulo, Faculdade de filosofia, Ribeirão Preto, São Paulo, Brazil
- Demography and social structure of the tropical wasp, *Parachartergus colobopterus*, 19 Dec. 1995, Entomological Society of America yearly meeting, Las Vegas, Nevada
- Colony cycles and kin recognition in a neotropical swarm-founding wasp: evidence from microsatellites. 9 July 1995, Society for the Study of Evolution yearly meeting, Montreal, Canada
- Microsatellites and kinship in social wasps, Molecular Approaches in Zoology and Evolution Symposium, American Society of Zoologists St. Louis, 6 January 1995.
- Curling, aggression, queenship and genetic relatedness in the neotropical epiponine wasp, *Parachartergus colobopterus*. XII International Congress on Social Insects, International Union for the Study of Social Insects, Sorbonne, Paris, France, 26 August 1994.
- Conflicts of interest and the evolutionary genetics of sexual production in swarm-founding wasps. Genetics of Sex Symposium, Department of Molecular Biology, Princeton University 5-6 May 1994.
- Genetic relatedness and social interactions in *Polistes* wasps. Symposium of the Centro Fiorentino de Storia e Filosophia della Scienza. Castiglioncello, Italy, 6 October 1993.
- Parentesco genético y comportamiento social en avispas neotropicales. Plenary Address, V Congreso Latinoamericano y XIII Venezolano de Entomología, Porlamar, Venezuela, 7 July 1993.
- Phylogenetic Tests of Emery's Rule: are social parasites most closely related to their hosts. Symposium talk, Society for the Study of Evolution, Snowbird, Utah, 20 June 1993.
- Genetic relatedness and queen number in social wasps. Fourth International Behavioral Ecology Conference, Princeton University, 22 August 1992.
- Highly variable microsatellite loci in social wasps. Society for the Study of Evolution meetings, Berkeley, CA, 20 June 1992.
- Cycles of queen number and genetic relatedness in neotropical wasps. Society for the study of evolution meetings, Hilo, Hawaii 1 August 1991.
- Evolutionary advantages of eusociality. Dept. of Zoology, University of Oklahoma, Norman, OK 14 Feb. 1991
- Seasonal variation in genetic structure of tropical wasp colonies, Entomological Society of America Meetings, New Orleans LA 5 December 1990.

- Relatedness and queen number in neotropical social wasps, Department of Organismic and Evolutionary Biology, Harvard University, Cambridge MA 11 October 1990.
- Social structure in the tropical wasp, *Parachartergus colobopterus*. Entomol. Soc. of America, San Antonio, TX 11 Dec. '89.
- Maintenance of sociality in multiple-queen tropical wasps, Department of Ecology and Evolutionary Biology, University of Arizona, 6 November 1989.
- Relatedness and social structure in wasps, Dept. of Ecology and Evolutionary Biology, Univ. of Calif.- Irvine, 11 Oct. 1989.
- Africanized Bees. Scientia Institute, Rice University, Houston, Texas, 12 Sept.1989.
- Parentesco y la evolución de la socialidad en avispas tropicales. (in Spanish)
 Departamento de Biología, Universidad Simon Bolívar, Caracas, Venezuela, 20
 June 1989.
- Relatedness and social structure in tropical swarm-founding wasps. Soc. for the Study of Evolution, State College, PA, 17 June 1989.
- Relatedness and social behavior in wasps. Department of Ecology and Evolutionary Biology, Univ. of Chicago, 30 Jan. '89.
- Seasonal variation in relatedness among nestmates in the social wasp, *Polistes bellicosus*. Animal Behavior Society meeting, Missoula Montana, 9 August 1988.
- Intriguing studies with social wasps. Hymenoptera workshop: Wasps. Brackenridge Field Laboratory, University of Texas at Austin, Austin, Texas, 16 April 1988.
- An experimental study of predation and the evolution of group living in social wasps. Society for the Study of Evolution, Bozeman, Montana, 24 June 1987
- Group size and predation in social wasps. Brackenridge Field Laboratory, University of Texas at Austin, 20th Anniversary Symposium, Austin, Texas, 23 April 1987.
- Conditional strategies and group nesting in social wasps. Dept. Biol. Sciences, Brock University, 12 March 1987.
- Constraints on independent nesting in *Polistes*. Dept. Entomology, Texas A & M University, 23 October 1986.
- Constraints on independent nesting by *Polistes* foundresses in Texas. 10th International Congress of the International Union for the Study of Social Insects, Munich, West Germany, 19 August 1986.
- Using kin selection theory to investigate group nesting in social wasps. Dept. of Zoology, Univ. Oklahoma, 26 Feb. '86.
- The evolution of cooperative breeding in primitively social wasps. Brackenridge Field Lab. Symposium, Univ. of Texas at Austin, Austin, Texas, 24 Oct. 1985.
- Subfertility and the evolution of group nesting in paper wasps. Society for the Study of Evolution, Chicago, Il., 23 June 1985.
- Evolution of cooperative breeding in social wasps. Dept. Zool., Ohio State Univ., Columbus, Ohio, 23 April 1985
- Advantages to group nesting in paper wasps (*Polistes*). Animal Behavior Society, Cheney, WA, 14 Aug. 1984.
- Caste problems in social insects. Biology Department, University of Houston, Houston, Texas, 13 October 1983.
- Sex investment ratios in *Polistes* wasps. International Union for the Study of Social Insects, International Congress, Boulder, Colorado, 13 Aug. 1982.
- Reproductive options of social wasp workers. Kellogg Biological Station, Michigan State University, Hickory Corners, Michigan, 29 July 1982.

Reproductive options of *Polistes* workers. Entomology Department, Cornell University, Ithaca, NY, 22 March 1982.

Behavioral Ecology of *Polistes* wasps. Istituto di Zoologia, Universitá di Firenze, Florence Italy, 9 July 1981.

Behavioral Ecology of *Polistes* wasps. (in French) Centre National de la Recherche Scientifique, Marseille France, 29 June 1981.

Behavioral Ecology of *Polistes* wasps. Zoologisches Institut, Würzburg Germany, 15 June 1981.

Reproductive competition and dominance hierarchies in the social wasp *Polistes annularis*. Population Biology Group, Biological Sciences, Stanford University, March 1981.

Reproductive competition and kin selection in *Polistes annularis*. Behavioral Ecology Symposium, Florida Entomological Society, Daytona Beach, FL, 23 August 1980.

Kin selection in paper wasp dominance hierarchies. Dept. Ecology & Behavioral Biol., Univ. of Minn., Minneapolis, 9 Jan. 1980.

Satellite nests and nest predation in *Polistes exclamans*. Entomological Society of America. Denver, CO, Nov. 1979

Kin selection and the significance of satellite nests. Symposium on Natural Selection and Social Behavior. Ann Arbor, Michigan, 16 October 1978.

The evolution of sociality in polistine wasps. University of Michigan Biological Station, July 1978.

Professional Service:

National Science Foundation Advisory Committee for Biological Sciences, 1 Sept 2014 – 30 Sept 2017.

BEACON, Scientific Advisory Board member, Michigan State University, 2011 – present

Animal Behavior Society, organized symposium on W. D. Hamilton's 50th anniversary of inclusive fitness. 31 July – 1 August 2013.

Society for the Study of Evolution Nominating Committee 2013 – 2015

NSF Frontiers in Animal Behavior Workshop, Airlie VA 27 April – 1 May 2012

Animal Behavior Society, President, 2012

NSF Evolutionary Genetics Panel, 13-15 April 2011.

Animal Behavior Society, Founder's Poster Award Competition Organizer, Indiana University, July 2011.

Organized with D. Queller, F. Ayala, J. Avise: In the light of Evolution V: Cooperation. Sackler Colloquium, NAS, Beckman Center, Irvine CA 7 – 8 Jan. 2011

Animal Behavior Society, Allee Competition Organizer, College of William and Mary, July 2010.

Scientific Advisory Committee of the Uppsala Centre for Evolution and Genomics 2009.

Animal Behavior Society Allee Competition Judge Pirenópolis, Brazil, June 2009.

IUSSI Copenhagen 2010 Organizing Committee

NSF Workshop on Tools 24-25 March 2009

ISBE 2008 Abstract Reviewing Committee April 2008

Dictybase Advisory Committee 2007-

Nominator for multiple national and international prizes

NSF FIBR panel 7-8 May 2007

NSF Dissertation improvement panel – Animal Behavior Feb. 28-2March 2007

NIH workshop on genes and behavior 4-5 January 2007

NSF FIBR preproposal panel 14-15 Nov. 2005

NSF Workshop on Frontiers in Evolutionary Biology, 10-12 Jan. 2005. http://www.nsf.gov/publications/pub_summ.jsp?ods_key=biorpt080106

International Union for the Study of Social Insects 2006 Meeting Organizing Committee

International Dictyostelium conference, session moderator, 19 Aug. 2004

International Union for the Study of Social Insects nominating committee 2002-2004.

Dictyostelium stock center advisory committee, 2002- present

Councilor, Society for the Study of Evolution, 2002 - 2004

NSF Minority Postdoctoral Fellowships Panel 20 March 2003, 11 March 2004.

2014: Reviewed 71 proposals & papers, wrote letters of rec. or nominat. for 57 people.

2013: Reviewed 84 proposals & papers, wrote letters of rec. or nominat. for 59 people.

2012: Reviewed 53 grant proposals and manuscripts, wrote letters of rec. for 49 people.

2011: Reviewed 66 grant proposals and manuscripts, wrote letters of rec. for 28 people.

2010: Reviewed 68 grant proposals and manuscripts, wrote letters of rec. for 53 people.

2009: Reviewed 52 grant proposals and manuscripts, wrote letters of rec. for 50 people.

2008: Reviewed 46 grant proposals and manuscripts, wrote letters of rec. for 40 people.

2007: Reviewed 61 grant proposals and manuscripts, wrote letters of rec. for 41 people.

2006: Reviewed 36 grant proposals and manuscripts, wrote letters of rec. for 40 people.

2005: Reviewed 36 grant proposals and manuscripts, wrote letters of rec. for 39 people.

2004: Reviewed 55 grant proposals and manuscripts, wrote letters of rec. for 49 people.

2003: Reviewed 59 grant proposals and manuscripts, wrote letters of rec. for 33 people.

2002: Reviewed 35 grant proposals and manuscripts, wrote letters of rec. for 36 people.

President, N. American Section, International Union for the Study of Social Insects, 2001.

National Science Foundation, IBN, Animal Behavior Panel, October 2001.

Duke Review Committee for OTS Undergrad Semester Abroad, Costa Rica March 2001.

OTS Assembly of Delegates member (Rice University) 2001-2002.

National Science Foundation CAREER PI meeting, Senior Biology Faculty, speaker, poster evaluator, 10-12 Jan. 1999.

National Science Foundation Molecular Evolution/Sloan Postdoctoral Fellowships Panel, 1994 - 1996.

Animal Behaviour Editorial Board, 1995 - 1997.

National Science Foundation Minority Postdoctoral Fellowship Workshop, September 1994, 1995.

National Science Foundation Committee of Visitors for Population Biology and Systematic Biology, May 1993.

National Science Foundation panel member for Population Biology and Physiological Ecology, 1988 - 1990.

Referee for professional journals including

American Naturalist, Animal Behaviour, Annals of Botany, Annals of the Entomol. Soc. of America, Apidologie, Behavioral Ecology, Behavioral Ecology and Sociobiology, Biochemical Genetics, Biological Bulletin, Biology Letters, Biological Reviews, British J. of Philosophy of Science, Cell, Current Biology, Ecology, Ecological Research, Ecology Letters, Ethology, Ecology, and Evolution, Ethology, Evolution, Evolution and Human Behavior, Evolutionary Ecology, Evolutionary Ecology Research, Evolutionary Theory, Frontiers in Zoology, Genetics, Heredity, Insectes Sociaux, J. of Biology, J. of Evolutionary Biology, J. of Experimental Biology, J. of Hymenoptera Research, J. of Insect Biology, J. of Insect Behavior, J. Kansas entomol. J., Molecular Ecology, Molecular Biology and Evolution, Molecular Phylogenetics & Evolution, Nature, Nature Reviews Genetics, Nature Reviews Microbiology, Mycologia, Naturwissenschaften, Nucleic Acids Research, Oikos, Parasitology, Phil. Trans. of the Royal Society Evolution, PLOS Biology, PLOS Genetics, PLOS One, PNAS USA, Proc. Royal Society of London B, Protist, Science, Trends in Ecology and Evolution and others.

Referee for National Science Foundation, National Geographic, Australian Research Council, NERC (UK), Finnish Research Council, Leverhulme Trust, and others.

Judging panel for posters, Animal Behavior Society, Tucson, Arizona, June 1986.

Chair, Nominating Com., International Union for the Study of Social Insects, 1981.

Organized Symposium on *Nestmate Recognition in Social Insects* for The Entomological Society of America, and International Union for the Study of Social Insects, San Diego, California, 30 Nov. 1981.

Scientific Consultant to British Broadcasting Corporation, Animal Behavior, July 1981.

University Service:

Curriculum Committee Wash U Biology 2013 - present

Organized Alan R. Templeton Symposium 2-3 June 2013

STEM Diversity Committee, Wash U 2012 – present

Work-life balance committee, Wash U 2012 – 2013

Planning co-director, Center for Evolution, Rice 2007 - 2009

Member, Keck Consortium for Computational Biology, Rice to 2011

Member, Rice Institute of Biosciences and Bioengineering to 2011

Member, Environmental and Energy Systems Institute to 2011

Scientia, Elected Fellow, elected Member 2009

Chair, Department of Ecology and Evolutionary Biology 2003 to 2009

ADVANCE Workshop for Career Success for Women 24-24 Oct. 2006

Faculty Sponsor, EEB Graduate Student Association 2003-2009

Alumni Travel Program Galápagos trip 22-31 March 2004

Chair, Julia Mile Chance Prize selection committee 2003

Director, Automated DNA sequencing facility 2000 - 2009

Departmental Library Liaison. 1988 to 2004

Graduate Council 1999- 2003

Education Council 2000-2002

Environmental Safety Committee 1998 - 1999

Associate, Wiess College (Rice) 1987 - present. (distinguished faculty associate 1999, 2002, 2003, superior 1988, 1998, outstanding 1989, 1991, 1992, 2000, 2001).

Radiation Safety Officer, Dept. Ecology and Evolutionary Biology, 1992 to 2001.

Undergraduate Research Training, Keck Center for Computational Biology 1996-1999.

Science Olympiad Faculty Sponsor, 1996 to 1998.

Admissions Committee 1990 to 1997.

Biosciences Curriculum Committee 1991 to 1997.

Alumni College presentation April 1995.

Commission on Women, elected member, Rice University, 1993 to 1995.

Ford Foundation Honors Program Coordinator, Wiess and Hanzen, (Rice), 1988-1990.

Organizer of departmental seminar series, 1984-1988.

Computer Committee, Rice, 1982-1985; 1988-89

Pesticide Use Committee, Biology Dept., 1983-1986.

Curriculum Committee, Biology Dept., 1982-1986.

Associate, Will Rice College, 1982-1985.

Lecture on Animal Behavior and Evolution, Rice Alumni Institute, March 1985.

Science Education Service:

Animal behavior & evolution day for St. Louis high school students Annual, Nov. 2012 - present

SST Talks on evolution, adaptation, and life cycles 19, 20 April 2011 (also 2010), Treasure Forest Elementary School

Rice Elementary Model Science Laboratory, HISD, Training for elementary school science teachers (key personnel) 2006 - present

Introduce David Hillis for Teaching Evolution is Vital, Emerson Unitarian Church 4 May 2008

International Baccalaureate Teachers Workshop on social interactions, 7 March 2008

Life cycles, lecture to teachers at Rice/HISD Elementary Model Science Lab, Sanchez Elementary, HISD, Houston, 11 January 2007, 16 January 2008.

Sally Ride Science Day for Girls 28 Oct. 2006

Slime Molds. Nature Discovery Center talk, Bellaire TX 2 November 2005.

Evolution of social behavior: lessons from slime molds. Science High School Talk, Mercedes TX 6 Feb. 2003.

Expanding your horizons, Behavior project 11 April 1999

World Wide Web Electronic studio project with Biology II class at the Science Academy of South Texas High School, Spring 1995 (http://www.rice.edu/wasps).

Advisory Board, Harris County Alliance for Science, Mathematics and Education, Division of School-Based Programs, Baylor College of Medicine, 1995.

Summer Institute of the Houston Elementary Science Alliance unit on animal behavior and ecology 1988-present.

Expanding your Horizons in Math and Science Workshop: Why do Birds Sing? Rice Univ. 24 April 1993.

Mentor in the Minority High School Student Research Apprentice Program, summer 1992.

Advisor in the Rice University Teacher Research Program, summer 1992.

- Science Partners for Houston mentor 1991 (Lanier Middle School Model Science Laboratory).
- An Evolutionary Perspective on Infectious Disease. Seminar for In-service Teachers, Rice Univ. 5 Oct. 1991.
- Reviewer for Sequence, Scope Coordination, Block I, Adaptation, Seventh Grade, 1991. Material evaluator, shoebox hands-on science for Houston Museum of Natural Science 1989-1990.
- Fondren Middle School Saturday Science Workshop for 30 sixth graders: Field experiments. 30 April 1988.
- Fondren Middle School Saturday Science Workshop for 60 sixth graders: Rocks, ants, fish. 24 Oct.1987.
- Summer Life Science Institute for seventh grade teachers 1987.
- Houston Math-Science Improvement Consortium mentor to high school biology teacher 1985, 1987.
- Judge, various science fairs, Longfellow, Horn, and MacGregor Elementary Schools; Fondren, Pershing and Lanier Middle Schools, HISD 1987—present.
- Behavior and ecology laboratories for elementary school students, lecture, Conroe ISD 1985.
- Teacher-in-Service lecture on Evolutionary Biology, October 1983.
- Lecture in summer school program for high school students 1981-1985.
- Field Trip Leader for Ecology Field Trips, Ann Arbor, MI Public Schools 1973-1974.

Postdoctoral Fellows and Visiting Scholars:

- Madhusudan Choudhury 1989-1991 Huxley Fellow, Current Position: Assistant Professor, Biology Department, Sam Houston State University, Huntsville, Texas
- Lisa Wooninck, visiting graduate student from Univ. California-Santa Barbara 1992
- Jeremy Field 1994-1995 Huxley Fellow, Current Postion: Professor of Evolutionary Biology, University of Sussex, UK
- Elisabeth Arévalo 1994-1998 Postdoc, Funding: NSF Minority Postdoctoral Research Fellowship, Conflicts of interest in genetic relatedness in social wasps \$65,600, Current Position (7/98): Associate Professor, Providence College, Providence RI.
- Perttu Seppä, 1995-1996 Postdoc, Funding: Academy of Finland, Natural Sciences Research Council, Partitioning of Reproduction in Social Insects. \$29,000. Current Position: Principal Investigator, Department of Biosciences, University of Helsinki, Finland.
- Jes Pedersen 1995, Funding: grad student, Danish Research Academy and University of Aarhus Faculty of Natural Sciences, \$27,335. Current Position: Assistant Research Professor, University of Copenhagen.
- Barry Sullender 1996-2000, Huxley Fellow, Current Position: Assistant Professor, Department of Natural Sciences, University of Houston/Downtown

Jaelyn Eberle 1996 - 1998 Postdoc, NSERC Postdoctoral Fellowship, Current Position Curator of Vertebrate Paleontology, University of Colorado Museum of Natural History.

Aviva Liebert April 1999, Grad student, Funding: Fellowship from Univ. Calif. Los Angeles.

Kimie Simokomaki, July- Aug. 1999, Postdoc, Funding, FAPESP (Brazil)

Kevin Foster Jan. 2001-2004. Huxley Fellow. Professor of Evolutionary Biology and tutor at Magdalen College, Department of Zoology, University of Oxford

Natasha Mehdiabadi Aug. 2002 - 2006 NSF Micro. Biol. Postdoc, Current Position: Research Associate: Smithsonian Institution, Entomology, National Museum of Natural History and University of Maryland at College Park, Washington DC and College Park Maryland.

Christopher Williams summer 2005 (Bioinformatics York University MS)

David Gilley Feb. 2006; Associate Professor, Department of Biology, William Paterson University

Ana Leticiao Fernandez Jan. – July 2006

Marcus Kronforst Aug 2004 – 2008 Neubaurer Family Assistant Professor, Department of Ecology and Evolution, University of Chicago

Jun Tan August 2007 – August 2008

Elizabeth Ostrowski Oct. 2005 – Oct. 2009 Assistant Professor, Department of Bioogy and Biochemistry, University of Houston, Houston Texas.

Gerda Saxer Oct. 2005 – June 2011 Faculty Fellow, Rice University

Neil Buttery August 2010 – August 2012

Xiangjun Tian July 2007 – February 2013 Research Associate, Baylor College of Medicine

jeff smith June 2010 – present

Debbie Brock August 2011 – present

Susanne DiSalvo January 2013 – present NIH NRSA postdoc

Suegene Noh June 2013 – present

Tamara Haselkorn 2014 – present

Graduate Students:

Colin R. Hughes, Ph.D. 1987 Group nesting and reproductive conflict in primitively eusocial wasps. Current Position: Faculty, Florida Atlantic University

Carlos R. Solís, Ph.D. 1993 Current Position: Rice University Information Technology in charge of teaching technology

Keith F. Goodnight, Ph.D. 1994 Current Position: Novelist (The Child)

- C. Jenifer Klingler, MA 1994 Current Position: Poet and Trailrunner, Bishop CA
- Jeanne A. Zeh, Ph.D. 1996 NSF IBN95-20861 Interpopulation crosses and postcopulatory sexual selection: a molecular genetic analysis. 1995. NSF Predoctoral fellowship, \$10,000. Current Position: Professor, Department of ecology, evolution and conservation biology, University of Nevada, Reno.
- Debbie Moralez DeLoach Ph.D. 1997 Breeding success, mating success, and mating strategies of the northern mockingbird, *Mimus polyglottos*. Research support: NSF DEB-9212845 Dissertation research: Song and Mating patterns in the Northern Mockingbird. 1992. 2 years \$12,130.
- Steve Quach MA 1997, Maternity and cyclical oligogyny in a colony of *Parachartergus colobopterus*. UTMB Med School Faculty.
- Francesca Zacchi Ph.D. 1998, Genetic structure of *Polistes dominulus* foundress associations. Outside Funding: Univ. Florence, \$15,000. Current position with Eli Lilly in Florence, Italy
- Michael Henshaw Ph.D. 2000 NSF Predoctoral Fellowship; Wray Todd Fellowship Collective worker control in the African social wasp, *Polybioides tabidus* (Postdoc, James Cook U., Australia, currently Associate professor, Department of Biology, Grand Valley State University.
- Yong Zhu Ph.D. 2000 Wray Todd Fellowship The origin of microsatellites and their application to the study of social evolution in the cellular slime mold, Dictyostelium discoideum, currently Associate Professor Yale School of Public Health
- Dirk Jan Ronhaar 1999-2001. Wray Todd Fellowship (teaching biology in Costa Rica)
- Eva Tóth Ph.D. 2002. Wray Todd Fellowship Conflict over male production in stingless bees (last position: Instructor Turks and Caicos islands)
- Angelo Fortunato Ph.D. 2002. Wray Todd Fellowship Evolutionary conflict in chimeras of the social amoeba, dictyostelium discoideum (Junior Faculty, Florence, Italy)
- Monica Landi Ph.D. 2002. Wray Todd Fellowship, Reproductive conflicts in the social wasp, Eustenogaster fraterna, and in the social amoeba, *Dictyostelium discoideum* Post-Doctal Researcher, Centro de biologia molecular e ambiental, Biology Department, Universidade do Minho, Portugal.
- Thomas Platt M. A. 2003. Environmental heterogeneity and the coexistence of cheaters and victims in the social amoeba *Dictyostelium discoideum*. Ph.D. 2011. University of Indiana, current: Assistant Professor Kansas State University
- Margaret Smith M. A. 2003. M. A. Claire Booth Luce Fellowship. Genotypic diversity and population structure in *Dictyostelium discoideum*. Current: Science Librarian
- Andrea Lasagni M. A. 2005. MS consultant Florence Italy
- Wendee Holtcamp M. A. 2005 NSF Predoctoral Fellowship. Current: freelance environmental writer moved to Uganda
- Lorenzo Santorelli Ph.D. 2007. Research Fellow, Zoology Department, University of Oxford, Fellow St. Cross College.
- Clea Scala M.A. 2007. Tutor, Rome, Italy

Sara Middlemist Ph.D. 2008 Howard Hughes Predoc Fellowship, High school teacher

David Castillo Ph.D. 2008. High school teacher, Houston TX

Owen Gilbert (Ph.D. 2011) University of Texas at Austin

Jennie Kuzdzal (Ph.D. 2010) M.D. Anderson Cancer Center.

Sara Kalla (Ph.D. 2011) Cornell University postdoc

Debbie Brock (Ph.D. 2011) Research Scientist, Wash U.

Chandra Jack (Ph.D. 2011) Beacon Postdoctoral Fellow, Michigan State University.

Washington University in St. Louis graduate students

Tracy Edwards (current) NSF GAANN Fellowship Katherine Geist (current) NSF predoctoral fellowship Jason Scott (current)

Washington University in St. Louis Graduate Rotation Students

Devin Dobias, 2011-2012

Jason Scott, Fall 2012

Kimberley Sukhum, Fall 2012

Jhen Peng, Fall 2012

Zuzana Kocsisova, Summer 2013

Cassondra Vernier, Summer 2013

Tyler Larson, Fall 2014

Undergraduate mentoring in research

From 1980 to 2011 at Rice University, I had 142 undergrads doing research under my direction. They produced 37 honor's theses, 31 publications of which an undergraduate was first author on 12. (Undergrad authors are noted in the publication list with a star.) This was a diverse group including 91 women, 14 African-American students, and 17 Hispanic students, or 64% women and 22% under-represented minorities. Most of these students have gone on to successful careers. Those who stand out include:

Christine Gorman, 1981 Scientific American, senior editor

Karin Gastreich, 1986 Associate Professor, Avila University, novelist (Eolyn, High Maga)

Vanessa Ezenwa 1995 Associate Professor, University of Georgia

Nicole Gerardo 1995 Associate Professor, Emory University

Thomas Platt 1998 Assistant Professor, Kansas State University

JJ Emerson 1999 Assistant Professor, University of California – Irvine

Shalene Jha 2002 Assistant Professor, University of Texas at Austin

From 2011 to 2015 at Washington University in St. Louis, I have had 34 undergraduates doing research in my group. They produced 5 honor's theses, and 4 publications are nearing publication. This group is also diverse, including 19 women, 8 African-Americans and 7 Hispanic students, or 56% women and 44% under-represented minorities. Thus far, at least three have gone on to graduate school, Eamon Callison to Harvard, Jeremy Davis to Indiana, and Spencer Cesar to Stanford.

Name	Start year	Years
Jean Winstead	1980	
Randy Hatfield	1980	1
Mary O'Rourke Beck 1981	1981	2
Christine Gorman 1982 (Scientific Amer.)	1982	2 2
Genie Lutz 1983 (PriceWaterhouseCooper)	1983	2
Karin Gastreich 1989 (PhD, UT Austin, Director OTS Undergraduate Education)	1986	3
Jeffrey Bates 1990 (MD, UT Southwestern)	1986	1
Jorge Negrón-Sotomayor 1990 (MBA, Mich.)	1987	2
Adrian Treves 1990 (Asst. Prof. Univ. Wisc.)	1987	1
Mandy Rappaport 1991 (MD, Medical College of Pennsylvania)	1988	1
Ceal Jenifer Klingler 1992 (freelance writer)	1990	3
Karen Barefield 1993 (math teacher)	1991	2
John Peters 1994 (MA Cornell U., NSF Predoctoral Fellowship, MD/PhD UT SW)	1991	3
Alice Green 1994 (Colorado State U.)	1993	1
Michele Hastings 1996 (Ph.D. Univ. Washington, NSF Predoctoral Fellowship)	1993	3
Troy Kiper 2 years	1995	2
Erin Newman 1 year	1995	1
Kira Taylor 2 years	1995	2
Alberto Youngblood 6 mo	1995	fall
Vanessa Ezenwa 4 years	1995	4
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A NI	4005	2
Ann Nguyen 2 years	1995	2
Mara Bryan 4 years	1995	4
Dan Demus 2 years	1995	2
Nicole Gerardo 2 years	1995	2
Katrina Harston 1.5 years	1995	1.5
Henry Lu 2 years	1995	2
Eleisha Nelson 1 year	1995	1
John Nguyen 3 years	1995	3
Colleen Savoie 2 years	1995	2
Jessica Williams 2 years	1995	2
Gary Patterson 1 year	1995	1
Patrick Tseng 1 year	1995	1
Amina Husain 2 years	1996	2
Josue Villesca 2 years	1996	2
Rebecca Lewis Herman 2 years	1996	2
Jennifer Rice 1 year	1996	1
Ting Chi Lu 1 year	1996	1
Eric Wang 1 year	1996	1
Patrick J Thomas 2 years	1996	2
Neema Jones 1 year	1997	1
Hema Thakurl year	1997	1
Ting-Weh Lu 3 years	1997	3
Jessica Esparza 3 years (honor's thesis)	1997	3
Angeli Gohel 6 mo	1998	fall
Leslie Wren 2 years	1998	2
Ashley Vavra 2 years	1998	2
Jennifer Stein 1 year (honor's thesis)	1998	1
Thomas Platt 4 years	1998	4
Lorenzo Santorelli, University of Florence Undergraduate, 3 years	1998	3
Max Stagi, University of Florence Undergraduate, 2 years	1998	2
Wendy Castle, Univ. Houston Undergraduate, 2 years	1999	2
JJ Emerson 1 year (honor's thesis)	1999	1
Alex Renwick 2 years	1999	2
Sloan Speck 6 mo.		∠ fall
1	1999	-
Miriam Mendoza 2 years	1999	2
Jessica Tullar 1 year	1999	1
Kim Pollard 2 years	1999	2
Jesse Damon, Brown University Undergraduate, 2 years	1999	2
Angelo Fortunato 2 years	1999	2
June Keay 1 year (honor's thesis)	2000	1
Alexis Grant 6 mo.	2000	fall
Simha Reddi, Stanford Undergraduate, summer 2000	2000	summer
Emily Caveniss 6 mo.	2000	fall
Jason Longoria (Century Scholar) 2 years	2000	2
Rowan Guinevere Casey-Ford (Century Scholar) 4 years	2000	4
Alicia Salamone (honors thesis) 2 years	2000	2
Jenny Kuzdzal 3 years (honor's thesis)	2001	3
Geneva Rhee (summer 2001)	2001	summer
Lynn Nguyen 1 year	2001	1
Ghislaine Switz 1.5 years (honor's thesis)	2002	1.5
Sunishka Wimalawansa 0.5 year	2002	fall
Shalene Jha 2 years	2002	2
Eric Sundstrom (Century Scholar)	2002	2

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Ben Walker (2 years)	2002	2
Amy Conley (2 years)	2003	2
Chandra Jack (2 years)	2003	2
Emily Jones 1.5 years (honor's thesis)	2003	1.5
James Stone (one year)	2003	1
Karen Romero (4 mo.)	2003	0.5
Abby Smith (2 years)	2003	2
Jessica Potter (2 years)	2003	2
Joyce Li (2 years)	2003	2
Thomas Rodriguez (4 months)	2004	0.3
Meredith Gray (1 year)	2004	1
Farhan Katchi (8 months)	2004	0.8
Dulce Carbajal (1 year)	2004	1
Arely Gonzalez (4 months)	2004	summer
Carlos Ramirez (4 months)	2004	summer
Amanda Cruess (1 year)	2004	1
Ryan McConnell (1 year)	2004	1
Farzin Dinyarian (4 months)	2004	0.4
Nicole Montgomery (senior thesis, 1 year)	2005	1
Caitlin Andrews (senior thesis, 1 year)	2005	1
Katie Stevens (senior thesis, 1 year)	2005	1
Prince Buzombo (9 mo)	2005	0.8
Juan Razo (6 mo)	2005	0.5
Michelle Afkhami (senior thesis, 2 years)	2005	2
Renate Medina (one year)	2005	1
Nora Saavedra (2 months)	2005	summer
Clea Scala	2005	1
Julia Ridgeway (Century Scholar, 4 years)	2005	4
Joanna Bagniewska (6 months)	2005	0.5
Carlos Rojo (6 months)	2005	0.5
Rahul Suresh (1 year)	2005	1
Sara Lark (6 months)	2006	0.5
Tracy Edwards (2 years, senior thesis)	2006	2
Stephen Rodriguez (1 year)	2006	1
William Massie (8 months)	2006	0.8
Emilia Calabresi (1 year)	2006	1
Jennifer Morton (8 months)	2006	0.8
Bryant Jack (Texas Southern University; 1 year)	2006	1
Paul Maliakkal (4 months)	2007	0.4
Kelly Liao (2 years, Honors research)	2007	2
Jing Luo 1 year (Century Scholar)		1
Margaret Diddams 2 years(Century Scholar)	2007	2
Valerie Marten-Ellis (Senior Honors Research)	2007	1
Ross Hamilton 2 years (Vanderbilt University)	2007	2
Jeremy Liao 3 mo. (Bellaire High School)	2007	
Maddy Sheik-Salim summer (Bellaire High School)	2007	summer
John Sultzbach 1 year (University of Houston)	2007	summer
Radhika Chhabra (1 year)	2007 2008	1 1
Boahemaa Adu-Oppong (3 years, Mellon Fellow) Meghali Goswami (1 year, Senior research)	2008	3
Nathan Murthy (summer, Berkeley undergrad)	2008	1 summor
Jing Jin (summer, Bellaire High School)	2008	summer
	2008	summer
Anna Li (summer, Bellaire High School)	2008	summer

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Michael Powers (3 years)	2008	3
Kevin Yi (summer Bellaire High School)	2009	summer
Salman Eraj (summer Bellaire High School)	2009	summer
Hira Mirza (summer, Memorial High School)	2009	summer
Asma Mirza (6 months, Houston Baptist University)	2009	0.5
Maya Carrillo (2 years)	2009	2
Alexi de Freitas (8 months)	2009	0.7
Hannah Walchak (Century Scholar, 2 years)	2009	2
Katherine Wei (Century Scholar, 2 years)	2009	2
Albert Wei (1 year)	2009	1
Tracy Huynh (1 year)	2010	1
Ashley Ojeaga (8 months)	2010	0.7
Erica Harris (1 year)	2010	1
Alona Bozhchenko (1 year)	2010	1
Morgan Black (3 months)	2010	
Tatiana Fovanova (7 months)		summer 0.6
Katherine T. Snyder (7 months)	2010	0.6
Ratherine 1. Shyder (7 months)	2010	0.0
2011 (Washington University in St. Louis)		
Amanda Boozalis (senior thesis, 3 years)	2011	3
Alicia Cañas	2011	4
William Eamon Callison (senior thesis, 2 years)	2011	2
Matthew Katz (1 year)	2011	1
Lucy Paredes (4 months)	2011	fall
Thomas Quisenberry (4 months)	2011	fall
Amy Wen (8 months)	2011	1
Juan Masi (Eureka, 8 months)	2011	0.6
Kai Jones (Eureka)	2011	4
Damil Adefarati (Eureka)	2011	2
Hannah Fox (St. John's College, summer)	2011	summer
Lily Bonadonna (Biomedrap, U of Mich., summer)	2011	summer
Emily McMeekin (Truman State U, summer)	2011	summer
Ben Howard (summer)	2011	summer
Stephanie Montenegro (Eureka)	2012	3
Rhett Koonce ((Eureka 5 months)	2012	fall
Julian Duodu (Eureka, 2 years)	2012	2
Apoorva Ram (18 months)	2013	1.5
Rohit Unni (4 months)	2013	spring
Bruce Wittmann (Wash U., summer)	2013	summer
Spencer Cesar (Amgen Scholars, Virginia Tech., summer)	2013	summer
Harkjoon Lee (Wash U., summer)	2013	summer
Jeremy Davis (senior thesis)	2013	2
Olivia Williams	2013	2
Samuel Levin (Oxford, UK, summer)	2013	1
Zoe Sissac (Eureka)	2013	2
Kyle Ooi (Eureka 4 months)	2013	fall
Andrea Leon (Eureka 4 months)	2013	fall
Libby Ward	2014	1
Lauren Christopher (Biomedrap summer)	2014	summer
Kelsey Crossen (Amgen Scholars)	2014	summer
Daniela Jimenez (Wash U Scholars)	2014	1

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Christa Fennessee (Eureka)	2014	fall
Darius Ford (Eureka)	2014	fall

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