David M. Rand - Curriculum Vitae
March 2024

PERSONAL:

Date of Birth: 13 November 1956
Place of birth: Cambridge, Massachusetts
Address: Department of Ecology, Evolution and Organismal Biology,
80 Waterman Street, Box G-W, Brown University,
Providence, RI 02912;
Ph: (401) 863-2890 (off.), -1063 (lab); FAX: 401 863-2166;
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EDUCATION:

9/83-8/87	Yale University, Department of Biology, Ph. D. September 1987.
9/75-6/80	Harvard College, B. A., Biology, *cum laude*, June 1980.
9/74-6/75	Northfield Mt. Hermon School, Northfield, MA
9/71-6/74	Lincoln-Sudbury Regional High School, Sudbury, MA

RESEARCH INTERESTS

Molecular population genetics, comparative genomics and evolution; coevolution of nuclear and mitochondrial genomes; mitochondrial aging; genomics of thermal selection; case studies with *Drosophila*; barnacles, and *Fundulus*

PROFESSIONAL EXPERIENCE:

7/13-present	Stephen T. Olney Professor of Natural History, Brown University
7/03-present	Professor of Biology, Brown University, Providence, RI
7/97-6/03	Associate Professor of Biology, Brown University, Providence, RI
7/91-6/97	Assistant Professor of Biology, Brown University, Providence, RI
1/91-6/91	Adjunct Assistant Professor of Biology, Brown University, Providence RI
1/88-6/91	Postdoctoral Fellow, Population Genetics, Museum of Comparative Zoology Laboratories, Harvard University
9/87-12/87	Postdoctoral Fellow, Institute of Marine Biology, Department of Biology, University of Crete, Greece
9/83-6/86	Teaching Assistant, Yale University
9/81-6/83	Biology and Mathematics Teacher, St. Albans School, Washington, D. C.
9/80-6/81	Teaching Fellow in Biology, Phillips Academy, Andover, MA
1979, 1980	Research Assistant, Homing Pigeon Navigation, Dr. Charles Walcott, SUNY, Stony Brook, (summers).
1977, 1978	Research Assistant, Seabird Ecology Study, Nome, Alaska, Dr. William H. Drury, NOAA, (summers and fall semester '78).

PROFESSIONAL ACTIVITIES:

Chair	Department of Ecology and Evolutionary Biology, 7/2013-present Renamed Ecology, Evolution and Organismal Biology, 2021
Director	NSF IGERT Training grant in Reverse Ecology, 2010-2017 Brown University Center for Computational Molecular Biology, 8/2011-8/2013 NIH COBRE Center for Computational Biology of Human Disease, Brown University, 2016-2021, 2021-2026 (pending)

President American Genetic Association, 2009

Associate Editor: Molecular Biology and Evolution, 1997-2000; 2000-2003
Genetics, 2004 – 2009
BioScience, 2005-2012
PloS Genetics, Guest Associate Editor 2013-2018
eLife, Guest Associate Editor, 2020-2021

Awards and Honors: Elected Chair, Gordon Research Conference on Molecular Evolution, 2008
Fellow, American Association for the Advancement of Science, 2011
Deans Award for Teaching in Biology, Spring 2013;

Panel Member: NSF Population Biology 10/95, 10/97, 4/98, 4/05, NSF Science and Technology Center Site Visit Panel, 10/09, NIH Program Project Advisory Panel, 7/99, NIH Special Emphasis Panel 3/05, 11/06; NIH NRSA Panel 7/06; NIH Genetic Variation and Evolution 2/2007, NIH Genetic Variation and Evolution (GVE) Panel, Regular Member 10/2008-6/2012, GVE *ad hoc* member 6/2018, NIH F-31-32 Panel 6/2018, NIGMS COBRE Phase 2 Panel 3/2020, Phase 1 Panel, 7/2020, 6/2021, NIGMS MIRA Panel 3/2021, NIGMS COBRE Phase 3 Panel 11/2022

Memberships: American Association for the Advancement of Science, American Genetic Association, Genetics Society of America, Society for the Study of Evolution, Society for Molecular Biology and Evolution

Reviewer: *American Naturalist, BMC Biology, BMC Genomics, BMC Evolutionary Biology, Current Biology, eLife, Evolution, Frontiers in Genetics, Genetics, Genome Research, Journal of Evolutionarily Biology, Journal of Molecular Evolution, Molecular Biology and Evolution, PLoS Biology, PLoS Genetics, PLoS One, PNAS, Nature, Nature Aging, Nature Genetics, Science*, NSF Population Biology, NSF Systematics, NSF Eukaryotic Genetics, NSERC

Expert Witness: DNA testimony in forensic cases in Rhode Island 1993-1996

GRANTS AND FELLOWSHIPS:

"Center for Biomedical Research Excellence: Center for Computational Biology of Human Disease", NIH General Medicine, 1P20GM109035-06, $ 11,304,112 8/4/21 – 8/3/2026, Dr. David Rand, PI.

"Mitonuclear genetics of complex traits in Drosophila", NIH General Medicine, 1R35GM139607-01, $1,961,594, 4/1/2021-3/31/2026, Rand, David (PI)

"Genome wide association analysis with Drosophila to discover how metformin effects longevity", NIH/NIA, 1 R01 AG069639-01, $1,974,581, 9/1/2020 – 8/31/2025, PI Dr. Marc Tatar, Rand 0.5 AY + 0.5 Summer

“Metabolomics Analysis of Drosophila Mitonuclear Genotypes, Nathan Shock Center for the Basic Biology of Aging, University of Washington, $10,500, Submitted 12/8/2018, awarded 2/17/2019, D. Rand, PI.

"Nuclear-Mitochondrial Fitness Interactions in Drosophila", NIH General Medicine, 2R01GM067862-13, $1,447,953, 4/01/17 – 3/31/21, Dr. David Rand, PI.

“Center for Biomedical Research Excellence: Center for Computational Biology of Human Disease”, NIH General Medicine, 1P20GM109035-01, $11,521,659, 6/1/2016-2/28/21, Dr. David Rand, PI.

“Mechanisms for Nutrient Modulation of Mitochondrial Dynamics and Metabolism”, DEANS Award, Division of Biology and Medicine, Brown University, $80,000, 7/1/2015-6/30/2016, Dr. Phillip Gruppuso, Dr. David Rand, co-PIs.

“Cigarette Smoke Effects on Mitochondria—From Flies to Lungs”, DEANS Award, Division of Biology and Medicine, Brown University, $80,000, 7/1/2014-6/30/2015, Dr. Sharon Rounds, Dr. David Rand, co-PIs.

"Nuclear-Mitochondrial Fitness Interactions in Drosophila", NIH General Medicine, 2R01GM067862-09, $1,351,682, 8/01/12 – 7/31/17, Dr. David Rand, PI., Dr. Zhijin Wu, co-PI.

“IGERT: Reverse Ecology: Computational Integration of Genomes, Organisms, and Environments", NSF DGE-0966060, $2,976,843, 8/01/2010 – 7/31/2017, Dr. David M. Rand, PI, with co-PIs Drs. Zoe G. Cardon, Erika Edwards, Sorin C. Istrail, Mitchell L. Sogin.

“Mitochondrial Genetics of Aging in Drosophila”, NIH National Institute on Aging, 1R01AG027849, $1,614,096, 10/01/09 – 9/30/2015, Dr. David Rand, PI.

“American Genetic Association Symposium: The Genetics and Genomics of Environmental Change” NSF DEB 0926150, $25,000, 6/08/2009 – 6/07/2010, Dr. David Rand, PI.

“Nuclear-Mitochondrial Fitness Interactions in Drosophila”, NIH General Medicine, 2R01GM067862, $1,267,400, 8/01/08 – 7/31/12, Dr. David Rand, PI.

“Evolutionary Response to Nanomaterial Exposure in the Environment: Functional Genomics of C60-Resistance in Drosophila”, Brown University Seed Fund Program, $55,000, P.I. D.M Rand, with K. Wharton (MCB) and R. Hurt (Engineering).

“Rhode Island EPSCoR: Catalyzing a Research, Education and Innovation Network” NSF EPS 05-54548, $6,750,000, 7/06 – 11/09, Dr. Jeff Seeman, URI, P.I. Dr. D. Rand, Brown University Graduate Director ($375,000 in graduate fellowships)

“Nuclear-mitochondrial fitness interactions in Drosophila”, NIH General Medicine, R01 GM067862, $1,095,301, 8/01/04 – 7/31/08, Dr. David Rand, PI; Dr. Bill Ballard, co Investigator.

“Genetic architecture of thermal selection in Drosophila”, NSF Population Biology, DEB 0343464, $536,000, 3/01/04 – 2/28/08, Collaborative Research Award with George Gilchirst at William and Mary ($281,000 to Brown University).

“Nucleotide polymorphism in heterogeneous environments: MPI in *Semibalanus”* NSF Population Biology DEB 0108500, $262,000, 9/1/01 – 8/31/04, Dr. David Rand, PI.

"Recombination, dominance, and selection on amino acid mutations" NSF Population Biology DEB 9981497, $172,367, 3/1/00 - 2/28/02, Dr. David Rand, PI, Dan Weinreich, co-PI.

“Longevity and candidate gene polymorphisms in Drosophila”, NIH-1RO1AG16632-01, $1,505,510, 7/1/99 - 6/30-04, Dr. Marc Tatar, PI; Dr. David Rand, Co-PI.

“US-France Cooperative Research: Molecular population genetics of New World and Old World Drosophila” NSF International Programs INT-9815899, $6,740, 3/1/99 - 2/29/00; $15,460 3/01-4/03 Dr. David Rand, PI, Dr. Michel Veuille, collaborator, Univ. of Paris.

"Evolutionary dynamics of mitochondrial DNA" NSF Population Biology DEB 9707676, 9/97-8/2000, $210,000, Dr. David Rand, PI.

"Molecular Ecological Genetics of the Acorn Barnacle" NSF Population Biology #BSR-9527709, $215,000 Dr. David Rand, PI, Dr. Mark Bertness Co-P.I. 3/96 - 2/99.

"An Automated DNA Sequencer for Brown University" NSF Biological Instrumentation and Resources #BIR-9513001, Dr. David Rand, PI, Dr. Edward Hawrot Co-P.I 12/95 - 11/96, $70,000.

"Experimental Population Genetics of Drosophila Mitochondrial DNA", NSF Population Biology #BSR-9120293, Dr. David Rand, PI. 1/15/92 - 6/14/97, $602,000.

"The Evolution and Maintenance of Asexuality in the Planarian *Dugesia tigrina*"(with A. Fausto-Sterling, Johanna Schmitt, Lisa Brooks), Biomedical Research Support Grant, Brown University, 7/91-6/92, $7,000

NIH NRSA Postdoctoral Fellowship, "Population Genetics of Mitochondrial DNA Size Variation", 1988-1990, $68,000

Grants-in-aid-of-Research, Sigma Xi, February 1986, $500

NIH Predoctoral Training Grant in Genetics, Yale University 1984-1987

Dudley Leyland Wadsworth Fellowship, Yale University, 1983-1984

GRANTS TO GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

“Mitonuclear coadaptation in Drosophila and humans”. NSF GRFP to CCMB student Leah Darwin, 8/2023-7/2026, $147,000. Proposal prepared with input and editing from CCMB SciComm class and Rand during fall 2022.

"Ontogenetically mediated selection in response to environmental heterogeneity in the acorn barnacle (Semibalanus balanoides)", Doctoral Dissertation Enhancement Grant, EEB DDEG Program, awarded to Joaquin Nunez, 1/2019, $10,000.

"'Tidally-zonated polymorphisms in the northern acorn barnacle in the North Atlantic: parallel evolution or ancient polymorphism?' KVA Fund for Internationalization and Scientific Renewal at the Sven Lovén Centre. The Royal Swedish Academy of Sciences (Kungliga Vetenskapsakademien; KVA), awarded to Joaquin Nunez, 12/21/2018 - 12/1/2019, SEK 49,000

"It takes two to make a thing go right: How mitochondrial and nuclear genomes interact to regulate metabolism", HHMI Gilliam Fellowship awarded to Shawn Williams 8/2017-8/2020, ~$150,000.

"Mitochondrial genes and TOR signaling in Drosophila". NIH/NIA Individual Predoctoral Kirschstein-NRSA Fellowship to Promote Diversity in Health-Related Research (F31), Awarded to John Santiago 7/2016 – 6/2019, ~$95,000

"Ecological genomics of the acorn barnacle" NSF GRFP to Joaquin Nunez, 4/2015; proposal prepared with input and editing from Rand prior to applying to Brown University.

"A Mitochondrial Hub for Dietary Restriction and Aging" NIH/NIA Individual Predoctoral Kirschstein-NRSA Fellowship to Promote Diversity in Health-Related Research (F31), Awarded to Marissa Holmbeck 9/2011 – 8/2014, ~$95,000

"Chastity in a Sexual World: The making of an unselfish genome" NSF Doctoral Dissertation Improvement Grant awardee Bruce Bryan, 5/07 – 4/09, $12,000.

"Drosophila energetics and mitonuclear function" NIH NRSA Kristi Montooth awardee, D. Rand PI, 3/1/06 – 2/28/09, $132,000

The evolution of gene expression in Drosophila" NIH NRSA, Colin Meiklejohn awardee, D. Rand PI, 1/1/05 – 12/31/08, $132,000

"Population connectivity and the origins of genetic diversity in the Mummichog, *Fundulus heteroclitis*, NOAA-NERR Grant to Robert Haney, 07/04-06/06, $40,000

"From Parasite to Mutualist: Wolbachia in Drosophila" NSF Dissertation Improvement Grant to Adam Fry, 5/01/01 – 4/30/02, $5840.

"The Mechanism of Selection at the MPI polymorphism in the Northern Acorn Barnacle" NSF Dissertation Improvement Grant to Paul R. Schmidt, 61/1/98 - 5/31/99, $5720.

"The Evolutionary Impact of Natural Selection, Quantitative Genetic Variation, and Gene Flow in a Salt Marsh Perennial, *Limonium carolineanum*. NSF Population Biology, Dissertation Improvement Grant for Matthew B. Hamilton, with Johanna Schmitt, 7/92 - 6/95, $12,000

PUBLICATIONS IN JOURNALS (undergraduate Co-Authors are underlined)

1. **Rand, D. M**. and G. V. Lauder, Jr. 1981. Prey capture in the chain pickerel (*Esox niger*): correlations between feeding and locomotor behavior. Can. J. Zool. 59:1072-1078.

2. Harrison, R.G., **D. M. Rand** and W. C. Wheeler. 1985. Mitochondrial DNA size variation within individual crickets. Science 228:1446-1448.

3. **Rand, D. M**. and R. G. Harrison. 1986. Mitochondrial DNA transmission genetics in crickets. Genetics 114:955-970.

4. Harrison, R. G., **D. M. Rand** and W. C. Wheeler. 1987. Mitochondrial DNA variation across a narrow hybrid zone. Mol. Biol. Evol. 4(2):144-158.

5. **Rand, D. M.** and R. G. Harrison. 1989. Molecular population genetics of mtDNA size variation in crickets. Genetics 121:551-569.

6. **Rand, D. M**. and R. G. Harrison. 1989. Ecological genetics of a mosaic hybrid zone: Mitochondrial, nuclear and reproductive differentiation of crickets by soil type. Evolution 43:432-449.

7. Arnason, E. and **D. M. Rand**. 1992. Heteroplasmy of short tandem repeats in the mitochondrial DNA of Atlantic cod, *Gadus morhua*. Genetics 132:211-220.

8. **Rand, D. M. 1992**. A dot blot hybridization method for estimating the frequencies of mitochondrial DNA haplotypes in experimental populations of Drosophila. Drosophila Information Service 71:176-180.

9. **Rand, D. M**. 1992. RIPping and RAPping at Berkeley. Genetics 132:1223-1224

10. **Rand, D. M**. 1993. Endotherms, ectotherms and mitochondrial genome-size variation. Journal of Molecular Evolution 37:281-295.

11. **Rand, D. M**. 1994. Thermal habit, metabolic rate and the evolution of mitochondrial DNA. Trends in Ecology and Evolution 9: 125-131 (cover article)

12. **Rand, D. M. 1994**. Concerted evolution and RAPping in mitochondrial VNTRs and the molecular geography of cricket populations. pp. 227-245 In: *Molecular Ecology and Evolution: Approaches and Applications*, B Schierwater, B. Streit, G. Wagner and R. DeSalle, Eds., Birkhauser Verlag

13. **Rand, D. M**., M. L. Dorfsman and L. M. Kann 1994 Neutral and non-neutral evolution of Drosophila mitochondrial DNA. Genetics 138: 741-756

14. Hutter, C. M. and **D. M. Rand**, 1995 Competition between mitochondrial haplotypes in distinct nuclear genetic environments: *Drosophila pseudoobscura* versus *D. persimilis*. Genetics 140: 537-548.

15. Kilpatrick, S. R. and **D. M. Rand**, 1995 Conditional hitchhiking of mitochondrial DNA: frequency shifts of *Drosophila melanogaster* mtDNA variants depend on nuclear genetic background. Genetics 141:1113-1124

16. **Rand, D. M**., 1996 Neutrality tests of molecular markers and the connection between DNA polymorphism, demography, and conservation biology. Conservation Biology 10: 665-671.

17. **Rand, D. M**. and L. M. Kann, 1996 Excess amino acid polymorphism in mitochondrial DNA: contrasts among genes from *Drosophila*, mice, and humans. Molecular Biology and Evolution 13(6):735-748.

18. Hamilton, M. B. and **D. M. Rand**., 1996 Relatedness estimated by oligonucleotide probe DNA fingerprints and the mating system of Sea Lavender

(*Limonium carolineanum*). Theoretical and Applied Genetics 93: 249-256

19. Datta, S., M. Kiparsky, **D. M. Rand**, and J. Arnold. 1996. A statistical test of a neutral model using the dynamics of cytonuclear disequilibria. Genetics 144:1985-1992

20. **Rand, D. M**. and L. M. Kann. 1998. Mutation and selection at silent and replacement sites in the evolution of animal mitochondrial DNA. Genetica 102/103: 393-407

21. Kann, L. M., E. R. Rosenblum, and **D. M. Rand**. 1998. Aging, mating, and the evolution of heteroplasmy for mtDNA length variants in *Drosophila melanogaster*. Proc. Natl. Acad. Sci. 95:2372-2377

22. Boussy, I. A., I. Masanobu, **D. Rand**, and R. C. Woodruff. 1998. Decay of the eastern Australian latitudinal cline of *P* element-associated properties in *Drosophila melanogaster* populations, and a test of the cline's origins. Genetica 140:45-57

23. Schmidt, P. S. and **D. M. Rand**. 1999. Intertidal microhabitat and selection at MPI: Interlocus contrasts in the northern acorn barnacle. Evolution 53:135-146.

24. Schmidt, P. S. M. D. Bertness, and **D. M Rand** 2000. Environmental heterogeneity and balancing selection in the northern acorn barnacle. Proc. Roy. Soc. London, B 267:379-384.

25. Weinreich, D. M. and **D. M. Rand**, 2000 Contrasting patterns of non-neutral evolution in proteins encoded in nuclear and mitochondrial genomes. Genetics 2000 156: 385-399.

26. **Rand, D. M.**, D. M. Weinreich, and B. O Cezairliyan. 2000. Neutrality tests of conservative and radical amino acid changes in nuclear- and mitochondrially-encoded proteins. Gene 291:115-125.

27. Brown, A. F. L. M. Kann and **D. M. Rand**, 2001. Gene flow versus local adaptation in the Northern acorn barnacle, *Semibalanus balanoides*: insights from mtDNA control regions polymorphisms. Evolution 55: 1972–1979.

28. **Rand, D. M.** 2001. Mitochondrial genomics flies high. Trends in Ecology and Evolution 16:2-4

29. **Rand, D. M**. 2001. The units of selection on mitochondrial DNA. Annual Review of Ecology and Systematics 32: 415-448.

30. **Rand, D. M**., A. G. Clark, and L. M. Kann 2001. Sexually antagonistic cytonuclear fitness interactions in Drosophila melanogaster. Genetics 2001 159: 173-187.

31. Schmidt, P. S., and **D. M. Rand**. 2001 Adaptive maintenance of genetic polymorphism in an intertidal barnacle: Habitat and life history stage-specific survivorship of Mpi genotypes. Evolution 55(7):1336-44.

32. Tatar, M. and **D. M. Rand**. 2002. Aging: Dietary advice on Q. Science 295:54-55.

33. Fry, A. F. and **D. M. Rand**. 2002. Wolbachia interactions that determine Drosophila melanogaster survival. Evolution 56(10): :1976-81

34. **Rand, D. M**., Spaeth, P. S., Sackton, T, Schmidt, P. S. 2002. Ecological genetics of the Mpi and Gpi polymorphisms in the northern acorn barnacle and the spatial scale of neutral and non-neutral variation. Integrative and Comparative Biology 42:825-836.

35. Kingan, S. B., M. Tatar, and **D. M. Rand**. 2003. Reduced Polymorphism in the Chimpanzee Semen Coagulating Protein, Semenogelin I. J. Mol. Evol. 57:159-169.

36. Sackton, T. B., R. Haney, and **D. M. Rand**. 2003. Cytonuclear coadaptation in Drosophila: Disruptions of cytochrome c oxidase activity in backcross genotypes. Evolution 57:2315-2325

37. Sheldahl, L. S., D. M. Weinreich, and **D. M. Rand**. 2003. Recombination, dominance and selection on amino acid polymorphisms in the Drosophila genome. Genetics 165: 1195-1208.

38. Townsend, J. P and D. M. Rand. 2004. Mitochondrial genome size variation in New World and Old World populations of *Drosophila melanogaster*. Heredity, 93(1):98-103

39. Fry, A.F., M. R. Palmer, and **D. M. Rand**. 2004. Variable fitness effects of Wolbachia infection in Drosophila melanogaster. Heredity 93(4):379-389.

40. Comegys, M. M., S.-H. Lin, **D. M. Rand**, D. E. Britt, D. L. Flanagan, H. M. Callanan, K. Brilliant, D. C. Hixson, 2004 Two variable regions in carcinoembryonic antigen-related cell adhesion molecule1 N-terminal domains located in or next to monoclonal antibody and adhesion epitopes show evidence of recombination in rat but not in human. Journal of Biological Chemistry 279(33):35063-78

41. **Rand, D. M.**, R. A. Haney, A. J. Fry. 2004. Cytonuclear coevolution: the genomics of cooperation. Trends in Ecology and Evolution, 19(12):645-653

42. Ballard. J. W. O. and **D. M. Rand**. 2005. The population biology mitochondrial DNA and its phylogenetic implications. Annual Review of Ecology, Evolution and Systematics 36:621-642.

43. **Rand, D.M**. 2005. Mitochondrial genetics of aging: Inter-genomic conflict resolution. Science Vol. 2005, Issue 45, *Sci. Aging Knowl. Environ.,* [DOI:10.1126/sageke.2005.45.re5].

44. **Rand, D. M**., A. J. Fry, and L. A. Sheldahl. 2006. Nuclear-mitochondrial epistasis and Drosophila aging: Introgression of *D. simulans* mtDNA alters longevity in *D. melanogaster* nuclear backgrounds. Genetics 172: (1):329-41

45. Sanford, E., S. B. Holzman, R. A. Haney, **D. M. Rand**, M. D. Bertness. 2006. Thermal Tolerance of Larvae Regulates the Northern Geographic Range Limit of Fiddler Crabs. Ecology 87(11): 2882-2894.

46. Folk, D. A., P. Zwollo, **D. M. Rand**, G. W. Gilchrist. 2006. Selection for knockdown performance in Drosophila melanogaster impacts thermotolerance and heatshock response differentially in males and females. Journal of Experimental Biology 209(Pt 20):3964-73.

47. Haney, R. A. B. R. Silliman, A. J. Fry, C. Layman and **D. M. Rand**. 2007. The Pleistocene history of the sheepshead minnow (Cyprinodon variegatus): Non-equilibrium evolutionary dynamics within a diversifying species complex. Molecular Phylogenetics and Evolution 43(3):743-54

48. Haney, R.A., B. R. Silliman and **D. M. Rand**. 2007. A multi-locus assessment of gene flow and historical demography in the bluehead wrasse (*Thalassoma bifasciatum*). Heredity 98(5):294-302

49. Meiklejohn, C. D., Montooth, K, L. and **D. M. Rand. 2007.** Positive and negative selection on the mitochondrial genome. Trends in Genetics 23(6):259-63.

50. Drosophila Comparative Genomics Sequencing and Analysis Consortium (141 authors including Montooth, K. L., Abt, D., **D. M. Rand**). 2007. Evolution of genes and genomes in the context of the Drosophila phylogeny. Nature, 450(7167):203-18.

51. **Rand, D. M**. 2008. Mitigating mutational meltdown in mammalian mitochondria. PLoS Biology 19;6(2):e35 doi:10.1371/journal.pbio.0060035

52. Montooth, K, L. and **D. M. Rand.** 2008**.** The spectrum of mitochondrial mutations differs across species. PLoS Biology 6(8): e213 doi:10.1371/journal.pbio.0060213

53. Schmidt, P.S., Serrão, E. A., Pearson, G. A., Riginos, C. Rawson, P.D., Hilbish, T. J., Brawley, S.H. Trussell, G.C. Carrington, E. Wethey, D.S. Grahame, J.W., Bonhomme, F. and **D.M. Rand**. 2008. Ecological genetics in the north Atlantic: environmental gradients and adaptation at specific loci. Ecology: 89(11):S91-S107. doi: 10.1890/07-1162.1

54. Haney, R. A., Dionne, M. Puritz, J. and **Rand, D. M.** 2009. The comparative phylogeography of east coast estuarine fishes in formerly glaciated sites: persistence versus recolonization in *Cyprinodon variegatus ovinus* and *Fundulus heteroclitus macrolepidotus*. Journal of Heredity 100(3):284-96. PMID: 19091690

55. Rand, D. M. 2009. Why genomes in pieces? revisited: Sucking lice do their own thing in mtDNA circle game. Genome Research 19:700-702.

56. Montooth, K. L., Abt, D., Hofmann, J, and **D. M. Rand**. 2009. Comparative genomics of Drosophila mtDNA: variation in evolutionary rates across regulatory elements, oxidative phosphorylation complexes and lineages. Journal of

Molecular Evolution 69(1):94-114.

57. Liu, X., Vinson, D., Abt, D., Hurt, R, and **D. M. Rand**. 2009. Differential toxicity of carbon nanomaterials in Drosophila: Larval dietary uptake is benign but adult exposure causes locomotor impairment and mortality. Environmental Science and Technology, 43(16): 6357–6363.

58. Haney, R. A., Turner, B. J. and **Rand, D. M.** 2009. A cryptic lineage within the pupfish *Cyprinodon dearborni* suggests multiple colonizations of South America. Journal of Fish Biology 75: 1108-1114.

59. Flight, P. A., Schoepfer, S., and **D. M. Rand**. 2010. Physiological stress and the fitness effects of *Mpi* genotypes in the acorn barnacle *Semibalanus balanoides*. Marine Ecology Progress Series 404: 139-149.

60. Mahapatra, C., Bond, J., **Rand, D. M.**, M. D. Rand. 2010. Identification of Methylmercury Tolerance Genes in Drosophila. Toxicological Sciences Sci. 2010 Jul;116(1):225-38.

61. **Rand, D.M.**, D. M. Weinreich, Lerman, D., Folk, D. A., G. W. Gilchrist. 2010. Three selections are better than one: Clinal variation of thermal QTL from independent selection experiments in Drosophila. Evolution 64(10):2921-34. doi: 10.1111/j.1558-5646.2010.01039.x.

62. Montooth, K. L., Meiklejohn, C. D., Abt, D. N., and **D. M. Rand**. 2010. Mitochondrial-nuclear epistasis affects fitness within species but does not contribute to incompatibilities between species in *Drosophila*. Evolution 64(12):3364-79. doi: 10.1111/j.1558-5646.2010.01077.x.

63. Haney, R.A., B. R. Silliman and **D. M. Rand**. 2010. Effects of selection and mutation on mitochondrial variation and inferences of historical population expansion in a Caribbean reef fish, Molecular Phylogenetics and Evolution 57: 821–828. doi:10.1016/j.ympev.2010.07.014

64. Gorth, D.J., **Rand D.M.**, Webster TJ . 2011. Silver nanoparticle toxicity in Drosophila: size does matter. Int J Nanomedicine. 20116:343-50. doi: 10.2147/IJN.S16881. PMCID: PMC3044187.

65. **Rand, D. M.** 2011. Mitochondrial genome size, population genetics of the germline cytoplasm and the units of selection on Drosophila mtDNA. Genetica 139(5):685-97.

66. Flight, P.A., D. Nacci, D. Champlin, A. Whitehead, **D. M. Rand**. 2011. The effects of mitochondrial genotype on hypoxic survival and gene expression in a hybrid population of the killifish, *Fundulus heteroclitus.* Molecular Ecology 20:4503–4520. doi: 10.1111/j.1365-294X.2011.05290.x

67. Flight P.A., O'Brien, M., Schmidt, P.S., **D. M. Rand**. 2012. Genetic structure and the North American postglacial expansion of the barnacle, *Semibalanus balanoides*. J of Heredity 103(2):153-65 doi: 10.1093/jhered/esr083

68. Pesole, G., J. F. Allen, N. Lane, W. Martin, **D. M. Rand**, G. Schatz and C. Saccone. 2012. The neglected genome. EMBO Reports 13(6):473-4. doi:10.1038/embor.2012.57.

69. Flight, P.A. and **D. M. Rand**. 2012. Genetic variation in the acorn barnacle from allozymes to population genomics. Integrative and Comparative Biology 52(3):418-29. doi:10.1093/icb/ics099.

70. Zhu, C. T. and **D. M. Rand.** 2012. A hydrazine coupled cycling assay validates the decrease in redox ratio under starvation in Drosophila. PLoS ONE 7(10): e47584. doi:10.1371/journal.pone.0047584

71. Meiklejohn, C. D., Holmbeck, M. A., Siddiq, M. A., Abt, D. A., **Rand, D. M.**, and K. L. Montooth. 2013. An incompatibility between a mitochondrial tRNA and its nuclear tRNA synthetase compromises development and fitness in Drosophila. PLoS Genet. 2013 Jan;9(1):e1003238. doi: 10.1371/journal.pgen.1003238. Highlight in Faculty of 1000: http://f1000.com/prime/717976643

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Abstracts and papers presented at national and international meetings: (from Brown)

Rand, D. M. 1992. Endothermy, heteroplasmy and mitochondrial DNA size variation. International Conference of Molecular Evolution, Pennsylvania State University, State College, PA.

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Rand, D.M., R. Haney, J. Kanefsky, R. Wagaman, L. Nicolaides, 2005. Evolution of nuclear mitochondrial interactions in Drosophila. 46th Drosophila Research Conference, San Diego, CA, March 2005

Rand, DM, C. Meiklejohn, D. Folk, G. Gilchrist. 2005. Clinal analysis of a thermal QTL in Drosophila. Annual Meeting of the Society for the Study of Evolution / American Society of Naturalists / Society of Systematic Biologists, Fairbanks, Alaska June 2005

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Research Conference, San Diego, CA, March 2011.

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Rand, D. M., Ge, Y., Jourjine, N., Mossman. J. A. Mitonuclear epistasis and the transcriptional response to hypoxia in Drosophila. 55th Drosophila Research Conference, San Diego, CA March 2014.

Rand, D. M. Colin Meiklejohn, Kristi Montooth, Patrick A. Flight, Marissa Holmbeck, Eugenia Villa-Cuesta, Jim Mossman, Lei Zhu, Nicholas Jourjine, Jenn Ge, Mitonuclear Epistasis and Coadaptation in *Drosophila* GxGxE: what it is and why it matters. Systems Genetics and Evolution of Non-Human Model Organisms, Ascona Switzerland, May 2014,

Rand, D. M. Yawei Ge, Nicholas Jourine, Patrick Flight, Mitonuclear epistasis and coevolution mediate the differential expression of nuclear genes under varied levels of hypoxia in Drosophila, Annual Meeting of the Society for Molecular Biology and Evolution, San Juan Peurto Rico, June 2014.

Rand, D. M., C.-T. Zhu, J. Mossman, J. Santiago, A. Spierer, L. Biancani, T. Devlin, J. Dewey, B. Franklin, M. McAteer, Z. Pataki, C. Hale-Phillips, C. Ye, D. Yoon, Mitonuclear AxGxE: Genetic and dietary interactions are as important as single factors in explaining Drosophila lifespan and healthspan. Cold Spring Harbor Meeting on the Biology of Aging, October 2014.

Spierer, A., A. Pascal, R. M. Mabeza, D. M. Rand. Mitochondrial knockdown using tissue specific expression of mitochondrially-targeted restriction enzymes against mtDNA as a model for the decline in organismal performance. Drosophila Research Conference, Chicago IL, March 2015

Mossman, J. A., Y. Ge, N. Li, Z. Wu & D. M. Rand, Mitochondrial - nuclear interactions mediate genotype-specific transcriptional responses to hypoxia in Drosophila. Drosophila Research Conference, Chicago IL, March 2015

Mossman, J. A., L. Biancani, C.-T. Zhu, D. M. Rand, Mitochondrial x nuclear DNA epistases and environment modify fitness in the Drosophila Genetic Reference Panel (DGRP) Drosophila Research Conference, Chicago IL, March 2015

Rand, D.M., J.A. Mossman, L.M. Biancani, C.-T. Zhu. Can epistasis or GxE be predictable? Lessons from mitonuclear interactions in Drosophila. The Allied Genetics Conference, Genetics Society of America, Orlando FL, July 2016

Rand, D.M., J.A. Mossman, L.M. Biancani, C.-T. Zhu. Mitonuclear epistasis for fitness and gene expression in Drosophila: common features of GxG and GxE". Society for the Study of Evolution, Austin, TX, June 2016

Rand, D.M., J.A. Mossman, L.M. Biancani, C.-T. Zhu. Drosophila models of mitonuclear interactions in disease. Mitochondrial Medicine 2016. The United Mitochondrial Disease Foundation, Seattle Washington, June 2016

Rand, D.M., J.A. Mossman, L.M. Biancani, C.-T. Zhu. Mitonuclear transcriptomes show common features of epistasis (GxG) and gene-by-environment (GxE) interactions in Drosophila. Society for Molecular Biology and Evolution, Austin, TX, July 2017

Rand, D.M., J.A. Mossman, L.M. Biancani, C.-T. Zhu. Mitonuclear transcriptomes show common features of epistasis (GxG) and gene-by-environment (GxE) interactions in Drosophila. Gordon Conference on Ecological and Evolutionary Genomics, University of New England, July 2017

Nunez, J. C. B. Elyanow, R.G. Brown, B. R. P. and D. M. Rand. 2017. Ecological genomics of thermal adaptation: Genome wide screens in Acorn barnacles reveal multiple loci responding to thermal gradients at tidal microhabitats. Gordon Conference on Ecological and Evolutionary Genomics, University of New England, July 2017

Williams, S., B. Franklin, **D. M. Rand**. A mitochondrial rescue of a nuclear defect in starvation resistance and lipid levels in Drosophila. 59th Annual Drosophila Research Conference, Philadelphia, PA, Apr 11 - 15, 2018.

Spierer, A.N., J.A. Mossman, F.A. Lemieux, E. Brett-Turner, **D.M. Rand**. Identifying genetic modifiers of flight performance using the Drosophila Genetic Reference Panel. 59th Annual Drosophila Research Conference, Philadelphia, PA, Apr 11 - 15, 2018.

Nunez, J.C.B. and **D. M Rand**. From tides to nucleotides: Natural selection shapes functional genetic variation at intertidal microhabitats in the Northern Acorn Barnacle. Marine Evolution 2018 A Marcus Wallenberg Symposium 15–17 May 2018, Strömstad, Sweden.

Mossman, J.A., and **D.M. Rand**. Mitochondria, Sex, and nuclear gene expression: Cursing Mother's Curse. Society for Integrative and Comparative Biology, Annual Meeting, Tampa FL, January 2019.

Rand, D.M., Faye A. Lemieux, Kenneth Bradley, Lindsay Marmor. A mitonuclear reality check on the evolutionary significance of Mother's Curse in Drosophila.

Population, Evolutionary and Quantitative Genetics (PEQG2022), Asilomar California.

Rand, D.M., Faye A. Lemieux, Kenneth Bradley, Lindsay Marmor. A mitonuclear reality check on the evolutionary significance of Mother's Curse in Drosophila. 64th research conference, Chicago, Illinois, March 2023.

Rand, D.M., Faye A. Lemieux, Kenneth Bradley, Lindsay Marmor. A test of Mother's Curse with deep mtDNA divergence and outbred nuclear backgrounds in Drosophila. Cold Spring Harbor Biology of Genomes, May 2023

Rand, D.M., Faye A. Lemieux, Kenneth Bradley, Lindsay Marmor. Pervasive absence of Mother's Curse among divergent mtDNAs in heterozygous nuclear backgrounds in Drosophila. Society for molecular biology and evolution. July 2023, Italy (remote)

Invited seminars

SUNY Stony Brook, October 1991. The units of selection on mitochondrial DNA
University of Rhode Island, The cytoplasm as a population and the evolution of mitochondrial DNA.
Yale University, 16 September 1994. "Non-neutral evolution of mitochondrial DNA: Evidence from cytonuclear competition experiments and nucleotide sequences."
Tufts University, 21 October 1994. "Thermal habit and the departures from neutral evolution in mitochondrial DNA"
University of Chicago, 5 December 1994. "Who said mtDNA is neutral? Insights from competition studies and nucleotide sequences."
University of Massachusetts, 31 March 1995. "Who said mtDNA is neutral? Insights from competition studies and nucleotide sequences."
Gordon Conference on Bioenergetics Proctor Academy 2-7 July 1995. "Metabolic Rate, Thermal habit and the evolution of mitochondrial DNA."
Rutgers University, 28 September 1995. "Who said mtDNA is neutral? Insights from cytonuclear competition experiments and nucleotide sequences."
University of Georgia, 25 October 1995. "Who said mtDNA is neutral? Insights from cytonuclear competition experiments and nucleotide sequence surveys."
University of New Hampshire, 31 March 1996. "Who said mtDNA is neutral? Insights from cytonuclear competition experiments and nucleotide sequence surveys."
National Zoological Park, Washington, D.C. 31 May 1996. "Neutrality and fitness tests of mitochondrial DNA with relevance for conservation biology: How to make fruit flies interesting."
Annual Drosophila Research Conference, Chicago, IL 4/16-4/20/97 Invited participant in the Workshop on Aging, "Aging, mating and the evolution of germline heteroplasmy for mitochondrial DNA length variants in *D. melanogaster*."
Cornell University, 2 February 1998. "Selection on mitochondrial DNA and on cytonuclear interactions"
University of Pennsylvania, January 21, 1999, "Searching for selection with molecular markers: finding it in flies and barnacles"
University of Arizona, May 3, 1999, "Detecting selection with interlocus contrasts: examples from flies and barnacles"
University of Chicago, May 17, 1999 "Detecting selection with interlocus contrasts:

examples from flies and barnacles”

Boston University, Nov 8, 1999 “Detecting selection with interlocus contrasts: examples from flies and barnacles”

Stazione Zoologica Anton Dohrn, Workshop on Neutralism and Selectionism: End of the debate, Ischia, Italy May 3-7 2000. “Sexually antagonistic selection and cytonuclear fitness interactions”

New England Molecular Evolutionary Biologists, Oct 14, 2000, “Genomic approaches to natural selection: from lab rat to web wienie”

Gordon Conference on Quantitative Genetics and Genomics, Feb 19-23, 2001, “Genomic and Phenomic scans of thermal selection in experimental populations of Drosophila melanogaster”

Marine Biological Laboratories, Woods Hole, MA, Workshop on Molecular Evolution, July 29 – August 10, 2001 “Neutrality tests of DNA sequences” and “Detecting selection using inter-locus contrasts”

Society for Integrative and Comparative Biology; Symposium on Physiological ecology of rocky intertidal organisms: from molecules to ecosystems. Anaheim CA, Jan 2002. “Thermal selection at the Mpi locus in the Northern Acorn Barnacle”

Carnegie Institution, Dept of Embryology, Baltimore MD 4 Feb 2002. “The units of selection on mitochondrial DNA”

Duke University, Dept of Biology, 4 March 2002. “Experimental genomics of thermal selection: what can flies tell us about barnacles?”

Longevity Consortium, Annapolis MD., 14 July 2002. “Mitochondrial genetics of aging in Drosophila”

Marine Biological Laboratories, Woods Hole, MA, Workshop on Molecular Evolution, July 29 – August 10, 2001 “Neutrality tests of DNA sequences” and “Detecting selection using inter-locus contrasts”

University of Lausanne, Switzerland, “La Sage” Meeting on Sex-specific genetic markers, 4 September 2002. “The evolution of mtDNA: Neutrality, selection and sexual antagonism”

University of Bern, Switzerland “Selection on genes and genomes: neutrality tests *in vivo* and *in silico*” 31 March 2003

University of Konstanz, Germany “Functional Genomics of nuclear-mitochondrial interactions” 29 April 2003

University of Fribourg, Switzerland “Experimental Evolution in Drosophiila: Selection on genes and genomes” 10 June 2003.

Harvard University, Cambridge, MA, “Mitochondrial mutations and fruitfly fitness”, 16 October 2003

Tufts University, Medford, MA, “Mitochondrial mutations and fruitfly fitness” 30 Jan 2004

Marine Resources Center, MBL Woods Hole, MA “Ecological Genetics of the acorn barnacle” 5 Nov 2004

University of Maine, Orono, ME “Gene flow versus local adaptation in the acorn barnacle” 5 Nov 2004

University of Connecticut, Storrs, CT “Cytonuclear coevolution: fitness consequences of mitochondrial genome introgression in Drosophila” 6 Dec 2004

University of Colorado, Boulder CO “Cytonuclear coevolution: the genomics of cooperation” 25 Feb 2005

Marine Biological Laboratories, Woods Hole, MA “"Nuclear-mitochondrial coevolution: conflict and cooperation in genomic interactions" 4 Aug 2005

Gordon Research Conference, Ventura, CA Session Chair, Molecular Evolution Conference: “Adaptive Evolution” 5-10 Feb 2006.

Gordon Research Conference on Molecular Evolution, elected Conference Co-Chair for

2008, Chair for 2010.
Yale University, New Haven CT “The mitochondrial mojo of fruitfly fitness” 18 Jan 2006
University of Massachusetts, Amherst MA, “The mitochondrial mojo of fruitfly fitness” 10 Apr 2006
University of Washington, Seattle, WA, “Mitochondrial genetics of aging in Drosophila” 23 May 2006
University of California, San Francisco, Longevity Consortium Program Project, “Mitochondrial genetics of aging in Drosophila” 10/2006.
University of Wyoming. “The mitochondrial mojo of fruitfly fitness” 11/2006.
University of California, Davis. “The mitochondrial mojo of fruitfly fitness” 11/2006.
Cornell University, Ithaca NY. “The mitochondrial mojo of fruitfly fitness” 3/2007
University of Washington, Symposium on Mitochondrial Evolution. “Mitonuclear coevolution, epistasis, and fitness. 6/2007
Gordon Conference on Evolutionary and Ecological Functional Genomics, Newport RI, “Mitonuclear coevolution, epistasis and organismal function. 7/2007
Uppsala University, Symposium on Cytonuclear Coevolution, “ European Society for Evolutionary Biology, “Cytonuclear coevolution, epistasis and hybrid zones”. 8/2007
Gordon Research Conference on Molecular Evolution, Ventura CA, 2/2008, Vice Chair 2008, Chair elect 2010
Ohio State University, “Mitonuclear coadaptation, epistasis, and fitness”, 8 May 2008
Kansas State University, “Mitonuclear coevolution, thermal selection, and fitness: when your genes are just another part of the environment 10/2008
SUNY Stony Brook, “Running hot and cold about balancing selection: thermal selection in flies and barnacles”, 12/2008
Villanova University, “Running hot and cold about balancing selection: thermal selection in flies and barnacles” 3/2009
Louisiana State University, “Mitonuclear coevolution, thermal selection, and fitness: when your genes are just another part of the environment 3/2009
Society for Molecular Biology and Evolution, Symposium on Mutation Accumulation in Eukaryotic Genomes, “Feeling positive about negative selection”, 6/2009
Pennsylvania State University, “Mitonuclear coadaptation, epistasis and fitness: evolutionary genetics of mitochondrial disease in Drosophila”; Institute of Molecular Evolutionary Genetics, Penn State, “Running hot and cold about balancing selection: Thermal selection in flies and barnacles”, 9/2009
University of North Carolina, Chapel Hill, “Mitonuclear coadaptation, thermal selection and fitness: when genes are just another part of the environment”, 9/2009
University of Montpellier, France, Institute for the Study of Evolution, “Evolutionary Genetics of mitonuclear coadaptation, fitness and disease”, 1/2010.
University of Cambridge, England, “Evolutionary genetics of mitonuclear cooperation, fitness and disease”, 4/2010
University of Bari, Italy, “Evolutionary genetics of mitochondrial-nuclear cooperation, fitness and disease in Drosophila", 5/2010
University of Montpellier, Station Marin Environment Littoral, Sète, France, “Genetic variation in heterogenous environments: gene flow and selection at Mpi in Semibalanus”, 6/2010
Cornell University, “The population genetics of the cytoplasm and the units of selection on mtDNA”, 7/2010
Drosophila Research Conference, Population and Quantitative Genetics platform session, “Phenotypic McDonald-Kreitman tests of mitochondrial genotypes reveals neutral divergence and non-neutral polymorphism of life history traits”,

3/2011.

National Heart, Lung and Blood Institute, Bethesda, MD, “Evolutionary genetics of mitochondrial fitness, aging and disease in Drosophila”, 6/2011

Drosophila Research Conference, Physiology and Aging platform session, “Mitochondrial genotype alters the nuclear transcriptional response to varied levels of hypoxia in Drosophila”, 3/2012

Cornell University, “Mitonuclear coadaptation, epistasis, and the genomics of cooperation”, 2/2013

Canadian Society of Zoologist, Annual Meeting, Symposium on Animal Mitochondria: Evolution, Performance and Plasticity, University of Guelph, “Mitochondrial genotypes drive differential expression of nuclear genes under varied levels of hypoxia in Drosophila”, 5/2013

University of British Columbia, “Evolutionary genetics of mitonuclear coadaptation in Drosophila”, 4/2014

Annual Meeting of the Society for Molecular Biology and Evolution, “Mitonuclear epistasis and coevolution mediate the differential expression of nuclear genes under varied levels of hypoxia in Drosophila, 6/2014.

Cold Spring Harbor Meeting on the Biology of Aging, “Mitonuclear AxGxE: Genetic and dietary interactions are as important as single factors in explaining Drosophila lifespan and healthspan”, 10/2014.

Drosophila Research Conference Mossman, J. A., L. Biancani, C.-T. Zhu, D. M. Rand, “Mitochondrial x nuclear DNA epistases and environment modify fitness in the Drosophila Genetic Reference Panel (DGRP)”, 3/2015

Keystone Meeting in Mitochondrial Metabolism, “Mitonuclear genetic interactions in Drosophila fitness, aging and disease”, Whistler, BC, 3/2015

Gordon Research Conference on Ecological and Evolutionary Genomics, “Introduction to Population Genomics, Adaptation, and Speciation”, Session Chair, 6/2015

Translational Research in Mitochondria, Aging, and Disease (TRiMAD) Symposium, “Mitonuclear epistasis for fitness, aging and disease in Drosophila”, Penn State, 11/2015.

Vanderbilt University, Department of Biology, “Mitonuclear epistasis for fitness, aging and disease in Drosophila”, 3/21/16

Evolutionary Biology Center, Uppsala University, Sweden, “Mitonuclear epistasis and the evolutionary genetics of fitness, aging and disease in Drosophila", 3/28/16

The Allied Genetics Conference, Genetics Society of America, Orlando FL, “Can epistasis or GxE be predictable? Lessons from mitonuclear interactions in Drosophila” 7/15/16

Brown University, By Faculty For Faculty Lecture Series, “Genes and Environment in Evolution and Disease: Common Features from Our Different Genomes, 11/7/16

University of Nebraska, Department of Biology, “Mitonuclear epistasis and coevolution in fitness, aging and disease”, 11/10/16

Bowdoin College, Department of Biology, “Genes and Environment in Evolution and Disease: Common features from our different genomes”, 4/6/17

Frontiers in Metabolism: From system physiology to precision medicine, EPFL and EMBO Press Life Sciences Symposium, Lausanne, Switzerland, “Mitonuclear genetic interactions and personalized genomic responses to diet in Drosophila, 10/24/2017

Society of Molecular Biology and Evolution Satellite Meeting, Mitochondrial Genomics and Evolution, Ein Gedi, Israel, “Mitonuclear coevolution, epistasis, GxE and the genetics of complex traits, 09/03/2017

115th International Titisee Conference: Evolutionary Mitochondrial Biology: Molecular,

Biochemical and Metabolic Diversity, Boehringer Ingelheim Fonds, Titisee, Germany, “Mitonuclear interactions affecting sex-specific fitness traits and transcriptional responses to environmental stress in Drosophila”, 3/30/2017

Society of Molecular Biology and Evolution, Annual Meeting, Austin Texas, “Mitonuclear transcriptomes uncover common features of epistasis (GxG) and genotype x environment (GxE) interactions in Drosophila”, 7/03/2017

University of Wisconsin, Department of Genetics, “Mitonuclear genetic interactions and personalized genomic responses to stress in Drosophila”, 2/28/2019

Society for Integrative and Comparative Biology, Annual Meeting: Symposium on “Beyond the Powerhouse: Integrating Mitonuclear Evolution, Physiology, and Theory in Comparative Biology” Rand, D.M. and J.A. Mossman “Mitonuclear epistasis, genotype-by-environment interactions and personalized genomics of complex traits in Drosophila, Accepted 10/24/2018, talk given 1/6/2019

Auburn University, Department of Biology, 10/15/2020, “Mitonuclear mojo of fruit fly fitness: GxG = GxE?

University of Nebraska, Nebraska Center for the Prevention of Obesity Diseases, 10/21/2020, “Mitonuclear interactions mediate genetic and environmental stressors in Drosophila: Does GxG = GxE?”

American Genetic Association, Symposium on Genes as Environments, 11/15-18/2020, “Mitochondria as environments for the nuclear genome in Drosophila: Mitonuclear GxGxE”.

University of California San Diego, Department of Ecology, Behavior and Evolution, 4/29/2022, “Epistasis and Genotype-Environment Interactions are Integrated by Mitonuclear Genotypes in Drosophila”

University of South Carolina, “Medicating evolution: will medical progress change the path of human evolution?”, Fall 2023 – moved to 3/18/2024.

University of South Carolina Department of biological sciences.” Epistasis, gene-environment interaction and context dependent effects in fly and barnacle fitness. Fall 2023 – moved to 3/19/2024.

TEACHING

Evolutionary Biology (BioMed 48), Lecture course, 75-120 students (127 in 2023)
Taught single-handedly each year since 1992 (sabbaticals in 2002, 2009).
39 Lectures (50 min. each), 3 problem sets, 3 hour-exams, and a final exam.
Weekly discussion sections of primary literature lead by Graduate TAs

Evolutionary Genetics (BioMed 141), Seminar and Lab course, ~20 students
Taught single-handedly every other spring semester 1993-2011 (not offered while serving as Chair 2013-present).
Seminar/Lecture 2x/week for 1.5 hours, Lab 1x/week for 3 hours
4 wet-labs using molecular genetic methods, 4 computer labs using current population genetics and phylogenetic software
5 Problem sets, 5 Lab write-ups, weekly quizzes
Final Grant Proposal in NSF-format on individual research projects developed during the semester.

Foundations of Living Systems (BioMed 20), Lecture course ~350 students
Lectures on Ecology and Evolution, Genomics, Spring 2008

Graduate Seminars

Phylogenetics (1994),
Modern Synthesis (1996)
Quantitative Genetics (1998)
Phylogenetics (2001)
Environmental Genomics (2004)
Tropical Ecology (2006)
Neutral Models in Ecology and Evolution (2007)
Biodiversity (2008)
Reverse Ecology (2011-2016), IGERT Core course, Fall & Spring Semesters.
Ecological and Evolutionary Genomics (Spring 2019, Spring 2020)
EEB Foundations Graduate Seminar Fall 2020

Guest Lectures

Genetics (BioMed 47, 154: DNA Fingerprinting and Forensic Analysis)
Bioinformatics (Statistical Methods in Bioinformatics: DNA sequences)
Neurobiology 104 Human Brain Evolution
Anthropology 173 Human Variation

Molecular Evolution Workshop, Marine Biological Laboratories, Woods Hole, MA, Workshop on Molecular Evolution, two lectures 2000-2007, "Neutrality tests of DNA sequences" and "Detecting selection using inter-locus contrasts"

Postdoctoral Advisees

Lisa Kann, Ph. D. University of Rhode Island, 1993; B.A., Oberlin College,1987
Michael R. Palmer, Ph.D. University of Kansas, 2000; B.A. Hartwick College 1995.
Daniel Weinreich, Ph.D. Harvard University, 1998; B.S. University of Michigan, 1983
Colin Meiklejohn, Ph.D. Harvard University, 2004, B.S, University of Chicago, 1999
Kristi Montooth, Ph.D. Cornell University, 2004, B.S. UC Irvine, 1999
Lei Zhu, Ph.D. SUNY Stony Brook, 2009, B.S. Fudan University, 2002
James Mossman, Ph.D. University of Sheffield, UK, 2008, M.S. Univ. Sheffield, 2004
Eugenia Villa-Cuesta, Ph.D. Universidad Autónoma de Madrid, 2004, M.S, 1999
Yevgeniy Raynes Ph.D. University of Pennsylvania, 2012. Senior Research Assistant

Graduate Students

Alice Brown, Ph.D., April 1995, Brown University; "Molecular Ecology of the Northern Acorn Barnacle, Semibalanus balanoides"; M.A., 1985 from Oregon State University; B.S., 1982, Brown University.
Bianca Brown, Ph.D. candidate in Ecology and Evolutionary Biology, degree expected 6/2020
Bruce Bryan, M.S. in Ecology and Evolution Brown University, expected 5/2011; "Evolutionary genetics of mitochondrial function in Drosophila sperm". B.A. Marlboro College, 2002
Patrick Flight, Ph.D. in Ecology and Evolution, Brown University, 9/2011. "Environmental genomics of the acorn barnacle". B.A., Biology, Duke University.
Adam Fry, Ph.D. January 2004. Ecology and Evolution, Brown University; "Effects of Wolbachia on longevity and fecundity of Drosophila melanogaster"; M.S. Univ. of Minnesota, 1997. Currently Lecturer, University of Connecticut
Matthew Hamilton Ph.D., June 1995 Brown University; "Oligonucleotide Fingerprint Analysis of Neighborhood Size in the Salt March Perennial, *Limonium*

carolineanum"; B.A. 1990 University of Chicago. Currently Associate Professor Georgetown University.

Robert Haney, Ph.D. in Ecology and Evolution, Brown University, 6/07; "Phylogeography of three estuarine fish in eastern North America"; BA, and M.S. 2001 SUNY Buffalo

Marissa, Holmbeck, Ph.D. in Molecular Biology, Cellular Biology and Biochemistry, 9/14, "Mito-nuclear interactions and environmental conditions that impact Drosophila physiology and lifespan"; B.S. 2008 UC Irvine.

Steve Kilpatrick Ph.D. September 1994 Brown University; "Conditional Hitchhiking of mtDNA in Experimental Populations of Drosophila melanogaster"; B.S., 1987 Eastern College, PA. Currently Associate Professor Univ. of Pittsburgh.

Kim Cohen Neil, Ph.D. in Ecology and Evolutionary Biology, 9/2020; B.S. Colby College 5/2012 "Conservation genetics of the New England Cottontail",

Joaquin Nunez, Ph.D. in Ecology and Evolutionary Biology, 6/2020 "Ecological genomics of the acorn barnacle".

Paul Schmidt Ph.D. May 1999, Brown University; "Balancing Selection at the Mpi locus in the Northern Acorn Barnacle"; B.A. 1993 Holy Cross College. Currently Assistant Professor, University of Pennsylvania

John Santiago, Ph.D. in Molecular Biology, Cellular Biology and Biochemistry, 4/2020; B.S, M.S., Florida Tech, 5/2011

Adam Spierer, Ph.D. student in Ecology and Evolutionary Biology, 4/2020; B.S. Colby College 5/2013

Rebecca Wagaman, M.S. in Molecular Biology, Cell Biology and Biochemistry, 6/2011, "Mitochondrial genetics of aging in Drosophila"

Shawn Williams, Ph.D. in Molecular Biology Cellular Biology and Biochemistry, 5/2021; "Mitochondrial genetics of lipid metabolism and stress resistance in Drosophila", Sc.B., John Jay College, CUNY, 5/2015; HHMI Gilliam Fellowship recipient

Leah Darwin, B.A. Arizona State University, 5/2021; " Mitonuclear coadaptation in Drosophila and humans"; PhD expected 5/2026

Jared Ingram, B.A. Dillard University, 2023. Experimental evolution of mitonuclear genotypes in Drosophila"; PhD expected 5/2027

<u>Ph.D. Thesis Committees (other than advisees), EEB Department</u>

Dale Ritter, 1995, Functional Morphology of the Expaxial Muscles in Lizards
Jennifer Gray, 1996, Functional morphology of flying squirrels
George Leonard, 1996, Community Ecology of the Rocky Intertidal
Shane Heschel, 2000, Quantitative Genetics of Drought Stress in Jewelweed
Pat Ewanchuck, 2002, Structure of Salt March Communities
Chris Siddon, 2003, Multiple Predator Effects in a Subtidal Community
Brian Silliman, 2005, Trophic Cascades in Southern Salt Marshes
Yuko Toyonaga, 2005, Physiological Genetics of Light Response in Arabidopsis
Andrew Altieri, 2006, Trophic Cascades of Massive Mussel Settlement
David Baier, 2005, Functional Morphology of the Avian Shoulder.
Melissa Lage, 7/2006, Microbial Diversity of Salt Marshes
Eric von Wettberg, 2006, Gene Duplication and Adaptive Light Responses in Arabidopsis
Erika Lasek-Nesslequist, 2009, "sex and recombination in Giardia, Brown/MBL Student
Alan Bergland, 5/2009, "Phenotypic plasticity for ovariole number in Drosophila
Christopher Graves, 2016 "Evolution of evolvability"

Terry Dial, 2016 “Form, function and performance across a range of offspring size in the Trinidadian guppy (Poecilia reticulata)”
Priya Nakka, 2018, “Population genomics of humans”, EEB/CCMB, PhD
Yinghong Lan, 2018, “Genetic Features that Protect Natural Populations from Being Overwhelmed by Deleterious Mutations”
Catriona Munro, 2018 “Evolution of transcriptomes in Siphonophores" EEB PhD Program
Stephen Rong, “Splicing regulation and natural selection in human evolution”, MCB/CCMB PhD Program, PhD January 2021
Bianca Brown, “Mammalian gut microbiome and conservation”, EEB PhD Program, PhD 2022
David Morgan, “Context Matters in the Mapping of Genotype to Phenotype”, EEB PhD Program, M.S. 2022
John Burley, “Landscape genetics of tropical forest trees”, EEB PhD Program, PhD 5/2023
Nigel Anderson, “Motor control of foot-flagging behavior in frogs”, EEB PhD Program, PhD expected 2025
David Peede, “Understanding the Interplay Between Speciation and Introgression, and its Impact on the Evolution of Humans, Tomatoes, Monkey Flowers, and Fruit Flies”, EEOB PhD program, PhD expected 2025.

Ph.D. Thesis Committees, Graduate Program in Computational Biology or Molecular Biology, Cell Biology and Biochemistry, and outside thesis committees

Andrea Nerrozzi, 1995, Chloroplast DNA Replication in Chlamydomonas, Annette Coleman, Advisor
Julian Wong, 2005, Biochemistry of Fertilization Envelope Formation in Sea Urchins, Gary Wessel, Advisor
Selena Gell, 2008-2011, RNA interference and the genetics of segregation distortion in Drosophila, Robert Reenan, Advisor
Yuko Hasegawa, 2008-2013, Detection of microbial samples in the environment using fluorescent probes; Mitch Sogin, Gary Borisy Advisors
Marissa Holmbeck, 2013, Mitochondrial-nuclear incompatibility in translation affects mitochondrial function and aging in Drosophila
John Santiago, 2013-2016, Mitochondrial modification of TOR signaling and homeostasis in Drosophila
Vanessa Scialabba, “Rapamycin and mitochondrial function in mouse liver”, MCB Graduate Program, PhD expected 2019
Kevin Murphy, “The Aging Heart: Mechanisms of Arrhythmogenesis and Sudden Cardiac Death”, 5th year PhD student
Anqi Zhou, “Pinpointing genetic modifiers of Drosophila Amyotrophic Lateral Sclerosis (ALS) models using multiomic approaches”, MCB 5th year Master’s Program
Brett Baggett, PhD in Molecular Biology, Cellular Biology and Biochemistry expected 2022, “A rabbit model of sudden cardiac death”
Samuel Smith, PhD in Computational Biology expected 2022, “Enabling equity in genomics through development of relevant statistical frameworks”
Kaileigh Ahlquist, PhD in Computational Biology expected 2022. “Computational approaches for analysis of balancing selection”

Rahul Gupta, “Nuclear genetic control of mitochondrial function and its contribution to human disease: insights at biobank scale” Harvard Medical School, Mass General Hospital, PhD 2023

Yuliya Nemtsova, “Mitochondrial dysfunction in a Drosophila knock-in model of ALS: early onset in sensory neurons and their genetic suppression”, MCB PhD program, PhD 2023

Sarah Twinney, “Characterization and Genetic Modulation of Drosophila melanogaster Models of Amyotrophic Lateral Sclerosis”, Biomedical Engineering Master’s program, M.S. 2023

Undergraduate Senior Thesis Projects

Mark Siegal, 1992, Selection on Mitochondrial DNA in Experimental Populations of Drosophila melanogaster; Ph.D. Harvard Univ., 1998 (HHMI Predoctoral Fellowship). Currently Assistant Professor, NYU.

Michele Dorfsman, 1993, Transmission Genetics of mtDNA in Drosophila melanogaster. M.D., University of Pennsylvania, 1997. Currently a Physician, Pittsburg, PA

Kristin Zvonar, RAPD Variation in the Planarian, *Dugesia trigrina*; M.D., Univ. of Pittsburgh

Jeff Townsend, 1994, Size Variation and Concerted Evolution in the mtDNA of Drosophila melanogaster; Ph.D. Harvard University 2002. Currently Professor of Biostatistics, Yale University

Mike Kiparsky, 1995, Selection on Nuclear and Mitochondrial Genes in Experimental Populations of Drosophila melanogaster. Ph.D., UC Berkeley, Director of Wheeler Water Institute, UC Berkeley

Carolyn Hutter, 1995, Competition Between Distinct mtDNAs in Different Nuclear Genetic Backgrounds; M.S. Cornell, 1998. PhD Univ. of Washington; Director of Genome Sciences at NHGRI.

Eleanor Brown, 1995, Heteroplasmy in Experimental Populations of Drosophila melanogaster; Law School Yale University 1998

Aaron May, 1996, With Whom Should an Endangered Population Hybridize: and Experimental Study in Drosophila melanogaster; Law School Stanford University, 1999

Dan Lerman, 1997, Thermal Selection in Experimental Populations of Drosophila melanogaster; Ph.D. University of Chicago 2003. HHMI Predoctoral Fellowship, AAAS Postdoctoral Fellowship; Lawyer Washington, D.C.

Erica Rosenblum, 1997, The effect of aging and mating on the transmission of mtDNA in Drosophila melanogaster; Ph.D. UC Berkeley; Associate Professor, UC Berkeley.

John Morrow, 1997, Phylogeny of Gulls and Terns inferred from mtDNA Sequences; M.D. Columbia University, Physician in NYC

Ron Palmon, 1997, Computer Simulation of Selection at Multiple Levels: a Model for mtDNA Inheritance; Physician in NYC

Roger Han, 1998, Phylogeny of Gulls and Terns Inferred from CytB and 16S gene in mtDNA; M.D. Brown University

Dan Basila, 1998, Multiple Approaches to the Study of Thermal Selection in Drosophila melanogaster. PhD candidate UT Austin; Playwright

Andy Kern, 1999, Spatial and Temporal Variation in Microsatellite Frequencies in the Northern Acorn Barnacle. Ph.D. UC Davis (HHMI Predoctoral Fellowship Recipient); Postdoc UC Santa Cruz; Associate Professor, University of Oregon (via Dartmouth and Rutgers).

Brent Cezairliyan, 2000, Conservative and Radical Neutrality Tests of Mitochondrial and Nuclear Protein Sequences; Ph.D. MIT with Robert Saur; Postdoc, Harvard Medical School with Fred Ausubel.

Paula Spaeth, 2001, Neutral and Adaptive Variation at the Mpi and Gpi Enzyme Loci in the Acorn Barnacle, *Semibalanus balanoides*. Ph.D. Stanford University, Tim Sackton, 2001, Coadaptation of Nuclear and Mitochondrial Genomes in Drosophila simulans. Ph.D. 2009 with Andy Clark, Cornell; Postdoc with Dan Hartl, Harvard.

Sarah Kingan, 2002, Adaptive Evolution of Semenogelin in Hominoids. Currently Ph.D. 2009 with Dan Hartl, Harvard University

Jeff Rasmussen, 2002, Confidence limits on “informative” gene sets from Affymetrix microarray experiments. Ph.D., University of Washington, Department of Genome Sciences, Postdoc, UCLA

Brandon Finegold, 2002, Population structure of Galapagos samples of *Megabalanus* barnacles inferred from mtDNA.

Ellen Goldstein, 2004, Functional consequences of mtDNA introgression between Drosophila species. M.D candidate, Einstein College of Medicine

Zelalem Alehegn, 2004, Protein substitutions in mitochondrial proteins of humans and other apes.

Lietta Nicolaides, 2005, Genetic architecture of oxidative stress resistance in mitochondrial introgression lines of Drosophila. Research Assistant, University College London; Senior Medical Writer at Cirrus Communications, UCL

Johanna Kowalko, 2005, Biochemical flexibility and the adaptation to environmental heterogeneity in the acorn barnacle, *Semibalanus balanoides*. PhD, Harvard University; Assistant Scientist and Lecturer at Iowa State University.

Eric Franzosa, 2006, Computational analyses of selection on human mitochondrial tRNAs. Ph.D., Boston University; Research Scientist, Harvard School of Public Health

Jeffrey Hofmann, 2005-2008. Mitochondrial genetics of aging and metabolic disease in Drosophila. MD/PhD candidate Brown University.

Sean Prior, 2007, Mitonuclear genetics of salinity tolerance in Fundulus.

Max Rubinstein, 2008, Mitochondrial genetics of aging in Drosophila”, Medical Student, Boston University.

Ikenna Achilihu, 2008, Genetic variation for hypoxia in Fundulus

Maggie Sogin, 2009, Population genetics of Fundulus, PhD student University of Hawaii.

Anya Brown, 2009, Population genetics of Fundulus. M.S. Student Cal State University, Northridge, PhD student University of Georgia

Leann Barnes, 2009, Population genetics of polluted and clean sites in Fundulus, Research Assistant, Brown University; PhD student University of Maryland / Smithsonian

Stephanie Le, 2010, Mitochondrial genetics of desiccation and starvation stress in Drosophila, MD, Brown University 2014.

Deborah Gorth, 2010, Nano-silver toxicity in Drosophila, MD/PhD student Thomas Jefferson University

Nicholas Jourjine, 2011, Mito-nuclear genetics of physiological stress in Drosophila, PhD. Student UC Berkeley

Eli Moss, 2011, Computational analysis of mitochondrial-nuclear genetic interactions in Drosophila, PhD Student, Stanford University
Paul Ingelmo, 2011, Mitochondrial genotype effects on longevity extension by diet restriction in Drosophila
John Vu, 2012, How dietary and hypoxic stress affect mitochondrial-nuclear epistasis for performance traits in Drosophila
Melanie Berger, 2013, Mitochondrial-nuclear epistasis for response to dietary stress in Drosophila
Yawei (Jenn) Ge, 2013, Mitochondrial genotypes alter nuclear transcriptional responses to hypoxia in Drosophila., MD/PhD student Harvard University
Christina Farrell, 2014, Mitochondrial biogenesis and enzyme function in mtDNA replacement strains of Drosophila, Medical Student
Taliya Lantsman, 2014, Rapamycin enhances mitochondrial function in mtDNA replacement strains of Drosophila, Medical Student
Julia Donner, 2014-15, Mitonuclear genotype interactions and Drosophila response to cigarette smoke, Medical Student Brown University
Russyan Mark Mabeza, 2014-15, Using Mitochondrial DNA Knock Out to Elucidate Time Course of Mitochondrial Degradation. Medical Student UCLA
Denise Yoon, 2015-2017, Models of neurodegeneration and reproductive disease using a mitochondrial knockout system in Drosophila, PhD student, Harvard University
Brian Franklin, 2015-2017, Mitonuclear interactions alter the impact of diet restriction on starvation resistance, and aging in Drosophila. Research Assistant, The Broad Institute of Harvard and MIT.
David Ferranti, 2017-2019, Biogeography of the acorn barnacle and the trans-Arctic interchange.
Sierra Harken, 2018-2019, The impact of rapamycin and mtDNA genotype on mitochondrial morphology in Drosophila.
Robert Blattner, 2018-2019, Immunogenetics of the endangered New England cottontail.
Ian Light, 2018-2020, Genetic and physiological adaptations to hypoxia between high- and low-elevation populations of Drosophila.
Kenneth Bradley, 2021-2022, Genetic Analyses of Sex-Specific Mitonuclear Interactions and their Consequences on the Immune System of Drosophila
Lindsay Marmor, 2021-2022, Use of Dietary Supplements to Recover Phospholipase Associated Carbohydrate Homeostasis and General Metabolic Function in Drosophila melanogaster
Alexander Griffin, 2023, The Impact of Alternative Mitochondrial Genomes on the Transcriptional Profile of the Nuclear Genome.

SERVICE TO THE UNIVERSITY

Chair, Department of Ecology and Evolutionary Biology, 7/2013 – present
Provost's committee on Business Ethics. 2022-2023
Mentor, for Dr. Hongwei Yao, COBRE for Cardiovascular and Pulmonary Biology, 2020-present
Member, Dean of the College Search, 2018
Member, Provost's Chairs Agenda Committee, 2016-2018
Member, Dean of Admissions Search Committee, 2016

Member, Committee to Evaluate the Center for Computational Molecular Biology, 7/2016
TPAC Tenure Appointment Review Committee, Dr. Dennery, 4/2015
Member, Provost Search Committee, Spring 2014
Member, Bioinformatics Task Force, for OVPR Spring 2014
Member, Provost's Agenda Committee for Department Chairs Meetings, 2013-14
Member, Tenure, Promotions and Appointments Committee, 9/2011-2013, Vice Chair 2012-2013
Member, Search Committee, EEB Faculty Search, 2012-2013
Member, Presidents Science Advisory Council Summer 2012-2013
Member, Educational Innovation Strategic Planning Committee, Fall 2012
Member, MBL Futures Committee, Fall 2012
Member, BioMed Strategic Planning Committee, Summer-Fall 2012
Member EEB Admissions Committee, 2012, 2013
Member, Search Committee for Dean of the Faculty, Spring 2011
Review Committee, Brown-MBL graduate Program, 1/2011
Member, Search Committee, Assistant Professor in Bioinformatics, 2011
Member, Search Committee for faculty position in the Josephine Bay Paul Center at MBL, 2008-2009
Member, Instructional Advisory Committee for Dean of the Graduate School, Sheila Bonde, Fall 2008
Member, Advisory Search Committee for the Dean of Biology and Medicine, 2008
Member, Steering Committee for expansion of the Brown/MBL collaboration, 2007-2008
Chair, Working Group on Teaching Assistant positions in Biology and Medicine, 2008
Director of Graduate Studies, Department of Ecology and Evolutionary Biology, 2003-present
Director, Graduate Fellowship program, RI EPSCoR program, 2006-2009
Chair, BioMed Committee to Reevaluate Tenure, Promotion and Reappointment, 2006-2007
Member, Undergraduate Science Education Committee, 2006-2007
Member, Advisory Committee to President Simmons for Provost Search, 2006
Member, Search Committee for Assistant Professor of Computational Biology, 2005-2006, 2006-2007
Member, Academic Priorities Committee, 2003-2006; Vice Chair 2004-2006
Member, Executive Committee, Center for Computational Molecular Biology, 2004-present
Member, Action Group for Dean Position in Graduate and Postdoctoral Studies, Spring 2005
Member, Search Committee, Dean Position in Graduate and Postdoctoral Studies, Fall 2005
Member, Search Committee, Assistant Professor, Ecology and Evolutionary Biology
Member, Search Committee, Assistant Professor, Center for Computational Molecular Biology
Member, Search Committee, Dean of the Graduate School, Spring 2005
Member, Search Committee, Dean of Medical and Biological Sciences, Spring 2003
Member, Undergraduate Biology Curriculum Committee, 1995-present
Director, Brown University DNA Sequencing Facility
Member of Computational Biology Committee to design and establish an Sc.B. Degree in Computational Biology, 1997
Member of Advisory Committee for the Center for Genetics and Genomics, MCB Department
Chair, Faculty Search for Genomics Position, Molecular Biology, Cell Biology, and

Biochemistry, 2000-2001

Chair, Faculty Search for Computational Biology; Dept. of Molecular Biology, Cell Biology, and Biochemistry

Member Search Committee, Evolutionary Genetics Department of Ecology and Evolutionary Biology; 1995 (Adjunct Position), 1996 (Tenure track position)

Member of the Molecular Biology Facility Committee, MCB Department

Colloquium Lecture and Discussion, Inauguration Weekend for President Ruth Simmons, Brown University, October 14, 2001: Must We Grow Old: Genetics of Aging (with Prof. Wharton and Tatar)

Joint Appointment in the Department of Molecular Biology, Cell Biology and Biochemistry (MCB); Serving on Ph.D. Committees, Advisory Committees, and as a Trainer in the MCB Graduate Program

Undergraduate Concentration Advisor, for A.B. Biology, Sc.B. Biology and Applied Math-Biology, Sc.B. in Computational Biology Degrees.

SERVICE TO THE COMMUNITY – EDUCATIONAL OUTREACH

Bookshelves in Biology, 1991: A Unit for the Use of Computers in Evolutionary Tree Building, Lecture in NSF-Funded Program for Outreach with area High School Teachers, PI, Prof. Peter Heywood

Zooscope, 1995: Lecture on Conservation Genetics and Classroom Exercises for Experimental Analysis of Captive Breeding Programs, using Drosophila. NSF-Funded Program for Outreach with area High School Teachers, PI, Prof. Peter Heywood

Genes and Genomes 2001: Lecture on Using Drosophila Selection Experiments to Map Genes; Computer Exercises for Classroom analysis of Drosophila Genome Web Page; Programs for Regional High School Teachers and Interested Public, May 5, 2001, Brown University.

Barrington High School, 2005: Lecture on Natural Selection and the Evolutionary Genetics of Climate Change: a Drosophila model. Part of the Broader Impacts Aim of NSF Grant: “Genetic architecture of thermal selection in Drosophila”.

Wheeler School, and Vartan Gregorian School; IGERT Trainee Outreach activities, January 2015

Clark University, External Review Committee for Biology, Chemistry and Physics, March 28-30, 2018