MARIA E. ORIVE

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CURRENT POSITION

Associate Dean, College of Liberal Arts & Sciences and Professor, Department of Ecology & Evolutionary Biology, University of Kansas

RESEARCH INTERESTS

- Evolutionary theory and population genetics of organisms with complex life histories, including clonal reproduction.
- Life history evolution and the evolution of senescence.
- Effects of population structure and life-history attributes on gene flow and genetic diversity.
- Use of multilocus genotypic data in analyzing gene flow and hybrid zones.
- Within- and between-host pathogen and symbiont population dynamics.

EDUCATION

1988-1994	**PhD in Zoology**, University of California, Berkeley, CA Advisor: Montgomery Slatkin
1989	**Tropical Biology #89-3**, Organization for Tropical Studies Universidad de Costa Rica, Costa Rica
1984-1988	**BS in Biological Sciences, with Honors**, Stanford University, Stanford, CA Advisors: Marc Feldman, Paul Ehrlich

ACADEMIC APPOINTMENTS

2021-present	**Associate Dean**, Natural Sciences & Mathematics, College of Liberal Arts and Sciences, University of Kansas, Lawrence, KS
2019-present	**Professor**, Department of Ecology and Evolutionary Biology University of Kansas, Lawrence, KS
2019-2021	**Chair**, Department of Ecology and Evolutionary Biology University of Kansas, Lawrence, KS
2012-2019	**Associate Chair for Faculty**, Department of Ecology and Evolutionary Biology, University of Kansas, Lawrence, KS
2007-2019	**Faculty Ombudsman**, University Ombuds Office, University of Kansas, Lawrence, KS
2007-2008	**The Carl and Lily Pforzheimer Foundation Fellow**, Radcliffe Institute for Advanced Study, Harvard University, Cambridge, MA
2004-2019	**Associate Professor**, Department of Ecology and Evolutionary Biology University of Kansas, Lawrence, KS
1997-2004	**Assistant Professor**, Department of Ecology and Evolutionary Biology University of Kansas, Lawrence, KS
1996-1997	**Postdoctoral Fellow**, Institute of Cell, Animal, and Population Biology University of Edinburgh, Edinburgh, UK, Advisor: Nicholas Barton
1994-1996	**Postdoctoral Associate**, Department of Genetics University of Georgia, Athens, GA, Advisor: Marjorie Asmussen

HONORS AND AWARDS

2022	**American Association for the Advancement of Science (AAAS) Fellow**
2007-08	**Radcliffe Institute Fellowship**, Radcliffe Institute for Advanced Study, Harvard University
2005-06	**Senior Administrative Fellow**, University of Kansas
1996-97	**NSF-NATO Postdoctoral Fellowship**, University of Edinburgh
1993-94	**Dissertation-Year Fellowship**, University of California, Berkeley
1989	**Smithsonian Tropical Research Institute (STRI) Fellowship**, Panama
1988-92	**NSF Minority Graduate Fellowship**, University of California, Berkeley

FUNDING AND GRANTS

2023-27	**NIFA-NSF-NIH Ecology and Evolution of Infectious Diseases (EEID) Research Grant**, 2023-67015-40544, "Invasive species as conduits for pathogen spillover between natural and agricultural systems", $456,839, **Subaward PI** (pass-through entity University of Florida; total grant $2,994,963, PI Erica Goss).
2019-24	**NSF Research Grant**, DEB-1923495, "Collaborative Research: SG: Clonality and the scope for adaptation in heterogeneous environments," $162,324, **PI** (collaborative grant with University of Florida; total grant $200,000).
2019-23	**Agence Nationale de la Recherche (ANR, France)**, "Clonix2D**:** The genetic consequences of partial clonality in populations colonizing new areas", €437,707, **Co-PI** (PI, Solenn Stoeckel, INRA Rennes).
2018-20	**Institut National de la Recherche Agronomique (INRA, France)**, INVAMAT (INRA-SPE), "Evolvability of invasive species: Modeling the demogenetics of invasive populations in spatially-explicit contexts", €15,000, **Co-PI** (PI, Solenn Stoeckel, INRA Rennes).
2014-19	**NSF Research Grant**, DEB-1354754, "SG: Evolutionary lag and the effects of clonal structure", $149,022, **PI**.
2010-12	**General Research Fund Award**, University of Kansas, "Patterns of host-endosymbiont association: linking theory and data", $4,620, **PI**.
2001-06	**NSF Research Grant**, DEB-0108242, "Mutation and levels of selection in clonal organisms", $151,995, **PI**.
2001-06	**NIH Research Grant**, 1 R01 GM60792-01A1, "Within-host population dynamics of retrovirus vaccine", $254,660 (subcontract; total grant $1,285,817 with University of Kansas Medical Center), **Co-PI**.
1998-01	**NSF Minority Research Planning Grant**, DEB-9813335, "Mutation and selection in clonal organisms", $18,000, **PI**.
1998-99	**New Faculty General Research Fund**, University of Kansas, "Theoretical models of mutation and selection with clonal reproduction", $5,000, **PI**.
1992-93	**NIH Research Supplement for Underrepresented Minorities in the Biomedical Sciences**, University of California, Berkeley

PUBLICATIONS

Orive, M.E., M. Barfield, and R.D. Holt. (2023) Partial clonality expands the opportunity for spatial adaptation. American Naturalist 202(5):681-698, https://doi.org/10.1086/726335

Peniston, J.H., M. Barfield, R.D. Holt, and **M.E. Orive**. (2021) Environmental fluctuations dampen the effects of clonal reproduction on evolutionary rescue. Journal of Evolutionary Biology 34:710-722, https://doi.org/10.1111/jeb.13778

Orive, M.E. and S. Krueger-Hadfield. (2021) Sex and Asex: a clonal lexicon. Journal of Heredity 112:1-8, https://doi.org/10.1093/jhered/esaa058

Rushworth, C.A., R.S. Baucom, B.K. Blackman, M. Neiman, **M.E. Orive**, A. Sethuraman, J. Ware, and D.R. Matute. (2021) Who are we now? A demographic assessment of three evolution societies. Evolution 75(22): 208-218, https://doi.org/10.1111/evo.14168

Orive, M.E. (2020) The evolution of sex, in *The Theory of Evolution* (S.M. Scheiner and D.P. Mindell, eds.), pp. 273-295, University of Chicago Press.

Agusto, F.B., M.C.A. Leite, and **M.E. Orive**. (2019) The transmission dynamics of a within- and between-hosts malaria model. Ecological Complexity 38:31-55, https://doi.org/10.1016/j.ecocom.2019.02.002

Orive, M.E., R.D. Holt, and M. Barfield. (2019) Evolutionary rescue in a linearly changing environment: Limits on predictability. Bulletin of Mathematical Biology 81:4821-4839, https://doi.org/10.1007/s11538-018-0504-5

Chang, E.S., **M.E. Orive**, and P. Cartwright. (2018) Non-clonal coloniality: Genetically chimeric colonies through fusion of sexually produced polyps in the hydrozoan *Ectopleura larynx*. Evolution Letters 2(4):442-455, https://doi.org/10.1002/evl3.68

Orive, M.E., M. Barfield, C. Fernandez, and R.D. Holt. (2017) Effects of clonal reproduction on evolutionary lag and evolutionary rescue. American Naturalist 190(4):469-490, https://doi.org/10.1086/693006

Carter, J. M., **M.E. Orive**, L.M. Gerhart, J. Stern, R.M. Marchin, J. Nagel, and J.K. Ward. (2017) Warmest extreme year in U.S. history alters thermal requirements for tree phenology. Oecologia, 183(4):1197-1210. doi:10.1007/s00442-017-3838-z

Barfield, M., **M.E. Orive**, and R.D. Holt. (2015) The role of pathogen shedding in linking within- and between-host pathogen dynamics. Mathematical Biosciences, 270:249-262. doi:10.1016/j.mbs.2015.04.010

Marriage, T. and **M.E. Orive**. (2012) Mutation-selection balance and mixed mating with asexual reproduction. Journal of Theoretical Biology, 308:25-35.

Marriage, T.N., S. Hudman, M.E. Mort, **M.E. Orive**, R.G. Shaw and J.K. Kelly. (2009) Direct estimation of the mutation rate at dinucleotide microsatellite loci in *Arabidopsis thaliana* (Brassicaceae). Heredity 103:310-317.

Orive, M.E., M.N. Stearns, J. K. Kelly, M. Barfield, M.S. Smith and R.D. Holt. (2005) Viral infection in internally structured hosts. I. Conditions for persistent infection. Journal of Theoretical Biology 232(4):453-466

Williamson, S., S.M. Perry, C.D. Bustamante, **M.E. Orive**, M.N. Stearns, and J.K. Kelly. (2005). A statistical characterization of consistent patterns of human immuno-deficiency virus evolution within infected patients. Mol. Biol. Evol. 22:456-468.

Kelly, J. K., S. Williamson, **M.E. Orive**, M. Smith, and R. D. Holt (2003). Linking dynamical and population genetic models of persistent viral infection. American Naturalist 162:14-28.

Orive, M.E. and N. H. Barton (2002) Associations between cytoplasmic and nuclear loci in hybridizing populations. Genetics 162:1469-1485.

Williamson, S. and **M.E. Orive** (2002) The genealogy of a sequence subject to purifying selection at multiple sites. Molecular Biology and Evolution, 19:1376-1384.

Orive, M.E. (2001). Somatic mutations in organisms with complex life histories. Theoretical Population Biology, 59:235-249.

Asmussen, M.A. and **M.E. Orive** (2000) The effects of pollen and seed migration on nuclear-dictyoplasmic systems. I. Nonrandom associations and equilibrium structure with both maternal and paternal cytoplasmic inheritance. Genetics 155:813-831.

Orive, M.E. and M.A. Asmussen (2000) The effects of pollen and seed migration on nuclear-dictyoplasmic systems. II. A new method for estimating plant gene flow from joint nuclear-cytoplasmic data. Genetics 155:833-854.

Otto, S.P. and **M.E. Orive** (1995) Evolutionary consequences of mutation and selection within an individual. Genetics 141:1173 - 1187.

Orive, M.E. (1995) Senescence in organisms with clonal reproduction and complex life histories. American Naturalist 145:90 - 108.

Orive, M.E. (1994) Evolutionary genetic models of organisms with complex life histories. Ph.D. thesis, University of California, Berkeley.

Orive, M.E. (1993) Effective population size in organisms with complex life histories. Theoretical Population Biology 44:316 - 340.

Orive, M.E. and J. F. Baughman (1989) Effects of handling on *Euphydryas editha.* Journal of the Lepidopterists' Society 43(3):244 - 247.

ARTICLES AND BOOK REVIEWS

Orive, M.E. (2025) Recombination and selection, in *The Encyclopedia of Evolutionary Biology*, 2nd edition (C.A. De Moraes Russo, J.B. Wolf, editors), Oxford: Academic Press.

Carlen, E., I. Liao, M. Neiman, **M.E. Orive**, and C. Rushworth (2020) Reflecting on diversity, equity, and inclusion: past and future. SSE Diversity Committee in *SSE Community Blog*, January 16, 2020. https://ssecommunityblog.org/reflections-on-sse-diversity/

Orive, M.E. (2016) Recombination and selection, in *The Encyclopedia of Evolutionary Biology* (R.M. Kliman, ed.) vol. 3, pp. 417-424, Oxford: Academic Press.

Orive, M.E. (2011) Putting the R in evolutionary modeling (book review). Evolution 65(3): 912–914

PUBLISHED CODE

Orive, M.E., M. Barfield, and R.D. Holt (2023) Code and Output data associated with M.E. Orive, M, Barfield, R.D. Holt. Partial clonality expands the opportunity for spatial adaptation. Submitted to The American Naturalist. [Data set]. In The American Naturalist. Zenodo. https://doi.org/10.5281/zenodo.7698895

MANUSCRIPTS SUBMITTED OR IN PREPARATIONS

Simon, M.W., R.D. Holt, and **M.E. Orive**. Sources or sinks: the role of plant litter as an environmental reservoir for plant pathogens. *Submitted*, Journal of Ecology.

Godineau, C., **M.E. Orive**, and R.D. Holt. Infinitesimal model for migration between two populations. *In preparation*.

Khare, S.B., R.D. Holt, and **M.E. Orive**. Partial clonality and range expansion along an environmental gradient. *In preparation*.

OTHER RESEARCH ACTIVITIES

Apr. 30-May 2, 2025 **Santa Fe Institute Workshop**, *Biological Information and Environmental Uncertainty*, Santa Fe, NM. Invited participant.

Oct. 7-9, 2024	**Santa Fe Institute Workshop**, *The Theory of Genetics: Articulating and Formalizing Theories of Biological Information*, Santa Fe, NM. Invited participant.
June 2-4, 2019	**American Genetic Association (AGA) 2019 President's Symposium**, *Sex and Asex: The genetics of complex life cycles*, Portland, OR. Planned, organized and led symposium as President of AGA.
Aug. 2018	**2nd Joint Congress on Evolutionary Biology/Evolution 2018**, Montpellier, France, Co-organizer of invited symposium: *Evolution on the edge: eco-evolutionary dynamics, range expansion, and local adaptation*.
Oct. 6-8, 2014	**National Evolutionary Synthesis Center (NESCent) Catalysis Meeting**: *Evolution and Community Ecology of Host-Associated Microbiota*, Invited participant.

INVITED TALKS

Dec. 4, 2025	**Department of Biology, University of New Mexico, Albuquerque, NM** "Sexual and asexual life histories: modeling adaptation in time and space."
Sept. 24, 2025	**Department of Biology and Biochemistry, University of Houston, Houston, TX** "The effects of partial clonality on evolutionary rescue and the opportunity for spatial adaptation."
June 2, 2025	**Modeling and Theory in Population Biology Workshop, National Institute for Theory and Modeling in Biology (NITMB), Chicago, IL** "Matrix population models and linkages to population genetics, quantitative models, and evolutionary theory."
April 30, 2025	**Biological Information and Uncertainty Workshop, Santa Fe Institute, Santa Fe, NM** "Major evolutionary transitions through the lens of biological information."
May 24, 2024	**Modeling and Theory in Population Biology Meeting, Banff International Research Station, Banff, Canada** "Evolutionary rescue and spatial adaptation under sexual and asexual reproduction: Combining stage-structured models and quantitative phenotypes."
June 8, 2023	**Mathematical Models of Evolutionary Rescue, Max Planck Institute for Evolutionary Biology, Plön, Germany** "Effects of partial clonality on evolutionary rescue and the opportunity for spatial adaptation."
July 5, 2021	**CLONIX2D Meeting, Rennes, France [hybrid virtual meeting]** "Adaptation of partially clonal populations under spatial structure."
June 24, 2021	**American Society of Naturalists (ASN) Symposium, *The Theory of Evolution*, Evolution 2021 [virtual meeting]** "The evolution of sex: a theory of recombination."
Feb. 12-13, 2020	**JF Crow Institute for the Study of Evolution, University of Wisconsin Madison, WI, Darwin Day 2020** "Replicating viruses and adapting clones: Making sense of biology with mathematics," Wednesday Nite @the Lab, and "Complex life histories: modeling adaptation in time and space," Evolution Seminar Series.

Nov. 21-22, 2019	**Department of Biological Sciences, Auburn University, Auburn, AL** "Complex life histories: modeling adaptation in time and space" and "Mathematical models in evolutionary research."
Aug. 27, 2019	**BioHasard 2019, *Stochastic Models for Biology*, Rennes, France** "Adaptation to environmental change under partial clonality: the effect of environmental variation."
Nov. 10, 2018	**National Association of Biology Teachers (NABT) 2018 Conference, *Scott Williamson Speaker Series*, San Diego, CA** "Mathematical models in evolutionary research."
Jul. 9, 2018	**Symposium *Somatic Mutation and the Evolution of Multicellularity*, Annual Meeting of the Society for Molecular Biology and Evolution (SMBE 2018), Yokohama, Japan** "Mutation and selection within an individual."
Mar. 5-17, 2018	**3rd Bangalore School on Population Genetics and Evolution, International Centre for Theoretical Studies (ICTS), Bangalore, India** "Effects of clonality on evolutionary lag and rescue" + 4 lectures on evolution in age/stage-structured populations and evolution of quantitative traits.
Mar. 21, 2017	**AMIGO Mini-Conference (Plant and Animal Diseases), INRA Rennes/INRA Nantes, Rennes, France** "Within- and between-host pathogen population dynamics."
Mar. 20, 2017	**Institute for Genetics, Environment, and Plant Protection, INRA, Rennes, France** "Mutation and selection within and between clonal organisms."
Nov. 30, 2016	**Center for Computational, Evolutionary and Human Genomics, Stanford University** "Mutation and selection within and between clonal organisms."
Dec. 11, 2015	***Montyfest: A Symposium in Honor of Montgomery Slatkin*, University of California, Berkeley** "Evolutionary lag and the effects of clonal reproduction."
Nov. 4, 2015	**Department of Ecology and Evolutionary Biology, Yale University** "Mutation and selection within and between clonal organisms."
Nov. 6, 2014	**Department of Biology, University of Florida**, Gainesville "Together and apart: a new model of host-endosymbiont population dynamics."
Aug. 21, 2014	**National Science Foundation**, DEB, Evolutionary Processes Cluster, Washington, DC "Together and apart: host-endosymbiont population dynamics."
Sept. 7, 2011	**Department of Biology, University of North Carolina, Chapel Hill** "Together and apart: modeling host-endosymbiont population dynamics."
Jan. 30, 2009	**Department of Biology, Indiana University** "Together and apart: determining patterns of host-endosymbiont association."
Oct. 16, 2008	**Department of Ecology, Evolution and Organismal Biology, Iowa State University** "Together and apart: determining patterns of host-endosymbiont association."
Apr. 30, 2008	**Radcliffe Institute for Advanced Study, Harvard University** "Together and apart: theoretical models of host-symbiont genome evolution."
Jan. 14, 2002	**Institute of Cell, Animal and Population Biology, University of Edinburgh**, Scotland, "Levels of selection and mutation in clonal organisms."

Apr. 17, 2001 **Department of Biology, Colorado State University**
"Mutation and selection within and between individuals: effects of clonal reproduction and indeterminate growth."

Sept. 24, 1999 **Department of Entomology, Kansas State University**
"The use of multilocus data for estimating migration rates in hybridizing populations."

May 25, 1999 **Institute of Cell, Animal and Population Biology, University of Edinburgh**, Scotland
"Mutation and within-individual selection in clonal organisms."

Feb. 4, 1999 **Department of Entomology, University of Kansas**
"Mutation and selection within individuals: the effects of indeterminate growth and clonal reproduction."

June 9, 1996 **Symposium *Frontiers in Molecular Evolution*, SMBE 1996**, Tucson, AZ
"Evolutionary consequences of somatic mutations: an example from clonal organisms."

Oct. 10, 1995 **Institute of Cell, Animal and Population Biology, University of Edinburgh**, Scotland, "Life history evolution in clonal organisms."

Dec. 6, 1993 **Laboratoire d'Ecologie, Ecole Normale Supérieure**, Paris, France
"Life history evolution in clonal organisms."

Nov. 16, 1993 **Institute des Science de l'Evolution, Université de Montpellier**, France
"Life history evolution in clonal organisms."

PAPERS PRESENTED

July 30, 2024 **3rd Joint Congress for Evolutionary Biology/Evolution 2024, Montreal, Quebec, Canada**, "Partial clonality over time and space: evolutionary rescue and spatial adaptation" in the symposium *Evolutionary rescue: theory, data, and pressing applications.*

June 25, 2023 **Evolution 2023 – Annual Meeting of the Society for the Study of Evolution (SSE), the American Society of Naturalists (ASN), and the Society of Systematic Biologists (SSB), Albuquerque, NM**, "Partial clonality expands the opportunity for spatial adaptation."

June 22, 2019 **Evolution 2019, Providence, RI**, "Adaptation of partially clonal populations under spatial structure."

August 8, 2018 **2nd Joint Congress for Evolutionary Biology/Evolution 2018, Montpellier, France**, "The interaction of spatial structure and clonality on adaptive evolution" in the symposium *Evolution in Metapopulations and Structured Populations: A symposium in honor of Ilkka Hanski, Isabelle Olivieri, and Dave McCauley*.

June 26, 2017 **Evolution 2017, Portland, OR**, "Evolutionary lag and rescue in stage-structured clonal populations."

June 18, 2016 **Evolution 2016, Austin, TX,** "Evolutionary lag in populations with both sexual and clonal reproduction."

June 24, 2014 **Evolution 2014, Raleigh, NC,** "The effects of clonal reproduction on the rate of evolution."

June 22, 2013 **Evolution 2013, Snowbird, UT**, "The roles of vertical vs. horizontal transmission in host-endosymbiont dynamics."

June 19, 2011 **Evolution 2011, University of Oklahoma, Norman, OK,** "A new population genetic model of host-endosymbiont dynamics."

June 28, 2010 **Evolution 2010, Portland State University, Portland, OR,** "Estimating the relative rates of horizontal vs. vertical transmission of coral endosymbionts: a forward model for application to SNP data".

June 16, 2009 **Evolution 2009, University of Idaho, Moscow, ID,** "Patterns of host-endosymbiont association from measures of identity-by-descent and linkage disequilibrium".

June 24, 2008 **Evolution 2008, University of Minnesota, Minneapolis, MN,** "Determining patterns of host-endosymbiont association: an identity-by-descent approach".

June 24, 2006 **Evolution 2006, SUNY Stony Brook, NY,** "Mutation and selection at multiple levels: effects of clonal reproduction and indeterminate growth".

June 29, 2004 **Evolution 2004, Colorado State University, Ft. Collins, CO,** "Mutations with multilevel fitness effects in organisms with stage-structured life histories".

June 22, 2003 **Evolution 2003, California State University, Chico, CA,** "Evolutionary genetic models of cnidarians and their algal endosymbionts."

Jan. 3, 2002 **European Population Genetics Group 35th Annual Meeting. University of Leeds, Leeds, UK,** "Mutation and selection in chimeric organisms."

June 30, 2001 **Evolution 2001, University of Tennessee, Knoxville, TN,** "Dicytoplasmic vs. cytonuclear data: which is better for estimating pollen and seed migration rates?"

June 25, 2000 **Evolution 2000, Indiana University, Bloomington, IN,** "Somatic mutations with within-individual and individual level fitness effects in modular organisms"

June 26, 1999 **Evolution 1999, University of Wisconsin, Madison, WI,** "Associations between cytoplasmic and nuclear loci in hybridizing populations"

June 21, 1998 **Evolution 1998, University of British Columbia, Vancouver, B.C.,** "Somatic mutation in clonal organisms: selection in chimeric individuals"

June 17, 1997 **Evolution 1997, University of Colorado, Boulder, CO** "Multilocus data, migration and hybrid zones."

June 20, 1996 **Evolution 1996, Washington University, St. Louis, MO,** "Estimating two types of gene flow using joint nuclear-mtDNA-cpDNA data."

July 12, 1995 **Evolution 1995, McGill University, Montreal, Quebec**, "Estimating pollen and seed migration from joint nuclear-mitochondrial-chloroplast data."

June 17, 1994 **Evolution 1994, University of Georgia, Athens, GA**, "Somatic mutations in clonal organisms."

Dec. 18, 1993 **California Population and Evolutionary Genetics Group (CALPEG) Annual Meeting, Stanford University**, Palo Alto, CA, "Somatic mutations in clonal organisms."

June 22, 1993 **Evolution 1993, Snowbird, UT**, "Senescence in clonal organisms."

June 18, 1992 **Evolution 1992, University of California, Berkeley, CA**, "A coalescent effective population size for clonal organisms." (Poster)

Dec. 15, 1991 **CALPEG Annual Meeting, Asilomar, Marin Headlands, CA**, "Effective population size in clonal organisms."

Aug. 1, 1991 **Evolution 1991, University of Hawaii, Hilo, HI,** "A coalescent approach to effective population size in organisms with complex life-histories."

Dec. 17, 1990 **CALPEG Annual Meeting, University of California, Irvine, CA** "A coalescent approach to effective population size in clonal organisms."

OTHER INVITED PRESENTATIONS

Feb. 10, 2023 **Center for Faculty Development and Mentoring, University of Kansas**
"Navigating conflict: Some lessons from 12 years in a university ombuds office."

May 3, 2022 **Association for Women in Mathematics, University of Kansas**
"Replicating viruses and adapting clones: Making sense of biology with mathematics."

Feb. 9, 2018 **Red Hot Research No. 45: Representation/Participation, The Commons, University of Kansas**
"Uniformity or variability: reproducing in a changing environment."

Aug. 18, 2011 **KU Teaching Summit, University of Kansas**
"What being an Ombudsman has taught me about teaching."

March 2, 2011 **Department of Mathematics Math Club, University of Kansas**
"Mathematical models in population genetics."

June 29, 2010 **Undergraduate Diversity Program at Evolution 2010 (sponsored by NSF and NESCent), Portland, OR**
"Undergraduate Futures Talk: 5 Things I Thought Were True About a Future in Evolutionary Biology"

Nov. 6, 2006 **Association for Women in Mathematics, University of Kansas**
"Mathematical models in population genetics."

POSTDOCTORAL RESEARCHERS

Margaret W. Simon, 2024 – present
Theoretical models of plant pathogens.

GRADUATE STUDENTS

Mayowa Ojo, MS, 2019 (co-advised with F.B. Agusto)
Mathematical modeling of *Neisseria meningitidis*: a case study of Nigeria.

Tara Marriage, PhD, 2009 (co-advised with J.K. Kelly), Lecturer, University of Kansas
Mutation, asexual reproduction and genetic load: A study in three parts.

Qinqin Gong, MS, 2009 (co-advised with J.K. Kelly)
The effects of directional epistasis on molecular evolution.

Elizabeth Slade, MS, 2007 (co-advised with J.K. Kelly)
A comparison of models of persistent infection: Predicting key features of early HIV infection.

Linda Wachsberg, MS, 2006
Effect of population subdivision on the management of captive species: a computer simulation approach.

Scott Williamson, PhD, 2003, Assistant Professor, Dept. of Biological Statistics and Computational Biology, Cornell University (deceased)
Detecting natural selection from patterns of polymorphism and divergence.

UNDERGRADUATE RESEARCHERS

Isabelle Cristofani, 2022 – 2025
Mathematical modeling in the biological sciences

Seth Pua, 2021 – 2024 (Haskell Indian Nations University, University of Kansas)
NIH Bridge Program, NIH MARC Program
Model of a multiple plant host – fungal pathogen system.

Kat Frenzel, 2019 – 2020
KU Emerging Scholars Program
Simulation modeling using C programming language.

Anna Goddard, 2018 – 2020
Initiative for Maximizing Student Diversity (IMSD), KU Undergraduate Research Award
Selection on relative amounts of clonal and sexual reproduction in populations with mixed sexual/asexual reproduction and stage structure.

Caroline Hwang, 2017 – 2018
KU Emerging Scholars Program
Simulation modeling using C programming language.

Mackenzie Johnson, 2014 – 2017; *Biology Honors*
Undergraduate Biology Program Research Award, KU Undergraduate Research Award, Undergraduate Diversity at Evolution Award
The effect of deleterious mutations and finite genome size on clonal interference and the rate of evolution.

Lauren Melcher (Texas A&M University – Commerce), Summer 2017
KU EEB REU Program
Consideration of a distribution of selective effects for beneficial and deleterious mutations in simulations of clonal interference.

Gabriel Haas, 2015
Mathematical modeling in epidemiology and population dynamics.

Carlos Fernandez, 2013 – 2015
Initiative for Maximizing Student Diversity (IMSD), McNair Scholars Program
Models of the evolution of stage-structured populations with clonal reproduction.

Lei Wei (Wellesley College), Summer 2014
KU EEB REU Program
Clonal interference: combining multiple-loci and varying beneficial mutation effects.

Stephen Rong (Washington University), Summer 2013
KU EEB REU Program
Modeling host-endosymbiont population genetics, the limit of low symbiont uptake.

Julio Ramirez, 2012 – 2014; *Biology Honors*
Initiative for Maximizing Student Diversity (IMSD), KU Undergraduate Research Award, Undergraduate Diversity at Evolution Award
Simulation studies of mutation-selection balance with sexual and asexual reproduction.

Elisa Rosales, 2009 – 2010
Initiative for Maximizing Student Diversity (IMSD)
Dynamical models of host-virus interaction.

Rachel Debes, 2006 – 2009; *Mathematics Honors*
Initiative for Maximizing Student Diversity (IMSD)
Modeling dynamics of viral infection; combining within-host struture with cellular immune response.

Megan Denchfield, 2006
Numerical analysis of the effects of somatic mutation.

TEACHING EXPERIENCE

University of Kansas

Genetics, Population Genetics, Biostatistics, Scientific Integrity, Evolutionary Mechanisms, Coalescent Theory, Sexual and Asexual Reproduction, Senior Seminar in Genetics, Seminar on the History of Population Genetics, Freshman Honors Tutorial

University of Edinburgh
Tutorials in Evolutionary and Ecological Genetics
University of Georgia
Evolutionary Genetics (Guest Lecturer, graduate level)
University of California, Berkeley
Population Genetics (Lecturer), General Biology (Graduate Student Instructor), Population Genetics (Graduate Student Instructor)
Stanford University
Biostatistics (Course Assistant), Biology for Non-Majors (Head Teaching Assistant), Human Behavioral Biology (Teaching Assistant), Center for Teaching and Learning (Tutor)

OTHER TEACHING ACTIVITIES

Honors Contract, Principles of Genetics (Fall 2025) – with J. Blumenstiel – developed and oversaw a KU Honors Program Honors Contract Activity for honors students enrolled in BIOL 350 Principles of Genetics. Students gained experience in reading primary scientific literature, developed the ability to summarize and explain scientific results to a non-specialist audience, and linked basic genetics concepts from their BIOL 350 course to research approaches and results in the primary literature.

Catalysis Meeting, National Evolutionary Synthesis Center (NESCent), Durham, NC, "K-12 Evolution Education and the Underserved" (April 18-20, 2013) – presentations, discussion, and break-out sessions on the topic of evolutionary education in underserved/underrepresented communities. Meeting resulting in preparation and submission of a collaborative NSF research proposal (for which I served as PI for the KU component) "A Longitudinal Study of STEM Majors: Impact on Underrepresented Minorities in Evolutionary Science Careers", submitted in January 2014 (declined for funding).

Faculty Seminar, Center for Teaching Excellence (CTE), University of Kansas (Fall 2012) – collaborative project with J. Hall (Communication Studies) – development of online statistics modules for summer statistics courses; activities included 5 seminar meetings in Fall 2012 during which participants read and discussed literature, listened to presentations on online and hybrid courses, and developed and presented teaching ideas.

Spencer/Teagle Project, CTE, University of Kansas, "Statistics in Primary Literature" (2010 – 2011) – one of 4 faculty members chosen to develop methods to enhance writing and critical thinking in undergraduate courses at KU; activities included participation in Spencer/Teagle Faculty Seminar, planning library-use aspect of course redesign, selection of Graduate Student Teaching Fellow for project, preparation of new materials for Biol 570, analysis of results.

Faculty Fellowship ($1500 to D. Smith and M. Orive), CTE, University of Kansas, "Tracking leaning and retention of a fundamental biological concept across three courses: Hardy-Weinberg Equilibrium" (2007 – 2008) – activities included tracking student learning and retention across 3 courses (Intro. Biology, Genetics, and Evolution), carrying out assessment, analysis of results, and development of Blackboard modules for use in other courses. Results presented in 2 sessions at the KU Summit on Teaching, CTE, 8/14/07, titled "Learning Across the Curriculum", giving overview project and discussing how similar projects could be undertaken to assess curriculum-level learning and retention.

Best Practices in Teaching: Institute 2000, CTE, University of Kansas (May 23-24, 2000) – activities included discussions and presentations on learning in large classrooms, active learning, and use of technology to increase student engagement. During the Institute, I developed learning modules that later became discussion session activities for my introductory genetics course (now Biol 350).

SERVICE/PROFESSIONAL SOCIETIES

Leadership Positions/Elected Council and Board Memberships:

Society for Modeling and Theory in Population Biology (SMTPB), Board of Directors, 2024 – present
Society for the Study of Evolution (SSE) Council, 2021 – 2023
American Genetic Association, President-elect/President/Past-president, 2018 – 2020
Friends of the Lied Center Board of Directors, 2013 – 2016
American Genetic Association Council, 2013 – 2015
National Evolutionary Synthesis Center (NESCent) Advisory Board (Associate Chair), 2008 – 2011

Editorial Positions:

Evolution, Associate Editor, 2022 – 2024
Journal of Heredity, Associate Editor (Special Issue, 2019 President's Symposium), 2019 – 2021
American Naturalist, Associate Editor, 2018 – 2021
Encyclopedia of Evolutionary Biology (Elsevier), Population Genetics Section Editor, 2013 – 2016
Genetica, Associate Editor, 1998 – 2013

Review Panels:

NSF External Review Panel (chair), National Institute for Theory and Mathematics in Biology (NITMB), site visit May12 – 15, 2024
NSF Evolutionary Genetics Pre-Proposal Panel, 2016
NSF Science & Technology Centers Pre-Proposal Panel, 2015
NSF Evolutionary Genetics Full Proposal Panel, 2012
NSF Evolutionary Ecology Pre-Proposal Panel, 2012
NSF Advancing Theory in Biology Panel, 2009
NSF Evolutionary Genetics Panel, 2007
NSF Evolutionary Genetics Panel, 2006
NSF Evolutionary Genetics Panel, 2005
NSF Evolutionary Genetics Panel, 2004
NSF Doctoral Dissertation Improvement Grants Panel, 2002

National/International Service:

Scott H. Williamson Award Committee (Chair), SMTPB, 2024 – present
Undergraduate Diversity at Evolution Program, Organizing Team, 2023 – present
Society for the Study of Evolution (SSE) Diversity Committee, 2017 – 2020, 2021 – 2023
SSE Constitution and Bylaws Ad Hoc Committee, 2021 – 2022
American Society of Naturalists (ASN), Nominations Committee, 2018 – 2022 (Chair, 2020)
European Society for Evolutionary Biology (ESEB), Equal Opportunities Committee, Co-Chair Data Task Group, 2015 – 2018

University/College Service:

KU Reads Advisory Board, 2025 – present
KU Center for Genomics Post-Doctoral Fellowship Committee (Chair), 2022 – present
Associate Vice Chancellor for Research Search Committee (Chair), 2022
KU Office of Research Higuchi Biosciences Center Taskforce, 2022
KU Center for Genomics Advisory Committee, 2021 – present
KU Office of Research ITTC Review Committee, 2021
College of Liberal Arts & Sciences (CLAS) Associate Dean for Social & Behavioral Sciences Search Committee (Chair), 2021
rpk/KU Academic Data Workshops, 2020
Kansas Biological Survey (KBS) Director Search Committee, 2018 – 2019
Anthropology Department Chair Search Committee, 2018 – 2019
University Ombuds Search Committee, 2017
Procession Marshal, KU Commencement, 2015 – 2016
University Core Curriculum Satellite Committee, 2011
CLAS Sabbatical Leave Committee, 2009 – 2011
Vice Provost for Faculty Support Search Committee, 2006
University Academic Policies and Procedures Committee (Chair), 2005 – 2007
University Council 2003 – 2006

Faculty Sponsor:

Association for Women in Science (AWIS), Univ. of Kansas Chapter, 1998 – 2005

Examples of Division/Department Service:

EEB By-Laws Committee, 2021 – 2022
EEB Executive Committee, 2011 – 2021
EEB Post-tenure Review Committee (Chair), 2014 – 2019
EEB General Research Fund Committee (Chair), 2012 – 2019
Biological Sciences Alumni Advisory Board (BSAB), Faculty Liaison, 2012 – 2019
BSAB Alumni/Public Relations Committee (Co-Chair), 2014 – 2019
EEB Merit Review Committee, 2012 – 2019
EEB Self-Study Committee (Co-Chair), 2017
EEB Diversity Development Committee (Chair), 2009 – 2011
EEB Sabbatical Committee, 2008 – 2009 (Chair), 2010 – 2011
Undergraduate Biology Committee (Division of Biological Sciences), 2001 – 2003, 2006 – 2007, 2009 – 2010
EEB By-Laws Committee, 2006 – 2007
EEB Curriculum Committee, 2002 – 2003, 2004 – 2005
EEB Undergraduate Education and Research Committee (Chair), 2003 – 2004
EEB Evolution/Developmental Biology Search (Chair), 2003 – 2004
Genetics Program Executive Committee, 2002 – 2004
EEB Minority Affairs Committee, 1998 – 2001

Reviewer:

American Naturalist
Biometrics
Ecology
Evolution
Evolution Letters
Frontiers in Genetics
Genetics
Journal of Ecology
Journal of Theoretical Biology
Molecular Biology and Evolution
Science Advances
Genetica
Genetical Research
Theoretical Population Biology

Member:

American Association for the Advancement of Science
American Genetic Association
American Society of Naturalists
Association for Women in Science
Faculty Retention Outreach Group (FROGs), University of Kansas
Scientists of Color, UC Berkeley
Sigma Xi
Society for Modeling and Theory in Population Biology
Society for the Study of Evolution