

Editor-in-Chief

Mohamed Noor

Biology Department

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RESEARCH INTERESTS

Research in my laboratory strives to understand what genetic changes contribute to the formation of new species, and how the process of genetic recombination affects both species formation and molecular evolution. I've been fascinated at how often genetic recombination plays a major role in any evolutionary genetic question I seek to pursue, so understanding its causes and effects has become a thread uniting the dissertations of most people in the laboratory. Our approaches combine classical genetic, molecular genetic, and genomic/ bioinformatic analyses, along with occasional forays into areas like animal behavior (in relation to speciation). I am also very interested in helping develop educational activities (K-12 or college) in genetics and evolution. See my lab webpage for more detailed information: <https://sites.google.com/site/noorlabduke/>

Handling Editors

Maria Servedio

Department of Biology

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RESEARCH INTERESTS

I am an evolutionary theoretician with a range of interests that center on the evolution and evolutionary effects of mate choice. Two primary research foci are the role of mate choice mechanisms in speciation, particularly in the situation of secondary contact, and the evolution of male mate choice. I am also very interested in the effects that learning of preferences and traits can have on mate choice evolution and speciation, as well as the effects that these processes can have on the evolution of learning itself. I address these and other evolutionary questions using mathematical modeling techniques.

Peter Tiffin

Department of Plant Biology

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RESEARCH INTERESTS

My research uses a mixture of population genetic, genomics, and empirical manipulations in contemporary populations to investigate past and ongoing evolution. Recent or ongoing research in the lab has investigated genomic diversity, the genetic basis of quantitative traits, past and potential adaptation to ongoing climate change, evolutionary limits to species range expansions, evolution in mutualisms, and local adaptation. We work on both plant and rhizobia species.

Associate Editors through 2019:

Name Michael Collyer
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Research Interests I am an evolutionary ecologist with research specialization in analytical methods for high-dimensional data. The general research focus in my lab is to understand the evolutionary implications of species confronting changing ecologies, especially due to environmental change. In general, I focus on morphological evolution of vertebrates, especially working with high-dimensional shape data. I also develop statistical methods for the analysis of high-dimensional phenotypic data.

Keywords (areas of expertise) Morphometrics (including Geometric Morphometrics), Multivariate Statistics, Comparative Methods, Trajectory Analysis, Phenotypic Plasticity, Ichthyology

Are there any areas of study or approaches that you'd prefer not to cover? Genomics, Molecular Evolution, Embryology, Evolutionary Biochemistry

Name Vaughn Cooper
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Research Interests We study the evolution, ecology, and genome dynamics of experimental and clinical microbial populations. The following questions motivate our work.

1. How do microbes adaptively evolve when colonizing eukaryotic hosts, either as pathogens or symbionts? Can we predict these dynamics and identify driver mechanisms to guide therapy?
2. How do bacteria evolve and form communities within biofilms, especially within infections? What does this teach us about nascent multicellularity?
3. How and why do ecological tradeoffs evolve?
4. Why do genome regions replicated at different times evolve at different rates?
5. Evolution is best taught by hands-on experimentation. How do we deliver this on a massive scale?

Keywords (areas of expertise) experimental evolution, bacteria, ecological specialization, microbiome, curriculum development, pleiotropy

Are there any areas of study or approaches that you'd prefer not to cover? plant genetics

Name Andrew J. Crawford
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Research Interests Research in the Crawford Lab focuses on evolutionary genetic approaches to understanding the origin and demise of vertebrate biodiversity in the Neotropics. Current research attempts to integrate information between scales of inquiry. Across larger spatial and temporal scales we use biogeographic approaches to infer historical processes underlying diversification and community formation. At the scale of populations, we are interested in elucidating the influence of ecology on phylogeographic structure, connecting organismal traits to migration rates. At the organismal level we are researching the physiological basis of range limits and adaptations to novel environments, as well as the molecular basis of adaptations to novel diets. Our lab is also active in conservation research and engagement. Most research is focus on frogs, with additional studies of rodents, snakes, and lizards. Follow @CrawfordAJ

Keywords (areas of expertise) Biogeography, Phylogeography, Molecular population genetics, Molecular phylogenetics, Molecular evolution, Herpetology.

Are there any areas of study or approaches that you'd prefer not to cover?

Name Florence Débarre

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Research Interests



I am a theoretician in Evolutionary Ecology. A central, although not exclusive, goal in my research is to determine the influence of spatial structure and heterogeneity on the maintenance of diversity and on the evolution of life-history traits.

I have worked on topics including the evolution of specialization, the evolution of host defense in host-parasite interactions, the evolution of dispersal, and the evolution of social traits. I address these topics using mathematical models, using diverse frameworks (population genetics, quantitative genetics, adaptive dynamics, evolutionary game theory, ...).

Keywords

(areas of expertise)

evolutionary ecology, population genetics, adaptive dynamics, quantitative genetics, evolutionary game theory, inclusive fitness.

Are there any areas of study or approaches that you'd prefer not to cover?

Because my own work is theoretical, I do not feel qualified to evaluate purely experimental studies.

Name Samuel Flaxman
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Research Interests Research in my lab uses simulations to explore the dynamic and statistical properties of divergence with gene flow. We use forward-time individual-based models to explore generalities of how selection, drift, migration, mutation, and recombination interact to produce statistical patterns of divergence across the genome at various time points in the process of divergence of two populations. We also (have very recently started to) use coalescent simulations to test hypotheses and estimate parameters for real data sets gathered from transects across hybrid zones.

Keywords (areas of expertise) Speciation, Population genetics, Theory, Models, Simulations, Local adaptation, Divergence with gene flow, Hybridization

Are there any areas of study or approaches that you'd prefer not to cover? n/a

Name Gerlinde Höbel (Hoebel is alt. spelling, but publish under Höbel)

University University of Wisconsin-Milwaukee

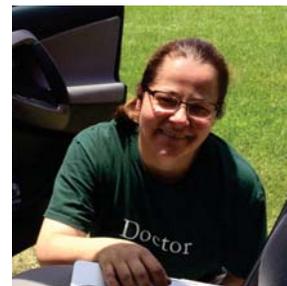
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Research Interests I study the evolution of animal communication, in particular how the sound, color and tactile components that make up animal displays interact with each other to help – and sometimes hinder-successful communication. I study these questions using frogs and insects, whose raucous choruses provide an ideal system in which to ask questions about different display types, and the social and environmental factors that facilitate their use. My research combines traditional techniques used to study animal communication (signal playbacks), methods used in the study of human speech perception and sophisticated methods for describing behavior (preference functions).

Keywords (areas of expertise) Acoustic Communication, Multimodal Communication, Bioacoustics, Sexual Selection, Behavioral Plasticity, Signal Timing, Character Displacement

Are there any areas of study or approaches that you'd prefer not to cover? Genomics; Purely theoretical studies.

Name Brian Hollis
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website



Research Interests I study the evolutionary genetics of sexual selection and sexual conflict. Much of my work involves generating and testing predictions of evolutionary theory using an experimental evolution approach with the fruit fly *Drosophila melanogaster*. A major aim is to better understand the ways sexual selection constrains and facilitates adaptation, in particular with respect to the evolution of sexual dimorphism.

Keywords (areas of expertise) sexual selection, sexual conflict, social evolution, experimental evolution, transcriptomics

Are there any areas of study or approaches that you'd prefer not to cover?

Name Samantha S. B. Hopkins
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Research Interests I am interested in the evolution of ecology in mammals. While I am a paleontologist first and foremost, I work in both extant and extinct organisms to understand patterns and processes of macroevolution in mammalian ecology. I am particularly interested in the interplay between climate, geologic processes, and autecology in driving rates and process of evolution. I build morphological phylogenies and use phylogenetic, morphological, and ecological information in comparative phylogenetic analysis of macroevolutionary processes.

Keywords (areas of expertise) Vertebrate Paleontology; Evolution of ecology; Macroevolution; Character evolution and correlation; Diversification rates; Mammals.

Are there any areas of study or approaches that you'd prefer not to cover? I'm probably not much good for studies on the population level and below; my work has been primarily at larger temporal, taxonomic, and spatial scales.

Name Simone Immler
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Research Interests The research in our lab addresses questions around the evolutionary causes and consequences of sexual reproduction. We aim to understand how life cycles evolve, how selection acts at different ploidy levels and in different sexes, how different sexes evolve, how genetic and epigenetic information is inherited from parents to offspring and to elucidate the evolutionary impact of all these processes. To do so we combine experimental approaches with genomics and theory in a wide range of study systems from zebrafish to fission yeast.

Keywords (areas of expertise) evolutionary biology, genetics, epigenetics, sexual selection, evolution of sex

Are there any areas of study or approaches that you'd prefer not to cover?

Name Kayla King
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Research Interests My research explores the ecology and evolutionary biology of symbiotic species interactions, along the mutualist-parasite continuum. I have worked extensively on the coevolution of host-parasite and mutualist interactions using experimental evolution, 'muddy boots' field work, genomics, and theory. My group's projects explore the links between symbiotic interactions and big problems in evolutionary biology, such as virulence, rapid evolution, sex, genetic diversity, and community diversity.

Keywords (areas of expertise) coevolution, diversity, host-parasite interactions, rapid evolution, sex, symbiosis

Are there any areas of study or approaches that you'd prefer not to cover?

Name Jessica Light
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Research Interests My research is focused broadly in evolutionary biology with a focus on phylogenetics, phylogeography, population genetics, and symbiotic associations between distantly related organisms, particularly mammals and their parasites. I use molecular and morphological data from field collected and ancient specimens to help elucidate evolutionary processes operating within and between distantly related, symbiotic taxa.

Keywords (areas of expertise) Evolution, phylogenetics, phylogeography, population genetics, biogeography, systematics, symbioses coevolution, mammals, parasites

Are there any areas of study or approaches that you'd prefer not to cover?

Name Mollie Manier
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Research Interests postcopulatory sexual selection, sperm competition, cryptic female choice, spermatogenesis, development of the female reproductive tract, epigenetics, genomics, transcriptomics, bioinformatics, gut microbiome, behavior, cognition, comparative methods

Keywords (areas of expertise) sexual selection, evolutionary genetics, quantitative genetics, population genetics, molecular evolution, speciation, epigenetics, genomics, transcriptomics, *Drosophila*, marine invertebrates, terrestrial vertebrates

Are there any areas of study or approaches that you'd prefer not to cover? None

Name Margarida Maria Demyon de Carneiro Pacheco de Matos
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Research Interests My research field is Evolutionary Ecology, using Experimental Evolution as tool. The main focus of my research is the study of the microevolutionary patterns and processes during adaptation to novel environments. This is approached by analyzing real time evolution of repeated colonizations of *Drosophila subobscura* populations to a laboratorial environment. The main ongoing project is the analysis, at several biological levels (phenotypic, karyotypic and genome-wide) of the evolution of populations founded from contrasting latitudes, to understand the role of History, Chance and Selection during Adaptation. Another, concomitant goal, of this research is the understanding of the evolutionary and genetic mechanisms underlying clinal variation of inversions. See more at <http://ce3c.ciencias.ulisboa.pt/member/margarida-matos> and at ce3c.ciencias.ulisboa.pt/sub-team/local-adaptation-in-drosophila

Keywords (areas of expertise) Evolutionary Ecology; Experimental Evolution; Phenotypic Evolution; Local Adaptation; Genetics of Adaptation; Historical and Genetic Constraints; Evolution of Chromosomal Inversions; Laboratory Adaptation

Are there any areas of study or approaches that you'd prefer not to cover? Macroevolutionary studies, Phylogenetics, Phylogeography

Name Jeffrey S. McKinnon
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Research Interests sexual selection; sexual dimorphism, including genetics/genomics; signal and ornament evolution; evolution of color patterns and color polymorphisms, including genetics/genomics; speciation

Keywords (areas of expertise) sexual selection; sexual dimorphism; signal evolution; ornament evolution; evolution of color patterns; color polymorphisms; speciation

Are there any areas of study or approaches that you'd prefer not to cover?

Name Keyne Monroe
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Research Interests My research broadly focuses on the roles of selection and evolution in shaping biological diversity, and the evolutionary consequences of environmental change. I use a combination of laboratory and field experimentation, quantitative genetic approaches, comparative approaches and evolutionary theory to explore how environmental change modifies patterns of natural selection, how it modifies the expression and structure of quantitative genetic variation, and how life histories are shaped or constrained by the combined effects of these evolutionary forces. I draw on the remarkably diverse life-histories of sessile marine organisms (invertebrates and seaweeds) to address these issues, doing so in nature wherever possible and with particular focus on ecological interactions as agents of selection.

Keywords
(areas of expertise) Evolutionary ecology, adaptation, environmental change, natural selection, quantitative genetic variation, phenotypic plasticity, life history evolution, marine systems.

Are there any areas of study or approaches that you'd prefer not to cover? I'm less comfortable with evaluating work that focuses heavily on molecular and population genetic approaches.

Name Daniel Ortiz-Barrientos
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Research Interests In the Ortiz-Barrientos Lab we study the genetics of speciation and adaptation. We are currently exploring the replicated evolution of traits and reproductive isolation, the early stages of speciation and the origin of ecotypes, the molecular causes of reproductive isolation and adaptation, the quantitative genetics of ecologically important traits and fitness, and the role of sexual selection on plant speciation.

Editorial Expertise Speciation, Selection - Sexual, Selection - Natural, Evolutionary Genomics, Adaptation, Hybridization

Are there any areas of study or approaches that you'd prefer not to cover?

Name Sheila Patek
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Research Interests The primary goal of research in the Patek laboratory is to examine the dynamic interplay between evolutionary processes and physics. We address this issue in two broad systems - evolutionary physiology of communication in the sea and the evolutionary dynamics of fast animal movements - with most projects focusing on arthropods. Our tools range from high speed videography and acoustics to phylogenetics and physiology.

Keywords (areas of expertise) biomechanics, functional morphology, phylogenetic comparative analysis

Are there any areas of study or approaches that you'd prefer not to cover?

Name Anna Qvarnström
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Research Interests We investigate how population divergence in ecological adaptations and reproductive behaviors relate to the build-up of different sources of reproductive isolation. This research is based on two natural study systems; a hybrid zone between collared and pied flycatchers on the island of Öland in the Baltic Sea, Sweden, and populations of Strawberry poison frogs in the Bocas del Toro archipelago in the Caribbean Sea, Panama. We also study factors (e.g. habitat heterogeneity) and evolutionary processes (character displacement) that mitigate ecological competition and reproductive interference between young species.

Keywords (areas of expertise) Natural and sexual selection, Character displacement at secondary contact, Song learning, Parasites, Genetics of adaptation, Clashes of genomes.

Are there any areas of study or approaches that you'd prefer not to cover?

Name Ana Rivero
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Research Interests I am interested in the evolutionary-ecology of host-parasite interactions. My most recent work has focused on the heterogeneity of infection outcomes in malaria-infected mosquitoes. Inter-individual and inter-population differences in mosquito infection success, load, virulence and transmission can have important consequences for the evolution and epidemiology of the disease. Our lab has been working on identifying the genetic and environmental sources of this heterogeneity using a rather unusual experimental system: bird malaria, mainly because it allows us to do work both in the lab and in the field. Recently, we have embarked on a new project looking at drug resistance and malaria transmission in Africa.

Keywords (areas of expertise) Host-parasite interactions
Life history trait evolution
Disease ecology
Behavioural Ecology
Vector-transmitted diseases

Are there any areas of study or approaches that you'd prefer not to cover?

Name Ronce Ophélie
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Research Interests I am generally interested in interactions between evolutionary and demographic dynamics. These interactions are central to different research questions related to the evolution of aging, dispersal, local adaptation, ecological niches and species range. I study how spatial structure, disturbances and transient dynamics far from equilibrium affect adaptation of species to changing environments. Most of my research is devoted to theoretical developments, but I am also involved in experimental projects studying adaptation of plants to soil pollution, adaptation of forest trees to changing climates, adaptation of phytophagous spider mites to new host plants, and of bacteria to antibiotic stress.

Keywords (areas of expertise) Life history theory, modelling, range evolution, niche evolution, evolutionary rescue, dispersal, local adaptation, gene flow, theoretical quantitative genetics, adaptation to global changes, aging, structured populations, phenotypic plasticity, inbreeding depression, mating systems

Are there any areas of study or approaches that you'd prefer not to cover? In particular I do not have the necessary expertise to properly evaluate myself with scrutiny comparative methods and more generally macroevolution approaches, molecular evolution, and genomics

Name Isabel Sanmartín
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Research Interests I am an evolutionary biologist interested in the theory and methods of biogeographical inference. One area of research is the analysis of macroevolutionary patterns of distributions across a diverse array of organisms (plants, animals, fungi). Another is the development of new analytical tools, especially Bayesian inferential methods, to unravel those processes underlying species distributions. My latest projects focus on the integration of phylogenomic data into such tools and the use of additional sources of evidence (fossil record, environmental models) to understand the link between climate change, geographic evolution, and extinction.

Keywords (areas of expertise) Evolutionary biology, biogeography, Bayesian inference, molecular systematics, statistical phylogenetics

Are there any areas of study or approaches that you'd prefer not to cover? Taxonomy

Name Stacey D. Smith
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Research Interests I study the evolution of floral diversity, with a particular emphasis on the tomato family Solanaceae. My work aims to elucidate the genetic mechanisms by which new floral traits arise, the ecological factors that drive those trait shifts, and the resulting macroevolutionary patterns. This research program combines phylogenetics, evolutionary genomics, pollination ecology, biochemistry, and statistical comparative methods.

Keywords (areas of expertise) phylogenetics, trait evolution, comparative methods, plant-pollinator interactions, evolutionary genetics

Are there any areas of study or approaches that you'd prefer not to cover?

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Research Interests I study plant diversity and evolution, with a particular emphasis on the evolution reproductive strategies and speciation. Research in my lab focuses on two main areas: (1) The role of natural selection in shaping plant reproductive strategies, mainly, flower form and its interaction with pollinators; and (2) evolution and speciation in invasive species, specifically, the adaptive consequences of hybridisation and genome doubling (polyploidisation) following the breakdown of reproductive barriers. To tackle these goals, we use a combination of field and glasshouse experiments, genetic and genomic analyses, phylogenetics, and theoretical models. Some of our current projects include the evolution of buzz pollination, the relative importance of sexual and asexual reproduction during biological invasions, and hybridisation and polyploid speciation in invasive *Mimulus*.

Keywords (areas of expertise) clonality, ecological genomics, evolutionary ecology, genetics of adaptation, genome duplication, hybridisation, invasive species, plant reproductive strategies, polyploidy, population genetics, speciation.

Are there any areas of study or approaches that you'd prefer not to cover? No.

Name David W. Weisrock

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Research Interests Research in the Weisrock Lab combines genetics, genomics, and evolutionary biology. Much of our research centers on using genetics to resolve the geographic boundaries of species in nature, reconstruct the relationships among these lineages, and address the mechanisms that have led to their formation. At the population level our research seeks to understand the adaptive and non-adaptive factors that influence gene flow and drive speciation. At a more macroevolutionary level we use phylogenetic approaches to resolve the evolutionary history of species assemblages and infer the rates at which they form.

Keywords (areas of expertise) Evolutionary Biology

Are there any areas of study or approaches that you'd prefer not to cover?

Name Melissa A. Wilson Sayres
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Research Interests I am an evolutionary and computational biologist, broadly interested in questions of genome evolution, mutation rate variation, and the consequences of population history. I use high performance computing, statistics, simulations, and comparative genomics to study questions relating to sex-biased mutational processes including, how sex chromosomes arise and evolve, why mutation rates differ between males and females, and how expression patterns vary between the sexes. Our lab develops models and analyzes experimental data to understand the effects of natural selection, convergent evolution, tumor progression and maternal-fetal conflict.

Keywords (areas of expertise) Sex chromosome evolution, X chromosome, X-inactivation, Y chromosome, genetic diversity, divergence, population genetics, natural selection, demography, life history trait evolution, coalescent simulations, microchimerism, RNAseq, DNA sequencing, genome assembly, bioinformatics, genomics, comparative genomics, sex-bias, male mutation bias, allele-specific expression.

Are there any areas of study or approaches that you'd prefer not to cover?

Associate Editors through 2018:

Cécile Ané

*Departments of Statistics and of Botany
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RESEARCH INTERESTS

I am generally interested in the methods and theory of statistical inference for molecular evolution and for trait evolution. One area is phylogenomics, to understand and model the variability of gene genealogies: due to incomplete lineage sorting, non-vertical inheritance, duplication/loss, or systematic errors. Another area of research is on models for trait evolution, to develop adapted model selection methods and fast computing tools.

Editorial Expertise

phylogenetics, hybridization, phenotypic evolution, comparative methods, statistical analysis.

Stuart J E Baird

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RESEARCH INTERESTS

HIGH RESOLUTION GENOMIC ANALYSIS OF INTROGRESSION ACROSS A SPECIES BARRIER: The project goal is to infer the role of intragenomic conflict in the origin and/or breakdown of species barriers. Genetic traces of admixture between modern humans and Neanderthals have provoked strong interest in fine scale patterns of introgression within genomes. Recently we have constructed a survey of precisely these fine scale patterns in the only mammalian admixture system with equivalent genome resolution: the European House mouse hybrid zone (HMHZ). Our high resolution analysis allows ancestral and introgression polymorphism to be clearly distinguished – a fundamental problem in understanding the history of species. This project capitalises on this unique genomic resource. We will use our extensive sample databank and prior understanding of the HMHZ supplemented by targeted sampling of new material. The history and action of candidate genes will be verified using focal genetic surveys (hybrid enrichment technology), combined with lab crosses and phylogeographic analyses of house mouse colonisation history.

Editorial Expertise

evolutionary biology, spatial genetics, population genetics, bioinformatics, hybrid zones

Thomas Bataillon

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RESEARCH INTERESTS

I am interested in both theoretical and empirical population genetics and in a broad array of topics including historically plant conservation and domestication with focus on mating system evolution and the effects of selfing. More recently I have been interested in population genomics and molecular evolution in a diverse array of organisms (plants, but also chimpanzees, micro annelids, symbiotic bacteria, marine sediment bacteria). I have a long-standing interest for mutations and their evolutionary consequences. Population genetic theory can make lots of predictions. Yet models specifying the fitness effects of mutations are often missing. I am interested in fitness landscape models and how to develop methods for inferring the distribution of fitness effects and factors governing rates of adaptation using data from both experimental evolution and population genomics.

Editorial Expertise

Evolutionary Genomics & Bioinformatics Molecular Evolution, Population & Quantitative Genetics, Model based statistical inference for genetic / sequence data, Genetics of adaptation.

I am comfortable with most population & quantitative genetics studies (both theoretical and empirical) and both population and experimental evolution approach. I am also pretty comfortable with studies using a phylogenetic approach and probably less comfortable with evolutionary ecology studies.

Jeremiah W. Busch

School of Biological Sciences

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RESEARCH INTERESTS

I study the ecology and evolution of natural populations, with a particular interest in the evolution of floral traits. The diversity of floral traits in angiosperms has long been associated with the benefits of cross-pollination in nature. Members of the lab are especially interested in the evolutionary challenges faced by populations when cross-pollination is ineffective or costly. Specifically, current research focuses on three major themes: 1) mechanisms driving the recurrent evolution of self-fertilization in plants; 2) interactions between the evolution of ploidy and mating systems; and 3) the process of floral character displacement when species share pollinators. In each of these areas, we employ molecular analyses of polymorphism, studies in natural populations, and manipulative greenhouse experiments to elucidate the evolutionary processes that maintain or transform genetic diversity in the wild.

Editorial Expertise

Evolutionary ecology, population genetics, self-incompatibility, mating systems, molecular ecology, polyploidy, flower color polymorphism, character displacement, species range limits.

Luis-Miguel Chevin

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RESEARCH INTERESTS

I am an evolutionary geneticist interested in a range of questions relating to adaptive evolution, from its quantification at the phenotypic level to the analysis of its genetic underpinnings and population consequences. My research topics include notably the genetics of adaptation (selective sweeps, pleiotropy and complexity, parallel evolution), phenotypic plasticity, fluctuating phenotypic selection, extinction risk/evolutionary rescue, and ecological speciation. Most of my work is theoretical, based on quantitative and population genetic modeling. I also have empirical projects on halophile organisms (brine shrimp *Artemia*, micro-alga *Dunaliella salina*), as model systems for adaptation to extreme environments.

Editorial Expertise

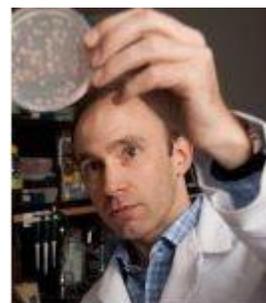
I review both theoretical and empirical papers within my area of expertise. On the theoretical side I have a preference for studies of responses to changing environments. On the empirical side I am especially (but not only) interested in studies of contemporary evolution in the laboratory (experimental evolution) or in the wild (long-term population studies).

Tim Cooper

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RESEARCH INTERESTS

My research interests center on understanding the processes underlying adaptive evolution. Using bacterial and computational experimental systems I aim to identify and integrate these mechanisms and examine how they depend on genetic and environmental factors.

Editorial Expertise

Much of my work is based on experimental evolution the lab-based study of evolving populations. This approach is multi-disciplinary, combining questions and techniques at molecular, organismal and ecosystem levels. We use experimental evolution to address questions including: what genetic changes allow bacteria adapt to novel environments? Do these changes have effects that depend on particular genetic backgrounds? What consequences does adaptation have on phenotypes such as robustness and evolvability? How does the relationship between genetic and phenotypic changes influence evolution?

Elizabeth Derryberry

Ecology and Evolutionary Biology

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RESEARCH INTERESTS

I am interested in how ecology drives the evolution of sensory and signaling systems, and, in turn, the interplay between divergence of mating signals and speciation. I make use of both traditional behavioral techniques and more recent computational and genomic techniques to test the morphological, environmental, and historical factors that shape variation in mating signals and the effect of these behavioral changes on social interactions. I integrate across levels of analysis (development, fitness benefit and evolutionary history) to better understand how and why mating signals evolve and implications for diversification. Taxonomically, my research focuses on birds, primarily because of the rich history of behavioral work on bird song as well as the genetic resources available. Most of my work is on the white-crowned sparrow (*Zonotrichia leucophrys*) and the zebra finch (*Taeniopygia guttata*) as well as comparative work within the diverse radiation of suboscines (Aves: Tyranni).

Editorial Expertise

Animal Behavior, Communication, Sensory Ecology, Phylogenetics, Hybrid Zones, Bird Song

Jeff Dudycha

Department of Biological Sciences

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RESEARCH INTERESTS

Research in my lab involves a mixture of evolutionary ecology, quantitative genetics, and comparative genomics. Most work uses the freshwater crustacean *Daphnia* as a model system, and our focus tends to be on adaptive and non-adaptive life history evolution. Current projects address genetic variation and plasticity of aging, and gene expression variation associated with different resource environments. Recently, we have embarked on a new project looking at the potential evolutionary responses of Notothenioid fish to predicted effects of climate change in the Southern Ocean.

Editorial Expertise

Life history evolution, Quantitative genetics, Evolutionary ecology (population/community), Phenotypic plasticity, Ecological/Evolutionary genomics (particularly transcriptomics), Freshwater systems, Southern Ocean.

Dmitry Filatov

Department of Plant Sciences

University of Oxford

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RESEARCH INTERESTS

My research interests are connected with experimental molecular population genetics, evolutionary genomics and molecular evolution. Most of the work in my lab has been focused on i) sex chromosome evolution in plants and ii) speciation and adaptation processes.

Editorial Expertise

Sexual dimorphism and sex chromosome evolution, Speciation and adaptation

Thomas Flatt

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RESEARCH INTERESTS

I study the evolution and mechanisms of life history and aging by applying population genomics (next-generation sequencing) and functional genetics to natural (e.g., clinal) and laboratory (artificial selection and experimental evolution) populations of the fruit fly (*Drosophila melanogaster*) which are phenotypically differentiated for life history. My group is particularly interested in using genomics to identify candidate genes and alleles likely shaped by selection and then to test these candidates for effects upon life history by using functional genetics (e.g., RNAi, synthetic recombinant populations, and CRISPR/Cas-9 gene editing). Currently, my laboratory is applying this toolbox to (i) latitudinally differentiated populations along clinal gradients, (ii) a major clinal inversion polymorphism, and (iii) a 30-year-long artificial selection experiment for longevity. Another focus of my research is on understanding the physiological basis of life history trade-offs. For example, I am using functional genetic, genomic and physiological tools to investigate how hormonal signaling pathways (e.g., insulin, juvenile hormone, ecdysone) mediate and modulate trade-offs between reproduction and lifespan, immunity, and somatic maintenance. Thus, my integrative work combines experimental evolution, evolutionary genetics, population and functional genomics as well as physiology in order to understand how life histories evolve.

Editorial Expertise

Life History Evolution, Life History Trade-Offs, Population Genomics, Experimental Evolution, Drosophila

Jeff Jensen

School of Life Sciences

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RESEARCH INTERESTS

The Jensen Lab uses a variety of approaches from population genetics in order to study the process of adaptation. This work can generally be summarized by the following three focal points: 1) Statistical & Computational Methodology, 2) Studying Adaptation in Natural Populations, 3) Studying Adaptation in Experimental Populations

Editorial Expertise

Theoretical & Computational Population Genetics, Empirical Population Genetics, Experimental Evolution

Britt Koskella

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RESEARCH INTERESTS

My research explores the role that species interactions, particularly between bacteriophages, bacteria, and plants, play in shaping diversity in nature. I use a unique combination of field studies of natural host-parasite interactions and laboratory-based, experimental coevolution techniques to identify large-scale patterns and rigorously test the underlying mechanics of the coevolutionary process. My work aims to: (i) scale our understanding of coevolution up from pairwise to multi-species interactions; (ii) compare patterns of natural host-associated microbial communities (microbiota) with processes of community formation and stability observed *in vivo*; and (iii) apply this understanding to predict and examine the impact of microbial coevolution on the health of natural, agricultural and human populations.

Editorial Expertise

Experimental evolution, Coevolution, Host-parasite interactions, Disease ecology and evolution Microbiome

Irby Lovette

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RESEARCH INTERESTS

My research centers on questions about the generation and maintenance of evolutionary diversity in natural systems across levels of biological organization that span genes and genomes, to behavior and community structure. Using a combination of phylogenetic, comparative, and experimental methodologies, I document temporal and geographic patterns of diversification, test hypotheses about the historical processes that produce those patterns, and explore their consequences for the present-day ecology and behavior of birds and other organisms. At the Cornell Lab of Ornithology, I supervise the Fuller Evolutionary Biology Program, where my overarching goal is to attract and support an intellectually broad and curious community of scholars that generates a steady output of high-quality research, and which trains undergraduates, graduate students, postdocs, and interns to become leaders in evolutionary biology, conservation genetics, behavioral ecology, and related fields.

Editorial Expertise

Evolution, genomics, ornithology, behavior, ecology, conservation

Gil Rosenthal

*Department of Biology
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RESEARCH INTERESTS

My research focuses on how individual behavioral decisions interact with macroevolutionary processes. I am particularly interested in mechanisms of mate choice and their evolutionary consequences. My current work uses field observations, experimental studies of behavior, and genomic analyses on natural hybrid zones of swordtail fish (genus *Xiphophorus*) and addresses the dual role of mate choice in facilitating and inhibiting genetic exchange among lineages. Specific projects include elucidating interactions between genotype and mate-preference learning, mapping of sex-chromosome and autosomal effects on male traits and female preferences, and population-genomic and functional characterization of the fitness of early-generation hybrids.

Editorial Expertise

Mate choice, Communication, Sexual selection, Speciation, Hybridization

Claus Rueffler

Department of Animal Ecology

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RESEARCH INTERESTS

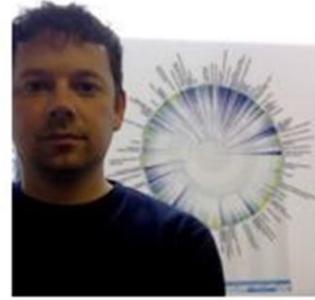
I am a theoretician interested in the evolution and maintenance of biological diversity. This interest encompasses speciation as well as the evolution of phenotypic diversity within species due to e.g. polyphenism, plasticity, bet-hedging or division of labor. As a theoretical modeling framework, I mostly use adaptive dynamics, an approximation of the evolutionary dynamics based on the technical assumption of rare mutations of small effect. A characteristic of adaptive dynamics is that fitness is derived from an explicit ecological scenario accounting for the feedback loop between intra- and interspecific ecological interactions on the one hand and evolution on the other hand.

Editorial Expertise

I have a dual background in biology and mathematics and can review a broad range of modeling papers. These include models of eco-evolutionary dynamics, life-history evolution, ecological speciation, division of labor but also models of purely ecological dynamics, e.g., dynamics of structured populations. I have rather little experience in experimental design and statistics and therefore do not feel qualified to review exclusively empirical papers. Furthermore, I do not feel qualified to review theory papers addressing issues in molecular population genetics.

Gavin Thomas

*Department of Animal and Plant Sciences
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RESEARCH INTERESTS

My research focuses on modelling the diversification of species and traits at a macroevolutionary scale. I am particularly interested in how we can use information on the phylogenetic relationships among species to infer how present day biodiversity has arisen over time and ask: How and why do lineages and traits diversify?; What are the consequences of varying tempo and mode of lineage and trait evolution for temporal and spatial patterns of diversity. My lab are currently preoccupied with collecting a large data base of bill shapes and plumage colours from all extant bird species (~10,000 species) using museum study skins (mainly the NHM at Tring and also the University of Manchester Museum).

Editorial Expertise

Phylogeny, diversification and trait evolution

Miriam Zelditch

*Museum of Paleontology
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RESEARCH INTERESTS and Editorial Expertise

My research focuses on morphological evolution, using quantitative methods to examine macroevolutionary questions, such as evolutionary tempo and mode and the ontogenetic origins of disparity, as well as empirical studies of variational properties: modularity, morphological integration and canalization. Recently, I have also analyzing rates of phenotypic evolution in populations adapting to unprecedented rates of environmental change. Most of my studies have focused on rodents, in particular, and vertebrate skeletal form, more generally. My technical expertise is in the use of geometric morphometrics in evolutionary and developmental studies. These methods present special challenges for studies of evolutionary tempo and mode because nearly all methods for conducting such studies are devised for univariate data but geometric shape data are inherently and necessarily multivariate and the number of variables typically far exceeds the number of individuals measured. These methods also complicate studies of morphological integration and modularity because the spatial structure of the data violates the assumptions underlying several commonly used methods. Although I have some experience with phylogenetic analyses of molecular data, I would not say that I am expert in such analyses.

Associate Editors through 2017:

Amy Angert

Departments of Botany and Zoology

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RESEARCH INTERESTS

Research in my lab is conducted at the interface of ecology and evolutionary biology. Much of our research focuses on the evolutionary ecology of species' geographic ranges, asking what limits adaptation at the edges of species' ranges, why closely related species vary by orders of magnitude in range size, and how ranges are likely to shift in response to climatic changes. Another line of enquiry focuses on the assembly of species within communities and mechanisms of species coexistence. These projects are united by a focus on demographic variation, which provides a means for understanding the population-level consequences of trait and fitness variation as well as for predicting community dynamics. Another unifying theme is mechanisms of, and constraints on, niche evolution, especially the role that trade-offs play in generating diversity among species and across environments.

Editorial Expertise

Evolutionary ecology, biogeography (especially evolution of range limits and range size/rarity), Local adaptation and fitness trade-offs, Quantitative trait variation, Community assembly

Ricardo Azevedo

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RESEARCH INTERESTS

I use a mixture of theory and computation to address fundamental questions in evolutionary genetics. One broad theme of my research is understanding how the genetic architecture evolves and, in turn, influences the evolution.

Editorial Expertise

Population genetics, evolutionary theory, experimental evolution, adaptive landscape, biological networks, speciation, robustness, epistasis, evolvability.

Janette Wenrick Boughman

Department of Zoology

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RESEARCH INTERESTS

My research program addresses two venerable questions in evolutionary biology: How do new species arise? How does selection cause genetic change in nature? Despite decades of research; however, we have only recently begun to reveal the mechanisms that generate new species in nature. I have focused primarily on whether sexual selection causes speciation. This long-standing but controversial question is receiving a lot of attention currently, partly because of the special role that mate choice can play in determining gene flow, and evidence is beginning to accumulate in its support. Progress in understanding how selection is acting in natural populations to cause evolutionary change at the genetic level has lagged behind. My work melds several rapidly advancing areas to investigate questions of fundamental importance to our understanding of how biodiversity is created, and how it is maintained. I use a combination of field observations, field experiments, laboratory experiments, and genomics to address these questions.

Editorial Expertise

Speciation, isolation, sexual selection, parallel evolution

Mark J F Brown

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RESEARCH INTERESTS

My research has 3 main strands. I work on the evolutionary ecology of host-parasite interactions, particularly in complex multi-host/multi-parasite systems, using field and lab approaches, and molecular tools where necessary. My systems of focus are bumblebees, and honeybees and ants to a lesser degree. I am also interested in the conservation biology of social insects, particularly bees, using field approaches and DNA barcoding. Finally, I have broad interests in the behaviour, ecology, and evolution of insect societies.

Editorial Expertise

host-parasite evolutionary ecology, social insect biology, DNA barcoding, kin selection

Andrea Case

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RESEARCH INTERESTS

I study the genetics and evolutionary ecology of reproductive systems in plants, specifically where more than one sex morph is present within populations. My recent research has focused on the maintenance of females in populations with hermaphrodites (a.k.a. gynodioecy). My primary interest is in explaining variation in sex expression and sex ratio among populations, and the distribution of sexual variation across clades.

Editorial Expertise

gender and sexual polymorphisms, ecological and evolutionary genetics, life history evolution, sex determination, cytonuclear interactions, male sterility/hybrid incompatibility, phylogeography, plant reproduction (mating systems, breeding systems, and sexual systems); less comfortable with theory

Suzanne Edmands

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University of Southern California*

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RESEARCH INTERESTS

My research spans a range of basic and applied questions in population and evolutionary genetics. A major focus concerns genetic mechanisms underlying reproductive isolation and environmental adaptation, using the copepod *Tigriopus californicus* as a model. A second focus involves spatial and temporal genetic variation in natural populations, with a particular emphasis on species and questions that are important for conservation and management. Currently funded projects include 1) a phylogenetic study of the evolution of hybrid inviability loci in *Tigriopus*, 2) genomics of thermal and osmotic stress tolerance in *Tigriopus* and 3) genetics and evolution of the endangered Channel Island Fox.

Editorial Expertise

Speciation, Inbreeding and outbreeding depression, Hybridization, Marine population genetics, Conservation genetics

Jan Engelstädter

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RESEARCH INTERESTS

My research focuses on two fundamental questions within evolutionary biology: (1) how do pathogens evolve and co-evolve with their hosts, and (2) why are sex and recombination so widespread in nature? I tackle these questions using a quantitative approach that involves both mathematical modelling and experimental evolution with bacteria. Specific research themes in my lab include the evolutionary consequences of natural transformation in bacteria, antibiotic resistance evolution, *Wolbachia* and other reproductive parasites of arthropods, and models of host-parasite coevolution.

Editorial Expertise

Mathematical modelling, Experimental evolution, Host-parasite coevolution, Evolution of antimicrobial drug resistance

Alistair Evans

School of Biological Sciences

Monash University

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RESEARCH INTERESTS

I am an evolutionary morphologist with interests in functional morphology, phenotypic evolution, paleontology and evo-devo, mainly of mammalian dentitions. I have worked on methods for quantitative analysis of morphology, including complexity, and macroevolutionary trends in body size. My work strives to integrate our understanding of the morphogenesis of teeth with functional and macroevolutionary trends, including the inhibitory cascade model of mammalian tooth development and evolution.

Editorial Expertise

Mammalian evolution, Nutritional ecology, Vertebrate paleontology, Vertebrate evolutionary developmental biology, Phenotypic evolution, Functional morphology, Morphometrics (including geometric morphometrics)

Matt Friedman

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RESEARCH INTERESTS

Understanding the evolutionary assembly of modern vertebrate biodiversity is the common goal of our research. Current projects span vertebrate history, from the divergence of jawed vertebrates deep within the Palaeozoic to the origin of novel bodyplans in the Cenozoic. These diverse topics demand a range of analytical approaches. We apply phylogenetic reconstruction, morphometry, computed tomography, simulation, statistical modelling, comparative anatomy, and mechanical and chemical preparation of fossils in order to deliver unique perspectives on patterns of vertebrate evolution over geological timescales.

Editorial Expertise

My research interests can be described as broadly macroevolutionary, including: systematics/phylogenetic inference, divergence-time estimation, comparative methods, ecomorphology/functional anatomy and paleobiology.

Jarrold Hadfield

Institute of Evolutionary Biology

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RESEARCH INTERESTS

I mainly work in the area of quantitative genetics; the study of inheritance, selection and evolution of complex traits. I use a combination of theory, statistical inference and experimentation in order to address questions regarding the form of natural selection and the nature of heritable variation. Most of my empirical work is carried out on wild populations of bird, but my theoretical and statistical work covers a broader taxonomic range. Specific projects in my lab cover the quantitative genetics of family interactions, the evolution of local adaptation, statistical methods for pedigree reconstruction and analysis, and phylogenetic comparative methodology.

David W. Hall

Department of Genetics

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RESEARCH INTERESTS

In my lab we utilize mathematical models and experiments in yeast to address various evolutionary questions. We are currently interested in determining the mutation rate and spectrum in several ascomycete yeasts, both at the molecular and fitness levels, and how they shape genome evolution and adaptation. We are also currently interested in the evolution of genes in regions of the genome exhibiting high levels of recombination. In the past, we have examined rates of adaptation, the evolution of selfish elements, life cycle evolution, sexual selection and reinforcement, and rates of substitution and polymorphism in social insects.

Editorial Expertise

Population genetics, Theoretical population genetics, Microbial evolutionary genetics, Genome evolution, Genetic conflict, Sexual selection, Speciation

Andrew G. McAdam

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RESEARCH INTERESTS

I am an evolutionary ecologist interested in the process of adaptation, including the ecological causes of natural selection, and levels of genetic variation and covariation. I have studied maternal effects as early-life environmental effects (including maternal behavior), transgenerational phenotypic plasticity and a source of indirect genetic variation. Recently I have also become interested in other sources of indirect genetic effects arising from competitive and social interactions with neighbours. I typically study wild populations (mostly small mammals) that are simple enough to be tractable, but which still retain the complexity that is inherent in natural systems.

Editorial Expertise

Maternal effects, natural selection, quantitative genetics in the wild life history evolution, phenotypic plasticity adaptation, mammals. Although I am not strong in theory, I am generally capable of assessing the quantitative/statistical aspects of most manuscripts.

Joanna Masel

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RESEARCH INTERESTS

I am an evolutionary theorist. My research is divided between analytical theory, evolutionary simulations, and empirical but dry lab bioinformatic work. Organismically, I am most familiar with *Saccharomyces* yeast. My primary interests at the moment are in the robustness and evolvability of living systems; integration of biochemical and other mechanistic constraints into evolutionary theory;

Editorial Expertise

I am something of a generalist, able to make connections between disciplines, including to biochemistry and some other fields outside Evolution's traditional focus. That said, theoretical population genetics applied to novel scenarios is my core interest, independent of what those scenarios are. While unable to judge experimental methods, I am interested in experimental work that has strong ties to theory for its interpretation, e.g. as found in some experimental evolution work.

Dan Rabosky

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RESEARCH INTERESTS

I study the causes of evolutionary radiations. Why do some groups of organisms contain so many species, and why do many other groups contain so few? Why do some groups have such tremendous ecological and morphological diversity? How do ecological interactions influence the diversification of species and phenotypes, and how does diversification in turn affect ecological community structure? I address these questions using a combination of fieldwork, molecular phylogenetics, and mathematical and computer modeling. We also develop new methods for modeling macroevolutionary dynamics. Ultimately, we hope to understand why some groups undergo dramatic evolutionary explosions and why many other groups do not.

Editorial Expertise

Macroevolution, diversification rates, speciation, extinction, phenotypic evolution, phylogenetic comparative methods, theory and methodology for macroevolutionary analyses, biogeography of Australia.

Rosemary Redfield

Professor Zoology

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RESEARCH INTERESTS

Most of my research addresses the question of whether bacteria have any processes functionally equivalent to sexual reproduction – the mixing together and reassortment of genetic material from two individuals. The answer has major repercussions because the function of sexual reproduction remains one of the most basic unsolved problems in evolutionary biology. If bacteria do have 'parasexual' processes that evolved because making new combinations of genes is beneficial, then studying these processes in bacteria could shed light on the evolution of sex in eukaryote organisms such as ourselves. If they do not, as my research indicates, then a successful explanation of the evolution of sex must be built on features not shared between bacteria and eukaryotes.

Editorial Expertise

Evolutionary processes in bacteria, especially gene transfer (conjugation, transformation); Genome evolution, especially in bacteria and protists; Evolution of sexual reproduction, especially in protists.

Liam J. Revell

Department of Biology

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RESEARCH INTERESTS

Research in my lab is concentrated in two main areas: computational method development for phylogenetics (primarily phylogenetic comparative biology); and evolutionary ecology of reptiles. I am presently conducting most of my computational method development in the R language and statistical computing environment and I developed, support, and maintain an extensive, multifunctional R phylogenetics library, 'phytools.' Students and postdocs in my lab are presently conducting research on tropical reptiles. For instance, we are studying adaptation to urban environments in Puerto Rican Anolis lizards; and we are investigating the evolutionary diversification and conservation genetics of an imperiled clade of Caribbean boas.

Editorial Expertise

Phylogenetics; Evolutionary Biology; Herpetology.

Derek Roff

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RESEARCH INTERESTS

I am an evolutionary population ecologist with wide-ranging interests in population and quantitative genetics, life-history, and the importance of trade-offs in shaping life history evolution. My work is both theoretical and empirical, and I have studied organisms ranging from seals, birds and fish to fruit flies and planktonic crustaceans. Much of my current research focuses on insects as model systems.

Editorial Expertise

Quantitative genetics, Life history theory and analysis, Ecological genetics, Evolution of behavior

Andrea Sweigart

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Email: sweigart@uga.edu*



RESEARCH INTERESTS

My research investigates the genetics of adaptation and speciation. We are interested in both the maintenance of variation within natural populations and the process of divergence between species. Several projects in the lab aim to identify the molecular genetic mechanisms and evolutionary dynamics of hybrid incompatibilities. We are also interested in the genomic and evolutionary consequences of mating system transitions and divergence with gene flow. Much of our research is focused on the *Mimulus guttatus* species complex; current projects are investigating the molecular functions and evolution of hybrid sterility loci, the genetic basis of hybrid lethality, the genomic effects of self-fertilization, mechanisms of local adaptation, and genome-wide patterns of introgression between sympatric populations.

Editorial Expertise

Speciation, Hybrid incompatibilities, Genetics of adaptation, Polyploid evolution, Mating system evolution

Joe Tobias

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RESEARCH INTERESTS

I am broadly interested in evolutionary ecology, from microevolutionary processes acting on individuals to macroevolutionary patterns playing out across large spatial, temporal and taxonomic scales. My research combines field data and experiments with molecular phylogenetics, evolutionary modeling and comparative analyses to help explain the origin and structure of biodiversity, with a focus on birds. I am particularly interested in clarifying the drivers of phenotypic variation, speciation and patterns of community assembly, and in how these insights can help us to understand and manage the response of biological systems to environmental change.

Editorial Expertise

Signal evolution, Acoustic signals/birdsong, Reproductive isolation, Adaptive radiation Macroevolution Phylogeography, Species interactions Comparative analysis