Quantitative and Systems Biology

GRADUATE STUDIES AT UNIVERSITY OF CALIFORNIA, MERCED (M.S., Ph.D.)

ACCELERATING DISCOVERY: The Quantitative and Systems Biology (QSB) Graduate Group at UC Merced offers cross-disciplinary doctoral and masters training to students from many fields in science and engineering, in diverse areas of biological research. With outstanding faculty across seven disciplines, QSB offers unique and competitive advantages to its diverse student body. QSB students train to communicate across boundaries while mastering core disciplines and skills.

QSB invites applications from all aspiring experimental, field and computational biologists who have basic training and experience in one or more core research skills such as laboratory work, fieldwork, mathematical modeling, statistics or computer programming. Students with diverse backgrounds, talents, and interests are encouraged to apply. A non-mandatory rotation track is available to first-year students.

DISCIPLINARY STRENGTHS

- Biochemistry and Molecular Biology
- Cell and Developmental Biology
- Computational Biology and Bioinformatics
- Ecosystem Ecology
- Mathematical and Theoretical Biology
- Microbial Evolution and Ecology
- Microbiology and Immunology
- Molecular and Cell Biology
- Molecular Evolution and Genomics
- Molecular Systems Biology
- Neurobiology
- Organismal and Integrative Biology
- Physical Biology
- Physiology
- Population Ecology, Genetics and Genomics
- Structural Biology
- Synthetic Biology
- Systems Ecology

CONTACT

For additional details, please visit our website, **qsb.ucmerced.edu**, or contact:

MIRIAM BARLOW, *Program Chair*
EMAIL: mbarlow@ucmerced.edu

KIRK JENSEN, *Admissions Chair*
EMAIL: kjensen5@ucmerced.edu

CLARISSA NOBILE, *Recruitment Chair*
EMAIL: cnobile@ucmerced.edu

INTERDISCIPLINARY TRAINING

QSB faculty collaborate across seven academic units: molecular cell biology, life and environmental sciences, chemistry, physics, applied mathematics, biological engineering and cognitive and information sciences.

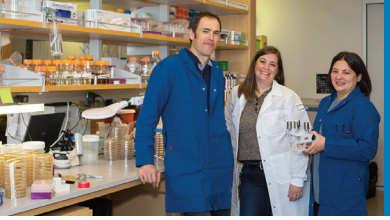
QSB aims to increase diversity in the workforce of scientists. In QSB, biologists are encouraged to train across scientific disciplines (e.g. physics, engineering, mathematics), and students in any field of science may train to become biologists. QSB has recently begun offering a Molecular and Cell Biology (MCB) concentration, which provides in-depth training in 'wet-lab' experimental findings and techniques.

FUNDING OPPORTUNITIES

Ph.D. students in good standing receive four years of year-round financial support, including payment of fees and tuition. Each doctoral student receives a base stipend of $25,000 per year. Students are typically supported by teaching and research assistantships, which can be supplemented by a variety of fellowships, awards and other forms of financial assistance.

TO APPLY

Applicants are encouraged to visit the QSB website, **qsb.ucmerced.edu** for details and to contact QSB faculty members whose research is of interest. All potential applicants are required to complete the General Test of the Graduate Record Examinations (GRE) and include a Curriculum Vitae.



Faculty

QUANTITATIVE AND SYSTEMS BIOLOGY

DAVID ARDELL — molecular and cell biology | Computational biology and evolution of gene expression mechanisms

MIRIAM BARLOW — molecular and cell biology | Experimental evolution of antibiotic resistance in bacteria

LAURA BEASTER-JONES, *Assistant Teaching Professor* **— molecular and cell biology** Evolution and development of chordates, developmental gene regulatory networks

ANNA BEAUDIN — molecular and cell biology | Defining origin of developmentally-restricted immune cells and developmental basis of immune dysfunction

MICHAEL BEMAN — life and environmental sciences | Microbial ecology and biogeochemical cycling in the oceans

JESSICA BLOIS — life and environmental sciences | Terrestrial paleoecology, niche and community modeling and phylochronology

WEI-CHUN CHIN — biological engineering Polymer physics and engineering of cellular and environmental systems

MICHAEL CLEARY — molecular and cell biology | Cell fate decisions and regulation in *Drosophila* neural stem cells and RNA decay

MICHAEL COLVIN — chemistry | Models of biological processes and molecular dynamics of disordered proteins

MICHAEL DAWSON — life and environmental sciences | Evolutionary ecology, biogeography and phylogeography of marine invertebrates

EVA DE ALBA — biological engineering Biochemical and biophysical approaches to understanding the molecular mechanisms regulating inflammation and programmed cell death.

DANIELLE EDWARDS — life and environmental sciences | Ecological, phenotypic, genomic and behavioral evolution of reptiles and amphibians

ARIEL ESCOBAR — biological engineering Cardiac cellular signaling and techniques to study cardiac cells in vivo

FABIAN FILIPP — molecular and cell biology Systems biology, fluxomics of cancer metabolism and metabolic disease

CAROLIN FRANK — life and environmental sciences | Genome and community dynamics of bacterial endophytes in conifer trees

MARCOS GARCIA-OJEDA, *Associate Teaching Professor* **— molecular and cell biology** General microbiology, microbial systems

XUECAI GE— molecular and cell biology Cell signaling in neural development, brain tumors and neurological disorders

AJAY GOPINATHAN — physics | Theory at the interface of biophysics and soft condensed matter physics

STEPHEN HART — life and environmental sciences | Terrestrial wildland ecosystems ecology, plant and soil microbe interactions

AARON HERNDAY — molecular and cell biology | Epigenetic and transcriptional networks, metabolic engineering of yeasts

LINDA HIRST — physics | Experimental soft matter physics and biophysics

KATRINA HOYER — molecular and cell biology | Immunological tolerance and auto-immune disease, regulatory T cells

EMILIA HUERTA-SANCHEZ — molecular and cell biology | Human population genomics, biostatistics and molecular evolution

KIRK JENSEN — molecular and cell biology Parasite pathogenesis and immunology, toxoplasma and host-immune responses

SHILPA KHATRI — applied mathematics Fluid-structure interactions and multiphase flows in the ocean

CHANGQING LI — biological engineering Cancer imaging, cancer therapy, fluorescence molecular tomography, x-ray imaging, biomedical imaging

BIN LIU — physics | Bacterial motility in complex media, single-cell behavior in biological processes

ANDY LIWANG — chemistry | Structural biology of circadian clock proteins and nucleic acids, NMR spectroscopy

PATRICIA J. LIWANG — molecular and cell biology | Biochemistry and structural biology of chemokines, anti-HIV microbicides

GABRIELLA LOOTS, *Lawrence Livermore National Laboratory* **— molecular and cell biology** | Organismal systems biology, limb and skeletal development, genetics of bone metabolism, transcriptomics

JENNIFER MANILAY — molecular and cell biology | Developmental immunology, cell fate regulation, hematopoiesis

KARA McCLOSKEY — biological engineering Stem cell and tissue engineering for regenerative medicine applications

EMILY JANE McTAVISH — life and environmental sciences | Computational approaches to big trees and big data, phylogenetics genomics, The Open Tree of Life

EMILY MORAN — life and environmental sciences | Evolutionary ecology of plant responses to environmental change

VICTOR MUÑOZ — biological engineering Protein folding, structure prediction and design, protein aggregation

CHIH-WEN NI — biological engineering Mechanobiology, angiogenesis, vascular biology

CLARISSA NOBILE — molecular and cell biology | Molecular development of microbial communities, biofilm formation

RUDY ORTIZ — molecular and cell biology Aldosterone in cardiovascular disease and Angiotensin II in metabolic diseases

NÉSTOR J. OVIEDO — molecular and cell biology | Stem cell regulation, cancer and regeneration in planarians

SCOTT ROY, *San Francisco State University* **molecular and cell biology** | Molecular evolution, gene/genome structure, intragenomic conflict, balancing selection, sex chromosomes and determination

RAMEN SAHA — molecular and cell biology Epigenetic mechanisms of neuronal gene transcription, roles in mental health and autism

JASON SEXTON — life and environmental sciences | Plant adaptation, species range limits biological invasions and evolutionary conservation science

SUZANNE SINDI — applied mathematics Mathematical biology, dynamical systems and computational biology and bioinformatics

MARK SISTROM — life and environmental sciences | Viral evolution, metagenomics and genomics with a focus on comparative methods

PAUL SMALDINO — cognitive and information sciences | Population dynamics, social and cultural evolution, self-organization, mathematical and computational modeling

ANAND BALA SUBRAMANIAM — physics | Experimental biophysics, cellular reconstitution, experimental synthetic biology

SUSANNAH TRINGE, *DOE Joint Genome Institute* | **life and environmental sciences** Sequence-based approaches to studying microbial community assembly, function and dynamics

CHRISTOPHER VINEY — biological engineering | Biomolecular materials, biologically inspired material synthesis and processing

AXEL VISEL, *DOE Joint Genome Institute* **molecular and cell biology** | Human functional genomics and enhancers in development and disease

ZHONG WANG — *DOE Joint Genome Institute* **molecular and cell biology** | Applications of high performance computing to big-sequencing data and machine learning

FRED WOLF — molecular and cell biology Genetic and neural coding of behavior in *Drosophila*

STEPHANIE WOO — molecular and cell biology | Endoderm development and epithelial morphogenesis in zebrafish

TANJA WOYKE, *DOE Joint Genome Institute* **life and environmental sciences** | Microbial genomics of candidate phyla representatives and development of functionally targeted single-cell approaches

JING XU — physics | Experimental biophysics, quantitative biology single-molecule analysis of molecular motors

JUSTIN YEAKEL — life and environmental sciences | Animal foraging and food web dynamics over space and time

MARIA ELENA ZOGHBI — molecular and cell biology | Structural, biochemical and functional studies of membrane transport proteins

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