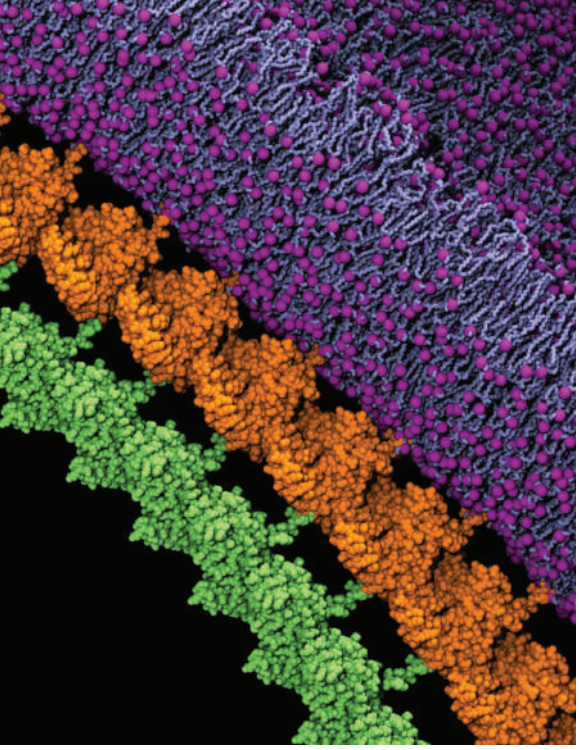

NSF-CREST Center for Cellular and Biomolecular Machines

UNIVERSITY OF CALIFORNIA MERCED

The CREST Center for Cellular and Biomolecular Machines (CCBM) at the University of California, Merced uses an interdisciplinary approach combining physical, biological and engineering methods to understand and control the functioning of multi-scale assemblies of biomolecules and cells and to design and develop novel bio-inspired functioning machines ranging from designer cells and tissue to diagnostic and therapeutic devices.

GRADUATE AND UNDERGRADUATE FELLOWS OF THE CENTER WILL BE ABLE TO TAKE ADVANTAGE OF :

- an interdisciplinary graduate training emphasis in Interdisciplinary Biophysical Sciences, Biomaterials and Biotechnology (IB3)
- training modules in nanobio fabrication, imaging and spectroscopy, and computation and modeling
- participation in all center activities including networking and professional development opportunities, center meetings and events, career skills workshops and more
- entrepreneurship and K-12 school outreach opportunities
- generous academic year and summer stipends, travel fellowships and more

CCBM
NSF-CREST
CENTER FOR CELLULAR AND BIOMOLECULAR MACHINES

THRUST 1: BIOMOLECULAR MACHINES

Proteins are true cellular nanomachines that perform sophisticated biological functions by self-assembling into dynamic 3D structures that use thermal energy to change shape in response to specific stimuli. Amid their many functions, proteins make for excellent nanoscale instruments.

THRUST 2: MACROMOLECULAR ASSEMBLIES AND HYBRID DEVICES

The high rate of discovery in nanotechnology is permitting us to realize nanomaterials with interesting new properties that can be used for building hybrid devices in conjunction with biomolecules. We focus on several of these applications including novel therapeutic delivery systems and nanoparticle based biosensors.

THRUST 3: CELLULAR AND MULTICELLULAR SYSTEMS

Large scale assemblies composed of multiple cells are ubiquitous, ranging from tissue to biofilms, and exhibit striking emergent behaviors controlled by cell mechanics and cell-cell interactions. We are developing new methods to study and guide the development of bacterial communities and differentiating tissue.

University of California Merced | 5200 N. Lake Road | Merced, CA 95343

ccbm.ucmerced.edu

CONTACT

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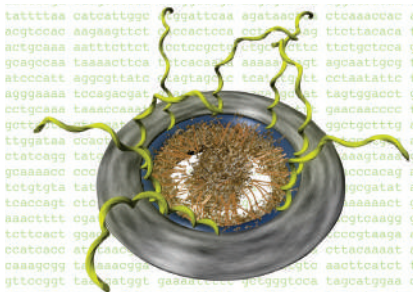

Faculty

CENTER FOR CELLULAR AND BIOMOLECULAR MACHINES

RYAN BAXTER, *chemistry*
single electron transfers, electro-responsive organic materials, synthetic methods and real-time reaction monitoring

DANIEL BELLER, *physics*
theoretical soft condensed matter, liquid crystals, active matter, population dynamics

WEI-CHUN CHIN, *bioengineering*
polymer physics and engineering of cellular and environmental systems

MIKE COLVIN, *chemistry and chemical biology*
models of biological processes and molecular dynamics of disordered proteins

KINJAL DASBISWAS, *physics*
theoretical biological physics, cell and tissue mechanics, biomaterials

EVA DE ALBA, *bioengineering*
protein engineering, structure, function and assembly; specific focus on inflammation and cell death; NMR, electron microscopy, optical traps

ANAND GADRE, *stem cell instrumentation foundry*
nanotechnology, medical device development, sensor development, drug delivery

XUECAI GE, *molecular and cell biology*
neurodevelopment, cell signaling, primary cilia, developmental disorders

SAYANTANI GHOSH, *physics*
experimental condensed matter physics, magnetism, metamaterials, nanoscience and quantum systems

ARVIND GOPINATH, *mechanical engineering*
fluid dynamics, polymers and active soft matter – theory and simulations

AJAY GOPINATHAN, *(co-director), physics*
theoretical biophysics, biopolymers, transport and collective behavior

AARON D. HERNDAY, *molecular cell biology*
molecular genetics, transcriptional networks, microbial epigenetics, genetic engineering, synthetic biology

LINDA HIRST, *physics*
experimental soft matter physics and biophysics

BIN LIU, *physics*
bacterial motility in complex media and single-cell behavior in biological processes

ANDY LIWANG, *chemistry and chemical biology*
structural biology of circadian clock proteins and nucleic acids, NMR spectroscopy

KARA E. MCCLOSKEY, *materials science and engineering*
stem cell and tissue engineering for regenerative medicine applications

KEVIN MITCHELL, *physics*
theoretical nonlinear dynamics, chaotic transport, atomic and molecular physics, fluids

VICTOR MUÑOZ, *(co-director), bioengineering*
protein folding, structure prediction and design, protein aggregation

JOEL A. SPENCER, *bioengineering*
biomedical optics, intravital imaging and sensing, tissue regeneration and transplantation

ANAND BALA SUBRAMANIAM, *bioengineering*
experimental biophysics, cellular reconstitution, experimental synthetic biology

SHAHAR SUKENIK, *chemistry and chemical biology*
experimental biophysics; protein structure, function, and interaction in the cellular environment

YUE JESSICA WANG, *materials science and engineering*
organic electronics, multi-functional polymers, additive manufacturing for wearable electronics

STEPHANIE WOO, *molecular cell biology*
developmental biology, morphogenesis, cytoskeletal dynamics, gut development, epithelial development

JING XU, *physics*
experimental biophysics, quantitative biology single-molecule analysis of molecular motors

TAO YE, *chemistry and chemical biology*
biomolecular science and engineering, nanotechnology

PRINTED ON RECYCLED PAPER
NOVEMBER 2018