

Potential Faculty Mentors, Research Interests, and Techniques 2017:

Faculty Mentor	Research Area and Expertise
Ken Bost, Professor	DNA vector design and soybean biotechnology development; Co-founder and Chief Scientific Officer for SoyMeds, Inc. Techniques Used: DNA vector development, generation of transgenic soybeans, protein chemistry, mass spectrometry, confocal microscopy, laser capture microdissection, PCR
Richard Chi, Assistant Professor	Membrane trafficking, yeast genetics, protein biochemistry Techniques Used: live cell microscopy, confocal imaging, fluorescently tagged proteins, mass spectrometry
Didier Dreau, Associate Professor	Microenvironment and the mechanisms associated with epithelial cell differentiation and migration; nanoparticle cell interaction and stability in epithelial cells Techniques Used: 3D analytical biotechnologies, nanoparticle cell targeting and interactions, laser capture microdissection, IVIS whole mouse imaging, confocal microscopy
Valery Grdzellshvili, Associate Professor	Engineering different RNA viruses [vesicular stomatitis virus (VSV)]; Identification and characterization of cellular and viral determinants of susceptibility or resistance of target cells Techniques Used: Gene engineering approaches to design and produce novel recombinant viruses, molecular cloning, PCR, mammalian cell culture, flow cytometry, RNA analysis, protein analysis, confocal microscopy, IVIS whole mouse imaging.
James Oliver, Professor	Identification and characterization of virulence factors of the pathogen <i>Vibrio vulnificus</i> , a natural inhabitant of oysters and the leading cause of seafood related deaths in the USA Techniques Used: high throughput Ion Torrent sequencing and genome alignment using CLC sequence software, PCR, genome alignment, expression microarrays and RNA sequencing, reporter assays for stress response and viability, biochemical assays
Matthew Parrow, Associate Professor	Biodiversity and phylogenetic systematics of eukaryotic microorganisms, applications of eukaryotic microbes such as fungi and algae in biofuel production and other biotechnologies Techniques Used: confocal microscopy, high throughput Ion Torrent sequencing and genome alignment using CLC sequence software, PCR, molecular phylogenetics, biochemical assays
Adam Reitzel, Associate Professor	evolution and ecology of coastal invertebrates <i>Nematostella vectensis</i> by using an interdisciplinary approach of comparative genomics, molecular biology, population genetics, evolutionary ecology, and field studies Techniques Used: whole genome bioinformatics analysis, high throughput Ion Torrent sequencing and genome alignment using CLC sequence software, molecular phylogenetics, confocal microscopy, qPCR
Christine Richardson, Associate Professor	Developmental and evolutionary impact of genome stability in mammalian cells and impact of exposure to dietary supplements and environmental agents that may alter DNA stability and genome organization and impact evolution; nanoparticle cell interaction and stability in multiple cell types Techniques used: DNA vector design and transgenic mouse development, whole genome bioinformatics analysis expression microarray, RNA sequencing, confocal microscopy, laser capture microdissection, IVIS whole mouse imaging, flow cytometry
Amy Ringwood, Associate Professor	Study of anthropogenic and environmental stressors such as metals, oil products, nanoparticles on organismal health and population sustainability of marine organisms; understanding cellular responses to new materials facilitating the development of smart nanoproducts Techniques used: biochemical assays, confocal microscopy, PCR, qPCR, protein chemistry, molecular biometrics
Molly Redmond, Assistant Professor	Microbial ecology, biogeochemistry, marine microbiology, biodegradation and bioremediation, antibiotic resistance in wastewater and urban streams Techniques used: microbial cultivation, DNA sequencing, qPCR, microbial community analysis, whole genome analysis, metagenomics, gas

	chromatography
Bao-Hua Song, Assistant Professor	<p>Plant evolutionary and ecological genetics and genomics: integrated approaches to understand plant ecological adaptation and application in crop improvement</p> <p>Techniques used: whole genome bioinformatics analysis, high throughput Ion Torrent sequencing and genome alignments, molecular phylogenetics, confocal microscopy, qPCR. Knowledge of Python or similar by participant would be a significant advantage in this lab</p>
Todd Steck, Associate Professor	<p>Microbiome analysis to determine antibiotic resistance; bacterial source tracking (BST) to identify fecal contaminants in surface waters; Founder of BioTrackers, Inc. for commercial applications of BST monitoring</p> <p>Techniques Used: microbial community genome sequencing, genome alignment, pyrosequencing, qPCR, microscopy</p>
Andy Truman, Assistant Professor	<p>Understanding the role of molecular chaperones in cancer using quantitative proteomics, molecular biology, systems biology and model organisms</p> <p>Techniques used: CRISPR Cas9 gene targeting, mass spectrometry, PCR, genomics platforms, large scale protein purification, phosphorylation analysis, yeast and mammalian cell systems</p>
Shan Yan, Associate Professor	<p>DNA damage response (DDR), to detect aberrant DNA structures or stalled replication forks, and to coordinate DNA repair, checkpoint activation, cell cycle arrest, and senescence/apoptosis</p> <p>Techniques used: Xenopus egg extracts, confocal microscopy, systems biology</p>