Discovery Begins Here
Faculty Areas of Research Expertise
2015-16

Natural Sciences
Colorado State University
CONTENTS*

3 | Biochemistry & Molecular Biology
4 | Biology
8 | Chemistry
12 | Computer Science
14 | Mathematics
16 | Physics
18 | Psychology
22 | Statistics

* Faculty listed in this publication are regular faculty in the College of Natural Sciences on record with the University as of Fall 2015.
James Bamburg: The cytoskeleton and neurodegenerative disease; neurodegenerative diseases; Alzheimer’s disease

Chaoping Chen: Molecular and cell biology of retrovirus assembly and budding; HIV-1, protease autoprocessing, high-throughput screen, allosteric regulation

Norm Curthoys: Renal response to metabolic acidosis; neuronal atrophy after stroke

Jennifer De Luca: Mechanisms of mitotic chromosome segregation; cancer biology; birth defects

Santiago Di Pietro: Molecular mechanisms of intracellular protein transport; protein transport defect diseases

Jeff Hansen: Higher order chromatin structure and chromatin architectural proteins; cancer biology; Rhett Syndrome

P. Shing Ho: Nucleic acid structure and function; biomolecular halogen bonds; cancer biology; drug design

Paul Laybourn: The mechanism of eukaryotic transcriptional regulation in a chromatin context; transcription in chromatin; T-Cell leukemia; scientific teaching and instruction research

Karolin Luger: Structure and function of eukaryotic chromatin; cancer biology; cancer therapeutics; Rhett Syndrome; birth defects

Steven Markus: Molecular motors and cell division; cancer biology; birth defects; neurodegenerative diseases

Erin Osborne Nishimura: Mechanisms of gene regulation in embryogenesis; its application to understanding human development and diseases

Jennifer Nyborg: Transcriptional deregulation in leukemia cells; leukemia; cancer biology; virology (or human T-cell leukemia virus, HTLV)

Olve Peersen: RNA dependent RNA polymerases and viral replication complexes; poliovirus; hand-foot-mouth disease; foot-and-mouth disease
Eric Ross: Yeast prions as a model for amyloid diseases; prion diseases

Thomas Santangelo: Mechanisms and regulation of archaeal transcription; biofuels development

Laurie Stargell: Mechanisms of gene expression in yeast; cancer biology; K-12 outreach

Tim Stasevich: Regulation of eukaryotic gene expression by post-translational modifications; cancer biology

Tingting Yao: Regulation of gene expression and chromatin dynamics by ubiquitin conjugation & deconjugation; cancer biology

Lisa Angeloni: Behavioral ecology; evolution of reproductive behavior of fishes; human disturbance and wildlife behavior; behavior and conservation biology

Mike Antolin: Ecology; epidemiology and population genetics of infectious diseases; plague and prairie dogs; mule deer and chronic wasting disease (prions)
Meena Balgopal: Science education; writing in the curriculum as a way to integrate learning at multiple levels; evolutionary biology

Pat Bedinger: Plant molecular biology; the evolution and molecular mechanisms for speciation in wild tomato species in South America; regulation of pollen-tube growth and development, and plant cell wall structure in relation to biofuels

Dan Bush: Molecular biology; genetics and biochemistry in plants (beets, rice); photosynthesis and physiology of sugar transport; biofuels

Greg Florant: Physiology and metabolism of lipids (fatty acids) in mammals; hibernation in ground squirrels and marmots

W. Chris Funk: Conservation biology, population genetics (genomics), and evolutionary ecology; endangered species; gene flow and adaptation; vulnerability of stream organisms (frogs, fish, aquatic insects) to climate change

Deborah Garrity: Development and genetics of the cardiac organ in vertebrates (i.e. the heart); development and control of rhythms in the heart; zebrafish; microscopy and imaging

Cameron Ghalambor: Evolutionary ecologist and adaptive evolution; integrative biology (behavior, physiology, genetics); evolution of phenotypic plasticity; range limits and sensitivity to climate change; guppies; Island Scrub Jays; Channel Islands, California

Kim Hoke: Neural and behavioral evolution; development, molecular biology, genetics linking neurobiology and behavior; acoustic communication in (earless) frogs in South America; anti-predator behavior in guppies

Shane Kanatous: Physiology of mammals in extreme environments; myoglobin and mitochondrial function; culture of living cell lines in diving seals; Weddell seals from Antarctica; elephant seals from Coastal California

Alan Knapp: Ecology and ecosystem science of plants; physiological ecology of grasslands; global change including climate change, invasive plant species, restoration ecology, fire, and herbivory; Konza Prairie Long Term Ecological Research site

June Medford: Molecular biology and development in plants; plant synthetic biology - engineering of organisms for specific purposes; signal transduction and pattern formation; highly specific plant detectors; biofuels

Tai Montgomery: Molecular biology and genetics of small non-coding RNAs; regulation of gene expression; genomics and bioinformatics; nematode worm Caenorhabditis elegans
Janice Moore: Ecology and evolution of parasitic worms; animal behavior; alteration of behavior of parasitized hosts; acanthocephalan worms; cockroaches

Rachel Mueller: Molecular evolution of genomes, especially extremely large ones; molecular evolution and diversification of lineages; nuclear and mitochondrial genomes of salamanders

Don Mykles: Physiology and regulation of molting and limb regeneration in crustaceans (Caribbean land crabs); molecular biology and bioinformatics of transcriptomes and proteomes

Dhruba Naug: Behavioral ecology of nutrition and parasitism in honey bees; cognitive ecology and social behavior

Graham Peers: Photosynthesis and eco-physiology in single-celled algae; molecular biology, physiology and modern “-omics” techniques; improving photosynthetic yields of crops; mechanisms that protect algae from too much light and other abiotic stresses

Marinus Pilon: Molecular biology of plants; photosynthesis and essential metal cofactors copper and iron; physiology, cell, molecular biology and biochemistry in Arabidopsis

Elizabeth Pilon-Smits: Plant physiology; accumulation and detoxification of environmental pollutants; selenium hyperaccumulation; use of plants for environmental cleanup or as fortified foods

N. LeRoy Poff: Aquatic ecology, conservation and restoration of riverine ecosystems; effects of hydrology and hydraulics on species interactions; freshwater biodiversity and sustainability; effects of environmental alteration, including climate change

A.S.N. Reddy: Plant molecular biology, cellular processes, growth and development; calcium-mediated signal transduction and calcium sensors; basic and alternative splicing of pre-messenger RNAs; disease resistance; cell wall degrading enzymes for biofuel production

Mark Simmons: Phylogeny and taxonomy of the flowering plants; Celastraceae (the spindle-tree family); methods in molecular phylogenetics (using genomic data to reconstruct evolutionary relationships among species)

Dan Sloan: Evolutionary genomics and molecular evolution; diversity in genome size, structure, and function across the tree of life; evolution of endosymbiont or organelle genomes (and their reduction in size); plants, insects, and bacteria
Melinda Smith: Plant ecology and human-caused global changes; impacts of climatic change, biological invasions, eutrophication (e.g., increased N deposition), and altered disturbance; warm-season (C4-dominated) grasslands

Stephen Stack: Cytogenetics of plant chromosomes; meiosis and recombination in plants; genomics of tomatoes

David Steingraeber: Plant ecology and morphology (form and structure); *Mimulus gemmiparus*, Rocky Mountain monkeyflower

Joe von Fischer: Ecosystems ecology of interactions among plants, soil, and soil microbes; ecology methane-harvesting microorganisms; feedback between global change and methane emissions as a greenhouse gas; methane detection methods

Diana Wall: Ecosystem ecology of disturbance in extreme environments (Antarctica); soil biodiversity (nematodes in particular) and decomposition of organic matter; regulation of above and belowground control of pests and pathogens; McMurdo Antarctica Long Term Ecological Research site

Colleen Webb: Mathematical biology and theoretical ecology; evolution of traits important in ecological interactions; ecology of infectious diseases
Chris Ackerson: Nanoparticle chemistry; biological and bio-inspired synthesis of metal and metal oxide nanoparticles; application of metal and metal oxide nanoparticles to biological imaging and medicinal purposes; gold nanoparticle crystallography

B. George Barisas: Bioanalytical and biophysical chemistry; motions and distributions of cell surface molecules as probed by laser optical and imaging methods; lateral and rotational diffusion, fluorescence and phosphorescence, energy transfer, microscopy; cellular immunology and endocrinology

Elliott Bernstein: Physical, materials, and computational chemistry; structure, energy levels, photodissociation of isolated molecules and reactive intermediates; structure, energy levels, energy dynamics, photodissociation, and reactions of isolated clusters; spectroscopy of isolated and solvated neurotransmitters, amino acids, and sugars
**Eugene Chen**: Polymer, organometallic, inorganic, and materials chemistry; asymmetric, stereospecific, living, and coordination polymerizations; polymer photovoltaic solar cells; catalyst synthesis and catalysis for conversion of non-food biomass or biorenewable monomers into chemicals, fuels, or sustainable polymers

**Debbie Crans**: Bioinorganic and bioorganic chemistry; insulin enhancing compounds; chemical and biological mechanisms by which vanadium and other transition metal act; interaction with and transport of metal complexes across lipid interfaces and membranes; applications of NMR, EPR, and mass spectroscopy in biological studies

**Delphine Farmer**: Analytical and atmospheric chemistry; instrument development to make field measurements of gas- and aerosol-phase compounds using high resolution mass spectrometry; understanding oxidation of organic compounds in the atmosphere and biosphere-atmosphere exchange of biogenic and pollutant compounds

**Richard Finke**: Inorganic/organic, materials, catalysis; chemical catalysis; solar energy to fuels chemistry and catalysis; kinetic and mechanistic chemistry; asymmetric catalysis; nanocluster materials chemistry

**Ellen Fisher**: Analytical, materials and physical chemistry: Molecule-surface interactions; surface chemistry; modification of polymers; separations, plasma deposition, and etching of semiconductors; biomaterials; nanostructured inorganic and composite materials; photovoltaic materials; plasma-catalytic removal of pollutants

**Chuck Henry**: Bioanalytical and environmental chemistry; capillary electrophoresis; microchip electrophoresis and high performance liquid chromatography applied to the study of diseases and chemical toxicology; optical and electrochemical microfluidic biosensors; development of sensors for third-world countries

**Alan Kennan**: Organic and bioorganic chemistry; molecular recognition; self-assembly; development of novel biological recognition motifs; construction of synthetic receptors for small molecules of biological interest; design of catalytic peptides

**Amber Krummel**: Physical and materials chemistry; structure and dynamics in complex, condensed phase systems; multidimensional infrared spectroscopy has high time resolution and is sensitive to molecular structure – exploiting these traits to investigate systems related to biology, environmental chemistry, and energy
**Branka Ladanyi:** Physical, materials, and theoretical chemistry; theory and computer simulation of liquids, supercritical fluids, complex fluids, and interfacial systems; applications to solvent effects on chemical reactions; solvation dynamics; neutron scattering; vibrational relaxation; dielectric properties; nonlinear optics

**Nancy Levinger:** Physical and materials chemistry; spectroscopy and dynamics of molecules and chemistry occurring in the condensed phase; ultrafast time-resolved spectroscopy and dynamics of molecules at liquid interfaces, in confined environments, and in complex systems; sum frequency spectroscopy of interfaces

**Martin McCullagh:** Physical, biomolecular and theoretical chemistry; development of multiscale computational models to investigate protein-DNA interaction; self-assembly of DNA-based biomaterials; translocation of biomolecular machines along DNA

**Andrew McNally:** Organic and sustainable chemistry; development of new catalytic transformations; asymmetric catalysis applied towards bio-active molecules; transformations of renewable and abundant feedstocks into valuable chemical products

**Brian McNaughton:** Chemical biology, combinatorial chemistry, organic chemistry, molecular biology; small molecule-dependent, sequence-selective regulation of mRNA translation; inhibition of protein-protein interactions; targeted delivery of therapeutics and imaging reagents

**James Neilson:** Functional inorganic materials for energy and biomineralization; new materials and methodologies involving solid-state and solution-phase reactions, particularly those involving kinetic control; structure/property materials relationships using synchrotron and time-of-flight neutron scattering methods

**Amy Prieto:** Nanomaterials, inorganic, solid-state, and electrochemistry; development of synthetic methods for making nanoscale materials with applications in hydrogen storage; Li-ion batteries; photovoltaics

**Anthony Rappé:** Physical, inorganic, and theoretical chemistry; development of molecular mechanics and dynamics technologies as well as electronic structure techniques; application of these theoretical methodologies to catalytic processes
A. R. Ravishankara: Atmospheric chemistry; gas phase kinetics and photochemistry, heterogeneous chemistry, atmospheric field observations, and analyses of modeling results; furthering understanding of the earth's atmosphere, diagnosing, understanding of, and providing solutions to environmental issues

Melissa Reynolds: Biomaterials, analytical, heterogeneous catalysis and biointerfacial chemistry; metal organic frameworks as biocatalysts, polymer chemistry; tissue engineering, protein-material interactions; biodegradable polymer scaffolds and gels; antimicrobial agents; wound healing processes and endothelial cell mimics

Tomislav Rovis: Organic and organometallic chemistry; asymmetric catalysis; organometallic chemistry; new synthetic methods; synthesis of biologically important molecules

Yian Shi: Organic chemistry; new synthetic methods; asymmetric catalysis; synthetic and biological study of bioactive molecules

Matthew Shores: Inorganic and materials chemistry; design, synthesis and study of novel paramagnetic metal complexes, with the goal of controlling spin in molecular species and molecule-based materials; single-molecule magnetism, spin-crossover, and solar photoconversion

Steven Strauss: Analytical, environmental, inorganic and materials chemistry; synthetic main group, transition metal, and fluorine chemistry; synthesis of borane/carborane superweak anions, safe electrolytes for large-scale lithium batteries, fullerenes and metallofullerenes for nanoelectronics, and electroactive ion-exchange materials

Grzegorz Szamel: Physical, materials, and theoretical chemistry; equilibrium and nonequilibrium statistical mechanics of condensed phase systems

Alan Van Orden: Physical and analytical chemistry; single molecule detection and spectroscopy; laser spectroscopy; optical and scanning probe microscopy; biomolecule folding and interaction kinetics; semiconductor nanocrystals; optical sensors; solar photovoltaics

Robert Williams: Organic and biological chemistry; total synthesis of biologically active natural products; development of new synthetic methods; asymmetric synthesis of amino acids and peptide isosteres; biosynthesis of natural products; mechanism of action of anti-tumor antibiotics; DNA-binding proteins
Charles Anderson: Artificial intelligence; machine learning; reinforcement learning; neural networks; biomedical image and signal processing; data analysis and visualization

Asa Ben-Hur: Bioinformatics; machine learning

J. Ross Beveridge: Computer vision; model matching; sensor fusion; visual feature extraction; local search optimization; software environments

James Bieman: Software engineering; software measurement and metrics; software design; evaluation and testing; object-oriented software; software reuse

A.P.W. “Wim” Böhm: Design of multithreaded and message passing algorithms for numerical and search applications running on parallel main processors or co-processors

Christina Boucher: Computational problems in genomics and transcriptomics; genome sequencing and resequencing; detection of transcription regulatory element; development of bioinformatic tools

Hamidreza Chitsaz: Genomics; structural molecular biology; synthetic biology; robotics
Bruce Draper: Computer vision; machine learning; video analysis

Sudipto Ghosh: Software engineering; software modeling; software testing; middleware technologies; object-oriented, aspect-oriented, and component-based software development

Adele Howe: Artificial intelligence; planning; scheduling; optimization

Yashwant Malaiya: Quantitative security; vulnerability discovery; fault-tolerant computing; reliability; fault modeling; testing

Daniel F. Massey: Networks; network security

Ross McConnell: Algorithms; graph theory

Sangmi Pallickara: Big data for the sciences: storage, retrieval, integration, metadata, provenance, visualization

Shrideep Pallickara: Streaming systems; parallel algorithms; cloud computing; analytics; distributed systems; real-time stream processing

Christos Papadopoulos: Networks; network security and measurements; network architecture

Sanjay V. Rajopadhye: Systolic arrays; recurrence equations; parallel algorithms; application-specific processor arrays

Indrajit Ray: Computer and network security; applied cryptography; security modeling; risk management; cloud security

Indrakshi Ray: Security and privacy; software assurance; database systems

Jaime Ruiz: Human-Computer Interaction (HCI); mobile interaction; gestural interaction

L. Darrell Whitley: Artificial intelligence; machine learning; genetic algorithms; neural networks
Jeff Achter: Number theory; arithmetic geometry; mathematical ecology and evolution

Henry Adams: Applied algebraic topology; computational topology; combinatorial topology

David Aristoff: Numerical analysis; mathematical physics

Dan Bates: Numerical algebraic geometry; scientific computation

Anton Betten: Combinatorics; coding theory; design theory

Renzo Cavalieri: Algebraic geometry; moduli spaces

Kelly Chappell: Mathematics education

Margaret Cheney: Inverse problems; radar imaging

Gerhard Dangelmayr: Applied dynamical systems; pattern formation

Jeanne Duflot: Algebraic topology; algebraic geometry; K-theory

Jessica Ellis: Undergraduate mathematics education
Oleg Emanouilov: Partial differential equations; optimal control; inverse problems

Alexander Hulpke: Computational group theory; combinatorics; number theory; symbolic computation

Patrick Ingram: Number theory and diophantine geometry, with applications to holomorphic dynamics

Paul Kennedy: Mathematics education

Michael Kirby: Computational and applied mathematics; geometric methods in pattern analysis; empirical analysis of large data sets; optimization and mathematical modeling; signal and image processing; optimal low-dimensional systems and modeling

Jiangguo James Liu: Scientific computing, numerical analysis, mathematical biology

Rick Miranda: Algebraic geometry

Jennifer Mueller: Inverse problems; electrical impedance tomography; medical imaging; PDE’s

Iuliana Oprea: Dynamical systems; pattern formation; fluid dynamics, hydrodynamic and hydromagnetic stability and bifurcation; numerical analysis; mathematical modeling

Tim Penttila: Finite geometries

Amit Patel: Topological tools for data analysis; persistent homologies; persistence diagrams and Reeb graphs; identification of order in complicated geometries.

Chris Peterson: Algebraic geometry

Mary Pilgrim: Mathematics education

Olivier Pinaud: Partial differential equations; waves in random media; inverse problems; quantum transport

Rachel Pries: Arithmetic geometry; number theory; Galois theory

Patrick Shipman: Differential equations; mathematical biology; applied mathematics
**Mark Shoemaker:** Enumerative geometry; symmetries and geometric invariants; applications in mathematical physics

**Clayton Shonkwiler:** Differential geometry; geometric knot theory; polymer models

**Simon Tavener:** Multi-physics and multi-scale problems; numerical solution, sensitivities, and parametrization

**James Wilson:** Groups; algebras; computation

**Yongcheng Zhou:** Numerical methods for partial differential equations; mathematical biology; fluid dynamics

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**R. Mark Bradley:** Theory of nanoscale patter formation induced by ion bombardment of solid surfaces; continuum modeling, the theory of pattern formation in nonlinear systems, and computer simulations to develop an understanding of these patterns

**Kristen Buchanan:** Nanomagnetism; investigation of magnetization reversal and dynamics in magnetic thin films and patterned magnetic nanostructures; spin dynamics
Norm Buchanan: Neutrino properties and interactions

Roger B. Culver: Global Network of Astronomical Telescopes (GNAT), variable star observations

Jose de la Venta: Electronic, magnetic, optical, and structural properties of hybrid materials and devices; how properties of hybrid materials change with the dimensionality of the system

Richard E. Eykholt: Chaos and nonlinear dynamical systems

William M. Fairbank, Jr.: Single atom detection, neutrino anti-particle determination

Stuart Field: Static and dynamic properties of superconducting vortices and other magnetic flux structures; imaging of vortices, allowing direct spatial information about their static configurations and dynamic flow patterns

Martin P. Gelfand: Condensed matter theory

John Harton: Dark matter detection with the directional dark matter experiment DRIFT; ultra high-energy cosmic rays with the Auger Observatory in Argentina; calibration of the Auger telescopes

David A. Krueger: LIDAR technology used to study upper atmosphere

Siu Au Lee: Quantum computing, laser manipulation of atoms

Stephen R. Lundeen: Rydberg atom spectroscopy

Jacob Roberts: Ultracold plasma physics; novel ultracold atom cooling techniques

R. Steve Robinson: Plasmas and ion beams applied to thin film processing; electric space propulsion, ion drive

Kate Ross: Quantum and frustrated magnetism; the use of magnetic frustration in materials to produce exotic quantum phases of matter; magnetic excitations using inelastic neutron scattering

James R. Sites: Device physics of low-cost CdTe and CIGS thin-film solar cells; separating various solar-cell losses, explaining losses on a fundamental basis, and suggesting strategies for improved solar-cell performance
Walter Toki: Neutrino properties and interactions

Robert J. Wilson: Investigations of the fundamental forces and particles in the universe such as the properties of neutrinos and their interactions

Mingzhong Wu: Magnetization dynamics; spintronics; nonlinear spin waves; microwave magnetic materials and devices

Dylan Yost: High resolution atom spectroscopy

Pat Aloise-Young: Health behavior in late adolescence (primarily tobacco and alcohol use) and pro-environmental behavior

Evelinn Borrayo: Influence of psychological and social determinants of health behavior; clinical interventions to prevent, control, and treat chronic diseases, including interventions to address cancer disparities among medically underserved populations

Zinta Byrne: Employee engagement, fairness in the workplace, organizational culture and leadership; job attitudes, such as commitment and support
Silvia Sara Canetto: Cultural scripts of women and men and suicidal behaviors; interest, persistence and success in science and engineering; stereotypes of gender, sexual orientation and aging; women, culture, and human rights

Ernest Chavez: Underrepresented individuals in STEM, systemic reasons for underrepresentation; general academic achievement of underrepresented individuals

Anne Cleary: Human memory processes and their neural basis; people’s awareness of their memories; memory ability that remains during retrieval failure

Ben Clegg: Skill acquisition, including studies of implicit learning (knowledge acquired without any direct intention to learn it); how automation and technology use in training impact learning and skilled performance

Jeanette Cleveland: Issues related to aging in the workplace, women in organizations, diversity, and work-non-work; international trends in human resources

Brad Conner: Etiology of sensation seeking and behavior disorders; how genotypes and the sensation seeking personality type influence the onset and course of disorders and the engagement in health risk behaviors, such as drug abuse

Tori Crain: The interplay among work, family, and sleep; positive work-family experiences and the role of family-supportive workplace environments; occupational stress interventions

Deana Davalos: Temporal processing; clinical neuroscience; event-related potentials of timing and working memory

Ed DeLosh: Basic encoding and retrieval processes in human learning and memory; topics and issues of relevance to learning and memory in educational settings

Bryan Dik: Vocational psychology, with emphasis on a sense of calling in the work role: meaning, purpose, religion, and spirituality in career development; vocational interest measurement; computer-assisted career development interventions
Gwenith Fisher: Health and well-being among older workers; retirement, work ability, and prolonged working life; the work/non-work interface, including work/non-work conflict, enhancement, work/life balance, parental leave and return to work

Dan Graham: Social-ecological determinants of physical activity and healthy eating; multi-level interventions promoting health behavior; nutrition label use; eye tracking

Jennifer Harman: HIV prevention and intervention; relationship commitment; social support and health; parental alienation; power; attitude change; program evaluation

Kimberly Henry: Development and evaluation of community-based programs, practices, and policies to promote positive youth development and prevent risky and unhealthy behaviors among adolescents and young adults

Kurt Kraiger: The study of learning in ill-structured environments, e.g., online training and mentoring, with particular attention to aging workers

Janice Nerger: Neural processing of human color vision
Matthew Rhodes: The study of memory and metacognition, including their application to education and cognitive aging

Kathy Rickard: Lifestyle modifications and effects on well-being for the general population as well as those with medical disorders/food related disorders; child and family interventions

Don Rojas: Information processing abnormalities in disorders such as autism and schizophrenia using brain imaging techniques

Lee Rosén: Child psychopathology and child psychotherapy; disruptive behavior disorders; Attention Deficit Hyperactivity Disorders; Autistic Spectrum Disorders; and resiliency

Carol Seger: Human learning, memory, and cognition; cognitive neuroscience; basal ganglia; functional neuroimaging

Lorann Stallones: Agriculture safety and health; human health and companion animals; disabilities and injury risk; organophosphate pesticides and suicidal behaviors; mindfulness and reduction of suicidal ideation, stress, and increasing well-being in the workplace

Mike Steger: Psychological well-being; meaning and purpose in life; psychological factors in health and health-impacting behaviors

Lucy Troup: Cognitive neuroscience; identifying brain mechanisms for cognition and behaviors: specifically, event-related potentials and electroencephalogram in relation to the processing of emotion, empathy and face perception; effects of cannabis on brain and cognition

Vicki Volbrecht: Neural processing of human color vision

Jessica Witt: Embodied perception and perception-action couplings; how a person's ability to perform an action influences their visual perception of the environment
F. Jay Breidt: Design and analysis of surveys; methods and theory for time series analysis; natural resource monitoring

Dan Cooley: Extreme value analysis; understanding modeling dependence in environmental/climatological applications

Don Estep: Uncertainty quantification for complex multiphysics, multiscale differential equations; computational error estimation; forward propagation of stochastic uncertainty; stochastic inverse problems; construction of efficient numerical solution methods

Bailey Fosdick: Development of statistical methodology for analyzing data stemming from social sciences; social networks analysis; development of Bayesian methods and dependence models

Jennifer Hoeting: Statistical methods to analyze ecological problems; model selection and uncertainty; Bayesian statistics; computational statistics
**Darren Homrighausen:** Machine learning techniques; modern computational methods; astrostatistics

**Piotr Kokoszka:** Functional data analysis; time series analysis; estimation of temporal and/or spatial dependence structure

**Chihoon Lee:** Applied probability; stochastic networks, stochastic control; statistics inference and estimation; operations management; pricing and revenue optimization

**Mary Meyer:** Constrained non-parametric function estimation and inference using shape restrictions

**Jean Opsomer:** Design and analysis of surveys; nonparametric regression methods; environmental statistics

**Haonan Wang:** Object Oriented Data Analysis (OODA); statistical analysis on tree-structured objects; big data analytics; machine learning and pattern recognition; functional data analysis; functional dynamic modeling; spatial statistics; network data; big data

**Wen Zhou:** High-dimensional data analysis; large-scale inference; statistical machine learning and their application in genomic researches; gene networks; differential analysis; modeling expression dynamical patterns; new machine learning methodologies
College of Natural Sciences

Dr. Janice L. Nerger, Dean

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