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## MSRIP 2017 Faculty Research Projects

The following faculty research projects are organized by colleges, and then alphabetically by department. Students are encouraged to look at related fields, as well as within their major departments for research projects, which might be interesting to them. For example, the research project in the theater department might also be interesting to sociology or education majors.

### **Bourns College of Engineering**

#### **Bioengineering**

Faculty Mentor: **Dr. Xiaoping Hu**

Research Setting: Lab

Research Project: Development of molecular imaging probes, analysis of neuroimaging data, development of new MRI techniques.

<http://www.engr.ucr.edu/faculty/bio/hu.html>

#### **Chemical and Environmental Engineering and Material Science**

Faculty Mentor: **Dr. Bryan M. Wong**

Research Setting: Lab

Research Project: Computer simulations on materials, environmental environments (water) and light harvesting materials.

<http://www.engr.ucr.edu/faculty/chemenv/bryanmwong.html>

#### **Mechanical Engineering**

Faculty Mentor: **Dr. Guillermo Aguilar**

Research Setting: Lab

Research Project: Dr. Princevac is interested in fundamental and applied fluid mechanics research—in particular, the application of fundamental turbulence concepts to studies in environmental flows.

<http://www.engr.ucr.edu/faculty/me/guillermoaguilar.html>

Faculty Mentor: **Dr. Marko Princevac**

Research Setting: Lab

Research Project: Dr. Guillermo's research involves biomedical optics and fluid mechanics.

<http://www.engr.ucr.edu/faculty/me/princevac.html>

## **College of Humanities, Arts, and Social Sciences**

### **Psychology**

Faculty Mentor: **Dr. Liz Davis**

Research Setting: Lab

Research Project: Children's development of emotion regulation; prosocial development, mindfulness mediation; bilingualism and emotional processes.

<http://www.psychology.ucr.edu/faculty/davis/index.html>

Faculty Mentor: **Dr. Rachel Wu**

Research Setting: Lab/library, etc. in the CALLA (Cognitive Agility across the Lifespan via Learning and Attention) research lab ([www.callalab.com](http://www.callalab.com)).

Projects include: visual search and category learning with children, undergraduates and older adults.

<http://psychology.ucr.edu/faculty/wu/index.html>

Faculty Mentor: **Dr. Judith Kroll**

Research Setting: Lab

Research Project: Cognitive processes that support the acquisition and proficient Use of a second language. We investigate how bilingual speakers manage to speak Words in one language at a time, how adult learners of a second language acquire New vocabulary, and what information is available when proficient bilinguals read In one of both of their two languages.

<https://bilingualismmindbrain.com/research/>

Faculty Mentor: **Dr. Edward Zagha**

Research Setting: Lab

Research Project: Behavioral-training mice on various behavioral tasks, designed to study sensory detection and impulse control; histological-brain tissue preparation and microscopy to study the expression patterns of various genetic mouse preparations.

<https://psych.ucr.edu/faculty/zagha/index.html>

Faculty Mentor: **Dr. Weiwi Zhang**

Research Setting: Lab

Research Project: Lab research using multiple cognitive neuroscience methods; functional roles of working memory in higher cognition (fluid intelligence); interaction between emotion and memory.

<http://www.psych.ucr.edu/faculty/zhang/index.html>

## **College of Natural and Agricultural Sciences**

### **Biology**

Faculty Mentor: **Dr. Chris Clark**

Research Setting: Lab

Research Project: (1) Examination of the aeroacoustic basis of the flight sounds of mosquitoes and flies: (2) wind tunnel experiments on the mechanics of how feathers flutter to produce sound.

Faculty Mentor: **Dr. Morris Maduro**

Research Setting: Lab

Research Project: Genetics of fat storage and metabolism in strains of the nematode *c.elegans*.

<http://www.biology.ucr.edu/people/faculty/Clark.html>

### **Botany and Plant Sciences**

Faculty Mentor: **Dr. David Nelson**

Research Setting: Lab

Research Project: Plant molecular biology.

<http://plantbiology.ucr.edu/people/faculty/nelson.html>

Faculty Mentor: **Dr. Fedor Karginov**

Research Setting: Lab, library, field, etc.

Research Project: Molecular and cellular biology of gene regulation by RNA-binding proteins.

<http://www.psychology.ucr.edu/faculty/davis/index.html>

### **Chemistry**

Faculty Mentor: **Dr. Matthew Conley**

Research Setting: Lab

Research Project: Synthesis of materials and organometallic compounds for catalytic applications.

<http://chem.ucr.edu/faculty.html?id=223>

Faculty Mentor: **Dr. Jingsong Zhang**

Research Setting: Lab

Research Project: Dr. Zhang's research concentrates on atmospheric chemistry, air pollution monitoring, trace gas detection, chemical instrument development, optical spectroscopy and mass spectrometry studies of chemical reactions.

<http://chem.ucr.edu/faculty.html?id=29>

### **Environmental Sciences**

Faculty Mentor: **Dr. Francesca Hopkins**

Research Setting: Lab/Field

Research Project: Measurement of greenhouse gases.

<http://envisci.ucr.edu/faculty/hopkins.html>

## **Physics and Astronomy**

Faculty Mentor: **Dr. Yongtao Cui**

Research Setting: Lab

Research Project: Image nanomaterials with atomic force microscope. Build electronics to measure resistance at microwave frequencies.

<http://www.physics.ucr.edu/people/faculty/yongtaocui.html>

## **Division of Biomedical Sciences**

Faculty Mentor: **Dr. Sika Zheng**

Research Setting: Lab- School of Medicine

Research Project: Dr. Zheng's lab studies the activity, mechanism, function and dysfunction of gene regulation at the RNA level, coding and noncoding, in the most complex organ—the brain.

[https://medschool.ucr.edu/faculty\\_research/faculty\\_profiles/bio.html?page=zheng\\_sika.Html](https://medschool.ucr.edu/faculty_research/faculty_profiles/bio.html?page=zheng_sika.Html)

## **Graduate School of Education**

Faculty Mentor: **Dr. Katherine Stavropoulos**

Research Setting: Lab- School of Medicine

Research Project: Areas of interest include understanding neural correlates of the Reward system in children with autism spectrum disorders(ASD), as well as broader Topics in social cognitive neuroscience. Of particular interest is the heterogenelly Observed in individuals with ASD, and how these differences can be explained using Neuroscience techniques.

[http://facultyprofiles.ucr.edu/gsoe\\_dept/faculty/Katherine\\_Stavropoulos/index.html](http://facultyprofiles.ucr.edu/gsoe_dept/faculty/Katherine_Stavropoulos/index.html)

## **School of Public Policy**

Faculty Mentor: **Dr. Julian Emmons Allison**

Research Setting: Lab/library, field

Research Project: (1) "Gender and Renewable Energy" requires updating literature and conducting/assisting with interviews; (2) "Ecological Grief" may require bibliographic research, will certainly require interviews, documentary work.

[http://facultyprofiles.ucr.edu/gender\\_studies\\_dept/faculty/Juliann\\_Allison/index.html](http://facultyprofiles.ucr.edu/gender_studies_dept/faculty/Juliann_Allison/index.html)