NEW OPPORTUNITY FOR COMMUNITY COLLEGE STUDENTS!

SUMMER RESEARCH PROGRAM
USC’s graduate initiative for Diversity, Inclusion, and Access (DIA) aims to increase the pool of diverse PhD applicants by providing academic and financial support and professional development opportunities.

DIA JumpStart works with USC schools and programs to invite diverse candidates from outside institutions to apply for 10-week summer research opportunities in various disciplines to preview the PhD experience. Available opportunities range from lab-based research to mentored participation in other types of faculty projects.

Summer 2020 program dates are **June 1 through August 7**, unless otherwise noted by the research opportunity. Prospective scholars should indicate on the application if there are commitments that effect the proposed start and end dates.

PROGRAM BENEFITS
The Graduate School provides JumpStart scholars with a stipend and health coverage. Those who successfully complete the program will also have their application fees waived if they apply to USC PhD programs in the future.

To complement their summer research experience, JumpStart scholars will participate in Graduate School sponsored sessions led by USC faculty and staff. Sessions include graduate admissions, PhD funding and fellowships, PhD student life, and more. JumpStart student’s research will be featured in an end of summer poster symposium.

APPLICATIONS
The JumpStart program provides an opportunity for highly motivated, underrepresented students who have an interest in gaining valuable research skills. The ideal applicants will have completed 30 transferrable units.

Applications are evaluated by the research program, or faculty, and the Graduate School. Applicants may be contacted for an interview.

Applications for research positions through DIA JumpStart are currently available at [https://provost.sma.usc.edu/prog/DIAJumpStart](https://provost.sma.usc.edu/prog/DIAJumpStart).

THE APPLICATION DEADLINE: Friday, January 17, 2020

As part of the application, students will be required to submit:

- Personal statement and research interests
- Short statement on academic and professional goals
- Resume or CV
- Current transcripts (unofficial or official)
- One (1) letter of recommendation from faculty

FOR MORE INFORMATION
Questions about DIA JumpStart should be sent to GradDIA@usc.edu. Additional information can also be found by visiting [http://graduateschool.usc.edu/dia/](http://graduateschool.usc.edu/dia/).
WHY CONSIDER **DIA JUMPSTART**?

It is hoped that students who complete the JumpStart summer program will be competitive for transfer admission to a four-year institution and continue their path to complete the bachelor’s degree with a future interest in pursuing the PhD degree. A national study reported that nearly 22% of PhD recipients in clinical and health fields began at a community college. Many of the JumpStart alumni began their higher education studies at a community college.

WHAT DID **LAST YEAR’S PARTICIPANTS** SAY ABOUT THE PROGRAM?

“The most helpful was being able to conduct research, learn from a seasoned professor, attend workshops, and complete the program with research and skills that can help me in the future.”

“I was able to see first-hand what graduate studies would be like. I also had the opportunity to work with and collaborate with professors that were willing to share their knowledge, expertise, and guidance.”

“The research experience exceeded my expectations, as I got to start my own project and fully understand the methodology of what I do and what my results are telling me.”

“Thank you DIA JumpStart program for the opportunity to working with passionate faculty in their labs, for letting us be part of such an incredible experience extending our knowledge in research and having an insight of what graduate school entails.”

“It is a great opportunity to expand your knowledge, establish new connections with students in the real world of graduate school.”

“Thank you for the opportunity to work with and collaborate with professors that were willing to share their knowledge, expertise, and guidance.”
2020 AVAILABLE RESEARCH OPPORTUNITIES

1. DEPARTMENT OF CHEMISTRY
   Snapshots of Chemistry

2. DIVISION OF BIOKINESIOLOGY AND PHYSICAL THERAPY
   A Study of Pain Sensitivity in Healthy and Individuals with Chronic Pain

3. SCHOOL OF PHILOSOPHY
   USC Meaning Lab

4. DEPARTMENT OF PSYCHOLOGY
   NeuroEndocrinology of Social Ties (NEST) Lab

5. PSYCHOLOGY AND OCCUPATIONAL SCIENCE
   Brain and Creativity Institute

6. DEPARTMENT OF SOCILOGY
   Comparing the Effects of Voter ID Laws on Immigrant Rights Organizations' Strategies across State Contexts

7. SPATIAL SCIENCES INSTITUTE
   Population, Health, and Place PhD Program
Spend 10 weeks of your summer carrying out research in residence in our Chemistry Department. We use the term "Snapshots of Chemistry" to emphasize our focus on gaining insights on key chemical features of molecular processes via visual images. Research projects will cover a broad range of topics, spanning from femtosecond time-resolved observations of transient events to synthesis of novel drugs, development of nanostructures and catalysis in energy research, biochemical and structural investigations of proteins and nucleic acids, and theoretical investigations using advanced algorithm and state-of-the-art computer graphics and multimedia capabilities.

We offer a broad selection of research groups in alternative energy, chemical physics, chemical biology, drug discovery, inorganic, materials/polymers, nanoscience, organic, physical, and theoretical chemistry.

You will work one-on-one in a lab with a faculty advisor and graduate student mentor. We integrate student research activities with weekly meetings that feature professional development courses, showcase student research presentations, and highlight the breadth of chemistry across traditional and interdisciplinary areas. Included will also be tours of local research facilities such as the NASA's Jet Propulsion Laboratory, Loker Hydrocarbon Research Institute and team building activities. The summer will culminate with a poster session, where you will display your summer research and discuss it with Chemistry faculty and graduate students.

**LEARNING OUTCOMES:**
We provide comprehensive research opportunities, individualized and long-term mentoring, professionalization and social activities. This approach aims to build skills and confidence needed for each participant to pursue STEM degrees and chemistry-related careers. We believe that having access to research opportunities and long-term mentoring empowers students with knowledge and opportunities needed for professional success in many careers. Research topics conducted in our department deal with significant and critical issues in our society, and participants learn both chemistry perspectives and the large role of chemical research in solving the current societal and environmental issues.

**PREFERRED COMPLETED COURSES:** General Chemistry (2 semesters)

**PROGRAM DATES:** May 26 - July 31

For more information, please visit [https://bit.ly/2WRlFxs](https://bit.ly/2WRlFxs)
DIVISION OF BIOKINESIOLOGY AND PHYSICAL THERAPY
A STUDY OF PAIN SENSITIVITY IN HEALTHY AND INDIVIDUALS WITH CHRONIC PAIN

For individuals with chronic musculoskeletal pain, recurrent or non-responsive chronic pain can be debilitating. This is especially true for patients with shoulder pain, who have alarmingly high rates of recurrent or non-responsive pain, with 68% of people still experiencing pain after one year. Within the Clinical Biomechanics Orthopedic and Sports Outcomes Research (COOR) Laboratory, in collaboration with the Applied Mathematics and Physiology Laboratory (AMPL), we strive to optimize shoulder performance and enable the diagnosis, rehabilitation and treatment for patients with shoulder disorders. To improve treatment efficacy, we first need to effectively describe patients in terms of their abilities. Specifically, pain sensitivity is one factor that is highly variable across the population, and has been previously tied to the overall success or failure of traditional chronic pain therapies.

In this study, the applicant will be a member of a multidisciplinary team investigating links between an individual’s sensitivity to pain and their overall experience of persistent shoulder pain. This study will be conducted in three phases:

1. Define normative values of one commonly used form of sensory testing, pressure pain threshold, and explore factors influencing this measure such as body site, age, and sex.
2. Identify individuals with shoulder pain who have heightened pain sensitivity by contrasting these individuals against the cohort of healthy participants.
3. Finally, evaluate the effectiveness of therapeutic interventions including single dose spinal manipulation and exercise for individuals with shoulder pain by contrasting the response of patients with and without heightened sensitivity.

The scholar will work closely with postdoctoral mentors in the lab to collect pressure pain threshold readings, and to generate custom analysis code using MATLAB. The scholar will be responsible for generating well-researched hypotheses regarding potential influential factors on an individual’s pain sensitivity such as a person’s age or sex. The scholar will be expected to report weekly on the progress of the project and may have the opportunity to present their research at internal, regional, or national conferences.

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LEARNING OUTCOMES:

• Synthesize findings from previous studies relevant to the aims of the scholar’s project. Review of published literature is a critical part of effective research. Students will first be tasked to read, understand, and bridge findings from previous research studies.

• Generate a set of evidence driven hypotheses to address the project aims. The hypotheses will be developed after students have had the opportunity to read and synthesize previous studies relevant to the project.

• Assist in research directed data collections, capturing pain sensitivity for both healthy controls and individuals with shoulder pain. The scholar will be expected to actively participate in data collections, and if appropriate, conduct data collections independently. Students will be expected to learn how to operate laboratory equipment including an algometer to measure pressure sensitivity, a handheld dynamometer to measure muscle strength, and an inclinometer to measure range of motion.

• Analyze data collected prior to and during the scholar’s tenure in the lab. The scholar will work closely with a senior mentor to develop and test hypotheses and synthesize results. Students will be expected to learn MATLAB to visualize and analyze data.

• Disseminate findings of their project. Students will be expected to present periodic updates at lab meetings, and may have the opportunity to present their findings at regional or national conferences.

PREFERRED COMPLETED COURSES:
Introductory Anatomy, Physiology, Computer Programming (MATLAB or Python preferred), Calculus

For more information, please visit https://bit.ly/2PS4Oco
School of Philosophy
USC Meaning Lab

Linguists say that sentences are about events, but what does that mean? The USC Meaning Lab is conducting NSF-funded research focusing on the properties of the language that children and adults use to talk about events, and how it compares to talk of objects. This research lies at the intersection of philosophy of language and mind, linguistics, and cognitive psychology. The JumpStart scholar will take the lead role in conducting an experimental study investigating how individuals determine when something that happened counts as a proper 'event', and how that determination impacts comparison with words like 'more'. The project thus involves working closely with the Principal Investigator and other lab personnel in developing the study design and implementation, as well as recruiting study participants, conducting the experiment, analyzing and interpreting the results, and preparing a presentation describing their work.

Learning Outcomes:
The JumpStart scholar will gain significant experience in all aspects of the research process in a social-behavioral lab, from study conception to dissemination. This includes training and exercise in basic programming, as well as statistical and data visualization methods. The scholar will gain insight into research that cross-cuts traditional disciplinary lines, enjoy frequent interaction with the Principal Investigator of a research lab, and lay the foundations for a cutting-edge research paper.

Preferred Completed Courses:
Some introductory level experience in linguistics, philosophy, and/or psychology is required.

For more information, please visit https://bit.ly/2WRQoKY
DEPARTMENT OF PSYCHOLOGY
NEUROENDOCRINOLOGY OF SOCIAL TIES (NEST) LAB

The NEST Lab studies the transition to parenthood and its impact on parents’ relationships, brains, and hormones. We have a special interest in understanding the fathering brain.

We are currently conducting the National Science Foundation (NSF) funded HATCH (Hormones Across the Transition to Childrearing) study to explore couple and family dynamics during the transition to parenthood. We recruit couples who are expecting their first child and follow them across the first year postpartum, with two laboratory visits (a prenatal visit and a postpartum visit) that include discussion tasks and questionnaires, plus neuroimaging scans of the new father. We are sampling hormones (cortisol, testosterone, oxytocin, and prolactin) and examining couple relationship functioning and psychological well-being over pregnancy and postpartum. We will also look at parenting, parent-child attachment, and early infant development.

In a sub-study linked with the larger HATCH study, we will be scanning expectant and new fathers both before and after the birth of their child, using a combination of structural and functional imaging to examine the fathering brain and how it is correlated with hormones and parenting behavior.

LEARNING OUTCOMES:

• Students will have the opportunity to gain hands-on experience running laboratory visits as well as gain exposure to functional magnetic resonance imaging (fMRI) data.
• Students will collaborate with graduate students in the lab to complete a research poster where they will 1) ask their own research questions, 2) learn to run independent analyses with SPSS, and 3) create a final poster product.
• Training in health psychology, close relationships, and perinatal processes

PREFERRED COMPLETED COURSES: Psychology

For more information, please visit https://bit.ly/2qtd7h
The JumpStart scholar will assist in everyday functioning of a research lab, which uses neuroimaging techniques to explore questions of social cognitive neuroscience. The current project looks at sensory functioning, gut microbiome, and brain activity, and their potential involvement in processing emotions, empathy, and social communication in Autism Spectrum Disorder. The JumpStart scholar will be required to maintain the RedCap data basing system, ensure data quality control, assist in recruiting, communicate with collaborators and participant families, and assist in acquisition of behavioral and neural data.

This position requires excellent attention to detail, organization, and an understanding of the study protocols, measures, and reporting requirements. This position also requires excellent communication and interpersonal skills because the JumpStart scholar will be working directly with participants and families from clinical populations to acquire paper and video data.

**LEARNING OUTCOMES:**
- Deeper understanding of neuroscience, Autism Spectrum Disorders, behavioral and psychological testing, and MRI acquisition
- Experience with the inner workings of and R01 level study in a research lab setting
- Clarity on the process and information regarding potential next steps in higher education, and success within graduate programs

**PREFERRED COMPLETED COURSES:**
Any courses in Psychology, Neuroscience, Occupational Therapy, Computer Science, Human Biology, or related fields.

In recent years, there has been growing political discourse about the threat of voter fraud, which has driven efforts to implement voter ID requirements across a number of states. As of April of 2019, 35 states had enforced or were scheduled to begin enforcing voter ID requirements. Much research tests the effects of these voter ID laws on voter turnout, with mixed evidence. Some work shows that these effects are particularly pronounced for racial and ethnic minorities and immigrants. Other studies argue that these effects exist but that they are negligible. A third hypothesis is that because these laws politicize targeted communities and draw their attention to politics, they can increase voter turnout. However, beyond these direct effects, studies show that racialized policies like voter ID laws have spillover effects on political culture and how groups, like immigrant rights organizations, organize and do political work. From a separate stream of research, we know that immigrant rights organizations have powerful effects on immigrants’ political participation. They are crucial mediators between individuals and the political system.

This research is centered on examining this relationship between Voter ID laws as they shape the political context and the organizations working on immigrant political engagement. We examine: 1) How do Voter ID laws impact immigrant rights organizations’ strategies? 2) How do these effects compare across different state contexts? To answer this question, we use a comparative, longitudinal research design to examine whether and how adopting state-level Voter ID laws shapes organizational strategies. We analyze strategies for immigrant rights organizations across four state contexts (Alabama, Georgia, Mississippi, North Carolina), operationalized across a number of political and cultural measures. We look specifically at immigrant-serving organizations for consistency, although there are numerous other organizations working on these issues. First, we use the 501(c)3 database, GuideStar, to build a unique database of immigrant-serving organizations accounting for a range of organizational variables that are theorized to matter for strategic decision-making (e.g. mission, age, size, resources). Next, we are in the process of building a qualitative dataset of organizational materials (e.g. press releases, reports, posters, web pages) before and after the enactment of the Voter ID law. Using ATLAS.ti, we will code the organizational documents and the newspaper articles to determine whether strategies shifted, how it shifted, and finally, how these effects compare across states.

As we enter another major election year, we will continue collecting data in real time to give us a better sense of the larger spillover effects of voter ID laws as they reshape political contexts. Ultimately, these findings can inform on the most effective strategies for contending with voter ID laws and for increasing immigrant political engagement within this political context.

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LEARNING OUTCOMES:

- The JumpStart scholar will learn to develop and use a mixed-method database by collecting and managing multiple types of data including organizational records, surveys, newspaper text, and archival data. Using this database, students will code the data and identify emerging themes that will allow them to develop expertise in the research questions of interest.
- During this time, scholars will collaborate closely with faculty and a graduate student advisor requiring the student to effectively communicate and use their problem-solving skills.
- Training in mixed methods to both engage a variety of learning styles and to build their expertise in a range of modes of social scientific research.

PREFERRED COMPLETED COURSES:
Familiarity with Social Science research (SOC 101 or similar general education course) or methods.

For more information, please visit https://bit.ly/36Hs6b1
This program will run concurrently with the SSCI 601ab research practicums scheduled for summer 2020. For the first 7-weeks of the summer session, with guidance from faculty and participants from the cognate fields, we will conduct research projects with the Ph.D. students and the DIA JumpStart scholars aimed at developing dissertation research at the intersection of Population, Health, and Place. There will be 9 Ph.D. students involved this summer.

The JumpStart scholars will have some choice as to which projects to work on. Past examples of projects include library research, computer work and fieldwork on the following topics:

- Access of homeless populations to water, sanitation, and hygiene (WaSH)
- Exploration of spatial and temporal methods in interdisciplinary research
- Research on how locations of licensed versus unlicensed cannabis retail locations affect health equity in the California
- Modeling exposures to noise pollution in the Los Angeles urban environment

One potential project for the upcoming summer includes further work on cannabis retail locations in California. We will investigate how these locations may affect propensity for underage cannabis use. This project is part of a large, multi-year longitudinal study funded by the Tobacco Related Disease Research Program (TRDRP) for which data is currently be gathered by surveying high school students throughout California.

DIA Jumpstart scholars will be expected to attend seminar discussions and team meetings, read articles alongside the Ph.D. students, and assist with various data gathering and processing tasks, including working with geographic information systems, depending on each scholar’s skill level and how rapidly they can be trained for these data-intensive tasks.

**LEARNING OUTCOMES:**

- Conduct library research and organize sources in order to build the foundation needed to create a literature review for a carefully defined topic in Population, Health, and Place
- Understand and communicate the value of basic principles of spatial analysis and Geographical Information Systems (GIS) software to analyze data and make maps.
- Conduct intermediate to advanced spatial analysis (depending on the scholars entering skill level and aptitude).

**PREFERRED COMPLETED COURSES:** Public Health, Geographic Information Systems

**PROGRAM DATES:** May 20 - August 7

For more information, please visit [https://bit.ly/2CobeI4](https://bit.ly/2CobeI4)