Program:
The NIDA Summer Research Internship Program provides paid internships to support undergraduate students with a focus on increasing underrepresented populations in substance use and addiction-related research. Through this program, undergraduate students age 18 years and older are introduced to the field of substance use and addiction research by participating in research internships with NIDA’s distinguished scientists at universities across the United States. Students work with leading addiction scientists for eight weeks during the summer. The internship may include laboratory experiments, data collection, data analysis, formal courses, participation in lab meetings, patient interviews, manuscript preparation, library research, literature reviews, and more. In addition, each intern will deliver a formal presentation on his/her research project at the end of the internship.

The NIDA Summer Research Internship Program is in its 26th year. Since the program’s inception in 1997, more than 1313 students have gained experience in substance use and addiction research.

Eligibility:
- This program provides experiential summer research internships for undergraduate students from all backgrounds, with a goal of enhancing the representation of students from underrepresented backgrounds (American Indian/Alaska Native, Black/African American, Hispanic/Latino, Native Hawaiian/Pacific Islander) in addiction-related research.
- Graduating 2022 college seniors are eligible to apply.
- Applicants must be at least 18 years old by May 31, 2022 and must be U.S. citizens or permanent residents of the United States (no exceptions).
- Individuals who have already participated in the NIDA Summer Research Internship Program are no longer eligible to apply.
- Students must be committed to working for 8 consecutive weeks during the summer (some schedule flexibilities may be allowed).

Scope of Support:
- Salary in the amount of $15.00 per hour for a maximum of $4,800 for eight weeks.
- Up to $2,500 for housing assistance (NIDA or the research site institutions will not pay for utility bills, internet costs, or expenses outside of the monthly rent charges. It is expected that the intern will use a portion of their salary to pay for these costs, if needed.
- Up to $500 to be used for air and/or local travel.

Housing for On-Site Internships:
There are two different housing options for the research sites included in the NIDA Summer Research Internship Program. For both options, the housing is funded by NIDA (up to $2,500).
- For research sites with the “Campus Housing Available” option, on campus housing will be an available option and this should be coordinated through the research site staff and institution.
• For research sites with the “Housing Subsidized” option, housing will still be funded by NIDA, however for these research sites, the intern will be responsible for securing their own housing accommodations. Research sites will not be able to provide housing through the university. Some research sites have local housing resource guides that they share with interns.

Hybrid and Virtual Internship:
Due to the pandemic, some research sites are offering hybrid or virtual research opportunities. If the selected institution has indicated that they are able to host a student through the hybrid or virtual model, and this is of interest to the applicant, please select that option and this information will be relayed to the research site. Due to the short timeframe, it is impossible for the research site or NIDA to provide a computer; therefore, you must have access to a computer, strong internet connection, and a quiet place to work. NIDA or the institution is not able to pay for the purchase of a computer, internet access, or any other costs associated with conducting a virtual research internship. Arrangements for a virtual internship should also be discussed with the research site as soon as the student is notified of selection to the program.

Application Procedures:
To apply for this program, complete all sections of the application form. Prior to making your research site selections, review the research projects and locations listed in the online brochure. After reviewing the descriptions, indicate on the application the three research sites that best match your research interests and why those sites are of interest to you. All efforts will be made to match applicants to one of their top three choices.

Application components include:

• The full application form
• Current transcripts (unofficial transcripts are acceptable)
• Two letters of recommendation on letterhead submitted electronically prior to the application deadline. It is the applicant’s responsibility to ensure that the letters of recommendation are submitted prior to the application deadline.

IMPORTANT: References will be contacted only after an application is submitted. However, applicants may modify, save, and submit their application as often as needed up to the application deadline and the application will be automatically updated each time, but in order for references to receive notification of a letter request, you must submit the application. Once an application is submitted, information about references cannot be changed. Again, applicants can continue to edit the other components of the application until the application deadline.

NOTE: Please make sure to insert the reference’s email correctly or they will not receive the recommendation letter request. A day after the application is submitted, applicants may want to confirm with references that they received the automatic email request. Please contact Julie Huffman, if either reference did not receive the automatic reference letter request email.

All application materials must be submitted by Friday, February 11, 2022.
Application Review and Selection:
Interns are selected according to the following criteria:

- Professional/Career goals
- Research Interests
- Accomplishments, Interests, and Success
- Letters of Recommendation
- Program Priorities

For additional information see the FAQs.

Contact:
For further information, please feel free to contact Julie Huffman, Julie.huffman@nih.gov, phone 301-443-9798
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<td>Housing Availability</td>
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<td>Rhode Island</td>
<td>Brown University</td>
<td>Pilot Implementation of Measurement-Based Care in Community Opioid Treatment Programs</td>
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<td>Rhode Island</td>
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<td>Electronic Cigarettes During Pregnancy: Impact on Fetal Development</td>
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<td>Causal Inference Methods for HIV Prevention Studies Among Networks of People Who Use Drugs</td>
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<td>Discovery of Novel Pharmacotherapeutic Targets for Opioid Addiction</td>
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<td>Knowledge Discovery and Machine Learning to Elucidate the Mechanisms of HIV Activity and Interaction with Substance Use Disorder</td>
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<td>Role of the NLRP3 Inflammasome in Mediating Microglial Activation and Development of Neuropsychiatric Symptoms Induced by HIV, Antiretrovirals, and Cocaine</td>
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<td>Genetic Basis of Nicotine Withdrawal in a Reduced Complexity Cross</td>
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<td>Using CRISPR Tools to Uncover the Role of CREB-Gene Regulation in Drug Abuse</td>
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<td>Wyoming</td>
<td>University of Wyoming</td>
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Alabama

Investigator: Saurabh Aggarwal, MD, PhD
Institution: University of Alabama at Birmingham
Birmingham, AL
Project Title: Chronic Widespread Pain in HIV: Novel Mechanisms and Therapeutics
Research: Basic Research
Research Area: Pain; HIV; Inflammation
Housing: Campus
Internship Type: In-Person

Student Qualifications: The intern should be willing to participate in research involving human participants, animals (mice and rats), tissue, and cell culture. No prior qualifications or skill sets are required but the intern should be highly motivated to learn science.

Project Description: People with HIV are 25-85% more likely to experience chronic pain compared to people without HIV, leading to greater odds of disability. However, the specific mechanisms that contribute to chronic pain in HIV are not understood. Chronic inflammation can increase pain sensitivity, while endorphins in blood can reduce pain. Therefore, the summer research project will focus on investigating whether the markers of inflammation (cytokines) are elevated and whether endorphin levels are red.
Arizona

Investigator: Art Riegel, PhD  
Institution: University of Arizona  
Tucson, AZ  
Project Title: The Role of Ryanodine Receptors in Drug Seeking  
Research: Basic Research  
Research Area: Cellular Signaling; Physiological Mechanisms; Prefrontal Cortex; Ryanodine Receptors; Operant Behavior; Patch-Clamp Electrophysiology; Viral-Mediated Gene Expression; Rodent Model of Drug Seeking; Transgenic FOS-TRAP Mice; Transgenic FOS-GFP Rats; Two-Photon Calcium Imaging; Immunohistochemistry  
Housing: Campus  
Internship Type: In-Person

Student Qualifications: Candidates should be highly motivated with 2-4 years of relevant undergraduate coursework. Students will be expected to work with rodents (rats and mice) in the context of behavioral testing. Preference will be given to individuals with prior exposure to techniques such as western blot analysis (biochemistry), optogenetics, designer receptors exclusively activated by designer drugs (DREADDs), or operant training in behavioral paradigms, but all interested students are encouraged to apply.

Project Description: Our laboratory in the University of Arizona Department of Pharmacology in Tucson brings together a large group of expert neuropharmacological researchers and a range of laboratory facilities to create outstanding opportunities for young people interest in a research career in the neuropharmacology of addiction. We are seeking an intern to assist with characterizing novel cellular systems in the brain relevant to addiction and pain. Students will have the opportunity to learn about the behavioral models and brain circuitry associated with pain perception and addiction.
Arizona

Investigator: John Streicher, PhD
Institution: University of Arizona
Tucson, AZ
Project Title: Development of Hsp90 Isoform-Selective Inhibitors as a Novel Opioid Dose-Reduction Therapy
Research: Basic Research
Research Area: Opioid; Pain; Signal Transduction; Heterodimer; G Protein-Coupled Receptor; Drug Discovery; Drug Development; Signaling Regulators; Opioid Behavior
Housing: Campus
Internship Type: In-Person

Student Qualifications: No prior research experience required. Previous research experience in mouse behavioral or molecular analysis (western, CRISPR, qPCR, etc.) or the opioid field is a bonus. Previous coursework in biology is required, cell biology being the most important and relevant. No specific major is required if coursework has been taken. No specific career interests required. Interns will be required to work with mice.

Project Description: The Streicher lab focuses on uncovering novel signal transduction mechanisms of the opioid receptors. This involves identifying novel regulators and determining their molecular mechanisms, mostly through in vivo opioid pain and side effect models. The Streicher lab then uses these novel signaling mechanisms to develop new profiles for drug discovery and development to create new analgesic drugs without the addictive and other side effect liabilities of opioids. The current project focuses on heat shock protein 90 (Hsp90), which we’ve shown has a crucial role in regulating opioid signaling in the brain and spinal cord. We’ve further found a novel translational strategy to target this protein using molecular isoform-selective inhibitors to improve opioid therapy. The intern summer project will focus on extended studies from these preliminary results to identify molecular signaling mechanisms underlying Hsp90 signaling regulation in vivo and to develop and refine the novel Hsp90 inhibitors for eventual clinical use. This will involve administration of our Hsp90 inhibitors to mice followed by opioid drugs like oxymorphone in acute and chronic pain models, along with side effects like reward/addiction. The behavior of the mice will be analyzed and their molecular signaling in the brain and spinal cord will be analyzed using cutting edge methods including CRISPR gene editing, proteomic analysis, and similar.
Arkansas

Investigator: Merideth Addicott, PhD
Institution: University of Arkansas for Medical Sciences
Little Rock, AR
Project Title: Neural Correlates of Distress Tolerance in Tobacco Addiction
Research: Behavioral Research
Research Area: Tobacco Addiction; fMRI; Distress Tolerance; Behavioral; Smoking Cessation
Housing: Campus
Internship Type: In-Person

Student Qualifications: This research involves working with self-report and behavioral data collected from humans; students will not work directly with participants. Student should be interested in psychology/neuroscience and addiction. Student should be familiar with statistics and Microsoft Excel/Access.

Project Description: Many smokers smoke in response to stress or anxiety and quitting smoking can be a stressful experience. How well individuals tolerate stress (i.e., distress tolerance) may relate to their ability to quit smoking. This project compares behavioral measures of distress tolerance between smokers and former smokers. These measures include self-report questionnaires, physical stress challenges (e.g., breath holding), and computerized emotional stress challenges (e.g., a math test). This study also investigates which brain regions underlie emotional stress and distress tolerance.
Arkansas

Investigator: Melissa Zielinski, PhD
Institution: University of Arkansas for Medical Sciences
Little Rock, AR
Project Title: Leveraging Implementation Science to Increase Access to Trauma Treatment for Incarcerated Drug Users
Research: Behavioral Research
Research Area: Drug Addiction; Prison; PTSD; Implementation Science; Cognitive Processing Therapy; Coping Skills; Mental Health; Hybrid Trials; RCT; Incarcerated Men; Incarcerated Women; Reentry
Housing: Campus
Internship Type: In-Person

Student Qualifications: Previous experience conducting human subjects research and/or interacting in a professional capacity with people with mental illness and/or addiction is preferred (though experience in both is not required). Comfort assessing traumatic event exposure (after receiving training) is important given the project’s focus. A background in psychology or closely related field would be ideal. Additional foundational qualifications of importance include excellent written and verbal communication skills.

Project Description: Trauma exposure and drug addiction go hand in hand for the 2.17 million people who are incarcerated in the U.S., as prevalence rates of both exceed 80% among prisoners. Increasing access to proven trauma therapies in prisons may reduce drug use, crime, costs, and community burden associated with incarceration by improving prisoners’ mental health prior to release. This study will increase knowledge on (1) strategies for implementing trauma therapies in prisons and (2) the effectiveness of two types of therapy (Cognitive Processing Therapy and PTSD Coping Skills Group) when delivered in prison. Primary effectiveness outcome measures of the trial are post-release PTSD symptoms and drug use behaviors. Secondary effectiveness outcome measures are depression and recidivism. Primary implementation outcome measures are intervention acceptability, appropriateness, adoption, feasibility, sustainability, and fidelity.
California

Investigator: Theodore Friedman, MD, PhD
Institution: Charles R. Drew University
Los Angeles, CA
Project Title: The Next Generation Substance Abuse Research Training at Charles R. Drew University (CDU) and UCLA (NGSART-CU)
Research: Basic Research
Research Area: Smoking; Nicotine; Insulin Resistance; Obesity; Diabetes; Drug Addiction; Fatty Liver Disease; Electronic Cigarettes; Minority
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Molecular biology, animal handling, and computer (Excel, Word, and PowerPoint) skills are preferred. For epidemiology and literature review projects, only computer skills are needed.

Project Description: The goals of this grant are to train the next generation of substance abuse researchers. Most of our research is on the endocrine effects of drugs of abuse. We are intrigued by the clinical condition that smokers are lean, yet have more cardiovascular disease, insulin resistance, and diabetes. We are using mouse models to understand this paradox and have found that nicotine plus a high fat diet leads to weight loss and reduced abdominal fat, but also ectopic fat depositions in the liver and muscle. We are also examining how nicotine plus soft drinks leads to hepatic steatosis. We recently found that electronic cigarettes lead to atherosclerosis, heart failure, and fatty liver disease in mice, and most of our current studies use e-cigarettes. Additional opportunities exist for clinical, literature review, and epidemiology projects related to drug addiction. All experiments are well suited for student involvement and will introduce them to major techniques in substance abuse research.

Housing is available at the nearby California State University, Dominguez Hills and USC. Students will be given the opportunity to present at our annual Drew Substance Abuse Research Day.
**California**

**Investigator:** Maria Cecilia Marcondes, PhD  
**Institution:** San Diego Biomedical Research Institute  
San Diego, CA  
**Project Title:** Dopamine System as Reporter of HIV Status and Inflammation in Meth Abusers  
**Research:** Basic Research  
**Research Area:** HIV; Neurological Disorders; Dopamine; Peripheral Biomarkers; Substance Use Disorders; Methamphetamine; Hyperthermia; Neuroimmunology  
**Housing:** Subsidized  
**Internship Type:** In-Person  

**Student Qualifications:** An intern must be curious, enjoy the discovery process, and have some knowledge in biology, such as knowing what a macrophage is.

**Project Description:** The cells of the immune system respond not only to immune and infectious stimuli, but also to neuroendocrine changes. This is because immune cells express receptors for several neurotransmitters and hormones. HIV is a virus that infects immune cells throughout the body, including in the central nervous system, where neurotransmitters are present. Thus, changes in the levels and types of neurotransmitters can impact HIV target cells and the infection status. Our lab studies the interactions between one neurotransmitter, dopamine, and HIV innate immune targets in the brain. Dopamine is important because it is highly increased by substance use disorders, which are a common comorbidity of HIV infection. Thus, HIV-infected cells in the brains of drug users are subjected to different rules compared to non-drug users. We believe that the changes that are caused in immune cells by exposure to dopamine can serve as biomarkers of HIV-neurological disorders that are specific to the population of drug users, for better monitoring their cognitive status and inflammation in the brain.
California

Investigator: Beth Denise Darnall, PhD
Institution: Stanford University School of Medicine
Stanford, CA
Project Title: Research and Mentoring in Innovative Patient Oriented Pain and Opioid Science
Research: Clinical Research
Research Area: Chronic Pain; Digital Health; Opioid Misuse; Online; Brief Behavioral Intervention
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Interest in chronic pain, opioid misuse, and pain psychology are preferred. Prior work with patients is desired but not required.

Project Description: In Summer 2022 we are implementing a national, virtual randomized controlled trial of scalable digital behavioral pain treatment for people with comorbid chronic pain and prescription opioid misuse and investigating impacts on pain and opioid outcomes.
California

Investigator: Gary Peltz, MD, PhD
Institution: Stanford University
Stanford, CA
Project Title: Computational Methods for Identification of Genetic Factors Affecting the Response to Drug Abuse
Research: Basic Research
Research Area: Genetics; Computational Methods; Mouse Genome (CRISPR) Engineering
Housing: Campus
Internship Type: In-Person

Student Qualifications: We develop computational methods that will enable genetic factors affecting many biomedical traits to be discovered and experimentally characterized. A computational method will be used to analyze 213,000 responses in inbred mouse strains. These tools will be used to analyze 15 responses of inbred strains to cocaine, methamphetamine, fentanyl, and nicotine. We use a high efficiency method for engineering allelic changes into the mouse genome to analyze the effect of these genetic factors.

Project Description: The interns will either help to develop computational methods for analysis of genetic and genomic data or aid in engineering the genome of mice using CRISPR to produce lines that can be tested for response to drugs of abuse.
California

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>Eric Sun, MD, PhD</th>
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<tr>
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<td>Stanford, CA</td>
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<tr>
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<td>The Epidemiology and Economics of Chronic Back Pain</td>
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**Student Qualifications:** Experience with STATA and/or SQL; basic statistics knowledge.

**Project Description:** The student will work with administrative claims data to examine the association between surgeon characteristics and perioperative outcomes, and in particular the association between surgeon characteristics and opioid use after surgery.
California

Investigator: Eric Zorrilla, PhD
Institution: Scripps Research Institute
La Jolla, CA
Project Title: Extrahypothalamic PPARs and Compulsive Food Intake
Research: Basic Research
Research Area: Addiction; Compulsive Eating; Cre/Lox Recombination, Chemogenetics; Nucleus Accumbens; Dorsal Striatum; Peroxisome Proliferator-Activated Receptor; Lipid Transcription Factor; Endocannabinoids; Dopamine D1 and D2 Receptors; Adenosine 2A Receptor; Genome-Wide Association Study (GWAS); Machine Learning; Ribosomal Profiling; TRAP; Alcohol Use Disorder; Optogenetics; Translational Research; Eating Disorders; Obesity; Stress
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: The successful intern will have a background in neuroscience, biology, biochemistry, or psychology. Interns with post-graduate training interests in these fields, in pharmacology/pharmaceutical disciplines, or in health careers (e.g., medicine, nursing, dentistry) are all welcome. Prior wet laboratory experience in pipetting and molecular methods is a plus, but not essential. The work will require students to work with mice and mouse tissue samples.

Project Description: The intern will participate in molecular and behavioral pharmacologic studies to help mechanistically test the overarching hypothesis that striatal peroxisome proliferator-activated receptor-delta (PPARδ) receptors modulate compulsive eating behavior. We are using Cre/Lox recombination approaches to dissect changes in expression of PPARδ and its target genes that develop in a model of compulsive eating within dopamine D1-expressing "direct pathway" vs. ADORA2A-expressing "indirect pathway" neurons of striatal compartments. We also are testing the effects of modulating PPARδ action in these circuits using genetically targeted PPARδ knockout and translationally relevant candidate agonist approaches. The studies will inform the neurobiology of and a potential novel therapeutic approach to compulsive eating disorders such as binge eating and obesity, as well as addictive disorders more broadly.
California

Investigator: Nicole Petersen, PhD
Institution: University of California Los Angeles
Los Angeles, CA
Project Title: Transcranial Magnetic Stimulation and Tobacco Use Disorder: A Network-Level Approach with Attention to Sex as a Biological Variable
Research: Clinical Research
Research Area: Brain Imaging; Brain Stimulation; Tobacco Use Disorder; Neuromodulation; Addiction; Sex/Gender Differences; Smoking
Housing: Campus
Internship Type: In-Person

Student Qualifications: This project involves human research subjects. Interns must be able to respect participant confidentiality, maintain a professional demeanor when discussing sensitive and personal subjects, and be comfortable building rapport with participants. No prior experience with functional magnetic resonance imaging (fMRI) or repetitive transcranial magnetic stimulation (rTMS) will be necessary. An interest in and enthusiasm for human psychology and neuroscience will be important to success.

Project Description: Our ongoing project involves delivering rTMS, a noninvasive brain stimulation technique, to people with tobacco use disorder who are overnight abstinent. We are testing the efficacy of rTMS in alleviating craving and withdrawal symptoms in these people, and how it may differ between men and women. The project also involves brain imaging with fMRI and behavioral measurements using standardized inventories. Therefore, a summer intern would be able to develop their own hypothesis centered around brain stimulation, brain imaging, and behavior (e.g., testing whether rTMS delivered to one of the study sites changes behavioral states, or how that stimulation might impact resting-state connectivity between two seed regions, etc.). Our team will work with the summer intern to develop an evidence-based and tractable hypothesis to be tested using the available paradigm during the summer research period.
Investigator: Steven Shoptaw, PhD
Institution: University of California Los Angeles
Los Angeles, CA
Project Title: MSM and Substances Cohort at UCLA Linking Infections Noting Effects (mSTUDY)
Research: Clinical Research
Research Area: Addiction; HIV
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: This internship is particularly suited to an undergraduate studying medicine, psychology, community health science, public health, or a similar field. Candidates should be entering junior or senior year. Completion of a statistics course is helpful, but not required. The intern will not work directly with research subjects but will be exposed to a variety of clinical research projects and will visit clinics conducting this research.

Project Description: The UCLA Center for Behavioral and Addiction Medicine is a multidisciplinary center that seeks to advance the prevention and treatment of chronic illnesses, especially in communities with health disparities. We work at the intersection of academia and community with a focus on treating addiction and preventing the spread of HIV. People who use substances are at much greater risk of acquiring HIV, and for those with HIV use of substances hinders viral suppression (a key measure of health for those with HIV). The intern will work closely with faculty, staff, and postdoctoral fellows to gain a general understanding of addiction and how it affects (and is affected by) other medical, behavioral, and social conditions.
Investigator: Glenn-Milo Santos, PhD, MPH
Institution: University of California San Francisco
San Francisco, CA
Project Title: The ION+EMI Study: Intermittent Oral Naltrexone Enhanced with an Ecological Momentary Intervention for Methamphetamine-Using MSM
Research: Drug Development Research
Research Area: Pharmacotherapy Trial; Stimulant Use; Methamphetamine Use; Substance Use; HIV; Ecological Momentary Intervention; Sexual and Gender Minorities; Men Who Have Sex with Men
Housing: Subsidized
Internship Type: Virtual or Hybrid

Student Qualifications: Required qualifications include interest in HIV, substance use, clinical research, and social determinants of health; interest in supporting ongoing research study among marginalized populations; and interest in receiving training on human subjects’ research. Preferred (not required) qualifications also include completion of one college-level statistics course or public health course; experience conducting literature reviews (e.g., for a class paper); and experience with human subjects’ research.

Project Description: This internship will allow participants to gain hands-on training in conducting double-blind placebo-controlled pharmacologic trials for substance use disorders among individuals at high risk for acquiring or transmitting HIV. The parent study, HiNT, is testing oral naltrexone taken on an as-needed basis and supported by an ecological momentary adherence intervention to reduce methamphetamine use among sexual minority men who have sex with men.
California

Investigator: Karen Kathleen Szumlinski, PhD
Institution: University of California Santa Barbara
Santa Barbara, CA
Project Title: Incubated Cocaine-Craving and Neurochemical Interactions
Research: Basic Research
Research Area: Behavioral Neuroscience; Drug Addiction; Self-Administration; Craving; Cocaine; Animal Models
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: The intern will be required to work with live rats, as well as rat tissue. An ideal candidate should have an interest in pursuing a PhD in behavioral neuroscience, with some background in biopsychology or pharmacology (the former preferred). The candidate will work as part of a research team and is expected to have excellent interpersonal skills. A candidate with prior animal experience is preferred but not required.

Project Description: This research project will use pharmacological approaches to target the AMPA and NMDA receptors in a rat model of cocaine taking to understand how the excitatory neurotransmitter glutamate drives excessive craving during long-term withdrawal.
Investigator: Christie Fowler, PhD
Institution: University of California Irvine
Irvine, CA
Project Title: Cannabinoid Modulation of Central and Peripheral Extracellular Vesicles
Research: Basic Research
Research Area: Cannabinoid; THC; Marijuana; Cannabis; Nicotine; E-Cigarettes; Extracellular Vesicles; RNA; Vape; Sex Differences; Rat
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Interns will be required to handle rodents and tissue samples. Preferred applicants will have a basic knowledge of neuroscience/biology with an interest in pursuing a research-related career (PhD or MD/PhD). Students will be trained in all techniques to be performed in this research.

Project Description: Given the recent increase in cannabis use in the U.S., there is an urgent need to understand the effects of cannabinoids more clearly on central and peripheral signaling mechanisms. The main psychoactive component in cannabis, Δ9-tetrahydrocannabinol (THC), has been shown to act directly on the cannabinoid receptors. These receptors are expressed in both brain and peripheral cellular populations that have been shown to secrete extracellular vesicles, including the choroid plexus, neurons, glia, and fat cells. The main goals of this research are to investigate the effects of THC on extracellular vesicle signaling in the brain and blood and to identify a panel of biomarkers related to THC use. To further validate the selectivity of the biomarker profile, RNA expression patterns will be compared in the presence of another drug commonly co-used with cannabis: nicotine. Thereafter, we will determine whether THC’s effects on extracellular vesicle density and RNA cargo can be attributed to release from specific cell types in the brain.

Check out the Fowler lab website!
California

Investigator: Davide Dulcis, PhD
Institution: University of California San Diego
La Jolla, CA
Project Title: Functional Significance of Dopamine Plasticity Induced by Neonatal Nicotine Exposure Affecting Adult Drug Preference
Research: Basic Research
Research Area: Nicotine- and Cannabis-Induced Neurotransmitter Plasticity Affecting Reward-Seeking Behavior
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Major in biology, neuroscience, or neurobiology preferred. Skills in histology, immunohistochemistry, and neuroanatomy and experience working with mice. Career interests in basic science, academic professorship, and pre-medical. The student will be required to work with mice and mouse tissue.

Project Description: The intern will be supervised by a postdoctoral fellow currently carrying out studies aimed at uncovering the molecular signaling of neurotransmitter plasticity induced by neonatal exposure to nicotine and cannabis affecting behaviors in adulthood. The intern will use translational mouse models relevant to a variety of neuropsychiatric conditions including mood disorders, addiction, and Parkinson's disease.
### California

**Investigator:** Johanna Folk, PhD  
**Institution:** University of California San Francisco  
San Francisco, CA  
**Project Title:** Reducing Parenting Stress to Facilitate Justice-Involved Youth’s Treatment Engagement  
**Research:** Clinical Research  
**Research Area:** Juvenile Justice; Adolescence; Parenting Stress; Mobile Health Intervention; Health Services  
**Housing:** Subsidized  
**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** Preferred qualifications for this internship focused on clinical research include high school graduate; excellent computer and word processing skills; investigative, data analysis, and reporting skills; ability to set priorities and work both independently and collaboratively; excellent organizational skills; detail oriented; demonstrated excellent punctuality, attendance, and reliability; and coursework in psychology.

**Project Description:** Parenting stress, which is heightened during the detention and community reentry of one’s child, is associated with greater perceived barriers to treatment, less youth therapeutic change throughout treatment, and premature treatment dropout. Addressing parenting stress improves youth treatment engagement and outcomes among youth engaging in antisocial behavior, yet given the many barriers to treatment, novel approaches to intervention are needed; mobile health (mHealth) technology is one promising approach. Advances in technology and community-engaged research allow for active stakeholder collaboration in mHealth application development, with no technological expertise required, through an approach called participatory informatics. The purpose of this mixed-methods study is to (1) develop an mHealth parenting stress intervention using participatory informatics; (2) assess the feasibility and acceptability of the participatory informatics approach and the intervention; (3) evaluate the intervention’s preliminary efficacy in reducing parenting stress and increasing youth engagement in substance use or dual diagnosis treatment post-detention through a pilot RCT; and (4) understand systems-level factors that could influence eventual system adoption and sustainability.
# California

**Investigator:** Ricky Bluthenthal, PhD  
**Institution:** University of Southern California  
Los Angeles, CA  
**Project Title:** Cannabis Use and Health Outcomes Among Opioid-Using People Who Inject Drugs in the Context of Cannabis Legalization  
**Research:** Epidemiology Research  
**Research Area:** Opioids; Cannabis Legalization; People Who Inject Drugs; Observational Epidemiology; Cohort Study; Nonfatal Overdose; Drug Use Frequency  
**Housing:** Subsidized  
**Internship Type:** Hybrid

**Student Qualifications:** Interns with a background in social science are preferred.

**Project Description:** The intern will participate in community-based data collection (quantitative and qualitative interviews with people who inject drugs) and the analysis and write-up of baseline data from this study.
California

Investigator: Dong Song, PhD
Institution: University of Southern California
Los Angeles, CA
Project Title: Combined Mechanistic and Input-Output Modeling of the Hippocampus During Spatial Navigation
Research: Basic Research
Research Area: Hippocampal Memory Prosthesis; Combined Mechanistic and Input-Output Modeling of the Brain; Experimental, Theoretical, and Computational Studies of the Hippocampus; Next Generation Neural Interface Technology; Large-Scale Multi-Region Flexible Conformal Multi-Electrode Array; Ultramiiniaturized Wireless Bioelectronics Systems for Neural Recording and Stimulation
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: The intern needs to have basic programming skill, preferably in Python or MATLAB. The intern will not work with animals, humans, or tissue samples.

Project Description: The summer intern will work on building computational models based on experimental data recorded from behaving animals to understand how the hippocampus performs spatial navigation function.
California

Investigator: Edward Wagner, PhD
Institution: Western University of Health Sciences
Pomona, CA
Project Title: Homeostatic and Hedonic Components Involved in NOP Regulation of Energy Homeostasis
Research: Basic Research
Research Area: Sex Differences; Nociceptin Opioid Receptor; Proopiomelanocortin; Dopamine; Energy Balance; Food Addiction
Housing: Campus
Internship Type: In-Person

Student Qualifications: The intern should have a strong sense of scientific curiosity and strong performance in sciences courses at the high school level as well as in lower- and upper-division science courses in college. The intern must be motivated and prepared to work as part of a team. The intern will work with animals and tissue samples and will be trained to do so confidently and independently. It is expected that the intern will put in a level of effort that will warrant co-authorship on papers.

Project Description: My lab examines the role of the nociceptin opioid receptor in regulating the excitability of hypothalamic proopiomelanocortin neurons and mesolimbocortical dopamine neurons that are critical to the control of homeostatic and hedonic feeding. The summer intern will be exposed to the various facets of the research conducted in my lab and will participate in homeostatic and binge-feeding studies that include the application of drugs in discrete brain regions as well as optogenetic and chemogenetic approaches. Time permitting, the intern will also perform electrophysiological recordings in an in vitro slice preparation that involves the application of drugs as well as optogenetic and chemogenetic activation of specific neuronal populations and learn how these manipulations affect the excitability of downstream postsynaptic targets.
California

Investigator: Athena Robinson, PhD
Institution: Woebot Health
San Francisco, CA
Project Title: RCT of Woebot for Substance Use Disorders
Research: Clinical Research
Research Area: Digital Therapeutics; Mental Health Automated; Conversational Agent;
Mobile Smartphone Application; Randomized Clinical Trial; Substance Use Disorder; Cognitive Behavioral Therapy
Housing: Subsidized
Internship Type: Virtual

Student Qualifications: This unique opportunity will allow the intern to gain valuable experience working at the intersection of technology and behavioral health. The successful applicant may come from a range of different majors including clinical and research psychology, other social science disciplines, public health, and computer science and engineering. Required skill sets include basic coursework on research methods. The intern will be required to complete all relevant training and certifications.

Project Description: The summer intern will be part of a cross-functional research team evaluating the efficacy of an artificial intelligence (AI) powered chatbot for mental health. Woebot for Substance Use Disorders leverages psychotherapeutic strategies and techniques derived from cognitive behavioral therapy, interpersonal psychotherapy, and motivational interviewing to address substance abuse issues. This research project is a collaboration between academic researchers at Stanford University and industry partners at Woebot Health. It involves a randomized controlled trial (RCT) that uses rigorous research methods to evaluate whether engaging with Woebot can decrease substance abuse and improve mental health conditions such as anxiety and depression.
Colorado

Investigator: Joshua Adam Barocas, MD
Institution: University of Colorado School of Medicine
Aurora, CO
Project Title: Development of a Novel Community-Based High-Performance Surveillance Network for Drug Use
Research: Epidemiology Research
Research Area: HIV; Substance Use; Epidemiology
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: Ideally, the intern will have a strong interest in clinical epidemiology, specifically related to substance use disorders and infectious diseases; a career trajectory toward a health-related field (e.g., medicine, nursing, public health); and a desire to work with data. Basic or introductory knowledge of epidemiology and biostatistics is preferred. A person with experience in advanced biostatistics will likely be able to delve deeper into the problem and work more independently.

Project Description: The summer research project will focus on assisting the research team in identifying hidden factors associated with overdose and HIV among people who use drugs. The project will build on work that the team is conducting related to risk and protective factors associated with drug use and HIV outcomes using machine learning, natural language processing, and clinical epidemiology. The goal of this work is to identify structural factors that influence HIV and overdose, shifting the onus for change away from the individual to place it more squarely on society and policy.
Colorado

Investigator: Ashley Brooks-Russell, PhD
Institution: University of Colorado, Anschutz Medical Campus
            Aurora, CO
Project Title: Novel Approaches to Assessing Cannabis Impaired Driving
Research: Behavioral Research
Research Area: Marijuana or Cannabis; Cannabis Impairment; Cannabis Tolerance; Driving Safety; Driving Under Influence; Detecting Impairment
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Experience with survey data or statistical analysis is preferred as well as an interest in public health.

Project Description: The student will assist with a research project that examines objective behavioral methods to detect impairment from cannabis related to driving performance. Specific activities will include assisting with participant recruitment and/or screening, shadowing and/or assisting with data collection activities, literature review and data analysis related to the student's research project, attending project meetings with the investigative team, and other similar research project activities.
Colorado

Investigator: Nicole Tuitt, DrPH
Institution: University of Colorado Anschutz Medical Campus
Aurora, CO
Project Title: Advancing Methods for Multilevel Interventions to Support Health Equity for Urban American Indian/Alaska Native and Black Youth
Research: Preventive Research
Research Area: Structural Racism; Substance Use; Sexual Risk-Taking; Urban American Indian and Alaska Native (AI/AN) Adolescents; Urban Black Adolescents; Mixed Methods Research
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Relevant majors include public health, psychology, anthropology, sociology, social demography, and education. Interest in a career addressing multilevel and structural factors that influence adolescent substance use and sexual risk-taking and strength-based, community and youth engaged research and practice. No research experience required. Should have practice-based experience working in communities of color, specifically with AI/AN and/or Black youth.

Project Description: The goals of this project are to (1) examine multilevel determinants of substance use and sexual risk-taking among Black and AI/AN high school youth (aged 14-18) in the Denver metropolitan area using a mixed methods approach and (2) engage urban AI/AN and Black youth to elucidate distinct conceptual frameworks of risk and resilience to substance use and sexual risk-taking and identify socioecological levels on which to intervene.
Investigator: L. Cinnamon Bidwell, PhD
Institution: University of Colorado Boulder
Boulder, CO
Project Title: ERP Studies of Acute Influences of THC and CBD on Memory Encoding and Retrieval Processes
Research: Clinical Research
Research Area: Health Effects of Legalized Cannabis
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Seeking a motivated undergraduate who is interested in gaining research experience at the intersection of public health, neuroscience, and psychological health. Some coursework in research methods or statistics preferred.

Project Description: The purpose of the study is to investigate the effects of different forms of cannabis on memory. Now that commonly available strains of cannabis contain different amounts of various cannabinoids including THC and CBD, it is important to know how different cannabinoids affect memory and related cognitive abilities. We employ a design that includes both naturalistic and experimental elements, with cannabis users assigned to self-administer one of three randomly assigned cannabis strains immediately prior to memory encoding (i.e., learning) and/or retrieval phases of a recognition memory task while recording memory-related ERPs (via EEG).
Colorado

Investigator: Angela Bryan, PhD
Institution: University of Colorado Boulder
Boulder, CO
Project Title: Exploring the Anti-Inflammatory Properties of Cannabis and Their Relevance to Insulin Sensitivity
Research: Clinical Research
Research Area: Health Effects of Legalized Cannabis
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Seeking a motivated undergraduate who is interested in gaining research experience at the intersection of public health, neuroscience, and psychological health. Some coursework in research methods or statistics preferred.

Project Description: We are conducting a study to understand the relationship of legalized cannabis use to the biological and behavioral factors related to type 2 diabetes. Interestingly, cannabis use increases caloric intake, but is related to lower body mass index, better insulin function, and lower risk for type 2 diabetes. We will study this paradox by examining the impact of cannabis strains that differ in the amount of THC and CBD (the two major cannabinoids in cannabis) on diabetogenic biological processes in order to inform individual choices regarding the use of cannabis and policy decisions regulating cannabis strains.
Colorado

Investigator: David Root, PhD
Institution: University of Colorado Boulder
Boulder, CO
Project Title: Genetic Dissection of Ventral Tegmental Area Glutamate and GABA Neurons in Reward and Aversion
Research: Basic Research
Research Area: Motivated Behavior; Reward; Aversion; Glutamate; Dopamine; GABA; VTA; Co-Release
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: High school degree and some college experience is desired. Psychology, neuroscience, or related major preferred. Applicants with a goal of entering graduate education in the neurosciences desired. No prior research experience is necessary. However, because this research involves mouse models, the intern must be willing to work with animal subjects.

Project Description: The Root lab is interested in identifying the circuits and functions of genetically defined neurons residing in the brain's "reward center," the ventral tegmental area. The lab investigates basic circuitries as well as cell-type specific involvement in motivated behavior, addiction, and stress.
Colorado

Investigator: Linda Watkins, PhD
Institution: University of Colorado Boulder
Boulder, CO
Project Title: Enduring Enhancement of Neuropathic Pain by Early Post-Trauma Morphine
Research: Basic Research
Research Area: Enduring Potentiation of Neuropathic Pain by Early Post-Trauma Opioids
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: At minimum, the intern will be required to work with rat spinal cord and brain tissues. If the intern is interested in working with awake rats, we can involve them in rat behavior. If interested in helping with various surgeries, we can involve them in those aspects. The intern can self-select which parts of the study to participate in.

Project Description: We have discovered a very troubling and previously unrecognized effect of opioids, including every opioid we have tested to date (morphine, fentanyl, oxycodone, etc.). When one gives a short course of opioid early after trauma, as one would to treat the pain of trauma, this actually leads to a multi-month amplification of the intensity and duration of post-traumatic pain. This is true for both pain from peripheral nerve injury (neuropathic pain) as well as that from abdominal surgery (post-operative pain). This is not a minor effect of opioids, so it is important to understand why this occurs in order to prevent it from happening. We are undertaking a wide array of mechanistic studies, including state-of-the-art viral vector targeted destruction of highly specific neurocircuits in brain, and analyses of effects of dendritic spines that form the basis of abnormal neuronal excitability, which we predict to be the cause of this deleterious effect of opioids.
**Connecticut**

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>Steven Kinsey, PhD</th>
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<tbody>
<tr>
<td>Institution:</td>
<td>University of Connecticut Storrs, CT</td>
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<tr>
<td>Project Title:</td>
<td>Stemming the Opioid-Induced Pain Cascade via Cannabinoid Modulation</td>
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<tr>
<td>Research:</td>
<td>Behavioral Research</td>
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<tr>
<td>Research Area:</td>
<td>Behavioral Pharmacology</td>
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<tr>
<td>Housing:</td>
<td>Campus</td>
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<tr>
<td>Internship Type:</td>
<td>In-Person</td>
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**Student Qualifications:** Background in psychology, biology, or similar area preferred.

**Project Description:** One effect of chronic opioid use is the development of opioid-induced hyperalgesia (OIH), a condition that increases pain sensitivity in opioid users and may contribute to drug abuse. The proposed study will manipulate the body’s own cannabis-like chemicals to reduce OIH. Our long-term goal is to develop effective treatments for opioid use disorder. Students will receive hands-on training in mouse surgery, behavioral testing, and in vitro cell culture techniques. More information can be found on our [lab website](http://example.com).
**Connecticut**

<table>
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<tr>
<th><strong>Investigator:</strong></th>
<th>Carla Rash, PhD</th>
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</table>
| **Institution:**  | University of Connecticut Health School of Medicine  
|                   | Farmington, CT  |
| **Project Title:**| Promoting Employment in Persons Living with HIV/AIDS |
| **Research:**     | Behavioral Research |
| **Research Area:**| HIV; Contingency Management; Incentives; Unemployment |
| **Housing:**      | Campus |
| **Internship Type:** | Virtual; In-Person; Hybrid |

**Student Qualifications:** Research will require contact with human subjects (e.g., interview, urine samples).

**Project Description:** This project aims to help persons living with HIV/AIDS stay motivated during the often-discouraging job-seeking process. The study uses a behavioral strategy called contingency management to help people stay engaged with the employment-seeking process. Opportunities to address research questions in other completed data sets are possible. These data involve disadvantaged populations (i.e., HIV-positive, homeless, food-insecure).
Connecticut

Investigator: Roman Shrestha, PhD, MPH
Institution: University of Connecticut
Storrs, CT
Project Title: Training in mHealth Prevention with MSM
Research: Preventive Research
Research Area: HIV/AIDS Prevention; Substance Use; mHealth; Mobile Health Application; Global Health; Lesbian, Gay, Bisexual, and Transgender (LGBT) Health Disparities; Mental Health
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Students with prior research experience are preferable, especially in HIV and at-risk populations such as men who have sex with men (MSM). Students should have an interest in pursuing graduate education and research in psychology, public health, or a related field and be conscientious and detail orientated.

Project Description: Malaysia’s HIV epidemic is rapidly expanding with recent evidence suggesting accelerated sexual transmission, especially among men who have sex with men (MSM). Central factors in this expanding HIV epidemic among MSM are condomless sex, STIs, and co-occurring psychiatric and substance use disorders (P/SUD). Insights into Malaysia’s HIV prevention gap are multifactorial. Both homosexuality and substance use are criminalized in Malaysia, making MSM who use substances bear the dual burden of stigma and discrimination, including in healthcare. MSM are often hesitant to disclose their sexuality, risk behaviors, or depressive symptoms, mostly due to fear of stigma, discrimination, or criminalization. Strategies that facilitate screening and prevention practices in a non-judgmental fashion are likely to increase access to evidence-based prevention like HIV testing and pre-exposure prophylaxis (PrEP), especially if screening and counseling address P/SUD. Introducing an innovative app-based platform to deliver holistic HIV prevention services represents a paradigm shift in HIV prevention because it can deliver effective prevention in a confidential, less stigmatizing, and convenient manner. Building on the advantages for scalability and dissemination afforded by the app platform, we propose to develop and test the efficacy of a clinic-affiliated app (JomPrEP) to deliver an integrated HIV prevention intervention that will promote HIV testing and linkage to PrEP.
Connecticut

Investigator: Kristen Brennand, PhD
Institution: Yale School of Medicine
New Haven, CT
Project Title: Functional Genomic Resource and Integrative Model of Dopaminergic Circuitry Associated with Psychiatric Disease
Research: Basic Research
Research Area: Epigenetics; Addiction; Schizophrenia; Stem Cells; Dopaminergic Neurons
Housing: Campus
Internship Type: In-Person

Student Qualifications: Neuroscience or genetics major. Basic tissue culture experience is a plus.

Project Description: We propose to develop methods for integrating a broad range of genomic and epigenetic data collected from hundreds of postmortem brain samples and genetic data collected from hundreds of thousands of living subjects to build a much-needed resource connecting genetic risk architecture of common psychiatric disease with neurobiology, including dopaminergic neurons as a key cell type critically important for the pathophysiology and treatment of mood and psychosis spectrum disorders and drug addiction.
Connecticut

Investigator: Lynn E. Fiellin, MD
Institution: Yale School of Medicine
New Haven, CT
Project Title: A Digital Intervention to Prevent the Initiation of Opioid Misuse in Adolescents in School-Based Health Centers
Research: Behavioral Research
Research Area: Videogames; Digital Health Tools; Prevention and Wellness Research; Adolescents; School-Based Health Centers; Randomized Controlled Trial
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: The ideal intern will be enthusiastic about learning new concepts and procedures. The intern will also need to be a strong team player. They could have a range of different interests such as psychology, biology, or medicine, plus a strong interest in being part of a team and working with adolescents. The intern should be a high school graduate and 18 years or older.

Project Description: The play2PREVENT Lab at the Yale Center for Health and Learning Games focuses on the use of play in the form of videogame interventions for health promotion, risk reduction, social good, and educational interventions. We develop and evaluate videogame interventions focused on behavior change, education, health, well-being, and social intelligence using the most rigorous scientific methods and metrics available.

The play2PREVENT Lab was recently awarded a National Institutes of Health (NIH) Helping to End Addiction Long-term (HEAL) Initiative grant to develop a videogame, PlaySMART, to promote mental health and prevent opioid misuse in adolescents. The intern will work with the play2PREVENT research team to evaluate our PlaySMART videogame intervention in high school students aged 16-19 in partnership with school-based health centers. The primary focus of this position is assisting with the execution of a large-scale randomized controlled trial and several ancillary projects related to this grant.
Connecticut

Investigator: Asti Jackson, PhD
Institution: Yale School of Medicine
New Haven, CT
Project Title: Investigating the Relationship Between Menthol Flavor and Nicotine Metabolism in African Americans Who Smoke Cigarettes
Research: Other Research
Research Area: E-Cigarette; Experimental Studies; Nicotine; Tobacco; Cigarette; Biomarkers; Health Disparities
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: The candidate should be a biology or psychology major or pre-medical student who is willing to work with a substance-using population; has high emotional intelligence, good organizational skills, and time management skills; and is patient and flexible.

Project Description: The overall goal of the study is to understand the relationship between menthol e-liquid flavor and nicotine metabolite ratio on plasma pharmacokinetic parameters of nicotine and subjective effects in African Americans who smoke by utilizing two lab-based e-cigarette exposure paradigms: (1) directed e-cigarette administration and (2) e-cigarette ad libitum use. The candidate will contribute to recruitment (i.e., distributing flyers and posting social media ads), conduct phone screenings to decipher if individuals are eligible to partake in the study, conduct intake appointments where participants will be consented and their personal information (e.g., demographics, smoking history, emergency contact) and biological samples (e.g., urine cotinine, breath CO, pregnancy test) will be collected and health measures assessed (e.g., heart rate, blood pressure, pulse oximetry). The candidate will have space to conduct these appointments at the Connecticut Mental Health Center (CMHC), located at 34 Park Street New Haven, CT 06519.
Connecticut

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Sarah Lichenstein, PhD</th>
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<tr>
<td>Institution</td>
<td>Yale School of Medicine</td>
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<td></td>
<td>Hamden, CT</td>
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<tr>
<td>Project Title</td>
<td>Connectome-Based Neuromarkers of Problem Cannabis Use</td>
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<tr>
<td>Research</td>
<td>Clinical Research</td>
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<tr>
<td>Research Area</td>
<td>Role of Developing Neural Network Connectivity in the Etiology and Course of SUD in Adolescence and Emerging Adulthood; fMRI; Functional Connectivity; Clinical Assessments; Dense Sampling</td>
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<tr>
<td>Housing</td>
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<tr>
<td>Internship Type</td>
<td>Virtual; In-Person; Hybrid</td>
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**Student Qualifications:** Students with background in psychology, neuroscience, data science, or related field preferred. Statistics and coding skills preferred if student is interested in conducting their own analyses during the internship.

**Project Description:** The intern will have the opportunity to participate in data collection for multiple ongoing studies related to neural correlates of cannabinoid use, including a longitudinal study collecting densely sampled fMRI data (four scans in 6 months) from 20 adolescents (aged 15-17) who regularly use cannabis and 20 age- and sex-matched typically developing adolescents, as well as a randomized, double-blind, within-subjects, cross-over study assessing neural changes following a single dose of CBD versus placebo among healthy female volunteers.
**Connecticut**

<table>
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<tr>
<th>Investigator:</th>
<th>Sandra Springer, MD</th>
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</table>
| Institution: | Yale School of Medicine  
New Haven, CT |
| Project Title: | Addressing Risk Through Community Treatment for Infectious Disease and Opioid Use Disorder Now (ACTION) Among Justice-Involved Populations |
| Research: | Clinical Research |
| Research Area: | Justice-Involved Persons; Stimulant and Opioid Use; Linkage Post-Release; PrEP; HIV; HCV; OUD; Patient Navigation; Mobile Health Unit; Implementation Research; Quantitative Research; Randomized Controlled Trial |
| Housing: | Campus |
| Internship Type: | Hybrid |

**Student Qualifications:** Ability to speak English/Spanish; Bachelor of Arts; possibly some training on data entry in Excel; literature review skills (PubMed, etc.); social media skills; interest in persons who use drugs, HIV prevention and treatment, and justice-involved persons.

**Project Description:** The intern could become experienced with justice-involved participants who have a history of opioid and/or stimulant use pre-incarceration who are interested in pre-exposure prophylaxis (PrEP) to prevent HIV infection or antiretroviral therapy to treat HIV infection through two mechanisms: (1) patient navigation where participants will be linked to clinicians in the community to receive such services and (2) a mobile health unit in five counties in Connecticut. The intern will be trained in general research assistant activities, shadow research assistants already working on the project, and help with recruiting and interviewing new participants. The intern could potentially review articles and assist with review papers, a retrospective data analysis project, and data entry.
Connecticut

Investigator: Renato Polimanti, PhD  
Institution: Yale University  
West Haven, CT  
Project Title: Investigating the Systems Genetics of the Patterns of Polysubstance Abuse and Addiction  
Research: Basic Research  
Research Area: Human Genetics; Statistics; Computational Biology  
Housing: Campus  
Internship Type: Virtual; In-Person; Hybrid  

Student Qualifications: The intern should have strong interests in human genetics, computational biology, or statistics.  

Project Description: Dr. Polimanti and the members of the Polimanti lab will mentor the intern with the goal of teaching basic skills related to computational biology and psychiatric genetics. The intern will apply the novel knowledge acquired to a project designed to investigate molecular mechanisms related to substance use disorders and their comorbidity. The focus of the project will be determined with consideration for the intern’s interests and career plans. Additionally, the intern will participate in the activities of the Yale Psychiatry Division of Human Genetics, closely interacting with its members and participating in the meetings scheduled within the division. The intern will also be encouraged to attend the many relevant seminars that take place not only at the Yale Medical School, but also at the Yale College of Arts and Science and on the Yale West Campus.
Connecticut

Investigator: Helena Rutherford, PhD
Institution: Yale University
New Haven, CT
Project Title: Psychosocial and Neurobiological Stress and Opioid Use Trajectories Following Pregnancy
Research: Clinical Research
Research Area: Maternal Opioid Use Disorder; Pregnancy; Psychosocial Stress; Neuroimaging
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: This study requires interns to work with human subjects. Although prior research experience is preferred, all necessary training will be given.

Project Description: Maternal opioid addiction is a significant public health concern, impacting the health and well-being of both mothers and their developing children during pregnancy and the postpartum period. Crucially, factors shaping maternal opioid use trajectories during pregnancy and after birth are not well understood. Emerging research indicates that elevated levels of psychosocial stress during pregnancy and the first year postpartum may explain increased risk for opioid relapse, consistent with a larger body of research that has documented the role of stress in the initiation and maintenance of addiction generally and an emerging body of work focusing on parenting stress and addiction specifically. The current project employs a short-term longitudinal design to measure the brain and behavioral mechanisms of psychosocial and parenting stress in pregnant women receiving medication-assisted treatment (MAT) for opioid use disorder (OUD) and demographically matched pregnant women not receiving MAT. The findings will be critical to the development of more effective evidence-based intervention and prevention approaches for pregnant women and mothers with OUD.
Florida

Investigator: Percy Calvo-Marzal, PhD
Institution: University of Central Florida
Orlando, FL
Project Title: Electrochemical Detection of Drug Metabolites Based on Molecularly Imprinted Polymer Magnetic Nanoparticles
Research: Basic Research
Research Area: Sensor Development; Point-Of-Care Detection of Drugs; Fentanyl and Derivatives; Magnetic Nanomaterials for Sensor Applications
Housing: Campus
Internship Type: In-Person

Student Qualifications: Chemistry and analytical chemistry coursework.

Project Description: The intern will work on the synthesis, characterization, and optimization of nanomagnetic molecularly imprinted particles (nanomag-MIPs) to be used as a substrate for the application of sensing material for drug detection. Characterization techniques such as SEM and TEM will be used. The intern will also learn electrochemical techniques for the detection of drugs using the nanomag-MIPs.
Florida

Investigator: Linda Cottler, RN, PhD, MPH
Institution: University of Florida
Gainesville, FL
Project Title: National Drug Early Warning System Coordinating Center
Research: Epidemiology Research
Research Area: Emerging Drug Trends; Surveillance; New Psychoactive Substances; Data Harmonization
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Seeking undergraduate students with interests in behavioral research, ethics, or the inclusion of underrepresented minorities in research. Students with a declared major in engineering, epidemiology, anthropology, psychology, or sociology are preferred. Summer interns must be dedicated, reliable, curious, independent, and solution- and detail-oriented, as well as have a desire to learn about substance abuse research.

Project Description: The Department of Epidemiology at the University of Florida has opportunities available for summer scholars interested in a challenging and rewarding summer experience. The 2022 summer scholars will work on an ongoing NIDA cooperative agreement, the National Drug Early Warning System (NDEWS) Coordinating Center, which maintains surveillance for emerging drug trends across the U.S. The Coordinating Center will collaborate across 18 sites to collect community-level data indicators to assess trends in availability, use, and consequences of new psychoactive substances. NDEWS will utilize novel surveillance methods, then harmonize data across sites for quick dissemination to key stakeholders.

The interdisciplinary nature of this project draws heavily on established and emerging public health surveillance methods and integrates expertise from multiple disciplines including epidemiology, forensic medicine, toxicology, psychiatry, sociology, bioinformatics, and artificial intelligence; thus, the internship will expose Summer Scholars to a team science approach and serve as an introduction to drug abuse research.
Florida

Investigator: Lori Knackstedt, PhD
Institution: University of Florida
Gainesville, FL
Project Title: Identifying Patterns of Human Polysubstance Use to Guide Development of Rodent Models
Research: Basic Research
Research Area: Intravenous Drug Self-Administration; Preclinical Animal Model; Cocaine; Alcohol; Relapse; Glutamate; Dopamine; Neurobiology of Drug Seeking
Housing: Campus
Internship Type: In-Person

Student Qualifications: No prior research experience necessary. Must be comfortable working with rats.

Project Description: The goal of this project is to build rat models of cocaine-alcohol polysubstance use in which rats voluntarily consume these two drugs sequentially or simultaneously. The effects of such polysubstance use on dopamine and glutamate homeostasis will be investigated.
Florida

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>Catalina Lopez-Quintero, MD, PhD, MPH</th>
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<tbody>
<tr>
<td>Institution:</td>
<td>University of Florida</td>
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<tr>
<td></td>
<td>Gainesville, FL</td>
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<tr>
<td>Project Title:</td>
<td>Drug Use Disparities Among Hispanics: Elucidating the Complex Interactions Between Socio-Cultural, Neurocognitive, and Drug Use-Related Factors</td>
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<tr>
<td>Research:</td>
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<tr>
<td>Research Area:</td>
<td>Epidemiology of Drug Use; Drug Use Disparities; Intersectionality in Drug Use; Mechanisms Underlying Drug Use Disparities; Population Neuroscience</td>
</tr>
<tr>
<td>Housing:</td>
<td>Campus</td>
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<tr>
<td>Internship Type:</td>
<td>In-Person; Hybrid</td>
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</tbody>
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**Student Qualifications:** We are seeking undergraduate students with interests in drug use and health disparities research with no prior research experience. Students with a declared major in public health, psychology, neuroscience, or sociology and who are interested in pursuing a career in medicine, neuroscience, or public health are preferred. The internship will be a positive growth experience for scholars who are independent, dedicated, and passionate about drug use and health disparities research.

**Project Description:** The Research Initiatives in Substance Use and Equity (RISE) Lab at the University of Florida Department of Epidemiology offers research opportunities for summer scholars interested in understanding the causes and consequences of drug use and how our communities are differently impacted by drug use. Summer scholars will participate in an established research training program for undergraduate students. Specifically, scholars will identify a knowledge gap in drug use disparities or population neuroscience and develop a research project that involves analyses of data from the Drug Use Disparities Among Hispanics: Elucidating the Complex Interactions Between Socio-Cultural, Neurocognitive, and Drug-Use Related Factors study or from national surveys such as the National Survey on Drug Use and Health or the Population Assessment of Tobacco and Health (PATH) Study. Summer scholars will work with other undergraduate students in the RISE Lab in developing their projects using a peer mentoring model.
Florida

Investigator: Brandon Warren, PhD  
Institution: University of Florida  
Gainesville, FL  
Project Title: Neuronal Ensembles in Extinction of Cocaine Seeking  
Research: Behavioral Research  
Research Area: Addiction; Rat; Self-Administration; Cocaine; Oxycodone  
Housing: Subsidized  
Internship Type: In-Person  

Student Qualifications: Interns must have a positive attitude and willingness to learn and must be comfortable with animal research and prepared to handle rats. Previous preclinical laboratory experience, rodent handling experience, neuroscience coursework, and microscope and image analysis training preferred.

Project Description: We will train rats to perform cocaine self-administration. We will use a variety of genetic and transgenic approaches to determine the role of neuronal ensembles (neurons activated by drug-taking) in self-administration and extinction of cocaine seeking. We will next perform single-nuclei RNA sequencing to determine the differential gene expression changes that underlie drug-taking behaviors.
Florida

Investigator: Dan Wesson, PhD
Institution: University of Florida
Gainesville, FL
Project Title: Circuitry and Function of Ventral Striatum Subregions
Research Area: Electrophysiology in Behaving Animals; Optical Imaging in Behaving Animals; Optogenetics; Motivation; Decision-Making; Cocaine Relapse; Viral Vectors; Ventral Striatum; Tubular Striatum; Nucleus Accumbens; Dopamine
Housing: Campus
Internship Type: In-Person

Student Qualifications: Introductory coursework in biology and psychology is preferred. The intern should be motivated, engaged, intellectually curious, well organized with a strong attention to detail, and able to work fluidly in teams. The intern will work with vertebrate animals in the laboratory, specifically mice, so the intern needs to be comfortable with that and have no known allergies to rodents. No prior research experience is required—we’d be happy to be the intern’s first laboratory experience!

Project Description: The selected intern will engage in neurophysiological research in behaving animals to understand the function of brain circuitry as it relates to and influences motivated behavior, including relapse to cocaine use. The intern will utilize state-of-the-art methods to manipulate and monitor genetically identified cell populations in the brain’s ventral striatum to test how the cells operate and to determine how they contribute to behavior. The overall goal of this project will be for the intern to build on our published and unpublished studies positioning the brain’s olfactory tubercle (which we recently renamed the “tubular striatum” or “TuS”) in the reward circuitry to determine mechanisms whereby the TuS exerts control over cocaine seeking and taking. The intern will test the overall hypothesis that there is a functional organization among ventral striatum subregions that influence drug taking and seeking. To accomplish this, the intern will use neural recordings, neural imaging, optogenetics, and/or DREADDs in behaving mice—a powerful and modern toolkit that our lab is expert in—to identify important principles of brain function. For more information, prospective interns are encouraged to visit our lab website.
Florida

Investigator: Georges Khalil, PhD, MPH
Institution: University of Florida
Gainesville, FL
Project Title: Social Influence Strategies During a Web-Based Smoking Prevention Intervention for Adolescents
Research: Behavioral Research
Research Area: Tobacco Prevention; Tobacco Cessation; Nicotine Addiction; Vaping; Electronic Cigarettes; Adolescents; Games for Health; Web-Based Programs; Intervention; Social Network
Housing: Campus
Internship Type: In-Person

Student Qualifications: Previous research experience is preferred, but not required. Although not required, preferred majors include psychology, sociology, communication, health sciences, social sciences, public health, community health, health education, and other related fields. This internship is best suited to candidates who are interested in adolescent health or tobacco prevention and control through behavioral science. This internship will require students to work with human subjects.

Project Description: During this summer term, Dr. Khalil and his research team will be conducting a pilot randomized controlled trial to test the feasibility and short-term effectiveness of a game-based tobacco prevention and cessation program for adolescents. During this project, the intern will have the opportunity to gain skills in the implementation of game-based social interventions for tobacco prevention. Particularly, the intern will engage in data collection in the community, implement and deliver the game-based intervention, and contribute to preliminary analyses of qualitative and quantitative data (qualitative interviews, statistical data, and social network data).
Florida

Investigator: Adam Carrico, PhD
Institution: University of Miami
Miami, FL
Project Title: Optimizing PrEP Adherence in Sexual Minority Men Who Use Stimulants
Research: Clinical Research
Research Area: Adherence; Cocaine; HIV Prevention; Methamphetamine; Pre-Exposure Prophylaxis (PrEP); Sexual Minority Men
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: Interns with career interests in psychology, nursing, or medicine are strongly preferred. Supervised interaction with human subjects is necessary.

Project Description: The intern will primarily assist with implementation of a randomized controlled trial testing the efficacy of a positive affect intervention for boosting and extending the benefits of contingency management for adherence to pre-exposure prophylaxis (PrEP) in sexual minority men who use stimulants. The intern will also have opportunities to complete a mentored research project leveraging multiple datasets from Dr. Carrico’s laboratory focusing on the intertwining epidemics of stimulant use and HIV/AIDS in sexual minority men.
Florida

Investigator: Elizabeth Losin, PhD
Institution: University of Miami
Miami, FL
Project Title: Psychological and Brain Mechanisms Underlying Disparities in Opioid and Non-Opioid Pain Treatment Decisions
Research: Behavioral Research
Research Area: Social/Cultural Neuroscience; fMRI; Pain Treatment Disparities; Health Disparities
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: The research will require the intern to work with human subjects and MRI. Ideal candidates will also have programming or statistical experience as fMRI data analysis is computationally intensive.

Project Description: The need for effective interventions to reduce overprescribing of opioids grows more urgent as the number of individuals affected by the opioid crisis continues to rise, and the need to improve pain management in minority populations becomes more critical as minority populations in the U.S. grow. The research project uses a novel combination of neurobiological (fMRI) and behavioral measures to investigate mechanisms underlying clinicians’ gender and ethnic biases in opioid and non-opioid analgesic pain treatment decisions. The findings of this research can inform improvements in clinician training aimed at mitigating analgesic prescribing disparities and the associated risks of opioid abuse and poor pain management.
Florida

Investigator: Helena Solo-Gabriele, PhD  
Institution: University of Miami  
              Miami, FL  
Project Title: Development and Proof-Of-Concept Implementation of the South Florida  
              Miami RADx-rad SARS-CoV-2 Wastewater-Based Surveillance  
              Infrastructure  
Research: Epidemiology Research  
Research Area: Wastewater Based Epidemiology; SARS-CoV-2; COVID-19  
Housing: Subsidized  
Internship Type: Hybrid  

Student Qualifications: Strong mathematics and statistics skills. Commitment to project.

Project Description: Students will have the opportunity to observe the process of collecting,  
concentrating, extracting, and analyzing wastewater samples for the virus that causes SARS-  
CoV-2. They will be given environmental and health-based data to evaluate possible  
relationships between SARS-CoV-2 levels in wastewater and health.
Florida

Investigator: Hansel Tookes, MD, MPH
Institution: University of Miami
Miami, FL
Project Title: Tele-Harm Reduction for Rapid Initiation of Antiretrovirals in People Who Inject Drugs: A Randomized Controlled Trial
Research: Clinical Research
Research Area: HIV; People Who Inject Drugs; Syringe Services Program; Harm Reduction
Housing: Campus
Internship Type: In-Person

Student Qualifications: No prior research experience required. The intern must embrace harm reduction: meeting people who use drugs where they are, treating them with dignity, and respecting their autonomy.

Project Description: Tele-Harm Reduction seeks to engage persons who inject drugs (PWID) in HIV care by bringing health care out of the traditional system and leveraging syringe services programs as trusted venues to deliver telehealth-enhanced access to antiretrovirals, medications for opioid use disorder, and hepatitis C cure. We urgently need a strong evidence base to prove that Tele-Harm Reduction can help us end the HIV epidemic in PWID and save lives. We seek to set the foundation to build a new standard of care to treat HIV among PWID in the COVID-19 era and beyond.
Florida

Investigator: Michal Toborek, MD, MPH  
Institution: University of Miami Miller School of Medicine  
Miami, FL  
Project Title: Targeting Inflammasomes in Substance Abuse and HIV  
Research: Basic Research  
Research Area: Neuroscience; Brain; Drug Abuse; Opioids; HIV; Vascular Biology; Blood-Brain Barrier; Mice; Cell Culture  
Housing: Subsidized  
Internship Type: In-Person; Hybrid

Student Qualifications: We accept students with or without prior research experience.

Project Description: Our research aims to investigate the impact of HIV brain infection and prescription opioids on ischemic stroke, a major comorbidity in the infected population and opioid abusers. We recently identified that brain infection by HIV increases susceptibility to ischemic stroke, leading to reactivation of HIV. Importantly, this effect was associated with activation of the inflammasome. While the impact of opioids, such as morphine and oxycodone, on these events is unknown, we have evidence that chronic exposure to opioids can enhance tissue damage in ischemic stroke and activate the inflammasome. In line with these observations, the central hypothesis of the current grant is that HIV and prescription opioids activate inflammasomes in the CNS that can worsen stroke outcome, including post-stroke HIV reactivation in the CNS and egress into the periphery. In Aim 1 of the proposed work, we will evaluate the mechanisms of inflammasome activation by HIV infection and prescription opioids. In Aim 2, we will therapeutically target mitochondria for protection against HIV and opioid-induced inflammasome activation, leading to improvement of stroke outcome and recovery. In Aim 3, we will study the impact of opioid-induced inflammasome activation on HIV reactivation in the CNS and egress into the periphery in ischemic stroke.
Florida

Investigator: Micah Johnson, PhD
Institution: University of South Florida
Tampa, FL
Project Title: Examining the Stress Processes Relating Ethnicity and Sex to Substance Misuse and Services Outcomes (ESPRESSO)
Research: Epidemiology Research
Research Area: Race; Disparities; Social Disadvantage; Opioid Misuse
Housing: Campus
Internship Type: Hybrid

Student Qualifications: Students should be interested in substance misuse research. We highly value underrepresented minority or disadvantaged students (social, mental health, or other disadvantages). Experience conducting quantitative analysis is preferred, but not required.

Project Description: Our thematic focus is on the relationship between social disadvantage and opioid misuse. Students will be trained on responsible conduct of research, IRB, substance misuse research, and mediating/moderating factors such as race. They will learn how to develop research questions, analyze data, and write and disseminate research findings.
**Georgia**

**Investigator:** J. Douglas Bremner, MD  
**Institution:** Emory University  
Atlanta, GA  
**Project Title:** Non-Invasive Vagal Nerve Stimulation in Patients with Opioid Use Disorders  
**Research:** Clinical Research  
**Research Area:** Opioids; Opioid Use Disorders; Neuromodulation; Inflammation; Brain Imaging; Vagus Nerve Stimulation; Interleukins; Craving  
**Housing:** Campus  
**Internship Type:** Hybrid

**Student Qualifications:** This is research in human subjects with no research in animals. Interns might transport blood samples. They will be asked to go to Opioid Use Disorder (OUD) support group meetings like Narcotics Anonymous (NA) to hand out flyers and recruit patients with OUDs as well as help with studies.

**Project Description:** Opioid addiction is a major crisis of epidemic proportions and drug overdose is now the leading cause of accidental death in the United States. Treatment of OUDs includes medications with effects on opioid receptors such as buprenorphine, but access is limited for many patients. Naltrexone is an opioid antagonist that has been shown in recent studies to be equivalent in efficacy to buprenorphine. However, initiation of treatment with long-acting naltrexone requires a period of abstinence of about 7 days, during which time patients suffer from intense symptoms of withdrawal with a risk of relapse that can lead to overdose-related death. Opioids have an inhibitory effect on norepinephrine and the sympathetic nervous system, and many symptoms of withdrawal are driven by rebound activation of these systems. This project will assess a form of neuromodulation involving non-invasive electrical stimulation of the vagus nerve (nVNS) that may play a useful role during the period of opioid withdrawal before the initiation of long-term naltrexone treatment in blocking norepinephrine, sympathetic, and inflammatory responses and enhancing peripheral parasympathetic and central brain function in areas modulating drug craving. The intern will be involved in recruiting patients with OUDs and collecting data on physiological and brain responses to opioid cues paired with nVNS or sham stimulation.
**Georgia**

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<thead>
<tr>
<th>Investigator:</th>
<th>Abeed Sarker, PhD</th>
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<tbody>
<tr>
<td>Institution:</td>
<td>Emory University</td>
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<td></td>
<td>Atlanta, GA</td>
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<tr>
<td>Project Title:</td>
<td>Mining Social Media Big Data for Toxicovigilance: Automating the Monitoring of Prescription Medication Abuse via Natural Language Processing and Machine Learning Methods</td>
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<tr>
<td>Research:</td>
<td>Epidemiology Research</td>
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<tr>
<td>Research Area:</td>
<td>Data Science; Artificial Intelligence; Social Media; Machine Learning; Natural Language Processing; Surveillance</td>
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<td>Housing:</td>
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<td>Internship Type:</td>
<td>Virtual; In-Person; Hybrid</td>
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**Student Qualifications:** No prerequisites. Interest in artificial intelligence, data science, machine learning, statistical methods, or similar topics. No animals or humans are involved in this research. Analysis will be on big data, particularly social media.

**Project Description:** Prescription medication (PM) abuse is a major epidemic in the United States and monitoring and studying the characteristics of the PM abuse problem requires the development of novel approaches. Social media encapsulates an abundance of data about PM abuse from different demographics but extracting that data and converting it to knowledge requires advanced natural language processing and data-centric artificial intelligence systems. Our proposed social media mining framework will automate the process of converting big data to knowledge on PM abuse, providing crucial insights to toxicologists about targeted populations and enabling the future development of directed intervention strategies.
Georgia

Investigator: Amanda Gilmore, PhD
Institution: Georgia State University
Atlanta, GA
Project Title: Technology-Based Prevention for Adolescent Substance Use, Sexual Assault, and Sexual Risk in Primary Care
Research: Preventive Research
Research Area: Adolescents; Drug Use; Prevention; Primary Care; Sexual Assault; Sexual Risk Behaviors
Housing: Campus
Internship Type: In-Person

Student Qualifications: Psychology or public health research experience preferred, specifically experience with recruiting and managing participants in a research study. Interest in adolescent well-being, sexual assault prevention, or substance use prevention preferred. Interns will be asked to work with humans.

Project Description: The goal of the study is to conduct a pilot feasibility trial of Teen Well Check, a technology-based prevention program developed to prevent substance use, sexual assault, and risky sexual behaviors for adolescents aged 14-18 in a primary care setting. Approximately 120 adolescents aged 14-18 will be recruited from a primary care office. They will be randomized to receive Teen Well Check, or a control condition and they will complete surveys at baseline and at 1-, 3-, and 6-month follow-ups.
Georgia

Investigator: Claire Spears, PhD
Institution: Georgia State University
Atlanta, GA
Project Title: Mindfulness-Based Addiction Treatment Delivered Through Mobile Technology for Low-Income Smokers
Research: Clinical Research
Research Area: Tobacco; Smoking Cessation; Mobile Health Technology; Mindfulness; Health Disparities; Low-Income
Housing: Campus
Internship Type: In-Person; Hybrid

**Student Qualifications:** Must be an outstanding undergraduate student in a relevant field such as public health, psychology, or social sciences. Excellent written and oral communication skills and the ability to work individually as well as in teams are needed. The student should have an interest in research, public health, reducing the harm of tobacco use, and health equity. No research with animals, humans, or tissue samples. No prior research experience is required.

**Project Description:** Adults with low socioeconomic status (SES) experience greater nicotine dependence, are less likely to quit smoking, and experience profound tobacco-related health disparities. Mindfulness training increases rates of smoking abstinence and lapse recovery, but in-person mindfulness treatment is not easily accessible to low-SES smokers. This project has developed a mindfulness-based mHealth smoking cessation program (smartphone app) that is specifically designed for low-SES smokers. The next year of the project involves pilot testing of the app with participants in order to gain in-depth feedback to continue to improve the program.
Investigator: Assaf Oshri, PhD
Institution: University of Georgia
Athens, GA
Project Title: The Influence of Community and Family Protective Processes on Neurocognitive Systems Associated with Early-Onset Drug Use: An Investigation of Rural Southern Youth
Research: Preventive Research
Research Area: Development of Risk and Resilience in Youth; Early Life Stress and Adversity; Multi-Method Approach; fMRI; Psychophysiological; Survey
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: Motivation and interest in conducting research.

Project Description: During the summer we will model data from families and youth to determine risk and protective factors for risk behaviors in adolescence.
Investigator: Scott Okamoto, PhD, MSW
Institution: Hawaii Pacific University
Honolulu, HI
Project Title: The Development and Evaluation of a Culturally Grounded ENDS Intervention for Rural Hawaiian Youth
Research: Preventive Research
Research Area: E-Cigarette; Native Hawaiians; Youth; Community-Based Participatory Research
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: Students majoring in psychology, social work, public health, or other allied disciplines are preferred. Students should have knowledge of or interest in rural, Native Hawaiian youth and school-based prevention. The project will require students to work with humans (adult researchers, community members, educational stakeholders, and/or youth).

Project Description: The intern will participate in pre-prevention research activities as part of the development of a culturally grounded, school-based intervention focused on preventing Hawaiian youths’ use of electronic nicotine delivery systems (ENDS) including e-cigarettes. These activities include assisting the research team in developing research protocols, a teacher implementation website, and social media platforms associated with the intervention. There may also be opportunities for focus group data collection with youth in public schools on the island of Hawai‘i.
Illinois

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>A. Vania Apkarian, PhD</th>
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<tr>
<td>Institution:</td>
<td>Northwestern University</td>
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<td></td>
<td>Chicago, IL</td>
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<tr>
<td>Project Title:</td>
<td>Center for Chronic Pain and Drug Abuse</td>
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<tr>
<td>Research:</td>
<td>Basic Research</td>
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<tr>
<td>Research Area:</td>
<td>Chronic Pain; Human; Rodent; Neuroimaging; Patch Clamp; Behavior; Opiates; Addictive Behavior</td>
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<td>Housing:</td>
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<tr>
<td>Internship Type:</td>
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**Student Qualifications:** Major career interest should be neuroscience in general, but also human or rodent studies of brain mechanisms of chronic pain, opiates, addiction, and addictive behaviors. There are opportunities to work with either humans or rodent models. We are a large group with six scientists working together. Therefore, there will be ample sources of learning and exposure to distinct lines of research.

**Project Description:** The intern will either participate in human brain imaging studies of patients with chronic back pain and opiate use or participate in rodent model studies of neuropathic pain and opiate exposure.
Illinois

**Investigator:** Lauren Wakschlag, PhD  
**Institution:** Northwestern University  
Chicago, IL  
**Project Title:** 9/24 HEALthy Brain and Child Development National Consortium  
**Research:** Other Research  
**Research Area:** Neurodevelopmental; Prenatal Exposure/Prenatal Substance Use; Developmental Psychopathology; Brain: Behavior; Community-Engaged  
**Housing:** Subsidized  
**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** Energetic and excellent attention to detail with interest in health and well-being of children and families. Background could range from neuroscience to psychology to public health. This research will involve engagement with humans. Interns who want to learn about multidisciplinary collaborative scientific process and a range of scientific careers would be well aligned with this site.

**Project Description:** The intern will participate in the newly launching Northwestern University site for the HEALthy Brain and Child Development (HBCD) Study, which will study how adverse prenatal exposures—particularly opioids, other substances, and stress— Influence developmental outcomes in the first few years of life; characterize typical and atypical patterns of brain and behavioral development; and identify family and ecological factors that promote resilience. This early phase of the study launch will provide an excellent opportunity to learn about the team science process with a study team including neuroscientists, epidemiologists, social workers, psychologists, addiction psychiatrists, ethicists, and maternal-fetal and pediatric physicians. The Northwestern site is one of 25 HBCD sites across the country and the intern will have the opportunity to sit in on national meetings to learn about the process of large-scale neurodevelopmentally oriented work.
Illinois

Investigator: Brian Feinstein, PhD
Institution: Rosalind Franklin University of Medicine and Science
   North Chicago, IL
Project Title: Understanding and Reducing HIV Risk Behavior and Substance Use Among Self-Identified Bisexual Adolescent Men
Research: Behavioral Research
Research Area: HIV; STI; Sexual Health; Substance Use; Bisexual; Sexual Minority; LGBTQ+; Adolescent; Youth; Prevention; Intervention
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Preferred intern qualifications include: a background in psychology, public health, or a related discipline; prior research experience; completed coursework in research methods and statistics; and interest in LGBTQ+ health. This research will not require students to work with animals, humans, or tissue samples. The intern will work with data that has already been collected.

Project Description: The goal of the project is to evaluate the feasibility, acceptability, and preliminary efficacy of an intervention designed to increase sexual health knowledge and reduce engagement in sexual risk behavior, including substance use, among bisexual adolescents. In addition to the intervention, participants also completed at-home HIV/STI testing as part of the project.
Indiana

**Investigator:** Kit Elam, PhD  
**Institution:** Indiana University  
Bloomington, IN  
**Project Title:** Gene-Environment Interplay Underlying Negative Family Environments and Family-Based Interventions in Early Adolescent Substance Use  
**Research:** Behavioral Research  
**Research Area:** Adolescent Substance Use; Genetics; Aggression; Peer Delinquency; Intervention Effects; Parenting  
**Housing:** Subsidized  
**Internship Type:** Virtual  

**Student Qualifications:** No prior research experience or qualifications are required for this internship. Individuals who have good time management skills, work well on complex tasks, and are eager to learn about research will gain the most from this experience. Introductory statistical training or coursework is helpful but not required. This research will not require the intern to work with animals, humans, or tissue samples.

**Project Description:** During the summer internship in Dr. Elam’s lab, the intern will work on a research project of their choice supported by a variety of research experiences. First, the PI and intern will work together to identify a substantive research topic of interest. The intern will pursue this topic through a research project by either conducting statistical analyses on related variables using existing data or conducting a comprehensive literature review to address the research topic of interest. The internship will center on this research project but will involve numerous supporting research activities including (1) engaging in weekly one-on-one meetings with Dr. Elam to discuss the project and broader research topics, (2) training in conducting statistical analyses or a systematic review, (3) attending a weekly research seminar composed of faculty, graduate students, and undergraduate students discussing related research, and (4) meeting one-on-one with leading professors in the Department of Psychological and Brain Sciences (Dr. Brian D’Onofrio) and the School of Public Health (Dr. Patrick Quinn), who have committed to supporting the intern’s experience. During the internship, the intern will have the full support of Dr. Elam and students in his lab, as well as access to three large longitudinal studies examining genetic and social influences on substance use and psychopathology.
Indiana

Investigator: Tamika Zapolski, PhD
Institution: Indiana University-Purdue University Indianapolis
Indianapolis, IN
Project Title: Racial Discrimination and Drug Use: Examining the Mediating Role of Inflammation Among African American Youth
Research: Behavioral Research
Research Area: Minority Health; Adolescent Health; Substance Use; Drug Use
Housing: Campus
Internship Type: Hybrid

Student Qualifications: Students should be interested in minority health and psychological research and outgoing enough to speak with strangers about the research project. This project will require students to work with humans. No prior research experience is necessary.

Project Description: The research project is aimed at understanding how racial discrimination and stress influence substance use risk among African American/Black youth and the role of inflammation, stress hormones, and negative affect in that process. We are also interested in understanding which factors, such as racial identity, may reduce the risk for these health outcomes. In order to examine these relationships, 150 individuals aged 15-19 who identify as African American/Black will be recruited to complete an online survey that will include questions about the participant’s substance use, health behaviors, mental health, and exposure to various environmental stressors, including racial discrimination, over the past 6 months, as well as provide a small blood sample to assess for inflammation biomarkers and stress hormones on three occasions over a 1-year period (baseline, 6-month follow-up, and 1-year follow-up).
**Iowa**

**Investigator:** John Wemmie, MD, PhD  
**Institution:** University of Iowa  
**Institution City, State:** Iowa City, IA  
**Project Title:** Novel Mechanisms for Correcting Opioid-Induced Synaptic Abnormalities  
**Research:** Basic Research  
**Research Area:** Opioid Abuse; Craving; Withdrawal; Relapse; Neuronal Plasticity; Drug-Seeking Behavior, Brain pH, Protons, Carbonic Anhydrase 4, Acid-Sensing Ion Channel 1a  
**Housing:** Campus  
**Internship Type:** In-Person  

**Student Qualifications:** This study will require interns to work with mice and mouse tissue. Completion of a college-level laboratory course is preferred.

**Project Description:** The U.S. is facing a crisis of opioid overdoses and addiction. Current treatments largely rely on replacing the drug of abuse with a different opioid and do not correct the underlying biological factors that drive craving and relapse. These factors include long-lasting changes to synapses in a brain region called the nucleus accumbens. Recently, the Wemmie lab found that these effects of opioids depend on an ion channel that is sensitive to protons, the acid-sensing ion channel-1a (ASIC1a). ASIC1a is activated by protons released into the synapse with neuronal activity. Protons are cleared from synapses by an enzyme called carbonic anhydrase 4 (CA4). Inhibiting CA4 with a drug called acetazolamide dramatically increases the current mediated by ASIC1a. This led to the hypothesis that acetazolamide treatment would reverse the synaptic changes caused by opioid withdrawal by inhibiting CA4 and increasing ASIC1a activity, thereby reducing craving and relapse. The lab is testing this hypothesis by assessing the effects of opioids on synaptic changes and behavior. The goal of this work is to gain a better understanding of the neurobiology underlying opioid addiction and to identify new molecular targets for treating opioid use disorder.
**Kansas**

**Investigator:** Zijun Wang, PhD  
**Institution:** University of Kansas  
**Lawrence, KS**  
**Project Title:** Neuronal Circuits and Molecular Mechanisms Underlying Early Social Isolation-Potentiated Heroin Seeking  
**Research:** Basic Research  
**Research Area:** Substance Use Disorder; Cocaine and Heroin; Functional and Molecular Changes in Key Brain Circuits Involved in Drug Relapse; Mouse Self-Administration Model; Conditioned Place Preference Model; Transgenic Mouse Models; Whole-Cell Patch-Clamp Recording; Cell-Type Specific Neuroepigenetics; RNA-Seq; Chip-Seq; Fiber Photometry  
**Housing:** Subsidized  
**Internship Type:** In-Person  

**Student Qualifications:** Candidates who are interested in academia, have animal research or wet-lab experience, or major in biology, psychology, or neuroscience are preferred.

**Project Description:** The summer research project will examine how heroin and prolonged abstinence alter prefrontal cortical function. Specifically, immunohistochemistry, whole-cell patch-clamp, and fiber photometry methods will be used to detect the synaptic and neuronal activity changes in the prefrontal cortex. Chemogenetic method will be used to examine the role of different prefrontal cortical neurons in drug-taking and drug-seeking behaviors. Finally, the cell-type-specific transcriptomic changes will be characterized via RNA-seq or qPCR.
Kentucky

Investigator: Cassandra Gipson-Reichardt, PhD
Institution: University of Kentucky
Lexington, KY
Project Title: Neuroinflammatory and Glutamatergic Mechanisms of Nicotine Seeking
Research: Basic Research
Research Area: Neuroinflammation; Glutamate; Plasticity; Nicotine; Relapse
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: Preferred (but not required) skills include rodent handling, career interest in addiction neuroscience, and a major in biology, chemistry, psychology, or similar. Interns will directly work with rats and brain tissue samples. Interest in graduate education preferred.

Project Description: The intern will conduct a project that involves evaluating the role of neuroinflammatory signaling and microglia in the reward pathway in driving nicotine relapse. This project will involve learning nicotine self-administration in rats, as well as learning how to maintain a breeding colony of rats that express a gene that allows for specific targeting of microglia (called CX3CR1-Cre rats). These rats are used in chemogenetics, which allows for directly activating or inhibiting microglia within the nucleus accumbens, a brain region heavily involved in nicotine addiction. The intern will learn surgical techniques such as intravenous jugular catheter placement, stereotaxic surgery, and intracranial viral administration, as well as self-administration behavior, immunohistochemistry, and confocal microscopy. The intern will also have the opportunity to learn about whole-cell patch-clamp electrophysiology.
Kentucky

Investigator: Kristen Gullo
Institution: US WorldMeds Louisville, KY
Project Title: Accelerated Development of Lofexidine for Neonatal Opioid Withdrawal Syndrome
Research: Drug Development Research
Research Area: Neonatal Opioid Withdrawal Syndrome; Neonatal Abstinence Syndrome; Pediatric Formulation Development; Clinical Trial Material Manufacturing; Phase 2; Efficacy; Safety; Pharmacokinetics; Regulatory
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Preferred candidates will have educational background in a relevant scientific (e.g., chemistry, chemical engineering, biology, biochemistry) or math/statistics field. Some exposure to basic or clinical research or a regulated environment is a plus, but not required. Desired attributes include analytical thinking, strong written and verbal communication skills, team player mentality, and a passion for helping patients. Interns will have no direct contact with animals, human subjects, or tissues.

Project Description: US WorldMeds is developing a non-opioid product for the treatment of neonatal opioid withdrawal syndrome (NOWS). A Phase 2 study in neonatal patients is planned to start in Q2 2022 to evaluate pharmacokinetics, safety, and efficacy of the new therapy. Additionally, transfer of the manufacturing process for the new product will be underway in order to produce material for a subsequent Phase 3 study to support new drug registration. The intern will be placed with a mentor responsible for the executional oversight of one or more of these development program components. The intern will participate in a number of activities to learn about drug development requirements, assist with documents, perform literature reviews, compile resources or data required for program decisions, support vendor communications and compliance oversight, tabulate and trend data, support internal cross-functional meetings to align research activities across stakeholders, and provide organizational and/or writing assistance with regulatory communications required under an Investigational New Drug Application.
Louisiana

Investigator: Charles Wood, PhD
Institution: Louisiana State University
New Orleans, LA
Project Title: The Impact of Cannabis on Inflammation and HIV-1 Reservoirs in Zambia
Research: Basic Research
Research Area: Cannabis; HIV; Tissue Reservoirs; Pathology; Immunohistochemistry; Molecular Biology
Housing: Campus
Internship Type: In-Person

Student Qualifications: Students should be rising juniors or seniors who are biochemistry or molecular biology majors with goals of going to graduate school and pursuing a research career. Preference will be for those with some prior research laboratory experience with human tissue samples.

Project Description: HIV-1 latent tissue reservoirs are not fully defined, and many factors, including the use of drugs of abuse, affect the size and distribution of these reservoirs. Understanding the extent of tissue reservoirs is key to curing HIV-1 infection. Cannabis has been implicated to be anti-inflammatory, and potentially can reduce inflammation in HIV-1-infected individuals to reduce the extent and distribution of latent HIV-1 reservoirs. The objective of the project is to determine whether cannabis use correlates with reduced local immune activation, altered size and distribution of HIV-1 tissue reservoirs, or reduced levels of persistent viral replication in those reservoirs by studying tissue from autopsy cases of HIV-1-infected individuals who were either cannabis or non-cannabis users. This will be carried out by determining the prevalence of tissue pathology, the level of inflammation and immune activation in the brain and other potential tissue HIV-1 reservoirs and defining correlations with cannabis usage. We will also determine whether cannabis use impacts the level of persistent viral replication or the size, distribution, and cellular composition of latent HIV-1 reservoirs in tissues.
Maine

Investigator: Jason Bubier, PhD
Institution: The Jackson Laboratory
Bar Harbor, ME
Project Title: Genetic Variation in Opioid-Induced Respiratory Depression in Mice
Research: Basic Research
Research Area: Systems Genetics; Heterogeneous Data Integration; Behavior; Mouse Genetics; Respiratory Physiology; Gene Expression; Genomics
Housing: Campus
Internship Type: In-Person

Student Qualifications: The student should have a biological science or related major. They should be interested in MD/PhD programs; however, a desire for a career as a scientist with a bachelor’s degree is also sufficient. No previous research experience is required. Computer programming experience is a plus. This research could include work with animals.

Project Description: The prescription of opioids for pain treatment has nearly quadrupled from 1999 to 2014, leading to an epidemic in addiction and overdose deaths in the United States. Morphine and its synthetic and more potent counterpart, fentanyl, bind to opioid receptors in the peripheral and central nervous system, producing feelings of sedation and euphoria in addition to analgesia. Opioid-induced respiratory depression (OIRD) caused by the activation of opioid receptors on neurons in the brainstem respiratory centers may lead to cardiorespiratory collapse and ultimately death. The overall objective of this grant is to define the molecular mechanisms underlying individual variability in respiratory responses to opioids that indicate specific sensitivities to opioids and pharmacological alternatives to naloxone. Utilizing the advanced mouse populations of the Collaborative Cross (CC) and Diversity Outbred (DO) strain, differences in opiate lethality and respiratory sensitivity have been observed, thereby modeling the individual variability of OIRD in humans. The overall objective will be attained by pursuing three specific aims: (1) map genetic loci that underlie the variability in morphine and fentanyl sensitivity in the DO mouse population; (2) define the in-depth physiological components of OIRD in CC mice using PiezoSleep and plethysmography; and (3) define the mechanisms that underlie the variable response to morphine and fentanyl by profiling the brainstem transcriptome in CC mice.
Maryland

Investigator: Oluwaseun Falade-Nwulia, MBBS, MPH
Institution: Johns Hopkins University
Baltimore, MD
Project Title: Ending the HIV Epidemic: Peer-Supported Collaborative Care for Mental Health and Substance Use Disorder Care Integration into HIV Care Settings
Research: Clinical Research
Research Area: Substance Use Disorder and Infectious Disease Care Integration; Peer Care Models; Social Network Research
Housing: Subsidized
Internship Type: In-Person; Hybrid

Student Qualifications: This work will be of particular benefit to interns interested in addressing health care disparities for individuals with substance use disorders. The research does not require students to work with animals, humans, or tissue samples.

Project Description: The intern will work on a research project focused on understanding the effectiveness of peer-based models for improving infectious disease care for patients with substance use disorders. They will participate in data collection, analysis, and writing up study results evaluating the role of peer mentors in supporting integration of infectious disease and substance use disorder care.
Maryland

Investigator: Emmanuel Oga, MBBS, MPH
Institution: RTI International
Columbia, MD
Project Title: HEALing Communities Study Data Coordinating Center
Research: Epidemiology Research
Research Area: Opioid Use Disorder; Community-Engaged Research; Health Communication; Community Interventions; Cluster-Randomized Trial
Housing: Subsidized
Internship Type: Virtual

Student Qualifications: Candidates majoring in public health, epidemiology, biostatistics, or community health preferred. Prior research experience is preferred, but we are happy to mentor an intern with no prior research experience.

Project Description: The HEALing Communities Study (HCS) is implementing and testing a community-engaged intervention called the Communities that HEAL Intervention (CTH) to increase the implementation of evidence-based practices (EBPs) in an integrated fashion to reduce opioid overdose deaths. The CTH is a multiphase, multisectoral, data-driven community response that employs a coalition-driven approach to facilitate community adoption of EBPs to mitigate the impact of the opioid use crisis. The CTH is implemented within the context of a parallel-arm, cluster-randomized, wait-list controlled trial. A total of 67 communities in four states are participating in the HCS.

As the data coordinating center, RTI supports the HCS in: (1) coordinating a research infrastructure that facilitates communication, coordination, and consensus building; (2) maximizing cross-site integration by applying implementation science methods to understand the barriers and facilitators to successful uptake of proven interventions in health care, criminal justice, and other public health settings; (3) applying advanced data management, biostatistics, analytic, and computing techniques; and (4) conducting rigorous health economics research to guide future decision-makers in choosing a strategy that is most cost-effective. The intern will be tasked with collecting background research and literature, conducting data analysis and data quality checks, and drafting manuscripts, abstracts, and scientific presentations.
Maryland

Investigator: Barbara Howard, MD
Institution: CHADIS
Baltimore, MD
Project Title: Online System for Primary Care to Prevent and Address Teen Substance Use
Research: Behavioral Research
Research Area: Prevention; Substance Use; Substance Abuse; Primary Care; Motivational Interviewing; Screening; Training; Tobacco Use; Alcohol Use; Marijuana; Prescription Drug
Housing: Subsidized
Internship Type: Virtual

Student Qualifications: The intern should possess an interest in adolescent health, substance use, public health, psychology, or health behavior change. Interns will not be required to work with animals, humans, or tissue samples. Interns should have proficiency in computer use including conducting database and internet searches. Fluency in French or Spanish would be useful for translation of resources but is not required.

Project Description: The research project will enhance ongoing work conducted as part of an effort to effectively identify and address adolescent substance use during primary care visits through an online system and associated screening tools. The summer project will entail identification and development of appropriate resources addressing substance use, screening, teen addiction, treatment, health goals, prevention, and problem solving. Activities will include assessment of resource literacy levels and translation of resources (as able). The acquisition of appropriate resources is a key element in providing support to teens and families.

The project will also include development of graphics for provider training modules. Provider training modules will enhance provider activities related to teen substance use risk identification, behavior change motivation, support of goals, and appropriate referrals.
Maryland

Investigator: George R. Uhl, MD, PhD
Institution: University of Maryland/VA Maryland
Baltimore, MD
Project Title: PTPRD Phosphatase Inhibitors for Addiction (NCE)
Research: Drug Development Research
Research Area: INDEnabling Studies of PTPRD Phosphatase Inhibitors; Mechanistic Studies of PTPRD Phosphatase Inhibition and Positive Allosteric Modulation; Participation in Expression of Recombinant Enzyme; Phosphatase Assays; Testing Efficacy and Toxicities in Mice Following GLP Studies
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Basic laboratory experience, care with experiments, handling abused substances for in vivo studies, and basic understanding of biology, genetics, biochemistry, and molecular biology.

Project Description: IND-enabling studies of PTPRD phosphatase inhibitors and mechanistic studies of PTPRD phosphatase inhibition and positive allosteric modulation. Participation in expression of recombinant enzyme, phosphatase assays, testing efficacy and toxicities in mice, and following GLP studies.
Maryland

**Investigator:** Rong Chen, PhD  
**Institution:** University of Maryland School of Medicine  
Baltimore, MD  
**Project Title:** Clear Volume Imaging with Machine Learning: A Novel Tool to Identify Brain-Wide Neuronal Ensembles of Opioid Relapse in Rat Models  
**Research:** Behavioral Research  
**Research Area:** Computational Neuroscience; Machine Learning; Opioid Relapse; Neuroimaging  
**Housing:** Subsidized  
**Internship Type:** Hybrid

**Student Qualifications:** Previous experience in programming (Python or R) is required. Experience in developing machine learning algorithms, deep learning, or analyzing biomedical images is preferred. This project does not require the intern to work with animals, humans, or tissue samples.

**Project Description:** Dr. Chen’s research focuses on leveraging machine learning and computational modeling to understand the relationship between brain and behavior, leading to novel therapeutic concepts for brain disorders and brain-inspired AI. This project centers on developing algorithms to analyze clear volume imaging data to understand opioid relapse in rat models.
Massachusetts

Investigator: Sabrina Assoumou, MD, MPH
Institution: Boston Medical Center/Boston University School of Medicine
Boston, MA
Project Title: Engaging Young People Who Inject Drugs into HCV and HIV Care
Research: Clinical Research
Research Area: HIV; Hepatitis C; Opioid Use Disorder
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: The intern should have excellent oral and written communication skills. An intern whose studies specialize in psychology, public health, or medicine is preferred. Experience with coding transcripts and developing themes from coded data is a plus.

Project Description: Recent human immunodeficiency virus (HIV) and hepatitis C virus (HCV) outbreaks among persons who inject drugs illustrate that these infections should be addressed simultaneously to improve outcomes. In the United States most of the new HCV infections are among young people who inject drugs (PWID). Studies at detoxification centers have shown that linkage to care is problematic. Social services support such as case management has the potential to improve linkage to care; however, little is known about its potential influence on the care of young PWID. We conducted in-depth interviews of patients and stakeholders at the largest drug detoxification center in Boston. The goal of the interviews was to determine potential facilitators of and barriers to linkage and retention in HIV, HCV, and substance use treatment services. We have coded all the interviews and are now developing themes from the interviews. We are in the process of preparing manuscripts for publication in scholarly journals.
Massachusetts

Investigator: Anna Devor, PhD  
Institution: Boston University  
Boston, MA  
Project Title: Effects of Intrinsic and Drug-Induced Neuromodulation on Functional Brain Imaging  
Research: Basic Research  
Research Area: Neuroscience; Addiction; Drug Abuse; Neuroengineering; In Vivo Mouse Imaging; Two-Photon Microscopy; Mesoscopic Imaging; Neurovascular; Awake Mouse fMRI  
Housing: Campus  
Internship Type: In-Person

Student Qualifications: This project requires hands-on work with behaving laboratory mice performing cognitive tasks; scientific passion and enthusiasm; and personal integrity. Basic knowledge of neuroscience, some wet lab experience, and basic MATLAB skills are preferred.

Project Description: The brain can engage neuromodulatory neurotransmitters, including dopamine (DA) and norepinephrine (NE) volitionally during healthy neuronal activity (e.g., while performing a cognitive task). The same neuromodulatory systems are also targeted by drugs of abuse leading to adverse physiological effects. The overall goal of the project is to gain a better understanding of the role of these neurotransmitters in neurovascular control in the cerebral cortex to inform interpretation of noninvasive fMRI signals in drug abusers. This is done using microscopic imaging and fMRI in awake, behaving mice as a model species. Levels of NE and DA are modified by cocaine to quantify neuronal, vascular, and metabolic changes produced by this substance, both during spontaneous neuronal activity and in response to a cognitive challenge.
Massachusetts

Investigator:  Michael Otto, PhD  
Institution:  Boston University  
Boston, MA  
Project Title:  Nature and Predictors of Impaired Harm Avoidance in Polysubstance Abuse  
Research:  Clinical Research  
Research Area:  Clinical Science; Adults; Opioid Use Disorder; Risky Behaviors; Harm Avoidance Deficits; Stimulant Use; Neurocognition; De Novo Fear Conditioning  
Housing:  Subsidized  
Internship Type:  In-Person  

Student Qualifications:  We are seeking to support advanced college students (juniors and seniors) who have some research experience but need advanced training and exposure to research with clinical populations.

Project Description:  This study is designed to investigate learning and judgment deficits that may underlie failures to avoid harms associated with drug use disorders (risk for disease, overdose, and death). Using multiple assessment methods, we will evaluate judgment, learning, and memory deficits that may contribute to risky behaviors in adults with opioid use disorder or opioid use disorder in combination with stimulant use. Performance on laboratory assessments will be compared to those with no drug use disorders. This research is in response to a clear public health need for improved treatment and prevention strategies for those with clinical harm-avoidance deficits.
Massachusetts

Investigator: Stephanie Puig, PhD
Institution: Boston University
Project Title: Targeting PDGFRbeta to Treat Peripheral Opioid Tolerance
Research: Basic Research
Research Area: Translational Neuroscience on Pain, Opioid Analgesia, Opioid Use Disorders; Identification of Novel Targets to Increase Opioid Safety and Decrease Addiction Liability; Multidisciplinary Approach; Rodent Behavioral Pharmacology; Rodent Genetics; Optogenetics; Omics Data Analysis; mRNA Sequencing; Biochemistry; IHC; RNAscope; Microscopy
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: An intern with interests in neuroscience research, opioid signaling, or addiction neurobiology is preferred. Prior experience handling rodents is strongly encouraged, but the intern will be fully trained in performing all the assays using rodents. We welcome candidates with any biology background, but the most important requirement is motivation and eagerness to learn and contribute to the field!

Project Description: Many aspects of the current opioid crisis relate to the necessity of escalating prescription opioid doses as tolerance develops overtime (gradual decrease in analgesic efficacy). This promotes the emergence of deleterious side effects such as physical dependence, addiction, and respiratory depression, leading to a dramatic decrease in opioid safety. Thus, our laboratory focuses on identifying novel therapeutic strategies to prevent and treat opioid side effects by understanding the molecular mechanisms and the circuitry that underlies these phenomena. We recently demonstrated that opioid administration induces receptor tyrosine kinases (RTKs) activation in brain structures involved in opioid side effects. Moreover, we found that RTK inhibitors can prevent and reverse opioid side effects. However, the precise mechanisms are largely unknown. The intern will conduct a project testing the therapeutic potential of selective RTK inhibitors on rodent models of opioid tolerance, dependence, addiction, and respiratory depression. They will also investigate the underlying mechanisms by analyzing the consequences of the treatments on expression of mRNA and proteins of interest in structures of the central nervous system known to be involved in opioid side effects (e.g., spinal cord, brainstem, periaqueductal grey, prefrontal cortex, striatum, and midbrain).
Massachusetts

Investigator: Jeffrey Samet, MD, MPH
Institution: Boston University
Boston, MA
Project Title: MassHEAL – Reducing Overdose Deaths by 40% (2019-2023)
Research: Clinical Research
Research Area: Addiction; Alcohol; HIV; Research Training; International Research; Health Professional Substance Use Education
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Student must be pursuing a bachelor’s or associate degree; able to work independently and as part of a team; willing to be creative and flexible; and able to maintain strict confidentiality of all sensitive personal and health information.

Project Description: Addiction is a stigmatized condition affecting diverse populations with disproportionate effects on marginalized communities. We therefore have to solve complex addiction problems in order to reduce morbidity and mortality. It is clear that diverse groups are more productive, innovative, and likely to develop new approaches to solving these complex problems related to addiction.

Our objective is to leverage existing programs at Boston University (BU) and Boston Medical Center (BMC) to increase diversity, equity, inclusion, and belonging in addiction-related fields. We have three approaches to achieve this objective: (1) integrating addiction-related case studies, research, shadowing, and career panels into existing programs engaging underrepresented groups (URG) in STEM fields in order to introduce addiction-related work as an exciting and viable career path and increase knowledge around substance use disorders and their prevention and treatment; (2) extending outreach in existing BU and BMC addiction medicine training programs to support their URG trainee recruitment efforts as well as other diversity, equity, inclusion, and belonging initiatives; and (3) supporting retention of diverse faculty doing addiction-related work by linking them to funded research projects and excellent career mentorships.

The intern will assist with the advancement of projects that are of particular emphasis to Approaches 1 and 2.
Massachusetts

**Investigator:** Camron Bryant, PhD  
**Institution:** Boston University School of Medicine  
**Boston, MA**  
**Project Title:** A Reduced Complexity Cross in BALB/c Substrains to Identify the Genetic Basis of Oxycodone Dependence Phenotypes  
**Research:** Basic Research  
**Research Area:** QTL; Behavioral Genetics; Opioid; Withdrawal; Reward; Conditioned Place Preference; Anxiety; Elevated Plus Maze; RNA-Seq; Transcriptome; Gene Expression; Naloxone; Naltrexone; Conditioned Place Aversion; Addiction Liability; Spliceome; Splice Variants; Binge Eating; Food Addiction; Reward; Translational Genetics; Reinforcement; Intermediate Phenotype; Systems Genetics; eQTL; QTL; GWAS; Genome-Wide.

**Housing:** Campus  
**Internship Type:** In-Person

**Student Qualifications:** The student should be excited about the research topic, have basic pipetting skills, and be willing to work with rodents. Some experience in R preferred, but not essential.

**Project Description:** Substance use disorders (SUDs) are heritable psychiatric disorders with a significant genetic component. Opioid use disorder (OUD), one of the most heritable SUDs, has reached epidemic proportions in the United States. Human genome-wide association studies (GWAS) are statistically underpowered to detect the majority of common genetic variation that contributes to OUD. Discovery-based genetics in mammalian model organisms is a powerful complement to human GWAS and can uncover novel genetic factors, biological pathways, and gene networks underlying addiction traits. Mouse models are advantageous because they enable collection of the relevant brain tissue at the appropriate time points under controlled opioid dosing. Furthermore, gene editing permits the validation of functional variants in vivo within the same species on controlled, genetic backgrounds. Reduced complexity crosses (RCCs) are genetic crosses between inbred mouse substrains that are nearly genetically identical and can greatly accelerate identification of the causal quantitative trait genes/variants (QTGs/QTVs). Our primary objective is to use an RCC between BALB/c substrains to discover the genetic and molecular basis of state-dependent learning (SDL) of opioid reward following training with the mu opioid receptor agonist oxycodone (OXY; the active ingredient of Oxycontin). In Aim 1, we will map and replicate quantitative trait loci (QTLs) underlying SDL of opioid reward in an RCC F2 cross. In Aim 2, we will map QTLs controlling gene expression (eQTLs) in neuroanatomically defined brain regions of cellular modulation in control F2 mice and in OXY-trained F2 mice. In order to replicate and amplify cis-eQTLs, to increase precision in assigning candidate QTGs/QTVs in the regulation of gene expression and behavior, and to identify biological pathways and opioid-adaptive gene networks in specific cell types, we will conduct single-nucleus RNA-seq (snRNA-seq) in brain tissue following SDL of OXY reward. Integration of eQTL and snRNA-seq analysis will allow us to confidently nominate causal QTGs and QTNs underlying behavior. In Aim 3, we will reciprocally validate two candidate functional germline variants underlying SDL of OXY reward using CRISPR/Cas9 gene editing of each of the two alternate alleles onto each BALB/c substrain background. This powerful approach will allow us to demonstrate both necessity and sufficiency of the QTNs. The proposed studies will identify novel genetic factors underlying SDL of opioid reward. Independent from gene discovery, these studies will reveal novel, actionable insight toward specific cellular adaptations that mediate drug-reactivated memories that can be targeted to potentially improve behavioral outcomes.
Massachusetts

Investigator: Peter Chai, MD
Institution: Brigham and Women’s Hospital
Boston, MA
Project Title: Development of Ingestible Biosensors to Enhance PrEP Adherence in Substance Users
Research: Behavioral Research
Research Area: Ingestible Sensors; Medication Adherence; HIV Prevention; Technology-Based Interventions; mHealth; Adherence Interventions; Substance Use Disorder
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: Ideal interns will have had basic training in institutional review board and regulatory training for human clinical trials. Interns should also have previous experience conducting qualitative analysis and interviews and be comfortable assisting with computer interface programming and basic laboratory work (pipette skills). The intern should also have interest in HIV treatment/prevention and substance use and plan to pursue postgraduate training either in medical school or a doctoral program.

Project Description: The present grant develops a digital pill system comprising an ingestible radiofrequency sensor linked to a gelatin capsule that overencapsulates study medication. Ingestion of this digital pill activates the radiofrequency sensor, which transmits data surrounding ingestion time to a wearable off-body reader device. This device stores and forwards ingestion data to a participant’s smartphone, enabling real-time assessment of adherence. The study develops a behavioral intervention, PrEPSteps, that interprets digital pill adherence data to deliver personalized adherence interventions to improve PrEP adherence among men who have sex with men with substance use disorder.
Massachusetts

Investigator: Richard Urman, MD
Institution: Brigham and Women’s Hospital
Boston, MA
Project Title: Prevention of Opioid Use Disorder After Surgery: A Pilot and Feasibility Study
Research: Clinical Research
Research Area: Opioid Overdose; Pharmacist; Prescription Opioids; Prevention Program; Safety; Quality; Health Information Technology; Implementation Science; Opioid Epidemic; Surgery; Opioid Overdose; Medication Order Sets; Patient Engagement; Opioids; Opioid Use Disorder; Opioid Abuse; Pain Management; Informatics; Technology; Mobile Application; Healthcare Disparities; Health Inequities; Diversity; Spanish-Speaking; Race; Ethnic Disparity; Mobile Application; Patient Counseling; Prevention, Pharmacist
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: No specific prior experience is necessary. The intern will learn data entry, principles of conducting a clinical trial, research ethics, implementation science, and the use of technology in health care. The intern should have an interest in working to improve the safety and value of health care that benefits a diverse patient population. This is human subjects’ research; the intern will be exposed to highly interdisciplinary projects in addiction, surgery/medicine, pain management, pharmacy, and IT.

Project Description: The objective of this research is to design, and pilot test the feasibility of a Multi-faceted persistent Opioid use Prevention Program (MOPP) to support safer opioid prescribing, self-administration, and monitoring and reduce persistent opioid use and opioid misuse for patients transitioning to the community setting after major orthopedic surgery. The multi-faceted intervention includes: (1) pharmacist-led discharge counseling of patients and caregivers and communication with post-discharge providers; (2) standardized opioid prescribing discharge order sets for each surgery type; (3) a post-discharge pain management follow-up visit (with additional contact as needed) embedded within routine post-operative care for managing pain and opioid use; and (4) a patient engagement pain management app for assessing pain, function, and possible development of opioid use disorder (OUD).

In the related study, Reducing Ethnic and Language Disparities in Spanish-Speaking Patients Who Receive Opioids for Postsurgical Pain, the investigators are creating a dedicated Spanish-language version of the patient app and enrolling Spanish-speaking and Latino patients so that the investigators can evaluate baseline disparities in post-operative pain management by language and ethnicity, determine the incremental benefits of the Spanish-language app, and determine the ability of the intervention to reduce disparities by language and ethnicity on pain management and persistent opioid use.
Massachusetts

Investigator: Ateev Mehrotra, MD, PhD
Institution: Harvard Medical School
Boston, MA
Project Title: Telemedicine for Treatment of Opioid Use Disorder
Research: Basic Research
Research Area: Health Services Research; Disadvantaged Populations; COVID-19; Disparity; Evaluation; Geographic Difference; Geography; Health Services Accessibility; Improve Access; Innovation; Low-Income; Medicare; Rural; Rural Communities; Racial and Ethnic Disparities; Substance Use Disorder; Telemedicine
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Students from various disciplinary backgrounds including statistics, computer programming, biostatistics, public health, health services, data science, economics, political science, public policy, and social sciences are encouraged to apply. No prior research experience is required for this internship; however, the intern should be interested in statistics and statistical programming using SAS and knowledge of insurance claims and health service delivery.

Project Description: Access to substance use disorder (SUD) treatment for addictions to opioids, alcohol, or other substances is difficult for many patients in the U.S. The COVID-19 pandemic has made access even more complicated. Telemedicine for SUD (“tele-SUD”) may be a potential solution for this access problem. However, despite the widespread interest and growing use of live video-based tele-SUD visits in the U.S., much is still unknown about how tele-SUD is used in the treatment of SUD and how disparities impact tele-SUD use. To fill this knowledge gap, this project will examine national rates of tele-SUD and in-person treatment use across different populations using Medicare and private insurance data through 2020. The goal of this study is to explore the potential role of tele-SUD in improving access to care for individuals with SUD and to understand how tele-SUD can be utilized effectively during and beyond the global COVID-19 pandemic.
Massachusetts

Investigator: Shakiru Alapafuja, PhD
Institution: MAKScientific LLC
Burlington, MA

Project Title: Fatty Acid Amide Hydrolase (FAAH) and Monoacylglycerol Lipase (MAGL) as Novel Targets for Treatment of Cannabis Use Disorder (CUD)

Research: Drug Development
Research Area: Modulation of The Endocannabinoid System; Developing Novel Druggable Dual Fatty Acid Amide Hydrolase (FAAH) and Monoacylglycerol Lipase (MAGL) Inhibitors as Preclinical and Clinical Candidates for Cannabis Use Disorder (CUD)

Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: Preferred qualifications include good communications skills, as intern will be working with humans. No prior work experience is required. Undergraduate students interested in this area of research will be appropriate.

Project Description: The summer project involves conducting a marketing survey to determine the likely incidence of CUD. The summer intern will be conducting telephone surveys and in-person interviews with patients and caregivers at substance abuse treatment centers within the Boston area.
Massachusetts

Investigator: Christin Sander, PhD
Institution: Massachusetts General Hospital and Harvard Medical School
Boston, MA
Project Title: Imaging Dopamine Receptor Adaptations and Signaling Pathways with Combined PET/fMRI
Research: Basic Research
Research Area: Brain Imaging; Dopamine Receptor Signaling; Stimulant Drug Dynamics; Magnetic Resonance Imaging; Positron Emission Tomography
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Background in neuroscience, physical sciences or engineering, image analysis, programming or quantification/biological modeling is preferred but not required. Students should be comfortable working with human and animal imaging data. Enthusiasm and motivation to learn about brain imaging is the most important qualification.

Project Description: This research project utilizes multimodal brain imaging (magnetic resonance imaging and positron emission tomography) to investigate the effect of stimulant drugs on the brain. Specifically, the dopamine receptor system and related brain functional measures will be evaluated during exposure to stimulant drugs. Image analysis and pharmacokinetic modeling will be performed on a rich set of data, and the student will have the opportunity to be involved in the acquisition of new imaging data. This project will help to unravel the molecular action of drugs that lead to addiction. The student will be hosted at the A.A. Martinos Center for Biomedical Imaging, which is a research site of Massachusetts General Hospital.
Massachusetts

Investigator: Abigail Batchelder, PhD, MPH
Institution: Massachusetts General Hospital and Harvard Medical School
Boston, MA
Project Title: Stigma-Treatment Enhanced Incentivized Directly Observed Therapy for People with HIV Who Inject Drugs
Research: Behavioral Research
Research Area: Stigma; Substance Use; HIV
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: As this position will require working with humans, preferred intern qualifications include compassion for and comfort with working with diverse people living with HIV and substance use disorders, including individuals who are marginally housed. Strong organizational and time management skills, as well as attention to detail are important qualifications for this position. Excellent verbal and written skills are also strongly desired. Additionally, technology fluency with the Microsoft Office Suite is needed.

Project Description: People who inject drugs (PWID) are less likely to maintain viral suppression and this observation is likely perpetuated by stigma associated with substance use and HIV, making acceptable, feasible, and scalable intervention strategies that lead to viral suppression a public health priority. Evidence indicates that incentive-based interventions (e.g., contingency management) and directly observed therapy (DOT, i.e., where professionals watch a person take each dose of medication) improve adherence among people with substance use disorders; however, these strategies do not address the underlying barriers to adherence, such as internalized stigma related to substance use and HIV. This project aims to compare viral suppression among PWID living with HIV who receive only evidence-based video-delivered incentivized DOT and viral suppression among those who receive this intervention in addition to a stigma-focused cognitive behavioral therapy intervention.
Massachusetts

Investigator: Guoping Feng, PhD
Institution: Massachusetts Institute of Technology
Cambridge, MA
Project Title: A Genetic Engineering Toolbox for Marmosets (GETMarm): Development and Optimization of Genome Editing and Assisted Reproduction Techniques for Marmoset Models
Research: Basic Research
Research Area: Synapse Development; Neural Circuits; Genetic Engineering; CRISPR; Gene Therapy; Animal Models; Marmosets; Mice; Behavior Tracking; Autism; Psychiatric Disorders
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Computational skills are required for machine learning related projects. Applicants should also have mouse behavioral experience to perform disease model characterization and molecular biology experience to participate in gene therapy projects.

Project Description: While interning in Dr. Feng’s lab, the student will learn how to (1) use machine learning methods to develop behavioral tracking systems for marmosets, (2) perform behavioral characterization of mouse or marmoset models of autism and schizophrenia, (3) develop gene therapy for monogenic neurodevelopmental disorders, and (4) dissect the neural circuit basis of normal and abnormal behaviors.
Massachusetts

Investigator: Davida Schiff, MD
Institution: MassGeneral Hospital for Children
Boston, MA
Project Title: Improving Treatment Engagement and Adherence to Optimize Outcomes for Opioid-Exposed Mother-Infant Dyads
Research: Clinical Research
Research Area: Perinatal Substance Use Disorder; Opioid Use Disorder; Parenting; Medications to Treat Opioid Use Disorder
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: Qualifications include an interest and/or experience in reproductive and racial justice, interest and/or experience working with mothers and families affected by substance use disorders; interest and/or experience in qualitative or people-oriented research; and a background in anthropology or social sciences.

Project Description: The intern will develop qualitative research skills working on a study to learn more about experiences with the healthcare system and community programs for pregnant and parenting individuals of color with substance use disorder (SUD). Two Massachusetts statewide datasets have shown disparities in medication use for the treatment of opioid use disorder (OUD) in pregnancy and the postpartum period for Black and Latinx individuals, compared to white individuals. This project uses Antiracist Praxis and Community-Enhanced Research methods to investigate racial and ethnic inequities in SUD care across the perinatal continuum.
Massachusetts

**Investigator:** Zhicheng Carl Lin, PhD
**Institution:** McLean Hospital and Harvard Medical School
**Belmont, MA**
**Project Title:** Human Dopamine Transporter Gene: Variation and Transcriptional Regulation
**Research Area:** Molecular Biology; Human Genetics
**Housing:** Subsidized
**Internship Type:** In-Person

**Student Qualifications:** Knowledge of and laboratory experiences in basic molecular biology and cell culture are desired.

**Project Description:** This project will identify novel proteins (e.g., transcription factors) that can regulate gene activity, specifically transcription of the gene that encodes the dopamine transporter DAT. DAT is a master regulator of dopamine signaling in the brain, which is related to high brain function and a spectrum of brain disorders, including addiction, ADHD, and Parkinson's disease. Identification of proteins that regulate DAT transcription may enable a better understanding of how internal and environmental factors related to brain diseases confer the risks.
Massachusetts

**Investigator:** R. Kathryn McHugh, PhD
**Institution:** McLean Hospital and Harvard Medical School
Belmont, MA

**Project Title:** Affective and Inflammatory Reactivity to Pain in Opioid Use Disorder
**Research:** Clinical Research
**Research Area:** Opioid Use Disorder; Stress; Pain; Inflammation
**Housing:** Subsidized
**Internship Type:** Virtual; In-Person

**Student Qualifications:** This clinical project entails working with human subjects in an acute clinical setting (i.e., a psychiatric hospital). Preferred qualifications include experience working in a helping profession role, preferably in a clinical setting; good organizational and time management skills; and an interest in human subjects’ research or clinical practice. Candidates with an interest in careers in medicine, clinical psychology, or other clinical or clinical research area are preferred.

**Project Description:** Pain is an important risk factor for opioid use. The emotional component of pain appears to be uniquely related to risk for misuse of opioids. This study will examine whether emotional and peripheral inflammatory responses to pain are associated with opioid craving and risk for opioid use. Men and women with opioid use disorder will complete a pain assessment followed by measures of opioid craving and will be followed for 30 days. The results of this study will help inform treatment for people with chronic pain and opioid use disorder.
Massachusetts

Investigator: Martin Teicher, MD, PhD
Institution: McLean Hospital and Harvard Medical School
Belmont, MA
Project Title: Early Stress and the Neurobiology of Susceptibility and Resilience to Substance Use Disorders
Research: Clinical Research
Research Area: Pathways to Opioid Use Disorder; Childhood Maltreatment and Attention Deficit Hyperactivity Disorder (ADHD) as Separate Risk Factors; Neurocognitive Testing; Neuroimaging; Inflammatory Markers; Epigenetics
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Ideally the intern should be entering their sophomore, junior or senior year of college and have had classes in psychology and/or neuroscience. Computer skills would be helpful. Familiarity with UNIX would be desirable but are not required. Interns will have the opportunity to observe clinical interviews and assessments and to interact with human participants.

Project Description: We are testing the hypothesis that there are two different pathways that underly the development of hard substance use disorders (e.g., opioids, cocaine, methamphetamine). If our hypothesis is true, then some individuals with this disorder will have had a substantial history of childhood maltreatment and other individuals will have had a history of ADHD; these individuals will have distinctly different brain signatures on neuroimaging. We will also be assessing how much these brain changes associated with maltreatment are mediated by sleep disruption and inflammation.
Massachusetts

Investigator: Julie McCarthy, PhD
Institution: McLean Hospital and Harvard Medical School
Belmont, MA
Project Title: Improving Treatment Engagement in Individuals with Co-Occurring Substance Use and Psychosis: A Telemedicine Family-Based Approach
Research: Clinical Research
Research Area: Families; Substance Use; Psychosis; Intervention; Clinical Trial; Telehealth
Housing: Subsidized
Internship Type: Virtual

Student Qualifications: Interns ideally have a background in psychology, statistics; proficiency in Microsoft Office programs (e.g., Word, Excel, PowerPoint) and REDCap; effective communication skills; attention to detail; initiative; flexibility; and an interest in learning about intervention development, clinical trials, and expanding the reach of evidence-based services to all.

Project Description: Dr. McCarthy's team is developing and evaluating a new telehealth intervention for families of people with early psychosis and substance use disorder. Co-occurring substance use is related to poor treatment outcomes, and our program is designed to help families support a loved one by increasing their readiness to change their substance use and improve overall wellbeing of the family through one-on-one coaching. We are interested in understanding what works well for families, what are their challenges, and how we can overcome them through research.
Massachusetts

**Investigator:** Margie Renee Skeer, ScD, MPH
**Institution:** Tufts University School of Medicine, Boston, MA
**Project Title:** Testing a Brief Substance Misuse Preventive Intervention for Parents of Youth
**Research:** Behavioral Research
**Research Area:** Family Intervention; Substance Use Prevention; Qualitative Research; Interviews; Focus Group Discussion
**Housing:** Subsidized
**Internship Type:** Virtual

**Student Qualifications:** The intern should have (1) excellent communication skills, attention to detail and organization; (2) cultural competency and ability to work well with diverse populations; (3) ability to take responsibility for assignments and work both independently and as part of a team; and (4) ability to handle confidential materials with discretion. Desirable, but not required qualifications include training in qualitative data analytical methods, experience conducting interviews and/or focus group discussions, and coursework in research methodology.

**Project Description:** The SUPPER Project, funded by the National Institute on Drug Abuse, is a large-scale randomized control trial of a brief communication-based intervention, which aims to prevent substance use among adolescents. Children in 5th-7th grade and their parent/guardian are recruited from schools throughout Massachusetts. As part of the intervention, parents/guardians are asked to read a brief handbook, meet one-on-one with an interventionist for two sessions, and receive two text messages per week for 13 weeks. Dyads are asked to complete surveys, audio record prompted conversations, and video record family meals at baseline and at 3, 6, 12, and 18 months. The current study is designed to examine the efficacy of the SUPPER Project intervention; the next step is an implementation trial. Our research team is concurrently completing a program evaluation analysis, guided by the Reach Effectiveness Adoption Implementation Maintenance (RE-AIM) framework, to ultimately inform revisions to the program prior to the implementation trial.

The intern’s primary objective is to assist with the qualitative assessment of the implementation of and adoption of SUPPER by schools. The intern will organize and complete semi-structured interviews with community stakeholders and a focus group discussion with interventionists who deliver one-on-one sessions. The intern will conduct a literature review on RE-AIM and develop a report summarizing their findings and best practices.
Massachusetts

Investigator: Hong Yu, PhD
Institution: University of Massachusetts Lowell
Lowell, MA
Project Title: Identifying Opioid Overdose Predictors Using EHRs
Research: Epidemiology Research
Research Area: Natural Language Processing; Aberrant Behaviors; Opioid Overdose
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: Interns should have taken courses and have experiences in public health and computer science.

Project Description: Pain and effective pain management are among the most critical health issues facing Americans. In 2011, the Institute of Medicine reported that as many as one-third of Americans experience persistent pain, which leads to an annual cost of approximately $635 billion in medical treatment and lost productivity. Prescription opioids are increasingly used to treat acute and chronic pain. To date, epidemiologic research defining opioid-related adverse drug event (ADE) risk factors has relied on broad, static categorizations of risk derived from diagnostic codes. Though important foundational work, these studies have three important limitations: (1) they focus on only the most catastrophic ADE (i.e., an overdose) and thus miss the opportunity to identify less severe, prodromal ADEs (e.g., fatigue, dizziness, sleepiness, oversedation) that may precede and predict an overdose; (2) they do not reliably capture aberrant drug-related behaviors (ADRBs; i.e., risky patterns of use that may affect overdose risk); and (3) they rely on clinician-coded diagnoses in structured data, which have notoriously weak sensitivity and specificity and neglect rich opioid-related information from unstructured clinical narratives. To address this gap, we propose a stepwise approach that leverages the power of electronic health records and new computational methodologies to explore associations among prodromal adverse events, ADRBs, and overdose.
Michigan

Investigator: Julia Felton, PhD
Institution: Henry Ford Health System
            Detroit, MI
Project Title: Improving Delay Discounting to Decrease Harsh Parenting Among Parents
              Receiving Substance Use Treatment in a Low Resource Community
Research: Behavioral Research
Research Area: Parenting; Behavioral Economics; Delay Discounting
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: We are happy to include interns at all levels of experience. It is helpful if
interns have an academic interest in psychology, public health, or a related field and a personal
interest in working with individuals from low-resource communities.

Project Description: The intern will aid with supporting a NIDA-funded grant examining a brief
intervention for parents receiving residential substance use services to improve the parent-child
relationship and decrease risk of harsh parenting, an established predictor for later substance
misuse. This project utilizes peer recovery coaches, which are individuals with lived experience in
substance use recovery, to deliver the intervention. Specific research questions will focus both
on the intervention's effectiveness in reducing harsh parenting and improving the parent-child
relationship, as well as its implementation potential (e.g., how much participants like the
intervention and how feasible the intervention is within a residential treatment setting).
### Michigan

**Investigator:** Pooja Lagisetty, MD  
**Institution:** University of Michigan  
**Ann Arbor, MI**  
**Project Title:** A Tailored Behavioral Intervention to Increase Engagement in Opioid Tapering in Primary Care Settings  
**Research Area:** Health Services Research; Secondary Data Analysis; Qualitative Interviews; Survey Development/Administration (Policy Disparities, and Care Coordination Focused)  
**Housing:** Subsidized  
**Internship Type:** Virtual; Hybrid

**Student Qualifications:** A student with some an interest in sociology, survey methodology, or basic statistical ability (Stata, R) is preferred. Our work is often policy focused, and thus strong written and oral communication skills is also preferred.

**Project Description:** Our lab is currently working on a project where we are evaluating a patient-centered clinical tool that assesses pain and addiction needs in general medical care settings. We are working to convert this tool into a clinical decision aid that can be implemented throughout a health system. In addition to this project, the lab also conducts a variety of work focused on disparate access to treatment for individuals with OUD, pain, stigma within healthcare settings, and policy change.
Minnesota

Investigator: Mustafa al’Absi, PhD
Institution: University of Minnesota Medical School
Minneapolis, MN
Project Title: Effect of Sex Differences and Concurrent Cannabis Use on Stress-Related Psychobiological Mechanisms Associated with Smoking Cessation and Relapse
Research: Clinical Research
Research Area: Stress; Trauma; Addiction; Early Life Adversity; Health Disparity; Pain, Tobacco, Cannabis, Stimulants, Human Research, Psychological; Psychobiology; Psychophysiology
Housing: Campus
Internship Type: Hybrid

Student Qualifications: Desired qualifications include excellent communication skills, interest in human and clinical research, and research experience.

Project Description: Our laboratory is located within the University of Minnesota Medical School. Our program provides opportunities for training and research focusing on factors mediating effects of stress and trauma on addictive behaviors related to tobacco, cannabis, alcohol, and khat. Our approach is transdisciplinary, and our collaborators include experts in psychology, medicine, physiology, and pharmacology. Students can participate in multiple activities as appropriate and fitting to their interests and skills.
Minnesota

Investigator: Yanaira Alonso Caraballo, PhD
Institution: University of Minnesota
Minneapolis, MN
Project Title: Motivation in Females: Interactions Between Gonadal Hormones and Striatal Glutamatergic Plasticity
Research: Basic Research
Research Area: Motivation and Reward-Seeking; Females; Ovarian Hormones; Reward System; Addiction
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: The student does not need prior research experience. The research requires animal handling and thus the student should be comfortable handling rodents. Students majoring in biology, biomedical sciences, neuroscience, or biochemistry are preferred.

Project Description: This project will focus on the behavioral, molecular, and electrophysiological mechanisms of oxycodone incubation related to craving and cue-induced drug-seeking in female rats. The goal is to determine the effects of incubation on craving and cue-induced seeking related to the reward system and the role of ovarian hormones on these effects.
Missouri

Investigator: Beau Ances, PhD
Institution: Washington University in Saint Louis
St. Louis, MO
Project Title: Cannabis, HIV and Mental Processing Systems (CHAMPS)
Research: Clinical Research
Research Area: Neuroimaging; HIV; Cannabis
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: A strong background in programming and computer science, as well as basic neuroanatomy, is preferred.

Project Description: This proposal employs novel methods to identify key determinants and consequences of concurrent HIV infection and regular cannabis use. We will acquire extensive phenotype data from peripheral and brain markers of immune activation, brain structure, and neuropsychological performance (NP) in persons living with HIV (PLWH) that are receiving combination anti-retroviral therapy (cART). The patient population will include 80 regular cannabis users and 80 non-users, as well as HIV uninfected (HIV-) controls (including 80 regular cannabis users and 80 non-users). Our overall hypothesis is that cannabis use leads to increases in inflammation in the peripheral and brain compartments. We also hypothesize that phenotypic signatures due to regular cannabis use and HIV will be delineated through NP and brain volumetrics. In Aim 1, we hypothesize that regular cannabis use will increase both peripheral and brain immune indices in PLWH on cART. In Aim 2, we hypothesize that regular cannabis use will lead to a worsening of NP and reductions in brain volumetrics in both PLWH on cART and HIV-controls. This proposal will provide key insights into the effects of regular cannabis use and HIV on peripheral and brain markers of immune function and NP in PLWH and HIV- controls. These insights are critical for cure strategies and ongoing HIV treatment initiatives.
Missouri

Investigator: Laura Bierut, MD
Institution: Washington University School of Medicine in St. Louis
St. Louis, MO
Project Title: Washington University Career Development Program in Drug Abuse and Addiction
Research: Clinical Research
Research Area: Precision Medicine for Smoking Cessation; Genetics; Nicotine Addiction
Housing: Campus
Internship Type: Hybrid

Student Qualifications: Research will require interaction with human research participants. Interns should be comfortable interacting with research participants from diverse backgrounds. Previous research experience is not required.

Project Description: Cigarette smoking remains the leading cause of preventable death. Several effective medications for smoking cessation exist, but uptake of these treatments is low, making smoking cessation difficult. Difficulty in quitting smoking is also driven in part by genetic factors, which have not been incorporated into cessation interventions. Incorporating genetic information within a risk communication tool may engage current smokers in new quit attempts and motivate treatment use. Genetically informed interventions may promote cessation by changing health-related cognitions and engagement. The overarching goal of this study is to advance the development of a genetically informed smoking cessation intervention, called the RiskProfile. The study will enroll 128 current smokers to receive genetic testing. Participants will be assigned to receive either the genetically informed RiskProfile intervention (intervention group) or brief smoking cessation advice (control group). Smoking outcomes will be assessed up to 6 months post-intervention. The study will test the effects of the RiskProfile intervention on primary outcomes of (1) use of smoking cessation medication and (2) average number of cigarettes smoked per day. Secondary outcomes include readiness to quit smoking and biochemically verified smoking abstinence. Health-related cognitions (including perceived risk, benefits of treatment use and cessation, self-efficacy) and engagement (including personal relevance, comprehension, sharing results) will also be assessed.
Nebraska

Investigator: Tony W. Wilson, PhD
Institution: Boys Town National Research Hospital
Boys Town, NE
Project Title: Signatures of Cannabis Abuse in NeuroHIV (SCAN): An Integrated Molecular and Imaging Approach
Research: Clinical Research
Research Area: Neuroimaging; MEG; Magnetoencephalography; MRI; fMRI; Attention; Cognition; Memory
Housing: Campus
Internship Type: In-Person

Student Qualifications: Students with previous coursework in psychology, neuroscience, and/or computer science or engineering typically do well and learn the material very fast. We expect all interns will require intensive training and we will provide that during the first two weeks.

Project Description: The intern will be trained in cognitive neuroscience and the analysis of neuroimaging data (both MEG and MRI). Typically, the intern receives about two weeks of hands-on training and then selects a project to focus on for the remainder of the program. These projects involve analyzing a neuroimaging dataset comprised of cannabis users and nonusers who are performing a specific cognitive task (e.g., visual attention). Generally, the results show brain regions where chronic cannabis use is negatively affecting brain function. The internship concludes with the intern presenting their findings via a poster at a regional conference.
Nebraska

Investigator: Karsten Bartels, MD, PhD
Institution: University of Nebraska Medical Center
Omaha, NE
Project Title: Improving Opioid Prescription Safety After Surgery
Research: Clinical Research
Research Area: Opioids; Patient Safety; Health Services Research; Surgery; Anesthesia
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: Ideal interns will have an interest in public health, health services research, or clinical medicine.

Project Description: The research project will be focused on clinical outcomes research in perioperative medicine. We are specifically interested in the association of substance use disorders with adverse outcomes after surgery and in developing interventions to mitigate such adverse outcomes. Our research group is very diverse. We welcome students and have a phenomenal track record in bringing them to publication. We have a departmental research internship structure so that the intern would not be alone. Housing may be available at reduced cost via the university.
Nebraska

Investigator: Shilpa Buch, PhD
Institution: University of Nebraska Medical Center
Omaha, NE
Project Title: Molecular Mechanisms Underlying HIV and Cocaine-Mediated Microglial Activation: Targeting NLRP3 Inflammasome
Research: Basic Research
Research Area: HIV; Cocaine; HIV-associated Neurological Disorders (HAND); Inflammasomes; HIV-1 Tat; Chronic Neuroinflammation; Glial Fibrillary Acidic Protein (GFAP); Cell Signaling; Cytokines
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: The intern should have a demonstrated interest in science and a desire to conduct research. Good communication skills are required. In this project, the intern will not have contact with animals or tissue samples. Prior research experience is preferred but not required.

Project Description: In the era of antiretroviral therapy, HIV-infected individuals are living longer, and the incidence of HIV-associated dementia is greatly reduced. However, increased survival rates have led to an increase in the prevalence of HIV-associated neurological disorders (HAND). Drug abuse has been shown to accelerate the incidence and prevalence of HAND. Since HIV does not infect neurons, most neuroinflammation and subsequent neuronal damage results from glial cell activation, including activity of microglia and astrocytes. This project will examine the role of HIV viral protein Tat and/or cocaine use on the microglial activation and whether this activation is mediated via NLRP3 inflammasome signaling. Microglial activation will be measured by increased expression of the proinflammatory cytokines along with cellular activation markers Iba-1 and CD11b as measured by appropriate qPCR, ELISA, and western blot analysis using cell lysates. The intern will learn to culture both mouse and human primary microglia and treat the cells based on the experimental paradigm. The intern will then learn the entire process of performing western blot analysis (from making the gels to analyzing the resulting blots).
Nebraska

**Investigator:** Hongying Dai, PhD
**Institution:** University of Nebraska Medical Center
**Omaha, NE**
**Project Title:** Racial Disparities in Biomarkers, Tobacco Cessation, and Smoking Relapse in Association with Electronic Cigarette Use
**Research:** Behavioral Research
**Research Area:** Competency-Adapted Remotely Delivered Youth Vaping Prevention Program
**Housing:** Campus
**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** This project is a good match for students who are interested in health promotion and community engagement research for diverse communities. Students can work remotely. Working hours are flexible. Special skills are required, including a proficiency in MS Office (Word, PowerPoint, Excel), and strong written and verbal communication skills.

**Project Description:** WeCare! aims to increase the reach and effectiveness of vaping prevention programs to reduce vaping prevalence among African American (AA) and Hispanic/Latino (H/L) adolescents and increase the adoption rate and implementation quality (e.g., fidelity) of vaping prevention in underserved schools and communities, thus reducing tobacco-related health disparities among AA and H/L populations. Interns will help to develop a competency-adapted, remotely delivered vaping prevention program. We will start with our evidence-informed vaping prevention curriculum (TEAM–No Vaping) developed under the CDC and FDA Tobacco/Vaping Prevention Guides. Then, we will use a deep structure approach to infuse norms and historical meanings associated with AA and H/L culture, and further integrate ENDS use patterns, vaping-related risk factors, and psychosocial influences related to vaping for AA and H/L adolescents into the developed curricula. Program contents will also be matched to the observable characteristics (e.g., language and images) of AA and H/L youth. We will form a Curriculum Advisory Board of parents, school personnel, and tobacco control advocates (n=20) and pre-test the program with youth (n≈30) to provide inputs through an iterative process. Six tailored modules will cover knowledge of ENDS, health effects, informational and normative social influences, self-efficacy, skill-building, marketing influence, and media literacy.
New Jersey

Investigator: Stanley H. Weiss, MD
Institution: Rutgers New Jersey Medical School
Newark, NJ
Project Title: Outcome Assessments of Demographically Diverse Long-Term Cohorts of Persons at High HIV Risk Enrolled from Drug Abuse Treatment Programs in the 1980s Across the U.S.
Research: Epidemiology Research
Research Area: Epidemiology; Mortality; Opioid Use Disorder; Cannabis; Alcohol; Tobacco; Other Drugs; Polydrug Use; HIV/AIDS; Prospective Cohort; Statistical Analysis; Patterns of Drug Treatment; Infectious Diseases; Liver Disease; Diabetes; Obesity; Health Disparities
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: There will be no laboratory work. Excellent written and spoken communication skills required. Strong quantitative skills, including experience with statistical software or complex computer programming, required for office-based work. Extraordinary maturity required for field work. Interests in public health, epidemiology, cancer, and drug use issues are advantageous. We are based at a medical university. Completion of human subject’s protection training two months prior to the summer is required.

Project Description: In the face of the continuing HIV/AIDS epidemic, the evolving epidemics of drug abuse, including opioids, and many HIV-infected persons living longer, there is a need to better understand the long-term clinical epidemiology of health outcomes among drug users. Our project uses the extensive data from our 35-year-old prospective cohorts of nearly 11,000 drug users. All of our cohorts will be matched to mortality registry data, and in subsequent years to nationwide cancer registry data, to characterize disease outcomes in HIV-positive individuals contrasted with such outcomes in HIV-negative individuals (accounting for baseline demographic, behavioral, and medical factors). These cohorts are uniquely diverse in gender, race, ethnicity, and geography, hence affording a distinctive opportunity to study such outcomes in both sexes and in underrepresented minority populations, yielding information that will be of great value in clinical practice and health systems planning. The development of our most recent cohort (which is funded as a subaward to us through a supplement to NIDA grant R01DA044014), has been delayed by the COVID-19 pandemic, so the intern may alternatively be able to participate in that latter project. Other databases we use include the NJ Prescription Monitoring Program (which helps us to examine prescribed drug use outside of drug treatment programs), records from treatment programs, and the NJ AIDS/HIV and cancer registries.
New Jersey

Investigator: David Barker, PhD  
Institution: Rutgers University  
Piscataway, NJ  
Project Title: Defining the Differential Roles of Glutamatergic and GABAergic Projections from the Lateral Preoptic Area to the Lateral Habenula in Reward, Aversion, and Drug-Seeking Behavior  
Research: Basic Research  
Research Area: Neuroscience; Drug Addiction; Anatomy; Cocaine; Opioids; Pain  
Housing: Subsidized  
Internship Type: In-Person; Hybrid

Student Qualifications: Interns from a broad range of backgrounds are encouraged to apply. We welcome students with little to no prior research experience. Previous laboratory assistants have come from a variety of majors related to neuroscience including psychology, cell biology, biomedical engineering, genetics, computer science, and biology. The research in our lab involves work with animals and, on some occasions, animal tissue samples. Underrepresented populations are especially welcome.

Project Description: Our work examines how a part of the brain called the lateral preoptic area is involved in processing information about positive and negative events. We are especially interested in how this area processes information in the context of drug addiction, including how the area processes information about drug-related cues and how the area changes its processing when an animal has experienced a state of depression or chronic pain.
New Jersey

Investigator: Morgan James, PhD
Institution: Rutgers University
Piscataway, NJ
Project Title: Orexin/Hypocretin as a Common Mediator of Stress and Reward Behavior in Cocaine Addiction
Research: Behavioral Research
Research Area: Cocaine; Sleep; Withdrawal; Hypothalamus; Orexin; Behavior; Self-Administration
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: This project will require students to work with laboratory animals (i.e., rats). Experience working with rats or mice is preferable, but not necessary. These projects are typically suitable for students pursuing majors in psychology, neuroscience, cell biology, pharmacology or another related field.

Project Description: Cocaine withdrawal is associated with severe sleep disturbance, and poor sleep is frequently cited as a primary reason for relapse. Despite this, conventional hypnotics are typically not prescribed due to their high abuse liability, and thus there exists a need for novel strategies for managing sleep dysregulation in abstinent populations. In this summer research project, we will examine how drugs of abuse disrupt the function of brain systems and circuits that regulate sleep, with the view to identifying targets for novel pharmacotherapies to manage sleep dysregulation in addiction. Particular attention will be given to the orexin neuropeptide system, which is important for sleep/wake processes and exhibits significant plasticity in response to cocaine. We will measure the activity of orexin neurons during cocaine withdrawal and then seek to normalize their activity using chemogenetics and pharmacological strategies. We hypothesize that normalizing sleep outcomes via manipulation of orexin cells and circuits will reduce relapse to cocaine taking. Thus, the outcomes of this project will have strong translational implications for the treatment of cocaine use disorder.
New Jersey

Investigator: Stephanie Shiau, PhD, MPH
Institution: Rutgers University
Piscataway, NJ
Project Title: Leveraging Large-Scale Administrative Claims Data to Evaluate Prescription Opioid Use, Risks, and Outcomes in Older Adults Living with HIV
Research: Epidemiology Research
Research Area: HIV; Aging; Complications; Opioid Use; Health Services Research; Administrative Claims
Housing: Subsidized
Internship Type: Virtual

Student Qualifications: Interns should be highly motivated to obtain background knowledge in HIV. Interns must have good communication skills and possess quantitative analytic skills. An interest in pursuing a career in epidemiology and/or biostatistics is preferred. Previous experience with both SAS and R programming is preferred.

Project Description: A gap exists in understanding how prescription opioid use affects a growing population of aging people with HIV who commonly report chronic pain and have multiple comorbidities and take multiple medications. This research project will assess how HIV and prescription opioid use interact to affect health outcomes.
New York

Investigator: Justin Knox, PhD
Institution: Columbia University
New York, NY
Project Title: Social Environmental Drivers of Stimulant Use and Its Impact on HIV Prevention and Treatment in Black Men Who Have Sex with Men
Research: Epidemiology Research
Research Area: Stimulant Use; Substance Use; Polysubstance Use; HIV; Prep; HIV Care; HIV Prevention; Black Sexual Minority Men
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: An interest in research focused on substance use, HIV and racial and sexual minorities would be preferred.

Project Description: Use of stimulants is a growing problem in the United States, particularly in marginalized groups, such as in Black gay and bisexual men and other sexual minority men (SMM). The proposed scientifically rigorous, exploratory R21 study aims to increase our understanding of stimulant use and other drug use in Black men who have sex with men (MSM) by using the data and infrastructure of an established cohort (the Networks and Neighborhoods Cohort Study) to characterize stimulant use and other drug use, identify its social-environmental drivers, and assess its contribution to HIV transmission. The findings will directly inform a future grant proposal to develop and test an intervention that addresses stimulant use and HIV among Black SMM.
New York

Investigator: Yasmin Hurd, PhD
Institution: Icahn School of Medicine at Mount Sinai
New York, NY
Project Title: Neurodevelopmental Effects of Cannabis and Its Epigenetic Regulation
Research: Basic Research
Research Area: Marijuana; Heroin; Neurodevelopment; Mesocorticolimbic Brain Regions; Developmental Effects of Drugs; Adolescent; Prenatal; Nucleus Accumbens; Prefrontal Cortex; Stress; Depression; Addiction; Epigenetics; mRNA
Housing: Subsidized
Internship Type: In-Person; Hybrid

Student Qualifications: Qualified students usually have an interest in neuroscience, but this is not a requirement. Previous experience in research areas relevant to biochemistry, molecular biology, animal behavior, or anatomy are welcome. The research conducted in our lab will provide students with an opportunity to conduct behavioral work with animals (rodents) and to carry out postmortem brain studies on animal and human tissue. Although previous research experience is highly regarded it is not a requirement.

Project Description: Our research studies the long-term impact of developmental cannabis exposure through the use of multiple techniques. We use animal models to provide information about the causal relationship between adolescent or prenatal exposure to tetrahydrocannabinol (THC; the psychoactive component of cannabis) and behaviors in adulthood relevant to addiction and psychiatric vulnerability. We study molecular and biochemical changes in the brains of THC-exposed animals in order to identify the specific genes and brain pathways that are associated with addiction vulnerability. We use state-of-the-art techniques to study molecular mechanisms in discrete cells and their specific link to behavior in order to identify the mechanisms that maintain the long-term effects of cannabis. We also conduct translational studies in humans in order to understand the relevance of our animal work to human addiction populations. In addition, human molecular and genetics studies are conducted in relation to opioid use disorders and in complementary animal models.
New York

**Investigator:** Joseph Palamar, PhD, MPH  
**Institution:** New York University Langone Health  
New York, NY  
**Project Title:** Drug Use Among Nightclub and Dance Festival Attendees in New York City  
**Research:** Epidemiology Research  
**Research Area:** Club Drugs; Nightclubs; Electronic Dance Music; Dance Festivals; Ecstasy; Molly; New Psychoactive Substances; Bath Salts; Survey; Epidemiology; Hair Testing; Adulterants; Ketamine; Cocaine; Methamphetamine  
**Housing:** Subsidized  
**Internship Type:** In-Person

**Student Qualifications:** Ideal candidates will be enrolled in an undergraduate program focusing on public health, psychology, sociology, nursing, or another health- or social science-related discipline. Excellent English and oral communication skills are necessary, and socially outgoing individuals are preferred as interns must be comfortable approaching passersby on the street. Familiarity with the electronic dance music (EDM) scene is preferred and must be willing to work late night hours. No prior research experience necessary.

**Project Description:** This study focuses on drug use among adults in the EDM party scene of New York City (NYC). We collect data on self-reported drug use and we also collect hair samples from participants to determine whether they have unknowingly been exposed to novel drugs such as “bath salts” which are commonly present in ecstasy/Molly. The intern with help research assistants survey individuals about to enter nightclubs and dance festivals, typically late at night (from about 11:00pm to 1:30am). The majority of randomly selected parties are in Brooklyn and Manhattan. Interns will help research assistants track the number of individuals entering each randomly selected party and approach individuals about to enter parties to determine eligibility and interest in participation. They will also assist research assistants administer the survey on electronic tablets, assist in the collection and tracking of hair samples, and help track recruitment and participant payments. The intern will also attend short periodic team meetings to discuss progress. Emphasis is placed on safety and the interns will always work with a group of research assistants.
Investigator: Babak Tofighi, MD
Institution: New York University Grossman School of Medicine
New York, NY
Project Title: Development of a Text Messaging Tool to Support Buprenorphine Treatment in Primary Care
Research: Clinical Research
Research Area: Mobile Health Tools; Underserved People Who Use Opioids; Substance Use Treatment; Primary Care and Social Services; Social Determinants of Health
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: No prior experience is needed.

Project Description: The intern will work with community stakeholders and people who use opioids to facilitate receipt of a novel mobile health support tool to enhance linkage and retention in substance use treatment. The intern will gain experience in advancing a public health solution in coordinating with multiple stakeholders, including the department of health, NYC Health+Hospitals system, harm reduction and social services programs, and community pharmacies, to facilitate optimal implementation of the mobile health solution.
**New York**

**Investigator:** Tamara Sussman, PhD  
**Institution:** New York State Psychiatric Institute and Columbia University  
New York, NY  
**Project Title:** A Longitudinal Study of Puerto Rican Children and the Impact of Adverse Childhood Experiences on the Development of Cognitive Control and Risk for Substance Use Disorders  
**Research:** Preventive Research  
**Research Area:** Adverse Childhood Experiences; Substance Use Risk; Cognitive Control; Computational Modeling; fMRI; Task-Related Brain Imaging  
**Housing:** Campus  
**Internship Type:** Virtual; Hybrid

**Student Qualifications:** While none of these skills is required in advance, the following skills would be helpful: knowledge of use or facility with RedCap, Excel, SPSS, R, or another statistics package, and Python (particularly for the computational modeling).

**Project Description:** The association between adverse childhood experiences (ACEs) and substance use disorders (SUD) is well established; however, the cognitive and neurodevelopmental mechanisms driving ACE-related SUD risk are not well characterized, limiting prevention efforts. Improved understanding of the impact of adverse childhood experiences (ACEs) on cognitive control and substance use (SU) risk is of particular importance in the Puerto Rican community, as this minoritized group has higher rates of ACEs and worse SUD treatment outcomes than the general US population, likely related to structural racism, and is underrepresented in SUD and neurobiological studies. The 5-year K08 parent grant investigates the influence of ACEs on the development of sub-components cognitive control and related brain activity (Aim 1), and the relationship between ACE-related changes in development and SU risk (Aim 2), using computational modeling to elucidate ACE-related differences in task-performance. We hypothesize that increased ACEs will lead to (1) a slower rate of evidence accumulation (i.e., drift rate, a computational model parameter), and (2) greater neural activity in key regions. Furthermore, these behavioral and neural changes will be associated with increased risk for SU. Over the summer, we will examine results from data already collected for this study, including the influence of racial discrimination on SU risk. Results will be appropriate for presentation in a poster, or similar format.
New York

**Investigator:** Amanda Bunting, PhD  
**Institution:** New York University Grossman School of Medicine  
New York, NY  
**Project Title:** Development of a Novel Polysubstance Assessment Tool for Vulnerable Subpopulations  
**Research:** Behavioral Research  
**Research Area:** Community; Polysubstance Use; Criminal Justice; Assessment; Screening; Instrument Development; Opioids; Psychometrics; Vulnerable Populations  
**Housing:** Campus  
**Internship Type:** In-Person

**Student Qualifications:** Interns will work with human subjects, including individuals who are engaged in active drug use. Respect for research subjects and the use of person-centered language is a requirement for Dr. Bunting’s lab. A social sciences background, including experience in sociology, psychology, health services, public health, is preferred.

**Project Description:** This summer, Dr. Bunting’s research lab will be testing a new and innovative way to measure polysubstance use- the high-risk pattern of drug use when people mix more than one drug together. Polysubstance use substantially contributes to overdose risk, yet current tools are limited in their ability to measure these patterns of drug use. Interns will have the opportunity to be involved in community recruitment of vulnerable populations (e.g., individuals recently released from incarceration, persons who inject drugs) and assist research staff with study procedures to test the reliability and validity of the new tool.
New York

Investigator: Paul Glimcher, PhD
Institution: New York University Grossman School of Medicine
New York, NY
Project Title: SOAR: Smartphones for Opioid Addiction Recovery
Research: Clinical Research
Research Area: Behavior; Decision-Making; mHealth; Opiate
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: The ideal candidate will have basic statistical skills, and be completing an undergraduate degree in psychology, neuroscience, or a related discipline. Interns will be expected to work with patients at least some of the time, although data analysis will be the intern's primary commitment. Expertise with MATLAB, Python, or R is preferred.

Project Description: Based on brain scanning data, the laboratory recently developed a set of behavioral assays that examine how people in treatment for opioid addiction make decisions. The decisions people in treatment make can be used to predict reuse/relapse events at the individual level about a week in advance with an accuracy of better than 70%. In this project, the behavioral battery is deployed via smartphone to patients in treatment. When a reuse event is predicted the patient's physician is contacted and encouraged to consider adjusting medication doses to prevent the reuse event. The goal of the research is both to improve the predictive power of the battery and to determine whether changing dose in response to this prediction improves treatment outcomes.
New York

Investigator:  Charles Neighbors, PhD
Institution:  New York University Grossman School of Medicine
            New York, NY
Project Title:  Coaching Performance Driven Practice Change in the Context of Value Based Purchasing Under New York Medicaid
Research:  Behavioral Research
Research Area:  Opioid Use Disorder; Practice Change; Medicaid
Housing:  Campus
Internship Type:  Hybrid

Student Qualifications:  No prior research experience required, but an interest in pursuing quantitative, qualitative, and/or mixed-methods research in some form going forward is preferred. An interest in addictions and health equity research is highly preferred. Some prior experience with statistical and/or qualitative data analysis software will be helpful but is not required. Studying public health, health care administration, or related field or an equivalent combination of education and relevant experience is helpful.

Project Description:  The Coaching for Addiction Recovery Enhancement (CARE) study works with 30 addiction treatment clinics around New York City and the Albany Capital Region in New York State to coach data-driven process improvement. The project uses large administrative data—including Medicaid data—to examine outcomes as well as qualitative methods to understand implementation and mechanisms of change. The project is the product of a strong partnership between academic and government agencies that provides an opportunity to learn about the real-world addictions treatment system, as well as the challenges of working with clinics in different settings.

The project also has a supplemental grant to study variation in patient-provider interactions with a health-equity lens. The study includes analyses of administrative data to identify racial/ethnic and gender variation in quality of care across clinics then interviews with patients and providers to examine the form and content of patients’ experiences to generate knowledge on how and why patient-provider encounters lead to disparities in care.
New York

Investigator: Moriah Thomason, PhD
Institution: New York University Grossman School of Medicine
New York, NY
Project Title: HEALthy Brain and Child Development National Consortium
Research: Epidemiology Research
Research Area: Developmental Neuroscience; Neurodevelopment; Infant Brain Development; Early Environment
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: We are looking for highly motivated students with strong communication and organizational skill sets. Historically, our lab has recruited full-time undergraduate students interested in advanced learning in STEM fields including psychology, neuroscience, biology, pre-med, and public health.

Project Description: Dr. Thomason directs the pediatric neurodevelopment lab at NYU Langone Health in the Department of Child and Adolescent Psychiatry. As an expert in perinatal neural connectivity, Dr. Thomason's research collaborative focuses on Baby Brain and Early Environment Studies (Baby BEES) and specializes in the acquisition and analyses of multi-modal neuroimaging data. The Baby BEES lab is comprised of interdisciplinary teams conducting research across multiple nationally funded initiatives, including the HEALthy Brain and Child Development (HBCD) Study. The HBCD Study will recruit a large cohort of pregnant women from regions of the country significantly affected by the opioid crisis and follow them and their children through early childhood. The study will collect information beginning at birth and continuing through early childhood, including structural and functional brain imaging data; anthropometrics; medical history; family history; biospecimens; and social, emotional, and cognitive development.
New York

Investigator: Aaron Hogue, PhD
Institution: Partnership to End Addiction
New York, NY
Project Title: Family-Based Recovery Support Service Network for Youth OUD
Research: Clinical Research
Research Area: Family-Based Treatment; Medication for Addiction Treatment; Adolescent and Youth Adult Opioid Use Disorder; Dissemination; Implementation Research
Housing: Subsidized
Internship Type: Virtual

Student Qualifications: The FACTS team is seeking a research Intern with enthusiasm and/or experience working with adolescents and families. This position is ideal for students interested in learning about family-based treatment for adolescent substance use and related behavior problems and for those seeking to develop data management and analysis skills. Spanish fluency is an asset.

Project Description: Partnership to End Addiction is seeking a Summer research Intern to work in its Family and Adolescent Clinical Technology & Science (FACTS) research division. The intern will work on a NIDA-funded multidisciplinary research collaborative dedicated to promoting family integration in treatment and recovery services for youth with opioid use disorder and other substance use disorders. See here for additional project information.

The intern will have access to archival data from several FACTS projects. It is our hope that they will develop and test a research question using basic statistical analyses with support from the FACTS team. The intern will have the opportunity to create and present a poster presentation.

This position is fully remote, and the research intern will be expected to participate in team meetings via Zoom.
New York

Investigator: Karin Kasza, PhD
Institution: Roswell Park Comprehensive Cancer Center
Buffalo, NY
Project Title: Assessing the Impacts of the Four 2019/2020 U.S. Federal-Level Tobacco Control Actions: Flavors, Youth Marketing, Youth Access, and Tobacco 21
Research: Behavioral Research
Research Area: Secondary Data Analysis; E-Cigarettes; Cigarettes; Tobacco; Population; Public Health; Tobacco Regulatory Science
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: There are no specific qualifications needed for this placement; however, a well-suited intern will have an interest in tobacco/nicotine product use behaviors and will be comfortable using – or will be motivated to learn how to use – statistical software packages for data analysis (e.g., Stata or SPSS). The intern will not work with animals, human subjects, or tissue samples.

Project Description: Several major federal-level tobacco control actions were taken in the US in 2019/2020 to reduce Electronic Nicotine Delivery System (ENDS)/tobacco product use among young people. However, around the same time, the COVID-19 pandemic began, which likely also impacted ENDS and tobacco use behaviors. This project is conducting secondary data analyses using large-scale nationally representative studies to determine the impacts of the federal tobacco control actions while also accounting for potential simultaneous impacts of the COVID-19 pandemic. The research intern will help to investigate these questions by working with the principal investigator to analyze data from nationally representative studies of tobacco/nicotine use; specifically, the intern will learn about national surveys used to collect population data, understand how the survey questions align with the data, and run statistical analyses using the data (including descriptive statistics such as reporting on the frequency of ENDS flavors used, and inferential statistics such as running regression analyses to predict changes in cigarette smoking following reduced access to tobacco products). The research intern will write up the results of analyses and will present results to others in the lab/department. This work may also be developed into a paper for publication in a peer-reviewed journal.
# New York

**Investigator:** James Swain, MD, PhD  
**Institution:** Stony Brook University  
Stony Brook, NY  
**Project Title:** Opioids and Maternal Brain-Behavior Adaptation During the Early Postpartum  
**Research:** Behavioral Research  
**Research Area:** Opioid Use Disorder; Maternal Brain; Maternal Behavior; Brain Imaging; Neuroimaging; Functional MRI (fMRI); Relapse; Buprenorphine; Empathy; Caregiving; Depression; Perinatal; Physiology; Postpartum Period; Postpartum Women; Neonatal Abstinence Syndrome  
**Housing:** Campus  
**Internship Type:** Hybrid

**Student Qualifications:** Our work involves human neuroimaging of parents with opioid use disorder (OUD) and depression. Computer skills and aptitude are valuable, including word processing, database software, and statistics packages. Good scientific writing skills and organization are also helpful. The ability to participate in subject recruitment and interview would be important. Compatible career interests include psychiatry, obstetrics, social, cognitive, and affective neuroscience, parenting, development, and addictions.

**Project Description:** The summer intern will assist in the conduct of our current R01—focused on mothers in the early postpartum with OUD. OUD is a fast-growing and devastating epidemic in the US, affecting many mothers who also suffer comorbid mood disorders. Maternal brain-behavior models are studied using magnetic resonance imaging studies. Multimodal neuroimaging methods are used to measure resting-state functional connectivity, neural responses to ethologically salient own-baby cry, and morphometry of key maternal brain circuits among mothers with OUD compared to depression matched controls at multiple early postpartum timepoints. Maternal thoughts and behaviors are measured by interview, self-report, and videos of behavior. This research will elucidate the neurobiology of parenting in the context of OUD with translational potential to optimize current approaches to treat mothers with OUD and suggest directions to best manage postpartum mental health issues.
Investigator: Paul Meyer, PhD  
Institution: University at Buffalo  
           Buffalo, NY  
Project Title: Integrated GWAS of Complex Behavioral and Gene Expression Traits in Outbred Rats  
Research: Basic Research  
Research Area: Drug addiction; Behavioral Genetics  
Housing: Campus  
Internship Type: In-Person

Student Qualifications: A high school diploma is preferred, especially with undergraduate coursework in science and biology. Students will be working with rats. No previous research experience is required.

Project Description: Interns can participate in any projects in our laboratory. A hallmark of addiction is the ability of drug-associated stimuli ("cues") to instigate drug-taking, even after periods of abstinence. We use a number of conditioning paradigms to determine under which conditions these drug cues acquire the ability to influence behavior. For example, we model drug-taking in our laboratory using intravenous and oral self-administration in rats, with a focus on nicotine, cocaine, and alcohol. Among other findings, we have found that nicotine enhances alcohol intake by altering how rats respond to alcohol cues and have established relationships between the response to food cues, drug cues, impulsivity, and cue-induced relapse. We are also in the process of testing and genotyping 1,600 rats on tests of cue responsivity and behavioral regulation, with the goal of generating a map of genomic locations that influence these behaviors. As candidate genes emerge from this research, we will conduct a number of follow-up studies examining the precise roles of these genes in addiction. For example, we are using genetically modified rats to determine whether these specific genes influence drug-taking in animal models of addiction. More information on our mapping project can be found here.
New York

Investigator: Lisham Ashrafioun, PhD
Institution: University of Rochester
Rochester, NY
Project Title: The Impact of Addressing Loneliness on Opioid Use
Research: Behavioral Research
Research Area: Substance Use Disorders; Pain; Suicide; Opioids; Cognitive-Behavioral Therapy; Treatment Seeking; Mental Health; Psychosocial
Housing: Subsidized
Internship Type: Virtual

Student Qualifications: Interns will need strong interpersonal, organizational, and written skills. Completion of at least two years of undergraduate coursework including research methods is preferred. Interns with an interest in a health-related field is preferred and this project is particularly well-suited for someone pursuing a career involving patient-centered care or research (e.g., social work, nursing, psychology, or medicine). The research involves human subjects.

Project Description: The intern will help with a randomized clinical trial assessing the impact of Cognitive-Behavioral Therapy for Loneliness (CBT-L) on loneliness among individuals with an opioid use disorder (OUD) and how changes in loneliness impact opioid use patterns. Loneliness is a psychosocial stressor that is associated with increased risk of opioid use, relapse, and death. Importantly, there are effective interventions that can be used to decrease loneliness; however, there are no studies that have directly intervened on loneliness among individuals with OUD, and the way that loneliness impacts opioid use remains unclear. CBT-L intervenes on loneliness by addressing negative beliefs that (1) maintain loneliness, (2) increase negative emotions, and (3) reduce one’s ability to engage in social activities. For an individual with an OUD, this is critical as addressing negative emotions, and having a sense that one has social support and engages social support are key aspects of recovery. The proposed study uses CBT-L to decrease loneliness by changing unhealthy thinking and behaviors, increasing engagement in enjoyable and social activities, and improving problem solving skills delivered by phone. We will compare its impact to a health education control condition.
New York

Investigator: Angélica Meinhofer, PhD
Institution: Weill Cornell Medicine
New York, NY
Project Title: Intergenerational Effects of America's Opioid Crisis: Parental Drug Use and Offspring Health
Research: Epidemiology Research
Research Area: Opioid Use Disorder (OUD); Medications to Treat OUD; Quantitative Research; Causal Inference; Quasi-Experimental Research Design; Medicaid; Claims Data; Policy Analysis; Intergenerational Effects of Parental Opioid Use; Pregnant People; Infants; Children; Families
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: Ideal candidates will have an interest in quantitative research at the intersection of substance use disorders, health policy and economics, and children and families. Statistical and database management experience, including proficiency in Stata, is preferred but not required.

Project Description: Early life adversity, including in utero and early childhood, may lead to lifelong physical and mental health, substance use, and behavioral problems. This longitudinal, population-based cohort study aims to elucidate the early and middle childhood health and healthcare outcomes of exposure to parental opioid use in early life. Results will shed light on the intergenerational effects of America’s opioid crisis and inform the development of policies and early interventions for improving the wellbeing of children affected by parental opioid use.
New York

**Investigator:** Sean Murphy, PhD
**Institution:** Weill Cornell Medicine
New York, NY

**Project Title:** Health and Economic Outcomes of Treatment with Extended-Release Naltrexone Among Pre-Release Prisoners with Opioid Use Disorder

**Research Area:** Opioid Use Disorder (OUD); Medications to Treat OUD (MOUD); Justice-Involved Populations; Healthcare Services Research; Randomized Effectiveness Trials; Quality-Of-Life; Cost-Effectiveness Analysis; Economic Analysis; Health Care for Justice-Involved Populations

**Housing:** Subsidized

**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** Ideal candidates will have an interest in the intersection between substance use disorder and health services research, including quantitative data analysis, economic evaluations (e.g., cost-effectiveness), and randomized effectiveness trials.

**Project Description:** Data for this study are being collected from two publicly funded randomized effectiveness trials in which extended-release naltrexone (XR-NTX) is being evaluated among individuals with opioid use disorder who are being released from incarceration. In the first study (XR-NTX vs. TAU), those receiving XR-NTX get their first injection prior to release from prison and a referral to community evidence-based treatment post-release; TAU consists of detoxification prior to release and referral to treatment. In the second study (enhanced XR-NTX vs XR-NTX), both arms receive XR-NTX prior to release from prison; the enhanced arm receives mobile medical XR-NTX treatment post-release and the XR-NTX arm receives referral to treatment post-release. The specific aims are to: (1) test for differences in the utilization of healthcare services associated with opioid use. Enhanced XR-NTX with mobile services post-release is expected to have the fewest emergency-department and inpatient visits, but the most primary care and behavioral healthcare visits, followed by XR-NTX, then TAU; (2) test for differences in quality-adjusted life-years (QALYs) gained over the intervention and follow-up periods. Enhanced XR-NTX is expected to result in the most QALYs gained, followed by XR-NTX, then TAU; and (3) calculate the cost to the correctional health system of implementing and running an XR-NTX program, and determine the relative value of each strategy from a state policymaker and societal perspective.
New York

**Investigator:** Bruce Schackman, PhD  
**Institution:** Weill Cornell Medicine  
New York, NY  
**Project Title:** Health Economics of Substance Use Disorder, HCV, and HIV Treatment: Evaluating Intervention Outcomes for Individuals, Systems, and Communities  
**Research Area:** Policymaker/Stakeholder Research; Policy Analysis; Opioid Use Disorder (OUD); Opioid Overdose; Claims and Managed Care Data; Data Completion; Large Data; Public Health Data; Health Services Utilization; Hepatitis C Virus (HCV); HIV  
**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** The candidate should have strong organizational skills and the ability to manage and synthesize data collected from multiple sources. A professional demeanor when communicating with stakeholders is necessary.

**Project Description:** The project aims are to produce an online resource and manuscript detailing best practices and procedures for establishing linked-records public health databases at the state level to address the opioid crisis, and to disseminate this information to stakeholders and policymakers to encourage actions to establish and use these databases. The summer intern will also have the opportunity to contribute to ongoing substance use health economics systematic literature review projects.
North Carolina

Investigator: Comfort A. Boateng, PhD
Institution: High Point University
High Point, NC
Project Title: Low-Efficacy Dopamine D4 Receptor Partial Agonists for Cocaine Addiction
Research: Drug Development Research
Research Area: Medicinal Chemistry; Drug Design; Synthesis and Pharmacological Evaluation of Dopamine Receptor Ligands
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Undergraduate students and senior high school students with chemistry background are eligible for this program

Project Description: Dopamine receptor (DR) ligands have been shown to alter cognition and behavior in animal models of neuropsychiatry disorders. DRs plays an important role within the brain such as cognition, attention, and decision making. A better understanding of DR-mediated signaling is essential to understanding and treating DR-associated disorder. This project will focus on design and synthesizing drug-like molecule that will inhibit DRs with simple organic molecules. Such compounds are important to study DR function and identify favorable pharmacology for disease treatment. This will create a small next-generation compound library using computational modelling approach to base on benzothiazole parental scaffold.
**North Carolina**

**Investigator:** Thomas Gamage, PhD  
**Institution:** RTI International  
**Research Triangle Park, NC**  
**Project Title:** In Vitro and In Vivo Characterization of CB1 Allosteric Modulators  
**Research:** Drug Development Research  
**Research Area:** Molecular Pharmacology; Drug Discovery; Structure-Activity Relationship (SAR) Studies; Allosteric Modulation; Receptor Theory; Cannabinoids; CB1 Receptor; G Protein Signaling; Signaling Bias; Cell Culture; Cell Biology; Signaling Kinetics; Bioluminescence Resonance Energy Transfer (BRET)  
**Housing:** Subsidized  
**Internship Type:** In-Person

**Student Qualifications:** At minimum, interns should have a good communication skills and strong attention to detail, as well as basic laboratory experience including pipetting, use of analytical balance, and preparation/pH adjustment of buffers. Preferred candidates will have previous experience in mammalian cell culture (interns will be culturing human HEK293 cells), an interest in pharmacology/drug discovery, and desire to pursue a graduate study in pharmacology or a related field.

**Project Description:** The cannabinoid type-1 receptor (CB1), through which THC exerts its psychoactive effects, is ubiquitous in the CNS and highly involved in modulating a wide range of neurophysiological functions, including pain and reward. CB1 is a G protein-coupled receptor (GPCR) and therefore primarily signals through heterotrimeric G proteins. In order for molecules to induce signaling bias through CB1, they must stabilize discrete conformations that can preferentially activate particular G protein subtypes. A novel means through which this can be further fine-tuned is allosteric modulation wherein a second molecule binds cooperatively (simultaneously) with a probe ligand binding at the orthosteric (binding site of the endogenous ligand). Further, kinetic analysis can provide insight into how these molecules affect signaling in real-time, non-equilibrium conditions and provide pharmacological parameters that better describe the dynamic nature of drug binding/signaling in vivo.

This project aims to examine allosteric modulators of the CB1 receptor in terms of their ability to augment G protein signaling. Allosteric modulators will be characterized for their signaling profiles alone and in combination with various orthosteric compounds and assessed in real-time using cell-based G protein BRET assays and pharmacological kinetic modeling.
North Carolina

Investigator: Kevin Frankowski, PhD
Institution: University of North Carolina at Chapel Hill
Chapel Hill, NC
Project Title: Negative Allosteric Modulators of the D3 Dopamine Receptor as Therapeutic Leads for Substance Use Disorders
Research: Drug Development Research
Research Area: Medicinal Chemistry; Structure-Activity Relationship Studies; Dopamine Modulation; Allosteric Binding
Housing: Campus
Internship Type: In-Person

Student Qualifications: The construction of the new analogues will entail multi-step organic synthesis using routes and organic chemistry protocols previously developed in our laboratory. While no specific prerequisite skills are required, familiarity with basic organic chemistry laboratory skills (i.e., separatory funnel, chromatography, and reaction set up) and fundamental organic chemistry knowledge (two semesters of organic chemistry lecture and laboratory) would lead to greater success in the 8-week program.

Project Description: D3 dopamine receptor antagonism has shown promise in treating substance use disorders, both in disrupting drug seeking motivation and preventing relapse. Targeting less conserved (allosteric) ligand binding sites on D3 dopamine receptors should facilitate the development of exceptionally selective negative allosteric modulators of the D3 dopamine receptor to test in animal models of opioid addiction. These novel D3 negative allosteric modulators will provide new therapeutic leads to treat substance use disorders, potentially with fewer off-target effects.
Investigator: Kathryn Reissner, PhD
Institution: University of North Carolina at Chapel Hill
Chapel Hill, NC
Project Title: Novel Cellular Markers of Drug-Mediated Calcium Signaling in Astrocytes
Research: Basic Research
Research Area: Addiction; Cocaine; Astrocyte; Neuron; Rat; Self-Administration; Synaptic Plasticity; Reinstatement; Glutamate Transport
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: No prior experience is required. Some background in neuroscience is a valued plus but is not absolutely required. However, a conscientious nature is absolutely critical. The successful applicant will be responsible for some behavioral training of rats, and some processing of brain tissue at the end of the experiment. Work with live vertebrate animals requires keen and careful attention to detail in order to ensure the well-being of the animal. The intern will be trained in all concepts and techniques.

Project Description: Our lab uses the rat self-administration model to study behaviors, neurocircuitry, and molecular pathways which contribute to cocaine addiction. In particular, we are interested in how cocaine self-administration leads to changes in neuron-astrocyte communication within the brain's reward circuitry, and how these changes in communication contribute to long-lasting drug seeking behaviors. Preliminary data indicate that following withdrawal from cocaine self-administration, astrocytes in the nucleus accumbens are smaller and make fewer synaptic contacts than astrocytes from saline control animals. The available summer project will be designed to follow up on this preliminary finding, and how cocaine self-administration affects calcium signaling in astrocytes. The summer student will learn how to perform rat surgical catheterization, how to provide post-operative monitoring and care, and how to perform and analyze self-administration behavior. The intern will also participate in molecular studies including calcium imaging, structural analysis of astrocytes, immunohistochemistry, expression of fluorescent markers, and confocal microscopy. Our lab is a fun and collaborative environment where we work together toward education and advancement of knowledge in the neurobiology of addiction.
North Carolina

Investigator: Eva Telzer, Ph.D
Institution: University of North Carolina at Chapel Hill
Chapel Hill, NC
Project Title: Neurobiological Susceptibility to Peer Influence and Drug Use in Adolescence
Research: Basic Research
Research Area: Adolescence; Adolescent Brain Development; Behavior; Brain Imaging; Developmental Psychology; Drug Use; Family; Peers; fMRI; Neuroscience; Parenting; Puberty; Social Behavior; Risk Taking; Teens
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: This position is ideal for students interested in pursuing a PhD in psychology, neuroscience, or related field, as well as individuals looking to work on cutting edge research with diverse populations. We are looking for meticulous, energetic individuals with excellent organizational and interpersonal skills. Flexible and independent thinking are required. The applicant should have an interest working with people of all ages and backgrounds and must be available to work evenings and weekends.

Project Description: Project SuperTeen is a longitudinal study examining the important role of peer influence on neurobiological development and drug use during adolescence. With funding from an R01 grant from the National Institutes of Health, the lab follows middle school students across 3 years to investigate how the brain changes during this important developmental phase. Diverse methodological tools are used, including hair sampling to obtain cortisol, fMRI to capture neural activation during reward processing and decision-making, and questionnaires to assess adolescent risk-taking and drug use. By studying changes in brain development, the lab seeks to broaden the field’s understanding of the biological experiences and social contexts that help teens thrive.
Ohio

Investigator: Alan Levine, PhD  
Institution: Case Western Reserve University  
Cleveland, OH  
Project Title: Center for Excellence on the Impact of Substance Use on HIV  
Research: Basic Research  
Research Area: Intestinal Permeability; Opioids; HIV; T Cells; Signal Transduction; Mucosal Immunology; Microbiome; Epithelium  
Housing: Campus  
Internship Type: In-Person

Student Qualifications: Interns should be undergraduate students with a keen interest in scientific research as a career goal. Interns will work with human tissue and cells.

Project Description: Opioid misuse is a crisis that not only includes addiction but also enhanced disease progression for an HIV infected person. We propose that opioids do so because they directly alter host immune defense, the intestinal barrier, and the microbiome. Summer interns will be paired with either graduate students or postdoctoral fellows to dissect the mechanisms and signal transduction pathways initiated by opioids in human T lymphocytes and intestinal epithelial cells, and how this effects the microbiome.
Ohio

Investigator: Erika Trapl, PhD
Institution: Case Western Reserve University
Cleveland, OH
Project Title: Impact of Flavor on Youth and Young Adults Use Intention, Abuse Liability, and Perceptions of Cigarillos
Research: Behavioral Research
Research Area: Cigarillo; Tobacco Regulatory Science; Flavor; Behavioral Economics; Eye-Tracking
Housing: Campus
Internship Type: Virtual; In-Person

Student Qualifications: Students should have background in public health, social sciences, behavioral economics, or related fields. This project requires the development of data collection tools and analysis of human survey and behavioral data to inform tobacco regulatory policy. Applicants must have completed at least one biostatistics or statistical methods course and be able to conduct basic statistical analysis.

Project Description: Flavored cigarillos are popular among youth and young adults. It is not clear whether removal of flavors from cigarillos would result in cessation or substitution of another tobacco product, such as e-cigarettes, and whether that choice would be more influenced by perceptions of appeal or perceptions of risk. To accomplish this, we have proposed three integrated aims to gather data to inform CTP regulation strategies on flavored tobacco, specifically for cigarillo products; throughout the proposed research, data on e-cigarettes will be gathered as a highly popular alternative product with potential substitutability. In summer 2022, survey data from nearly 400 cigarillo-smoking participants will be analyzed to assess risk perceptions, substitutability, and abuse liability based on presence of flavor and tobacco product type. Additionally, unique data from a behavioral economics experiment using the experimental tobacco marketplace will be analyzed. The successful intern will contribute to analysis of the project data and development of manuscripts.
Ohio

Investigator: Jason Blackard, PhD
Institution: University of Cincinnati College of Medicine
Cincinnati, OH
Project Title: Omics Analysis of HIV During Synthetic Opioid Exposure
Research: Basic Research
Research Area: HIV; Opioid; Fentanyl; Viral Diversity; Transcription Factor; MicroRNA; Transcriptome
Housing: Campus
Internship Type: In-Person

Student Qualifications: Previous experience in a molecular biology laboratory is preferred. Biology/biochemistry majors are preferred. Interns may work with virus-infected samples after appropriate training but will not be responsible for patient recruitment or enrollment. Animal studies are not part of this research project.

Project Description: The United States is in the midst of a major opioid epidemic largely attributed to synthetic opioids. For example, fentanyl is 50-100 times more potent than heroin and is involved in more than 60% of overdoses nationwide and more than 90% of overdoses in Ohio. Individuals with opioid use disorder are at significantly higher risk for transmission of HIV, and new cases of HIV are on the rise in the Midwest, as well as the University of Cincinnati. Opioid receptors are expressed in a variety of cell types that are susceptible to HIV infection. Commonly abused opioids promote HIV replication and virus-mediated pathology. Thus, translational research on virus-opioid interactions is essential for developing optimized treatment and limiting viral reactivation. Important knowledge regarding how synthetic opioids influence HIV latency and reactivation is absent from the available literature. To fill this critical gap and institute a major shift forward in understanding of this epidemic, our lab is conducting a series of complementary in vivo studies to directly evaluate the impact of synthetic opioids on markers of HIV latency/activation, viral diversity, transcription factor expression, microRNA expression, and cell signaling pathways.
Oklahoma

Investigator: Jennifer L. Stewart, PhD
Institution: Laureate Institute for Brain Research
             Tulsa, OK
Project Title: Plasticity of Aversive Salience in Opioid Use Disorder
Research: Clinical Research
Research Area: Opioid Use Disorder; Functional Magnetic Resonance Imaging; Addiction Recovery
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Students with a bachelor's degree in Psychology or Neuroscience who is interested in pursuing a Clinical Psychology PhD is recommended. As the intern will be collecting human subject data, prior experience collecting behavioral/physiology data is preferred.

Project Description: This longitudinal project aims to identify what self-reported, behavioral, neural, and physiological measures of aversive salience (e.g., stress, negative affect, pain, or drug craving) predict which individuals with opioid use disorder can maintain abstinence (versus relapse) in the 3 months after entering treatment. Research participants complete session visits at baseline, and 1-, 2-, and 3-month follow-ups. This project aims to enroll 200 individuals with opioid use disorder and compare them to 50 healthy comparison subjects. This is a within- and between-subjects study.
Investigator: Tamara J. Richards, PhD
Institution: Oregon Health and Science University
Portland, OR
Project Title: Genetic Factors Underlying Risk for Methamphetamine Intake and Associated Traits
Research: Basic Research
Research Area: Methamphetamine; Addiction; Behavioral Genetics; Genetic Risk; Mouse; Understanding the Genetic Factors Involved in Susceptibility to Drug Addiction
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: The intern should be working toward a bachelor’s degree in psychology, biology, neuroscience, or related basic science discipline. Helpful skills include competency with MS Office; laboratory animal handling experience; the ability to work cooperatively in a group; the ability to efficiently perform detail-oriented tasks; familiarity with basic data analysis; and capability to work within a flexible work schedule (specific hours of work on each day should be expected to be variable). Previous research experience is not a requirement.

Project Description: Answers to problems associated with excessive drug use are needed even after decades of study. Genetic and experiential factors play a role in individual differences in risk for drug use disorders and response to treatment. Animal models of drug use and sensitivity to drug-related effects that are thought to play important roles in addiction potential are used for in-depth studies. Mice, in particular, are favored for genetic investigations, because they share considerable physiological and genetic homology with humans, and methods for genetic manipulation have been perfected in this species. Our current research is focused on genetic factors involved in susceptibility to methamphetamine addiction. Standard inbred strains of mice, recombinant inbred strains, mice that have been selectively bred to voluntarily consume either high and low amounts of methamphetamine, and murine mutants created using CRISPR-Cas9 methods are used. In addition to studying methamphetamine intake, several other behaviors and physiological measures thought to be associated with risk for methamphetamine use are studied, and molecular genetic differences are assessed. The main goal is to identify mechanisms that may lead to the development of more effective treatments. Through behavioral genetics research and discussion with Dr. Richards and other laboratory staff, the intern will gain a deeper understanding of the complexities of drug abuse research and how it translates to the human condition.
Oregon

Investigator: John Williams, PhD
Institution: Oregon Health and Science University
Portland, OR
Project Title: Cocaine Effects on Single Neurons
Research: Basic Research
Research Area: Imaging; Electrophysiology; Opioid Tolerance and Withdrawal; Dopamine Transmission
Housing: Subsidized
Internship Type: In-Person; Hybrid

Student Qualifications: The most important qualification is a high level of motivation. Experience with basic lab tools (e.g., balances), preparing solutions, pipetting, and calculating concentrations and dilutions is preferred.

Project Description: The project would focus on imaging of opioid and D2-dopamine receptors on brain neurons using high resolution microscopy.
Pennsylvania

Investigator: Debra Bangasser, PhD  
Institution: Temple University  
            Philadelphia, PA  
Project Title: Sex Differences in Stress Inoculation of Addiction-Like Phenotypes  
Research: Basic Research  
Research Area: Opioid Misuse; Stress; Sex Differences; Resilience; Behavioral Neuroscience; Transcriptomics  
Housing: Subsidized  
Internship Type: In-Person  

Student Qualifications: We are happy to train any student that is eager to learn and willing to work with rats. A background in neuroscience, biology, and/or psychology would be a plus.

Project Description: The student will assist with studies investigating how a low-resource environment early in life affects impulsivity and decision-making in adult rats. Our preliminary data indicate that exposure to this low-resource environment reduces adult impulsivity in male rats. Female rats are not affected. This result is consistent with a stress inoculation effect and reveals that some adversity early in life can promote later resilience. Given that high impulsivity is associated with substance use disorder, we are also exploring whether this manipulation reduces opioid self-administration in male but not female rats.
**Pennsylvania**

**Investigator:** Lisa Briand, PhD  
**Institution:** Temple University  
Philadelphia, PA  
**Project Title:** Examining Mechanisms Underlying Drug-Associated Memory Erasure by Zeta-Inhibitory Peptide  
**Research:** Basic Research  
**Research Area:** Glutamate Plasticity; Mouse Models of Addiction; Role of Adolescent Stress in Reward Processing  
**Housing:** Subsidized  
**Internship Type:** In-Person  

**Student Qualifications:** Students will be required to work with laboratory animals. Enthusiasm to engage and learn about research rather than resume building is required. Applicants with previous experience working with rodents may be able to accomplish more over the course of the internship, but this experience is not required. Students with a desire to continue into a PhD program after graduating preferred.

**Project Description:** The intern will contribute to ongoing projects in the Briand lab examining the molecular mechanisms underlying opiate addiction. Tasks will involve running mice in self-administration studies aimed at examining the role of glutamate trafficking proteins in relapse to drug seeking behavior. Along with the analysis of behavioral data, the project includes tissue analysis of proteins involved in glutamate neurotransmission. The intern would receive training in self-administration models, assays of social behavior, western blotting and histological techniques, and would also have the opportunity to learn surgical techniques, including stereotaxic brain surgery and jugular catheter implantation.
Pennsylvania

Investigator: Wenzhe Ho, MD, MPH
Institution: Temple University
Philadelphia, PA
Project Title: Role of miRNAs in Methamphetamine/HIV-Mediated Immune Activation
Research: Other Research
Research Area: Drug abuse; HIV; Neuro AIDS; Viral Immunology; Innate Immunity; iPSC
Housing: Campus
Internship Type: In-Person

Student Qualifications: Students with a biology major and great interest and passion for research (with or without experience, although research experience is preferred) are preferred. Students are expected to be good listeners and observers who can follow instructions, pay attention to details, and get along with others. They should have the ability to organize and present experimental data. In addition, students should have excellent communication skills, are able to read research papers and write in English.

Project Description: Methamphetamine, a potent addictive psychostimulant, is one of the most abused drugs in the United States. Methamphetamine abuse is highly prevalent in HIV-infected individuals, which presents unique challenges for HIV prevention and treatment. Given the overlap impact of methamphetamine use and HIV on neuronal damage in the CNS, understanding the role of interplays between methamphetamine and HIV in the pathogenesis of HIV associated neurocognitive disorder (HAND) is urgently important. The goal of this project is to address the hypothesis that methamphetamine use and/or HIV infection inhibit host innate immunity and facilitate inflammation. The two specific aims are: (1) examine whether methamphetamine and/or HIV inhibit the intracellular viral restriction factors in newly established brain cell model (iPSC-derived microglia and neurons) and (2) determine whether methamphetamine and/or HIV infection induce expression of the inflammasomes/neurotoxic factors and promote the death of neurons.
Pennsylvania

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<tr>
<th>Investigator:</th>
<th>Mathieu Wimmer, PhD</th>
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<td>Institution:</td>
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<td>Philadelphia, PA</td>
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<td>Project Title:</td>
<td>Unraveling Epigenetic Mechanisms of Opioid Addiction Susceptibility</td>
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**Student Qualifications:** The intern should be willing to work with animals and interested in learning molecular biology techniques. A strong biology background is recommended but not necessary. This research requires working with animals and tissue samples.

**Project Description:** My lab is interested in the impact of drug exposure in rodent fathers (sires) on addiction-like behavior in the next generation. We use the drug self-administration model in rats to study addiction-like behaviors in the offspring of morphine-taking sires. The goal of our research is to (1) identify epigenetic mechanisms in the germline responsible for the transmission of drug exposure to the next generation and (2) define changes to the epigenetic landscape in the brain of offspring produced by drug-treated sires. The ultimate objective of my research program is to delineate mechanisms predictive of addiction vulnerability using multi-generational models of drug exposure.
Pennsylvania

Investigator: Xiang-Qun Xie, PhD
Institution: University of Pittsburgh School of Pharmacy
Pittsburgh, PA
Project Title: Cannabinoid CB2 Receptor Structure and Allosteric Modulators
Research: Drug Development Research
Research Area: GPCR Cannabinoid Receptor; Biophysics Medicinal Chemistry; Allosteric Modulator; Negative Allosteric Modulator; Machine-Learning Computing; Docking Virtual Screening; cryoEM, X-Ray Crystallographic Structures; Drug Design Discovery; Medical Marijuana
Housing: Subsidized
Internship Type: Virtual Only; In-Person; Hybrid

Student Qualifications: Students must have taken relevant courses including those in biology, biochemistry, chemistry, and organic chemistry. Students that have familiarity with basic computer programming, MATLAB, or Python are preferred. The intern will learn how to use SciFinder, perform a literature search, and complete computer modeling.

Project Description: Interns will perform molecular fingerprint machine learning (ML) and receptor docking approaches to design novel CB2 allosteric modulators on the basis of our established cannabinoid molecular information database (CBID) and 3D cryo-EM structure of the human CB2-Gi/agonist signaling complex.
Pennsylvania

Investigator: Mudit Tyagi, PhD
Institution: Thomas Jefferson University
Philadelphia, PA
Project Title: Characterization of Cocaine Induced Signaling Pathways that Enhances HIV Transcription
Research: Basic Research
Research Area: Drugs of Abuse; Cocaine; HIV Latency; Transcription; Replication; Epigenetics; Signaling Pathways
Housing: Campus
Internship Type: In-Person

Student Qualifications: We are looking for a motivated person, who is interested in research. Individual(s) that have prior familiarity with instruments normally used in molecular biology labs, (including micropipettes), know how to work aseptically with basic knowledge of personal protective equipment (such as lab coats, gloves, facemasks, and goggles) are preferred. The study involves human samples from both cocaine-using and HIV-infected individuals.

Project Description: The overall goal of the project is to understand the underlying mechanisms through which cocaine use further accelerates the aging process in HIV-infected individuals by enhancing immune activation and inflammation. Currant anti-HIV therapy is unable to restrict HIV protein production. Certain HIV proteins are toxic, especially to the CNS, because they stimulate pro-inflammatory cytokines and immune activation. Cocaine further enhances HIV protein production. The investigation proposed in this application will establish that cocaine accelerates the aging process by comparing cocaine-using HIV infected subjects with those not using cocaine. This project will evaluate four groups: Group 1 includes HIV-infected subjects aged between 25-50 years, who regularly use cocaine; Group 2 includes HIV-infected subjects aged between 25-50 years, who do not use any illicit drug; Group 3 includes uninfected subjects aged between 25-50 years, as controls; and Group 4 includes uninfected subjects aged between 25-50 years, who regularly use cocaine.

The specific aims of this project are to (Aim 1A) analyze cell surface markers of immune activation and inflammation, triggered by cocaine among different subject groups; (Aim 1B) investigate the potential impact of cocaine exposure on cell senescence; (Aim 1C) determine the cocaine effect on cell exhaustion; (Aim 2) define the plasma markers of immune activation and inflammation following cocaine use; and (Aim 3) examine the impact of cocaine on telomere length, telomerase transcript, protein, and activity.
Pennsylvania

Investigator: David Martin Lydon, PhD
Institution: University of Pennsylvania
Philadelphia, PA
Project Title: Person-Specific Dynamic Networks of Nicotine Withdrawal: Implications for Smoking Cessation
Research: Basic Research
Research Area: Cigarette Smoking; Nicotine; Experience-Sampling; Withdrawal; Networks; Complex Systems
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: No prior research experience is necessary. Students will work with existing data from human subjects.

Project Description: During smoking abstinence, withdrawal symptoms (e.g., depressed mood, irritability, and difficulty concentrating) emerge that can prompt a return to smoking in order to alleviate these symptoms. To better understand the dynamics of withdrawal symptoms during the course of smoking cessation attempts, the research project collects reports of withdrawal symptoms 10 times per day for 10 days during smoking as usual and 10 days during smoking abstinence. With these data, we examine (1) how withdrawal symptoms fluctuate from moment-to-moment and day-to-day during periods of smoking satiety and abstinence and (2) how fluctuations in these withdrawal symptoms are associated with smoking lapses.
**Pennsylvania**

**Investigator:** Megan Matthews, PhD  
**Institution:** University of Pennsylvania  
Philadelphia, PA  
**Project Title:** MAOI-Inspired Activity Probes to Translate Epigenetics and Genetics into Drugs  
**Research:** Drug Development Research  
**Research Area:** Chemical Biology; Activity-Based Protein Profiling; Hydrazine-Reactive Brain Proteome  
**Housing:** Campus  
**Internship Type:** In-Person  

**Student Qualifications:** Chemistry, biochemistry and neuroscience majors are welcome to apply. Research will involve isolating proteomes from tissue harvested from mice.

**Project Description:** Early antidepressants called monoamine oxidase inhibitors (MAOIs) can be used as chemical probes to map tissue-specific protein activity across the proteome. In this project, the intern will apply activity-based protein profiling to generate a spatiotemporal map of region-specific protein activity in the mouse brain. The anticipated results will guide the development of novel druggable targets and their role in CNS disease.
Pennsylvania

**Investigator:** Emily Dauria, PhD, MPH  
**Institution:** University of Pittsburgh  
**Pittsburgh, PA**  
**Project Title:** kINSHIP: Peer Navigators Addressing Intersectional Stigma to Improve HIV Prevention Among Criminal Justice-Involved Women  
**Research:** Behavioral Research  
**Research Area:** HIV-Prevention; Women's Health; Criminal Justice; Intervention Development; Patient Navigation; Intersectional Stigma  
**Housing:** Campus  
**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** Preferred qualifications for this research internship focused on human behavioral research include high school diploma; excellent computer and word processing skills; investigative, data analysis, and reporting skills; superior documentation skills; excellent organizational skills; an ability to set priorities; ability to work both independently and collaboratively. Applicants should be service oriented, responsive to questions and requests, detail oriented, and able to demonstrate excellent punctuality, attendance, and reliability.

**Project Description:** Women involved in the criminal legal system have complex and highly stigmatized sexual and substance use risk profiles and are particularly vulnerable to HIV. Pre-exposure prophylaxis (PrEP) is an efficacious HIV prevention strategy; however, women at high-risk of HIV infection in the United States are largely absent from national efforts to improve PrEP awareness and uptake. Criminal legal settings represent an important opportunity to address disparities in HIV by linking high-risk women, who experience multiple, intersecting stigmas, with innovative HIV prevention strategies, like PrEP. Peer-led patient navigation interventions have demonstrated efficacy in building trust and reducing stigma and discrimination-related barriers to healthcare engagement, suggesting that such interventions have strong potential to address complex barriers to PrEP access for women within the criminal legal system. The purpose of Project kINSHIP is to develop and test a peer-led patient navigator PrEP linkage intervention for criminal legal system-involved women at risk for HIV acquisition in San Francisco, California. The summer intern will assist with collecting and analyzing qualitative and quantitative data from the pilot phase of the kINSHIP intervention. Results will be used to refine the content and structure of the intervention for the larger randomized trial. Student interns will have the opportunity to contribute to conference abstracts and manuscripts.
Pennsylvania

Investigator: Jane Libeschutz, MD, MPH, FACP
Institution: University of Pittsburgh
Pittsburgh, PA
Project Title: Appalachian Node
Research: Clinical Research
Research Area: Substance Use; Opioid Use Disorder; Clinical Trials
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Research is conducted with human participations; however, opportunities for non-direct participant interaction are also available, including data quality review, developing procedural manuals, and attending team meetings. Preferred intern qualifications include an interest in substance use disorder research, interest in research (especially prior research experience or knowledge), attention to detail, ability to take initiative, and interpersonal communication skills.

Project Description: The Appalachian Node currently has seven Clinical Trials occurring in association with the University of Pittsburgh. Each study is evaluating a different area of substance use disorder and its impact on society. For example, the Medication Treatment for Opioid Use Disorder in Expectant Mothers (MOMs) study is enrolling pregnant women to compare the safety and effectiveness of two different forms of buprenorphine for pregnant women and their unborn children. The Subthreshold Opioid Use Disorder Prevention (STOP) Trial study is enrolling individuals with subthreshold opioid use disorder, or those that do not meet the full criteria of having an opioid use disorder to evaluate the most effective interventions to prevent the development of opioid use disorder. The Developing an Intervention to Address Intersecting Prescription Opioid and Chronic Pain Stigma in Cancer Survivors study is completing interviews with cancer survivors prescribed opioids for moderate-to-sever chronic pain and their caregivers regarding experiences with prescription opioid and chronic pain stigma. The study aims to identify potential contributors to stigma in cancer survivors. The Optimizing Retention, Duration, and Discontinuation Strategies for Opioid Use Disorder Pharmacotherapy (RDD) study aims to improve medication treatment and discontinuation for opioid use disorder and better predict who can discontinue medication without relapse.
### Rhode Island

**Investigator:** Sara Becker, PhD  
**Institution:** Brown University  
**Providence, RI**  
**Project Title:** Implementing Contingency Management in Opioid Treatment Centers Across New England: A Hybrid Type 3 Trial  
**Research:** Clinical Research  
**Research Area:** Implementation; Opioid; Contingency Management; Adolescent; Digital Health  
**Housing:** Subsidized  
**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** Interest in opioid misuse or addiction, implementation science, clinical research, and/or community partnerships is preferred. Strong interpersonal skills, time management skill, and attention to detail are required. Opportunities to contribute to manuscripts or conference presentations could be available for students with strong writing skills. Professional development support will be offered for students with interest in applying to graduate school.

**Project Description:** The summer intern will be contributing to two active implementation science trials. The first is called Project MIMIC and is a cluster randomized hybrid trial with 30 opioid treatment programs throughout New England. The trial tests two different implementation strategies to help opioid treatment programs deliver an evidence-based intervention called contingency management (CM). CM is one of the most effective interventions for the treatment of opioid use disorders, but it is one of the least available treatments in community opioid treatment programs. The study aims to help community programs to implement CM with consistency and quality. The second trial is called Parent SMART and is a pragmatic effectiveness trial with the largest adolescent residential treatment program in the United States. Parent SMART tests a technology-assisted parenting intervention to see if it can improve the outcomes of adolescents discharged from residential treatment to the community.
Rhode Island

Investigator: Lauren Micalizzi, PhD
Institution: Brown University
Providence, RI
Project Title: Prenatal Tobacco Exposure: Self-Regulatory Pathways to Externalizing Behaviors
Research: Behavioral Research
Research Area: Substance Use; Adolescents; Maternal Smoking; Externalizing; Development; Self-Regulation
Housing: Subsidized
Internship Type: In-Person; Hybrid

Student Qualifications: Desired qualifications include comfort and willingness to work with families from low-income and/or diverse populations; openness to and interest in learning new skills; strong interpersonal and organizational skills; and demonstrated ability to work both independently and collaboratively. A major or career interest in psychology, neuroscience, or a related field is preferred. Prior research experience is preferred, but not required.

Project Description: The summer intern will support a study examining the effects of maternal substance use during pregnancy on self-regulation, substance use, and other behavior problems among adolescents.
Rhode Island

Investigator: Cara Murphy, PhD
Institution: Brown University
Providence, RI
Project Title: A Multiple Health Behavior Change Intervention for Overweight and Obese Smokers
Research: Clinical Research
Research Area: Health Behavior Change; Randomized Controlled Trial; Obesity; Smoking Cessation; Weight
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Students must have a familiarity working with Zoom, Microsoft programs (e.g., PowerPoint, Word, and Excel), and Google programs (e.g., Gmail, Google calendar, Google voice, and Google drive). Students must also have strong communication and interpersonal skills, an ability to work independently and as part of a team, and an ability to develop rapport with research participants.

Project Description: This study is a pilot study to determine whether providing weight management treatment to individuals before they quit smoking will help them with quitting smoking and managing their weight while quitting smoking. Individuals with obesity who are interested in quitting smoking and who want to prevent weight gain will be invited to participate in a 16-week group-based virtual treatment program. For the first 8 weeks of treatment, half of the participants will receive behavioral weight management treatment and be asked to use self-regulation skills to lose weight. The other half of participants will be provided information about living a healthy lifestyle for the first 8 weeks. All participants will receive smoking cessation treatment for the final 8 weeks of the treatment program. Participants will be assessed for 3 months after quitting smoking to determine success with quitting smoking and with limiting the weight gain that often occurs when someone quits smoking.
Rhode Island

Investigator: Sarah Helseth, PhD
Institution: Brown University
Providence, RI
Project Title: Development and Preliminary Testing of an Adjunct Smartphone App to Reduce Marijuana Use in Court-Involved, Non-Incarcerated Adolescents
Research: Behavioral Research
Research Area: Adolescent; Cannabis; Substance Use; Juvenile Justice; Digital Health; Treatment Development
Housing: Subsidized
Internship Type: In-Person; Hybrid

Student Qualifications: Student will complete a required ethics training prior to engaging in any research activities. The juvenile court is currently virtual but may return to being in-person by Summer 2022. Preferred skills include coursework in child or developmental Psychology and relevant research methods. The ideal applicant will have some interest/experience in treatment, working with adolescents and families, substance use, technology, and an interest in scientific writing and presentations.

Project Description: Dr. Helseth is interested in working with a student seeking treatment research experience on her NIH-funded study of substance use problems in high-risk youth. Teenagers who use cannabis and go to juvenile court are more likely to face arrest or addiction in the future. Treating their cannabis use within the court system is ideal, but treatments would need to be inexpensive and easy to deliver. This study will test a new smartphone app to help teenagers in the court system reduce their use of cannabis and other substances. Phase II of the research will occur during Summer 2022 and will involve beta testing the new smartphone app with court-involved teens.
Rhode Island

Investigator: Kelli Scott, PhD
Institution: Brown University
Providence, RI
Project Title: Pilot Implementation of Measurement-Based Care in Community Opioid Treatment Programs
Research: Clinical Research
Research Area: Implementation Science; Community-Engaged Research; Measurement-Based Care; Hybrid Effectiveness-Implementation Study; Rapid Ethnography; Psychosocial Interventions; Substance Use Treatment; Opioid Use Disorder; Opioid Overdose; Opioid Treatment Programs; Mixed Methods; Measure Design; Intervention Development and Adaptation
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: An educational background in psychology or public health is preferred, however no prior research experience is needed for this internship. This project would be particularly relevant for interns interested in graduate training and/or a career in counseling, clinical psychology, and/or implementation science. This project will require students to work with human participants. Familiarity with Microsoft Word and Excel is preferred, along with strong organizational and communication skills.

Project Description: Summer interns will have the opportunity to participate in the first phase of a two-phase research project that is focused on improving the quality of treatment for opioid use disorder. This project involves using implementation science methods to develop and test a measurement-based care intervention for use in community opioid treatment programs. Measurement-based care is a research-supported intervention that involves a counselor administering a self-report symptom measure to clients, reviewing measure scores, and discussing the clients’ responses in a counseling session. Measurement-based care has not been well-studied in community opioid treatment programs, so Phase 1 of this project involves building community partnerships with programs offering opioid use disorder treatment. To help build these community partnerships, the study Principal Investigator (PI) will visit treatment program sites and will collect mixed methods data (including observational data, qualitative interviews, and quantitative surveys) from leaders, counselors, and clients to understand: (1) barriers to measurement-based care use and (2) potential ways that measurement-based care should be adapted to fit the needs of counselors providing treatment for opioid use disorder. This data will be analyzed and used to adapt a measurement-based care protocol that will be implemented and tested in opioid treatment programs in the second phase of the study.
Rhode Island

**Investigator:** Laura Stroud, PhD  
**Institution:** The Miriam Hospital Center for Behavioral and Preventive Medicine  
**Providence, RI**  
**Project Title:** Electronic Cigarettes During Pregnancy: Impact on Fetal Development  
**Research:** Clinical Research  
**Research Area:** Prenatal; Pregnancy; Substance Use; Marijuana; Cannabis; Epigenetic Placental Pathways; Infant Behavior; Infant Neurodevelopment; Infant Cortisol Reactivity  
**Housing:** Subsidized  
**Internship Type:** Hybrid

**Student Qualifications:** The applicant is required to be a matriculating student in a 4-year college program. Psychology, Biology, Neuroscience, or pre-med majors are preferred but not required. Students will work with human subjects, data, and biospecimens, as relevant.

**Project Description:** The Maternal and Infant Studies Lab at Brown Medical School is focused on understanding the impact of substance use during pregnancy on fetal and infant biobehavioral development, as well as epigenetic mechanisms. Undergraduate research assistants who join the biobehavioral research team are involved in a wide range of tasks (such as screening of pregnant mothers), entering and managing clinical data, coding fetal and infant behavior and temperament, and performing other study-related tasks. Interns are involved in every aspect of the research, including recruitment efforts, biospecimen and data collection, data analyses, and retention strategies. Training and supervision of these tasks are rigorous and tightly maintained in order to ensure that study aims are being carried out according to HIPAA and IRB guidelines.
**Rhode Island**

**Investigator:** Ashley Buchanan, DrPH  
**Institution:** University of Rhode Island  
Kingston, RI  
**Project Title:** Causal Inference Methods for HIV Prevention Studies Among Networks of People Who Use Drugs  
**Research:** Epidemiology Research  
**Research Area:** Causal Inference; Network Science; Substance Use Epidemiology; HIV/AIDS Epidemiology; Data Science; Statistics  
**Housing:** Campus  
**Internship Type:** In-Person; Hybrid

**Student Qualifications:** A background in causal inference and/or network science is beneficial, but not imperative because these courses are offered at URI and the student will be required to study these topics. Proficiency in R programming and completion of human subjects training is also beneficial, but the intern can also spend the two weeks prior to starting the position completing these tasks.

**Project Description:** The goal of this project is to conduct innovative research to develop causal inference methodology combined in novel ways with network science to solve challenges in network-based studies of HIV treatment and prevention among people who use drugs. We are interested in considering spillover effects and including networks structures in the analysis; spillover or disseminated effects are when one person's exposure affects another person's health outcome. We are extending our approach to evaluate if the effects of interest differ by network structures.
South Carolina

**Investigator:** Alexander Smith, PhD  
**Institution:** Medical University of South Carolina  
**Charleston, SC**

**Project Title:** Discovery of Novel Pharmacotherapeutic Targets for Opioid Addiction  
**Research:** Basic Research  
**Research Area:** Opioid Addiction; Behavioral Neuroscience; Neuronal Ensembles; Behavioral Pharmacology; Biochemistry; RNA-Sequencing; Light-Sheet Microscopy; Machine Learning; Computational Methods; Image Processing; Image Classification

**Housing:** Subsidized  
**Internship Type:** In-Person

**Student Qualifications:** Interns can be trained in all aspects of the planned wet lab experiments. However, previous knowledge of pipetting and biochemical techniques (such as western blotting and immunohistochemistry) would be beneficial. Interns who are more comfortable working with high-performance computing will have the opportunity to work on deep learning of 3D brain architecture using TensorFlow/PyTorch3D approaches, though this requires an already strong background of Python syntax.

**Project Description:** The Smith lab will use rodent (rat and mouse) models of drug addiction for discovery of new molecules that may be effective targets for medications to prevent relapse to drug seeking. Thus, this summer project will focus on training animals to self-administer (via lever-press or nose-poke) oxycodone or heroin during daily sessions where each drug infusion is paired with a light and sound cue (i.e., triggers). After a period of withdrawal, these cues are used to induce relapse behaviors. This model of drug addiction has face validity for human addicts who have high rates of relapse during periods of attempted abstinence, and report that relapse is often driven by sensory information that they associate with drug use. We use both cutting-edge wet-lab (biochemical/molecular) techniques as well dry lab (i.e., computational) techniques to examine contributions of individual brain regions and molecules to this relapse behavior.
South Carolina

Investigator: Lindsay Squeglia, PhD
Institution: Medical University of South Carolina
            Charleston, SC
Project Title: 13/13 ABCD-USA Consortium: Research Project
Research: Clinical Research
Research Area: Neuroimaging; Neuropsychology; Child and Adolescent Brain Development; Alcohol; Cannabis; Marijuana
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Preferred students have an interest in clinical research with children and adolescents. Students do not need to satisfy any major or skill requirements.

Project Description: The Adolescent Brain Cognitive Development (ABCD) study is a national longitudinal study that assesses the short- and long-term impact of substance use on brain development. The project has recruited approximately 12,000 youth before they begin using alcohol, cannabis, tobacco, and other drugs, and is following them over 10 years into early adulthood.
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<th>Investigator</th>
<th>John Woodward, PhD</th>
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<td>Internship Type</td>
<td>In-Person</td>
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**Student Qualifications:** The intern should possess a keen interest in understanding how the brain works and the ability to learn new skills. An interest in pursuing a career in biomedical research is recommended, although not mandatory. The intern will be expected to participate in studies using live rodents (including mice and rats).

**Project Description:** In this project, we will study the effects of abusing inhalants on brain circuits involved in reward and decision-making. Abused inhalants are an understudied drug of abuse and little is known about their effects on brain function. However, they are commonly used by children and adolescents since they are contained within a variety of common household products, such as glues, paints, and solvents. The best studied abused inhalant is toluene, which is liquid at room temperature and quickly turns to a vapor when exposed to air. We use electrophysiology and in vivo fiber photometry to study how toluene vapor affects the function on neurons in the ventral striatum—a brain area that is critical for acquiring and maintaining drug seeking. We have also developed a technique that allows adolescent rats to self-administer toluene vapor in order to mimic how humans expose themselves to abused inhalants.
**South Carolina**

**Investigator:** Michael Shtutman, PhD  
**Institution:** University of South Carolina  
**Columbia, SC**

**Project Title:** Knowledge Discovery and Machine Learning to Elucidate the Mechanisms of HIV Activity and Interaction with Substance Use Disorder

**Research:** Basic Research  
**Research Area:** HIV; HAND; HIV-Associated Neurodegenerative Disease; Cocaine; DDX3; Dad Box RNA Helicase; Artificial Intelligence; Machine Learning  

**Housing:** Campus  
**Internship Type:** In-Person; Hybrid

**Student Qualifications:** The minimum set of qualifications include general molecular biology/biochemistry lab training or bioinformatics training within R. The preferred set of qualifications include experience in fluorescent microscopy, cell staining, tissue culture, or experience in statistics, bioinformatics, and image analysis. Students will not be required to work with animals.

**Project Description:** HIV-1 Associated Neurocognitive Disorder (HAND) is a common and clinically detrimental complication of HIV infection. Viral proteins, including Tat, released from infected cells cause neuronal toxicity. Substance abuse in HIV-infected patients greatly influences the severity of neuronal damage. To uncover potential targets for anti-HAND therapy, we employed an AI-based literature mining system that we developed called MOLIERE: Automatic Biomedical Hypothesis Generation. The MOLIERE can be employed to reveal previously unknown associations of human genes with HAND. Evaluation and prioritization of the highest-scoring genes potentially associated with HAND showed several drugs approved by the FDA or in clinical trials for other applications, like cancer or allergies. These identified drugs protect neurons form combined neurotoxicity of HIV Tat and cocaine and therefore Tat the right candidate for repurposing drugs for HAND treatment. The goal of the project to determine the molecular mechanism of the drugs neuroprotection by combining of cellular biology with next-generation and signal-cell sequencing applications.
South Carolina

Investigator: Peter Vento, PhD
Institution: University of South Carolina
Columbia, SC
Project Title: Role of D2-Expressing Nucleus Accumbens Neurons in Punished Cocaine Seeking
Research: Basic Research
Research Area: Behavioral Neuroscience; Decision-Making; Aversive Learning; Rodent Self-Administration
Housing: Campus
Internship Type: In-Person

Student Qualifications: Student interns will work on studies involving laboratory rats, and while no prior experience with rodents is required, it is necessary that students are open to learning basic practices for handling and caring for laboratory rodents. Interns will also work with rat-derived brain tissue. No formal qualifications are required for work in the lab, but prior coursework in introductory neuroscience or biological psychology is preferred.

Project Description: Research in the Vento lab focuses on brain pathways mediating aversive learning and cost-benefit decision-making. How do we learn from negative experiences in day-to-day life, and how do we come to avoid suboptimal outcomes in the future? What are the neural circuits that control these processes and how are they perturbed in individuals battling substance abuse? To address these questions, ongoing experiments this summer will deploy a wide range of behavioral, neuroanatomical, and neurophysiological techniques in rodents to visualize and manipulate distributed neural circuits underlying substance use disorder. Research interns will learn how to deploy optogenetic, chemogenetic, and optical imaging tools in combination with a variety of rodent behavioral paradigms. The overarching goal of these studies is to better understand how the brain encodes negative experiences and how these processes might be targeted to combat the often-devastating consequences of addiction.
**Tennessee**

**Investigator:** Russell W. Brown, PhD  
**Institution:** East Tennessee State University  
Johnson City, TN  
**Project Title:** The Role of Adenosine A(2A) Receptor Activation on the Behavioral and Plasticity Response to Nicotine in a Rodent Model of Schizophrenia

**Research:** Basic Research  
**Research Area:** Behavioral Neuroscience; Dopamine; Adolescence; Rodent Model of Schizophrenia; Epigenetics; Novel Drug Targets; Behavioral Testing; Neural Plasticity Mechanisms; Sex Differences

**Housing:** Campus  
**Internship Type:** In-Person

**Student Qualifications:** Most importantly, students need to be motivated to learn about neuroscience research. It would be advantageous if the student has learned how to inject animals, has done some behavioral testing, and knows generally about preclinical research. However, these are not absolute requirements. We’re a friendly group, and we all work as part of a team. The student must be willing to join in as part of a team instead of acting alone.

**Project Description:** In past work, our laboratory has analyzed the behavioral and neurochemical consequences of dopamine D2-like receptor supersensitization, and its relevance to schizophrenia. Dopamine is a neurotransmitter involved in motor function and reward behavior that binds to two families of receptors: D1 and D2. Through early developmental administration of the drug quinpirole (which acts as an agonist to dopamine D2 receptors), the dopamine D2 receptor’s sensitivity increases. This increase in sensitivity does not result in a change in receptor number and persists throughout the animal’s lifetime. Over several years of work, we have found that neonatal quinpirole treatment enhances behavioral sensitization and rewarding effects of nicotine. This observation is especially important because approximately 80% of schizophrenia patients smoke cigarettes heavily. Ultimately, this heavy smoking results in a poor quality of life and shortens the average lifespan of schizophrenia patients. Our primary interest is to try to identify behavioral and neurobiological targets for treating smoking in schizophrenia, and we have identified the adenosine A(2A) receptor as a primary target. We also analyze several neural plasticity proteins that underlie these effects in the brain.
Tennessee

Investigator: Brendan Tunstall, PhD
Institution: University of Tennessee Health Science Center
Memphis, TN
Project Title: Opposing Contributions of Oxytocin and Corticotropin-Release Factor to Alcohol Dependence
Research: Basic Research
Research Area: Behavior; Neuroscience; Alcohol; Addiction; Neuropeptide; Oxytocin; Corticotropin-Releasing Factor (CRF); Fiber Photometry; Optogenetics
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Students with an interest in behavioral neuroscience and a desire to gain technical research training are highly preferred. Students would be required to work with animals (i.e., rats) and/or tissue samples (i.e., rat brain tissue). Lab experience or coursework in rodent behavior testing or brain-tissue processing, microscopy, and/or histological analysis would greatly strengthen the application of candidates. However, prior research experience is not a prerequisite for this position.

Project Description: Alcohol dependence is modeled in rodents using a variety of approaches. Oxytocin has been reported to decrease binge drinking in rats and mice and reduce alcohol-cue reactivity in alcohol-dependent rats and humans. The vapor model of alcohol dependence is a well-validated model that allows precise control of alcohol intoxication. Consistent with the defining symptoms of alcohol dependence in humans, alcohol vapor exposure drives escalated and compulsive-like drinking despite punishment, facilitates relapse, produces somatic withdrawal signs, decreases brain reward function, and heightens depression- and anxiety-like behavior. Using the alcohol vapor model, we have shown that intranasal administration of oxytocin dose decreased alcohol consumption and motivation for alcohol in alcohol-dependent rats. In this project, virus-mediated, selective expression of light-sensitive proteins will be used to allow optogenetic stimulation to excite or inhibit the activity of oxytocin neurons in the brain. Thus, it will be possible to assess the role of oxytocin release from neuronal projections into brain regions of interest in the mediation of addiction-like alcohol-drinking behavior in alcohol dependence.
Tennessee

Investigator: Pingsheng Wu, PhD
Institution: Vanderbilt University Medical Center
           Nashville, TN
Project Title: Electronic Cigarette Use During Pregnancy and the Impact on Newborn Metabolic Profile and Perinatal Health Outcomes
Research: Epidemiology Research
Research Area: Women; Electronic Cigarettes Use; Traditional Cigarette Use; Pregnancy; Pregnancy and Infant Outcomes
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: Students majoring in epidemiology, biostatistics/statistics, data science, informatics, computer science, and related majors who have formal training and/or are familiar with statistical software packages (such as R, SAS, or STATA) are preferred. Students should have competence in simple data analysis and manipulation. No prior experience with animals, tissue samples, and/or humans is necessary. Excellent verbal and written communication skills, as well as the ability to work in a team, are imperative.

Project Description: Electronic cigarettes (e-cigarettes) are electronic devices that produce an aerosol by heating a liquid typically containing nicotine, flavorings, and other additives for inhalation through a mouthpiece by the user. Despite advertisements depicting e-cigarettes as a safer and healthier alternative to traditional cigarettes, studies have shown that e-cigarettes may pose unique risk. In 2019, e-cigarette use was reported to result in 2,807 lung injury-related hospitalizations and 68 deaths. The Center for Disease Control and Prevention (CDC) and American College of Obstetricians and Gynecologists (ACOG) recommend that pregnant women, along with other high-risk populations, should not use e-cigarettes. In the proposed study, the student will work on determining the potential adverse effect of e-cigarette use during pregnancy, and whether quitting e-cigarette use minimizes such risk. The study will use nationally representative Pregnancy Risk Assessment Monitoring System (PRAMS) data, a surveillance study specifically designed to identify groups of women and infants at high risk for health problems (including smoking), monitor changes in health status, and measure progress towards goals in improving the health of mothers and infants.
**Texas**

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>Rachel Smith, PhD</th>
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<tr>
<td>Institution:</td>
<td>Texas A&amp;M University</td>
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<td></td>
<td>College Station, TX</td>
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<tr>
<td>Project Title:</td>
<td>Establishing a Link Between Habits and Punishment Resistance</td>
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<td>Research:</td>
<td>Behavioral Research</td>
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<tr>
<td>Research Area:</td>
<td>Neuroscience; Animal Models; Rats; Cocaine; Self-Administration; Immunohistochemistry; Reinforcement; Punishment Resistance; Habits</td>
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<td>Housing:</td>
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**Student Qualifications:** Ideally, the intern is interested in the biomedical field (e.g., graduate school for neuroscience or psychology or medical school), is majoring in a science discipline (e.g., biology, psychology, or neuroscience), and has taken neuroscience courses. The research project requires working with animals (specifically rats), handling them on a daily basis, and working with rat brain tissue. The intern should possess skills in organization and multi-tasking, as well as working well in a team and individually.

**Project Description:** The Smith lab is focused on investigating the neural mechanisms of habitual and compulsive cocaine seeking. To study addiction, an animal model of drug self-administration is used, in which rats learn to lever press for intravenous injections of cocaine during daily 2-hour sessions. Compulsive drug use is modeled in animals as punishment resistance, in which a subset of rats continue to seek cocaine even in the face of negative consequences (e.g., mild footshock). The summer research project will involve behavioral experiments in rats using the self-administration paradigm described. In addition, the research project will involve immunohistochemistry experiments to stain different proteins in the rat brain and explore neuronal activation in different brain regions and cellular subtypes.
Texas

Investigator: Mahesh Mohan, PhD
Institution: Texas Biomedical Research Institute
San Antonio, TX
Project Title: Epigenetic Mechanisms Underlying Cannabinoid Modulation of Neuroinflammation in HIV/SIV Infection
Research: Basic Research
Research Area: HIV; SIV; Intestinal and Neuroinflammation; Delta-9-Tetrahydrocannabinol; Cannabidiol; Rhesus Macaque; Basal Ganglia; Hippocampus; Cerebral Cortex; Lymph Nodes; Salivary and Intestinal Microbiome; Plasma Metabolomic Profiling
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Students pursuing degrees in biology, biochemistry, or chemistry are preferred. Required attributes include the ability to pipette accurately, calculate molarity, prepare incubation buffers, make antibody dilutions, and strictly follow standard operating protocols; attention to detail; and knowledge about basic statistical tests (e.g., "t" tests, Mann–Whitney U test, one-way ANOVA).

Project Description: The intern will conduct immunofluorescence studies in brain (basal ganglia and cerebral cortex) and intestines of chronically simian immunodeficiency virus (HIV/SIV) infected rhesus macaques administered vehicle or long-term low-dose delta-9-tetrahydrocannabinol (THC). The goal is to identify and quantify the cellular source of key inflammasome proteins (NLRP6) and proinflammatory and oxidative stress response proteins (wolfamin syndrome 1 (WFS1)) in the basal ganglia and intestine. In addition, the intern will also have the opportunity to culture and treat HCN2 (cortical neuronal cells) and small intestinal and gingival epithelial cells with THC, cannabidiol, and cannabinoid receptor agonists and antagonists to investigate its effect on the expression of oxidative stress response genes (Dual oxidase 1), indoleamine dioxygenase-1, and NLRP6 protein.
Texas

Investigator: Josee Guindon, DVM, PhD
Institution: Texas Tech University Health Sciences Center
Lubbock, TX
Project Title: Mechanisms of Cannabinoid Tolerance
Research: Basic Research
Research Area: Delta-9-Tetrahydrocannabinol (Δ-9-THC); Analgesic/Antiemetic Effects; Agonist and Sex-Specific Mechanisms of Cannabinoid Tolerance; Antinociceptive Effects in Chronic/Chemotherapy-induced Pain Models
Housing: Campus
Internship Type: In-Person; Hybrid

Student Qualifications: Students should be interested in working with mice and learning about behavioral, surgical, and molecular pharmacology. The project requires students to work with animals and tissue samples. No previous behavioral pharmacology experience is required; the PI holds a veterinary degree as well as a PhD and has successfully trained several trainees unfamiliar with behavioral/surgical techniques. A strong desire to learn about behavioral and molecular pharmacology is highly encouraged.

Project Description: The student will be exposed to behavioral pharmacology and molecular biology during the summer internship. Students will learn about chemotherapy-induced pain models (paclitaxel and cisplatin) as previously published and optimized by Dr. Guindon. Students will also learn to perform surgeries; specifically, how to perform gonadectomy (gdx) in males and females. Behavioral testing using mechanical (digital von Frey) and cold (acetone) allodynia (Guindon and Hohmann, 2013) will be used to assess the sensory component of pain by the students. The students will also learn to evaluate the affective component of pain by using elevated-plus maze (EPM) and open-field (OPF) tests. The first part of the project will evaluate mechanical and cold allodynia as well as EPM and OPF tests from Day 0 to Day 28. At Day 8, we will start the administration of cannabinoid compounds Δ-9-THC (6 mg/kg ip), WIN 55,212-2 (10 mg/kg ip), and CP 55,940 (0.3 mg/kg ip) alone or in combination with JNK inhibitors (SU 3327 3-10 mg/kg ip in intact or gdx males/females) in wild-type or disrupted GRK phosphorylation of CB1 (S426A/S430A mutant) mice using chemotherapy-induced pain models. Following chronic treatment with cannabinoid agonists alone or in combination, we will use tissue collections to perform molecular pharmacology techniques such as RNA-seq, single cells, ELISA, western blot, PCR, and quantitative PCR. Our NIDA intern from 2019 has published two manuscripts.
Texas

**Investigator:** Luis Colon-Perez, PhD  
**Institution:** University of North Texas Health Science Center  
Ft. Worth, TX  
**Project Title:** Determining the Effects of "Bath Salts" on Cognitive Control and Functional Brain Connectivity  
**Research:** Basic Research  
**Research Area:** Sustained Self-Administration of MDPV; Functional Connectivity Between the Frontal Cortex (PL, IL, and OFC), Thalamus, Amygdala, and NAc; Impairments in Cognitive Control Functions  
**Housing:** Subsidized  
**Internship Type:** In-Person

**Student Qualifications:** Prior experience with neuroscience behavioral rodent studies is ideal. No MRI experience is required. Ideally, interns will have completed at least one introductory neuroscience course and have interest in pursuing graduate studies in neuroscience, psychology, or biomedical engineering. Students will be required to work with rats.

**Project Description:** An unexplored aspect of drug abuse is the temporal relationship between drug abuse and alterations in cognitive control. Cognitive control refers to a set of mental processes driving the organization and mediation of goal-oriented behavior. It is also imperative to determine which changes in neural function in cognitive control circuitry underlie some of the most severe behavioral outcomes of drug addiction. The proposed research is designed to address existing gaps in our understanding of how drugs of abuse undermine cognitive control and which brain regions are most affected by estimating connectivity changes in the brain with fMRI.
Texas

Investigator: Louis Brown, PhD  
Institution: University of Texas  
El Paso, TX  
Project Title: Randomized Trial of a Data-Driven Technical Assistance System for Drug Prevention Coalitions  
Research: Preventive Research  
Research Area: Community Coalitions; Technical Assistance; Risk Reduction Behavior; Substance-Related Disorders; Prevention; Adolescent Behavior; Implementation Support; Sustainability  
Housing: Campus  
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Interests in public health, community organizing, human development, or psychology are appropriate. Students are expected to work with data that has already been collected from humans.

Project Description: More than 5,000 community anti-drug coalitions operating in the United States serve as a cornerstone of federal drug prevention. These coalitions, however, have demonstrated effectiveness in preventing substance use only when they use technical assistance (TA) and implement evidence-based programs (EBPs). The absence of TA and EBP implementation by coalitions is a key research-to-practice gap. The Coalition Check-Up TA system is designed to fill this gap by supporting community coalition implementation of EBPs. This trial will test the overall effectiveness of the Coalition Check-Up, including how it contributes to EBP implementation and prevention of youth substance use. Findings will clarify how the Coalition Check-Up, a scalable approach to TA due to its low cost, affects coalition capacity to support EBP implementation. Results will build the evidence base for how to support community coalitions’ sustainable implementation of evidence-based prevention programs and policies.
Texas

Investigator: Kathryn A. Cunningham, PhD
Institution: University of Texas Medical Branch
Galveston, TX
Project Title: NOP Receptor Antagonist for OUD Pharmacotherapy
Research: Basic Research
Research Area: Addiction Research; Addiction Sciences; Pharmacology; Toxicology;
Neuroscience
Housing: Campus
Internship Type: Virtual; In-Person

Student Qualifications: Students with a background in neuroscience, psychology, pharmacology, or behavioral science are preferred. Additional qualifications include excitement about science, team player mentality, and an understanding of the importance of preclinical research to advancing our understanding of biology and behavior pertinent to SUDs.

Project Description: The intern will explore one of our many ongoing projects. Our team has sustained funding from the NIH, foundations, and industry to investigate the pharmacology and biology of potential therapeutic targets involved in the development and progression of SUDs. This includes dopamine receptors, serotonin receptors, neuromedin receptors, and, most recently, nociceptin opioid (NOP) receptors, the ghrelin receptor, and orphan receptors (i.e., GPR139, GPR52). For example, we are investigating the role of the “hunger hormone” ghrelin and its receptor, growth hormone secretagogue receptor 1α (GHS1αR), in preclinical models of opioid use disorder. The intern could explore how epigenetic mechanisms in the brain sustain opioid intake, the potential for AMPAkines or the NOP receptor antagonist BTRX-246040 to suppress opioid intake, or how GPR52 activators control cellular biology and behavior. Other options include studying neuromedin U receptor 2 (NMUR2) signaling as a key interface between hypothalamic and mesolimbic systems and evaluating the action of NMUR2 agonists on feeding behavior. The long-term mission is to provide a rich training environment with a focus on the development of effective therapeutics to normalize brain health. Future projects include exploring mechanisms of prenatal opioid exposure on brain and behavior, determining the effect of chronic alcohol on brain circuit connectivity, and establishing novel neurocircuits that control cocaine taking.
Texas

**Investigator:** Fernanda Laezza, MD, PhD  
**Institution:** University of Texas Medical Branch  
Galveston, TX  
**Project Title:** FGF13: A Novel Druggable Target for Treating Substance Abuse Disorders  
**Research:** Drug Development Research  
**Research Area:** Drug Discovery; Neural Circuit; ION Channels  
**Housing:** Subsidized  
**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** The project is sufficiently flexible to allow the intern to choose among different methods ranging from medicinal chemistry to in vivo pharmacology. However, a common denominator for qualifications is to have a strong quantitative background and interest in drug discovery.

**Project Description:** Cocaine use disorder (CUD) is a national public health emergency in the United States for which there are no FDA-approved medications. CUD is a chronic brain disorder characterized by maladaptive plasticity of the reward circuit associated with hyperexcitability of medium spiny neurons (MSN) in the nucleus accumbens (NAc). Thus, targeted pharmacological modulation of MSN hyperexcitability could represent a novel therapeutic strategy to restore maladaptive plasticity underlying CUD.

Studies in the Laezza lab have recently led to the discovery of a new candidate compound for treating CUD that targets the protein-protein interaction (PPI) interface between the voltage-gated Na+ (Nav) channel Nav1.6, the determinant of firing of MSN in the NAc, and its regulator protein fibroblast growth factor 13 (FGF13). The goal of this project is to conduct ex vivo and in vivo proof-of-concept assessment studies of the candidate compound, followed by structure-activity relationship analysis, optimization of the candidate, and in vivo validation of optimized analogues using confirmatory models of CUD.
Utah

Investigator: Adam J. Gordon, MD, MPH
Institution: University of Utah
Salt Lake City, Utah
Project Title: Greater Intermountain Node
Research: Clinical Research
Research Area: Substance Use Disorder; Opioid Use Disorder; Clinical Trials; Addiction Health Research; Implementation Science
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Students should have proficient writing and oral communication skills, a basic understanding of human clinical research studies, and proficiency in the Microsoft Office suite (Word, PowerPoint, Excel).

Project Description: The Greater Intermountain Node (GIN) was founded in 2019 to expand the existing NIDA Clinical Trial Network infrastructure to include additional research settings and bring new research expertise to the network. The GIN investigators possess expertise in three areas of addiction research: (1) research within non-addiction specialty health care settings, (2) addiction and opioid research within large health systems of care, and (3) implementation science and approaches to bring addiction evidence-based research to practice. Our team is looking for an intern to assist on two projects housed within the GIN: the Emergency Department-Initiated Buprenorphine Validation Network Trial (ED-INNOVATION), which will test an implementation strategy to guide the development of emergency department-initiated treatment of opioid use disorder with buprenorphine at 30 sites across the U.S., and Medication Treatment for Opioid Use Disorder in Expectant Mothers (MOMs), a pragmatic randomized trial comparing two buprenorphine formulations. The GIN is housed within the Program for Addiction Research, Clinical Care, Knowledge, and Advocacy (PARCKA) within the Department of Internal Medicine’s Division of Epidemiology at the University of Utah School of Medicine. PARCKA provides addiction-related clinical care, advocacy, research, and education across the university and local community.
Investigator: Minglei Guo, PhD
Institution: Eastern Virginia Medical School
Norfolk, VA
Project Title: Role of the NLRP3 Inflammasome in Mediating Microglial Activation and Development of Neuropsychiatric Symptoms Induced by HIV, Antiretrovirals, and Cocaine
Research: Basic Research
Research Area: HIV; Cocaine; Antiretroviral; HAND; Neuroinflammation
Housing: Campus
Internship Type: In-Person

Student Qualifications: The candidate should have general background on neuroscience/biology, signal transduction, and neuroinflammation. Microglia biology and previous molecular biology lab experience are preferred. This project requires work with rodents (mice and rats). It does not require work with human samples or live virus.

Project Description: Mouse primary microglia will be seeded in 6-well plates followed by single exposure or co-exposure of HIV-TAT (25 ng/mL), cocaine (1 μM), and ARVs (each at 1 μM) for different periods (3 to 48 hours) followed by isolation of total RNA and proteins. In parallel, supernatants from treated cultures will also be collected at indicated times and assessed by ELISA and Luminex for the expression of proinflammatory cytokines. We will detect: (1) signal 1 pathway: the levels of miR-124 and TLR4, the total (t) and phosphorylation (p) levels of NF-κB, and the binding levels of NF-κB on NLRP3 promoter region; (2) signal 2 pathway: ROS levels, lysosome function (pH, number, and morphological changes), lysosomal markers LAMP1/2 levels, lysosome membrane permeability (LMP), and autophagy flux markers (LC3II, p62); (3) NLRP3 inflammasome status: the levels of NLRP3, ASC, caspase-1, IL-1β, and IL18; and (4) Mg activation status: proinflammatory cytokines including IL-1β and IL18 from cell lysates and supernatants.
Virginia

Investigator: Fatah Kashanchi, PhD  
Institution: George Mason University  
Manassas, VA  
Project Title: Effect of CBD on Exosome Release from CNS Infected Cells  
Research: Basic Research  
Research Area: Drug Abuse and HIV  
Housing: Campus  
Internship Type: In-Person

Student Qualifications: Students should have understanding of viral infections, drug abuse, and CNS-related components.

Project Description: The long-term goal of this proposal is to mitigate HIV-mediated pathogenesis within the CNS. The short-term goals include elucidating the role of the cannabinoids in the inhibition of viral transcription and the reduction in the release of extracellular vesicles containing viral RNA and proteins that cause CNS dysfunction. Our preliminary data suggests that the cannabinoids cannabidiol (CBD) and Δ9-tetrahydrocannabinol (THC) may be effective in reducing HIV-1 transcription of both short, non-coding RNA such as trans-activating response (TAR) RNA and full-length genomic RNA, thereby resulting in a decreased production of infectious virus. Additional data indicates that the reduction in transcription results in a decreased incorporation of HIV-1 RNA into EVs released from infected cells, which has been previously shown to contribute to dysfunction in recipient cells including activation of the NF-kB pathway through TLR3 and increased susceptibility to infection. Our aims include defining the mechanisms of cannabinoid-mediated decreased EV production and release in HIV-1 infected cells and determining the effect of CBD and THC on HIV-1 expression using 3D neurospheres. The overall positive impact of these two aims is to highlight the role of cannabinoids in EV release and dampening of neuroinflammation.
**Virginia**

**Investigator:** James Bjork, PhD  
**Institution:** Virginia Commonwealth University  
**Richmond, VA**  
**Project Title:** 20/21 ABCD-USA Consortium: Research Project Site at VCU  
**Research:** Clinical Research  
**Research Area:** Adolescents; Brain; Development; Impulsivity; Risk Factors; Resilience  
**Housing:** Subsidized  
**Internship Type:** Virtual; In-Person; Hybrid

**Student Qualifications:** Prior to the internship, the intern will be required to undergo online training in the responsible and ethical conduct of human subjects’ research. This will enable them to interact with human research volunteers immediately upon joining the lab. It is anticipated that this internship will be most satisfying to persons interested in adolescent brain development and cognitive and environmental risk factors for addiction.

**Project Description:** The intern will help Virginia Commonwealth University’s Decision Neuroscience Laboratory, one of 21 data collection sites of the NIH Adolescent Brain Cognitive Development Study (ABCD), collect data from more than 550 adolescents (mostly twin pairs) and their parents. This includes collection of neurobehavioral data from the adolescents, as well as collection of data on neighborhood and other environmental factors that might confer risk for use of drugs and alcohol.
Virginia

Investigator: M. Imad Damaj, PhD
Institution: Virginia Commonwealth University
Richmond, VA
Project Title: Genetic Basis of Nicotine Withdrawal in a Reduced Complexity Cross
Research: Basic Research
Research Area: Nicotine Addiction Research in Animal Models; Behavioral Genetics; Pain and Neuropathy; Role of Nicotinic Receptors in Behaviors; Adolescent Exposure to Drugs of Abuse; Impact of Flavors on Nicotine Dependence
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Students should have a science background, motivation, and interest in research. Experience in a research lab and with animal behavioral testing is a plus.

Project Description: Adolescents appear to be particularly vulnerable to initiating the use of tobacco and other nicotine products. This proposal uses a mouse vaping model to study the long-term impacts resulting from initiation of the use of oral nicotine delivery systems such as snus products and dissolvable tobacco products as well as inhaled nicotine during adolescence on alcohol dependence and behaviors later in life. A central goal of the experiments in this summer project is to examine the impact of oral nicotine consumption during adolescence in mice on nicotine intake and preference as well as nicotine withdrawal intensity in young adult animals, testing the general hypothesis that decreasing the nicotine content in oral products will worsen addiction later in life.
Virginia

Investigator: Peter Hamilton, PhD
Institution: Virginia Commonwealth University
Richmond, VA
Project Title: Using CRISPR Tools to Uncover the Role of CREB-Gene Regulation in Drug Abuse
Research: Basic Research
Research Area: CRISPR; Cocaine; Morphine; Transcription Factor; CREB; Nucleus Accumbens; Medium Spiny Neuron; Dopamine; Epigenetics; Neuroepigenetic Editing
Housing: Subsidized
Internship Type: In-Person; Hybrid

Student Qualifications: Curiosity, enthusiasm, and a willingness to contribute the time to perform the proposed experiments are the key qualities that we are looking for. This work will involve handling laboratory mice; the intern will complete mandatory training and health screening to enable this aspect of the research. Previous research experience is not necessary.

Project Description: In our lab, we are interested studying the brain epigenetic and transcription mechanisms that contribute to substance use disorders. To this end, we use molecular biology approaches to design novel molecular tools to rewrite the epigenome/transcriptome in the brains of awake and behaving rodents to investigate the impact on drug-induced behaviors and neurobiology. Potential summer research projects will focus on viral delivery of synthetic transcription factors to rodent brain areas and perform behavioral and/or biochemical tests to interrogate the consequences of our manipulations.
Investigator: Liangcai Gu, PhD
Institution: University of Washington
Seattle, WA
Project Title: Optopharmacology and Sensors for Dissecting Opioid Action In Vivo
Research: Basic Research
Research Area: Creating Protein-Based Opioid Biosensors
Housing: Campus
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: The candidate must have a strong interest in biotechnology development for studying drug addiction or neuromodulation. Major in biology, bioengineering, neuroscience, biochemistry, chemistry, or other relevant fields is required, related prior research experience is preferred. The intern will work with mammalian cells culture and fresh/fixed rodent brain tissue samples.

Project Description: The Gu lab is focusing on utilizing the de novo protein design approaches to create biosensors for detecting small molecules ranging from addictive substances to neurochemicals secreted in the brain. The intern in this project will work closely with the team to learn and participate in (1) construction of biosensors for targets of interest, (2) optimization of the performance of the biosensors, and (3) testing and applying the biosensors to the mammalian system.
Student Qualifications: It is preferred that the intern be comfortable with mouse handling, including scruffing and injecting. Endpoints of this mouse work involve sacrificing animals in approved and humane ways and interns must be comfortable with this idea. An interest or major in neuroscience or a related field is preferred. This work will require some programming or computational analysis, but preexisting experience is not required.

Project Description: The intern will facilitate an investigation into the dopaminergic basis of opioid seeking using a mouse model of opioid associative learning called conditioned place preference of morphine. The intern will combine this with an in vivo method of monitoring neural activity called fiber photometry to measure the activity dynamics of subpopulations of dopamine neurons in the ventral tegmental area during morphine exposure, morphine seeking, and morphine withdrawal. The applicant will also acquire skills in computational analysis, specifically using deep learning algorithms (programs such as DeepLabCut and Simba) to characterize behavioral patterns associated with the opioid exposure cycle.
Washington

Investigator: Garret Stuber, PhD
Institution: University of Washington
Seattle, WA
Project Title: Lateral Hypothalamic Circuits for Feeding and Reinforcement
Research: Basic Research
Research Area: Optogenetics; Calcium Imaging; Behavior; Mouse; Reward Seeking; Cortex; VTA; Accumbens
Housing: Subsidized
Internship Type: In-Person

Student Qualifications: Background in neuroscience is preferred. The applicant should have some familiarity with programming in either MATLAB or Python but need not be an expert. The applicant will be required to work with behaving mice for this project.

Project Description: The applicant will learn to conduct behavioral experiments in rodents that are trained in various reward-seeking paradigms. This will be combined with in vivo two-photon imaging to study neural circuit activity in either the prefrontal cortex, nucleus accumbens, or hypothalamus. The intern will be exposed to state-of-the-art microscopy techniques and in vivo circuit manipulations (optogenetics).
Student Qualifications: The intern should have a basic science background and a major in neuroscience, biology, biochemistry, physiology, psychology, or a related field. Students will be required to work with mice and mouse tissue samples. No prior research experience is required.

Project Description: The goal of our summer research project is to determine the contribution of neuropeptide signaling in the ventral tegmental area for the regulation of dopamine neuron activity and the promotion of motivated behavior. The project involves neural circuit manipulation using optogenetics strategies, gene mutagenesis using CRISPR/Cas9, and in vivo imaging of calcium dynamics in dopamine neurons during motivated behaviors.
Wisconsin

Investigator: Julia Dickson-Gomez, PhD
Institution: Medical College of Wisconsin
Milwaukee, WI
Project Title: Effects of State Laws to Reduce Opioid Diversion on Transition to Injection Drug Use and HIV/HCV Transmission
Research: Behavioral Research
Research Area: Opioids; Injection Drug Use; Law; Policy; Social Network; Qualitative; Quantitative; Harm Reduction; Medication-Assisted Therapy
Housing: Subsidized
Internship Type: Hybrid

Student Qualifications: Coursework or major in sociology, anthropology, or psychology is preferred.

Project Description: The intern will assist in conducting surveys with nonmedical prescription opioid users and heroin or fentanyl users, including those who inject and those who do not. They will also be involved in coding qualitative data.
Wisconsin

Investigator: Christopher Olsen, PhD
Institution: Medical College of Wisconsin
  Milwaukee, WI
Project Title: Environmental Modulation of Cocaine Seeking
Research: Basic Research
Research Area: Addiction; Cocaine; Ensemble
Housing: Campus
Internship Type: In-Person

Student Qualifications: Primary qualifications are motivation, desire to learn, and patience. The student should have an interest in neuroscience; a biology background is desirable. The student should feel comfortable with working with live mice (we will provide training in animal handling), learning to conduct surgical procedures, and working with fresh or preserved tissue (e.g., brain).

Project Description: Psychosocial enrichment has been shown to diminish cocaine craving and activation of the medial prefrontal cortex (mPFC) in response to drug-related stimuli. In a rodent model, environmental enrichment (EE) also reduces cocaine seeking and the ability of drug-related stimuli to activate the mPFC. Despite the robust ability of environmental factors to reduce behavioral and physiological responses to drug stimuli, the mechanisms of this phenomenon are not known. It is possible that EE directly modulates a specific ensemble of neurons that is engaged by exposure to a previous drug-taking environment. One such drug-seeking ensemble resides in the mPFC, a region where enrichment reduces drug stimuli-elicited activity. Our studies will focus on these ensemble neurons to determine if EE affects their ability to become reactivated by exposure to a drug environment, if EE alters cocaine-associated plasticity in these neurons, and if inhibition of this ensemble alters other mPFC-dependent behaviors.
Wisconsin

Investigator: John Curtin, PhD
Institution: University of Wisconsin–Madison
Madison, WI
Project Title: Contextualized Daily Prediction of Lapse Risk in Opioid Use Disorder by Digital Phenotyping
Research: Clinical Research
Research Area: Clinical Psychology; Substance Abuse; Addiction; Relapse Prevention; Opioids; Machine Learning; Just-In-Time Treatment
Housing: Subsidized
Internship Type: Virtual; In-Person; Hybrid

Student Qualifications: Preference given to psychology majors with an interest in pursuing a clinical psychology PhD. The preferred candidate will have experience interacting with research study participants from the community (not merely undergraduates). Experience with phone sales, support, or professional speaking a plus, as visits are conducted by phone.

Project Description: The broad goals of this project are to develop and deliver highly contextualized lapse risk prediction models for forecasting day-by-day probability of opioid and other drug use lapse among people pursuing drug abstinence. Participants will be followed for 12 months of their recovery, starting as early as one-week post-abstinence and as late as 18 months across participants in the sample. Well-established distal, static relapse risk signals (e.g., addiction severity, comorbid psychopathology) will be measured on intake. These signals include self-report surveys every two months, daily ecological momentary assessments, daily video recovery check-ins, voice phone call and text message logs, text message content, moment-by-moment location (via smartphone GPS and location services), physical activity (via smartphone sensors), and usage of the mobile A-CHESS Recovery Support app. The predictive power of these risk signals will be further increased by anchoring them within an interpersonal context of known people, locations, dates, and times that support or detract from participants’ abstinence efforts. Machine learning methods will be used to train, validate, and test opioid and other drug lapse risk prediction models based on these contextualized static and dynamic risk signals. These lapse risk prediction models will provide participant-specific, day-by-day probabilistic forecasts of a lapse to opioid or other drug use among opioid-abstinent individuals.
Wyoming

Investigator: Ana Clara Bobadilla, PhD
Institution: University of Wyoming
Laramie, WY
Project Title: Nucleus Accumbens Neuronal Ensembles in Drugs and Natural Rewards Seeking
Research: Basic Research
Research Area: Substance Use Disorder; Mental Disorders; Neuronal Ensembles; Reward Seeking; Natural Rewards; Drugs of Abuse; Relapse Models; Murine Models of Addiction; Behavioral Approaches; Systems Neuroscience; Molecular Approaches; Pharmacological Approaches; Neuropharmacological Mechanisms; Behavioral Neuropharmacology; Chemogenetic Approaches, Viral Approaches, Transgenic Approaches, Imaging Approaches; Nucleus Accumbens; Prefrontal Cortex
Housing: Subsidized
Internship Type: Virtual

Student Qualifications: The project requires motivation, attention to detail, being open to learning new techniques, and working with mice. We can train interns with no experience; the most important thing is that they have the motivation to learn!

Project Description: Our lab investigates the neurobiological mechanisms of relapse to drugs. We characterize the specific ensembles (defined as discrete networks of neurons simultaneously activated during a specific behavior) that drive reward-seeking behavior in mice models of substance use disorder. By establishing whether addictive drugs such as cocaine and heroin highjack the ensembles coding for biological rewards such as sugar, we aim to advance fundamental understanding of goal-directed behaviors and the disorders altering them. In the lab, students will be able to develop an ample experimental skillset, including behavioral, molecular, imaging, genetic, neurochemical, and chemogenetic approaches. All the projects include behavioral experiments with genetically modified mice, molecular biology approaches, and neuroimaging approaches using powerful microscopes.