National Institute on Drug Abuse

2017

Summer Research Internship Program

Program:
The NIDA Summer Research Internship Program supports all students with a focus on increasing underrepresented populations in drug abuse research. Through this program, students age 18 and older are introduced to the field of drug abuse and addiction research by participating in research internships with NIDA's distinguished scientists at universities across the United States. Students work with leading 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, and literature reviews. In addition, it is expected that 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 21st year. Since the program's inception in 1997, more than 1000 students have gained experience in drug abuse and addiction research.

Eligibility:
This program provides summer research internships for all students 18 years and older, with a focus on recruiting students underrepresented in the biomedical, behavioral, and clinical sciences (American Indian/Alaska Native, Black/African American, Hispanic/Latino, and Native Hawaiian/Pacific Islander). **Graduating 2017 college seniors are eligible to apply.**

Applicants must be at least 18 years old by May 31, 2017 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.

Scope of Support:

- Stipends in the amount of $12.00 per hour for a maximum stipend of $3,840 for eight weeks,
- Up to $2,500 for housing assistance,
- Up to $500 to be used for air or local travel.

Housing Accommodations:

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 and will be reimbursed to the intern by the host research institution**. For research sites with the "Campus Housing Available" option, the intern will be able to stay in on-campus housing which is coordinated through the laboratory staff, institution, and intern. 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 finding their own housing accommodations. Some research sites have local housing resource guides that they share with interns.

Application Procedures:
To apply for this program, fill in all sections of the application form. Prior to making research site selections, review the research projects and locations listed in the online brochure. After

reviewing the descriptions, indicate on the application the three sites that best match your research interests. All efforts will be made to match applicants to one of their top three choices.

Application components include:

- **a completed application form**
- **current transcripts (unofficial transcripts are acceptable)**
- **two letters of recommendation (must be on letterhead when possible)**

*****You may modify, save, and submit your application as often as needed up to the deadline and the application will be automatically updated each time. Your references will be contacted only after the application is submitted.**

All application materials must be submitted by Friday, February 10, 2017.

Application Review and Selection:
Interns are selected according to the following criteria:

- Professional/Career goals
- Research interests
- Academic Achievement
- Letters of recommendation
- Program priorities

For additional information see the FAQs.

Contacts:
Feel free to contact Julie Huffman, huffmanj@mail.nih.gov , phone 301-443-9798; or Albert Avila, Ph.D., aavila@nida.nih.gov.

2017 Summer Research with NIDA Site List by State

State	Site Name	Project Title	Site Number	Housing
Arizona	University of Arizona	Designing Novel Melanotropins for the Melanocortin System	1	Subsidized
California	Charles R. Drew University of Medicine & Science	Drew MIDARP (Infrastructure in Drug Abuse Research)	2	Subsidized
California	University of California, San Francisco	Developing Tools to Understand the Neuromodulation of Hypothalamic Function	3	Subsidized
California	Stanford University	Single Session Pain Catastrophizing Treatment: Comparative Efficacy & Mechanisms	4	Campus
California	University of California Irvine	Role of Ventral Pallidum Projection to VTA in Reinstatement of Cocaine Seeking	5	Campus
California	VA San Diego Healthcare System	Methamphetamine and Adult Hippocampal Neurogenesis	6	Campus
California	The Scripps Research Institute	Methamphetamine and HIV Interactions in the Regulation of Glial Activation	7	Subsidized
California	University of California, San Francisco	Digital Health Technology Use among Methadone Maintenance Patients	8	Campus
California	University of California, Irvine	A Protective Role for 2-AG in Age-Dependent Cognitive Impairment	9	Subsidized

State	Site Name	Project Title	Site Number	Housing
California	University of California, San Francisco	Using Facebook to Address Smoking and Heavy Drinking in Young Adults	10	Campus
California	University of California, Las Angeles	Combating Craving with Contingency Management: Neuroplasticity and MA Abuse in South Africa	11	Subsidized
Colorado	University of Colorado	Culturally Grounded Early Substance Use Prevention for American Indian Families	12	Subsidized
Connecticut	Yale University	Prison Interventions and HIV Prevention Collaboration	13	Campus
Connecticut	Yale University	Oxytocin and Brain Reward and Stress Responses to Infant Cues in Addicted Mothers	14	Subsidized
District of Columbia	Children's National Medical Center	Development of the Basal Telencephalic Limbic System	15	Subsidized
Florida	University of Florida	ABCD-USA Consortium: Research Project	16	Subsidized
Florida	Florida International University	Role of Autophagy in Microglia-induced NeuroAIDS in Substance Abuse	17	Subsidized
Florida	Florida International University	Multifunctional Nanocarrier to Erradicate HIV from Latently Infected CNS Cells and to Treat Drug Addiction	18	Subsidized
Georgia	Georgia State University	The Science of Decision Making: Connecting People to Policy	19	Campus

State	Site Name	Project Title	Site Number	Housing
Hawaii	Hawaii Pacific University	The Development and Evaluation of the Ho'ouna Pono Drug Prevention Curriculum	20	Subsidized
Illinois	Northwestern University	Multilevel Influences on HIV and Substance Use in a YMSM Cohort	21	Subsidized
Illinois	University of Chicago	HIV Intervention Models for Criminal Justice Involved Substance using Black MSM	22	Campus
Iowa	University of Iowa	Isolating the Extinction Circuit for Cocaine Seeking	23	Subsidized
Iowa	University of Iowa	Oxytocin and Brain Reward and Stress Responses to Infant Cues in Addicted Mothers	24	Campus
Maine	The Jackson Laboratory	Discovery of Addiction-Related Genes with Advanced Mouse Resources	25	Campus
Massachusetts	Massachusetts General Hospital	International Latino Research Partnership	26	Subsidized
Michigan	University of Michigan	Visualization of Combinatorial Epigenetic Marks and Complexes in Animals	27	Campus
Michigan	University of Michigan	Intergenerational Transmission of Drug Use in an Urban Sample	28	Campus
Missouri	Washington University	Nicotine Dependence to Smoking Cessation: Sequencing Common and Rare Variants	29	Campus

State	Site Name	Project Title	Site Number	Housing
Missouri	Washington University	Implications of Social Media Content and Engagement for Alcohol and Marijuana Use	30	Subsidized
Missouri	Washington University	Genetically Informed Smoking Cessation Trial	31	Campus
Missouri	Washington University	In Vivo Imaging of Dynamic Structural Plasticity Driving Morphine Conditioned Place Preference	32	Subsidized
Nebraska	University of Nebraska Medical Center	HIV Tat & Cocaine-Mediated Induction of Astrogliosis: Role of ER Stress in HAND	33	Campus
New Hampshire	Dartmouth College	Behavioral Treatment of Adolescent Marijuana Use	34	Campus
New York	New York University School of Medicine	Combined Cocaine and HIV Vaccine	35	Subsidized
New York	State University of New York at Stony Brook	Calcium-Related Neurotoxicity of Cocaine	36	Campus
New York	National Development Research Institutes, Inc.,	Bath Salts & the Illicit Drug Market: Use, Violence & Health Consequences	37	Subsidized
New York	New York University	Syndemic Production among Emergent Adult Men	38	Campus
New York	Icahn School of Medicine at Mount Sinai	Molecular Neurobiology of Human Drug Abuse	39	Campus

State	Site Name	Project Title	Site Number	Housing
New York	Icahn School of Medicine at Mount Sinai	Orexin Receptor Antagonists for Drug Addiction and Panic Disorder	40	Subsidized
New York	University of Rochester	Comparative Transcriptomic Signatures of Inhaled Tobacco Smoke	41	Campus
New York	University of Buffalo	Integrated GWAS of Complex Behavioral and Gene Expression Traits in Outbred Rats	42	Campus
New York	Columbia University	Translational Research on Interventions for Adolescents in the Legal System	43	Subsidized
North Carolina	University of North Carolina	Astrocyte-Mechanisms of Cocaine Seeking	44	Campus
North Carolina	University of North Carolina	Organismal and Genetic Networks in Drug Reward and Reinforcement	45	Campus
Oregon	University of Oregon	Preventing Drug Use and HIV-Risk Behaviors in CWS-Involved Adolescent Girls	46	Campus
Oregon	Oregon Research Institute	Peer Influence and Selection Mechanism Underlying Adolescent Problem Behaviors	47	Campus
Oregon	University of Oregon	Targeting Neurobiological & Behavioral Mechanisms of Self-Regulation in High-Risk Families	48	Campus

State	Site Name	Project Title	Site Number	Housing
Oregon	University of Oregon	Prevention of Substance Use in At-Risk Students: A Family-Centered Web Program	49	Subsidized
Pennsylvania	Temple University	Project 1 Reciprocal Interaction of Cocaine and HIV-1 on Glycolytic Pathways in Macrophages and Microglia Cells	50	Campus
Pennsylvania	Temple University	Opioids, HIV/HCV, and Host Cell, Innate Immunity	51	Subsidized
Pennsylvania	University of Pennsylvania	Pilot Implementation Project of Methadone and Suboxone or Injecting Drug Users	52	Campus
South Carolina	Medical University of South Carolina	Relapse to Cocaine-seeking: Cellular Adaptations in the VTA	53	Subsidized
Texas	University of Texas Medical Branch	Translational Addiction Sciences Center: Administration, Communication, and Integration Core	54	Campus
Texas	University of Texas at El Paso	Sex Differences in the Mechanisms that Promote Nicotine Reward and Withdrawal	55	Campus
Texas	University of Texas San Antonio	Mechanisms of Cocaine Hypersensitivity Following Chronic DBH Inhibition	56	Subsidized
Texas	University of Texas Medical Branch	5-HT2CR Allosterc Modulators as Novel Pharmacotherapy in Cocaine Use Disorder	57	Campus

State	Site Name	Project Title	Site Number	Housing
Washington	Fred Hutchinson Cancer Research Center	Modulating the Impact of Critical Events in Early HIV Infection: Effect of ART Initiation and Alcohol Use	58	Subsidized
Washington	University of Washington	Mechanisms of Drug Disposition during Pregnancy	59	Campus
Wisconsin	Marquette University	Glucocorticoid Regulation of Dopamine Clearance, Cocaine Seeking, and Reward	60	Campus
Wisconsin	Marquette University	Glucocorticoid-Regulated Endocannabinoids and Stress-Potentiated Cocaine Seeking	61	Campus
Wisconsin	Medical College of Wisconsin	Environmental Modulation of Cocaine Seeking	62	Campus

Arizona

Investigator:	Victor Hruby, Ph.D.
Institution:	University of Arizona Tucson, AZ
Project Title:	Designing Novel Melanotropins for the Melanocortin System
Research:	Drug Development Research
Research Area:	Peptidomimetic Ligand Design, Peptide Mimetics, Synthesis, Molecular Pharmacology, Structure-Biological Activity Studies
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Prefer an undergraduate with experience in science, preferably chemistry, biochemistry, neuroscience or pharmacology working towards a Bachelor of Science degree. Will not be working with animals, humans and/or tissue samples.

Program Description: A good project is to work on the synthesis of novel ligands that are designed to have agonist activity at mu opioid receptors, agonist or antagonist activity at delta opioid receptors, and/or kappa opioid antagonist activity all in a single or bivalent ligand, to purify the ligands using HPLC and other methods, to determine purity and structure using HPLC, TLC, mass spectrometry and NMR. Finally, as time permits, to help determine binding affinities and efficacies.

California

Investigator:	Theodore Friedman, M.D., Ph.D.
Institution:	Charles R. Drew University of Medicine & Science Los Angeles, CA
Project Title:	Drew MIDARP (Infrastructure in Drug Abuse Research)
Research:	Basic Research
Research Area:	Smoking, Nicotine, Insulin Resistance, Obesity, Diabetes, Drug Addiction, Fatty Liver Disease
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: The following skills are preferred:

- Molecular Biology skills
- Animal handling skills
- Computer skills (excel, word, and PowerPoint)

For epidemiology and literature review projects, only computer skills are needed.

Program Description: The Charles R. Drew University is a site of the DIDARP (Diversity-promoting Institutions Drug Abuse Research Development Program. Dr. Theodore Friedman is the Program Director. 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, yet ectopic fat depositions in liver and muscle. We are also looking at how nicotine plus soft drinks leads to hepatic steatosis. Additional opportunities exist for PET scanning projects, clinical projects, literature review projects 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 nearby California State University-Dominguez Hills and USC students will be given the opportunity to present at our annual Drew Substance Abuse Research Day.

Come enjoy a great summer in sunny Los Angeles and learn about drug addiction research.

California

Investigator:	Su Guo, Ph.D.
Institution:	University of California, San Francisco San Francisco, CA
Project Title:	Developing Tools to Understand the Neuromodulation of Hypothalamic Function
Research:	Basic Research
Research Area:	Neural Circuitry, Stress, Dopamine, CRF, Tool Development, Drug Abuse, Zebrafish
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Applicants should be currently enrolled in an undergraduate institution, preferably majoring in neuroscience. S/he should have prior knowledge or training in molecular biology, genetics, or microscopy. The research will require students to work with animals (zebrafish).

Program Description: The applicant will work with graduate students or postdocs in the lab and employ molecular genetics and imaging technologies to understand cellular and molecular basis of drug- or stress-induced behaviors.

California

Investigator:	Sean Mackey, M.D., Ph.D.
Institution:	Stanford University Palo Alto, CA
Project Title:	Single Session Pain Catastrophizing Treatment: Comparative Efficacy & Mechanisms
Research:	Clinical Research
Research Area:	Chronic Pain, Back Pain, Complementary and Alternative Medicine, fMRI, CBT, MBSR, Acupuncture, FCR, From Catastrophizing to Recovery, Trait Patient Catastrophizing, PC, and Cognitive-Emotional
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: Interns will not need to have any prior research experience. All of our research is with human participants, and interns will work under the direct guidance of our trained staff. We prefer interns that are interested in working with patients, interested in chronic pain and/or chronic disease, and interested in learning about new treatments. Lastly, as we leverage technology to make our study run smoothly, an interest in computers is a plus.

Program Description: Stanford's Center for Chronic Back Pain is a multi-armed project studying alternative (non-opioid) treatments to chronic low back pain: Mindfulness Based Stress Reduction & Cognitive Behavioral Therapy, and Acupuncture. Interns will play a vital role in all aspect of the study. They will provide assistance to the projects by working under the direct supervision of a Clinical Psychologist, research coordinators, and/or fMRI researchers. By participating interns will be directly involved with patient care, and will learn about a variety of alternative treatments for chronic back pain.

All interns will be under the Principle Investigator Dr. Sean Mackey, MD, PhD. Interns will check-in weekly with the Center Manager, and will receive the same mentorship by the Pain Division Research Manager we provide to all students. There are several PhD's and clinicians working on this project, all of whom are interested in mentorship. The specific mentor for each intern will be selected by the intern's interests and career goals, and is determined through start-up orientation with the Research Manager.

Participating interns will gain a current and comprehensive view of the field of Pain Research. All interns will be invited to participate in our weekly center and lab meetings. These opportunities allow interns to learn about all of the projects in Stanford's Pain Division and to learn about research strategies used in various types of clinical trials and scientific studies.

California

Investigator:	Stephen V. Mahler, Ph.D.
Institution:	University of California, Irvine Irvine, CA
Project Title:	Role of Ventral Pallidum Projection to VTA in Reinstatement of Cocaine Seeking
Research:	Basic Research
Research Area:	Behavioral Neuroscience, Addiction, Cocaine, Reward, Drugs, Motivation, Dreadds, Optogenetics, Channel Rhodopsin, Relapse, Reinstatement, Cues, and Conditioned Stimuli
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: Prior research experience is preferred, especially with rat behavioral experiments, electrophysiology, immunohistochemistry, microscopy, and/or computer programming.

Program Description: Addiction is a major health concern, and its chronic relapsing nature is perhaps its most insidious aspect. Exposure to drug-associated cues is a risk factor for relapse, and understanding how the brain processes these cues may lead to addiction therapies.

Here, we examine the role of projections from the ventral palladium (VP) to ventral tegmental area (VTA) in a rat self-administration/cue-induced reinstatement model of relapse. We will employ novel designer receptors (DREADDs) that allow on-demand inhibition or activation of VP and VTA cells during behavior. I have found that projections from VP to VTA are activated during cued reinstatement, and that DREADD inactivation of these projections specifically blocks this behavior. Here, we explore the mechanisms by which VP-VTA projections mediate cued reinstatement, and how VP inputs modulate VTA activity.

Using a combination of immunohistochemistry (postmortem staining for neural activity and cell types), electrophysiology (recording the firing of neurons in an anesthetized rat), and virus-based strategies to control neuron activity during reward seeking behavior (optogenetics and DREADDs), we will determine the roles of VP projections to VTA in drug relapse. These experiments will therefore characterize the mechanisms of the novel, functionally-identified VP-VTA pathway, which is crucially involved in cue-induced reinstatement of cocaine seeking in a rat model of relapse in addiction.

California

Investigator: Chitra Mandyam, Ph.D.
Institution: VA San Diego Healthcare System
San Diego, CA
Project Title: Methamphetamine and Adult Hippocampal Neurogenesis
Research: Basic Research
Research Area: Neural Stem Cells, Learning and Memory, Addiction, Behavior, Reward
Earliest Start Date: 6/19/2017
Campus Housing Available: Campus

Student Qualifications: Students majoring in Biochemistry or Neuroscience are preferred. Students should have an interest in performing animal behavior such as methamphetamine self-administration, biochemical experiments including immunohistochemistry and should be interested in performing extensive microscopic analysis. Students with experience in animal handling, pipetting, tissue handling are desired.

Program Description: Neural stem cells persist in the adult hippocampal subgranular zone and mature into hippocampal granule cell neurons (a process known as hippocampal neurogenesis). Neurogenesis may play a significant role in brain repair and recovery from a number of insults. Withdrawal and relapse are integral parts of the addiction cycle, and withdrawal from methamphetamine self-administration (Meth SA) enhances reinstatement to Meth seeking. It is therefore essential to determine whether withdrawal from Meth SA alters the process of hippocampal neurogenesis via altering the structural plasticity of newly born granule cell neurons in the hippocampus. The student intern will assist the graduate student to determine whether withdrawal from Meth SA alters the dendritic arborization and spine density of newly born neurons in the granule cell layer of the hippocampus. We will use techniques such as retroviral labeling to label newly born granule cell neurons and perform 3D structural analysis on these neurons. We will use state-of-the-art software Neurolucida and NeuroExplorer from MicroBrightField to determine these issues. The overall goal of the summer internship will be to assess if withdrawal from Meth SA differentially alters the structural plasticity of newly born versus preexisting neurons in the granule cell layer in the dentate gyrus of the hippocampus. Preclinical rodent models of intravenous Meth SA will be used.

California

Investigator:	Maria Cecilia G. Marcondes, Ph.D.
Institution:	The Scripps Research Institute La Jolla, CA
Project Title:	Methamphetamine and HIV Interactions in the Regulation of Glial Activation
Research:	Basic Research
Research Area:	Neuro-immunology of HIV and drug abuse
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Some knowledge on computers, on cell cultures, and a little theoretical knowledge of basic immunology. The research will be on human cell lines.

Project Descriptions: Methamphetamine (Meth) abusers and HIV-positive populations highly overlap, and in the presence of both factors neurological disorders are severed. We are examining different modes of action by which Methamphetamine abuse affects inflammatory outcomes in the brain, using in vitro systems. We have found that Meth can trigger different inflammatory genes by acting in different signal pathways, triggered either directly, through reactive oxygen species, or through dopamine. In addition, the interaction between Meth and HIV Tat, can further affect inflammatory outcome in the brain through yet other signaling pathways. We are examining the different modes of action of Meth and HIV Tat that modify the inflammatory status of the Central Nervous System, particularly as a viral reservoir. The student will learn bio-informatics and systems biology tools to identify target clusters and pathways under different experimental conditions, and learn validation techniques**.**

California

Investigator: Carmen L. Masson, Ph.D.
Institution: University of California, San Francisco
San Francisco, CA
Project Title: Digital Health Technology Use among Methadone Maintenance Patients
Research: Clinical Research
Research Area: HIV, HCV, Mobile Health, Health Technologies
Earliest Start Date: 5/30/2017
Housing: Campus

Student Qualifications: We are seeking undergraduate students with declared majors in psychology, sociology, or cognitive science. Candidates who have completed an introductory statistics course are preferred. Students will participate in a summer research training program with other summer interns from across a wide variety of disciplines at UCSF. Summer interns will be expected to attend summer research seminars and participate in laboratory meetings.

Program Description: This study will design and evaluate the feasibility and acceptability of a mobile optimized website for the dissemination of HCV and HIV health information. In the first phase of this work, we will explore potential barriers and facilitators related to the use of digital technologies among patients recruited from methadone maintenance treatment (N = 200). All participants will complete a computer-assisted interview that will assess sociodemographic and substance use characteristics, access to and use of digital technologies, trust in online information, health status, knowledge of HCV, and HIV/HCV risk behaviors. Qualitative interviews with a subsample of those who completed surveys will provide more in-depth information about participants' trust in online health information, confidence in dealing with health issues and online health information, and preferences related to the use of digital technology to obtain health information, including information about HCV and HIV. In the second phase, we will design and test the feasibility and acceptability of a mobile optimized website: 1) website development and refinement (N = 5); and 2) randomized pilot study (N = 40) to assess whether tailored motivational text messages will increase participants' motivation to use the website. If feasible and acceptable, the website will provide reliable, efficient, and high-quality HCV health information targeting drug users with the potential for wide dissemination.

California

Investigator:	Daniele Piomelli, Ph.D.
Institution:	University of California, Irvine Irvine, CA
Project Title:	A Protective Role for 2-AG in Age-Dependent Cognitive Impairment.
Research:	Basic Research
Research Area:	Endocannabinoid, Lipid signaling, Cognitive Aging, Enzyme, and Neuroscience
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Students should be familiar with basic knowledge of laboratory environment, completed lower division biology and/or chemistry courses (lecture & labs), ability to work with laboratory animals (rodents), collect animal tissues and work with hazardous chemicals such as methanol and chloroform. Prior research experience is preferred but not required of undergraduate students.

Program Description: Aging is accompanied by a decrease in cognitive ability, which can progress into cognitive impairment and dementia. Cannabinoid receptors modulate long- and short-term synaptic plasticity in the brain. In young rodents, activation of these receptors impairs memory, whereas blockade exerts pro-cognitive effects. The opposite occurs, however, in aged animals, in which cannabinoid receptor activation alleviates, whereas genetic cannabinoid receptor deletion enhances, aging-related cognitive deficits. Very limited data are available about the role played by endocannabinoid ligands, such as 2-arachidonoyl-sn-glycerol (2-AG) and anandamide, in influencing cognitive function during aging.
We hypothesize that age-dependent reductions in 2-AG mobilization (formation and/or deactivation) contribute to cognitive aging. To test the hypothesis, we will use a mouse model that overexpresses the 2-AG-hydrolyzing enzyme, monoacylglycerol lipase (MGL), in excitatory neurons of the forebrain (MGL-tg mice). This genetic manipulation selectively reduces forebrain 2-AG levels without altering other endocannabinoid-related proteins and lipids. We will compare MGL-tg and wild-type mice at various ages for three key parameters: 2-AG signaling, cognitive performance, and the markers of neuroinflammation. The project has the potential to uncover new functions of 2-AG signaling in the aging brain, and to lay the groundwork for the discovery of novel strategies to alleviate age-related cognitive deficits.

California

Investigator:	Danielle Ramo, Ph.D.
Institution:	University of California, San Francisco San Francisco, CA
Project Title:	Using Facebook to Address Smoking and Heavy Drinking in Young Adults.
Research:	Clinical Research
Research Area:	Alcohol Consumption, Smoking, Addiction, Social media, Facebook, Behavioral Study, Binge Drinking, Dependence, Design, Clinical Trial, Young Adults, Focus Group, Usability Testing, Tobacco, and Risk Behaviors
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: The intern will work with human participants on social media and will never meet them in person.

- High school degree or BA/BS with a major in psychology or related science
- Highly proficient working with MS Word, Excel, and PowerPoint
- Professional skills including time management, superior organization, ability to meet multiple deadlines, be resourceful
- Strong oral/written communication, interpersonal and organizational skills
- Previous research experience is not required

Project Description: The intern will work on a project that focuses on using Facebook to address smoking and heavy drinking in young adults. Phase I will develop Tobacco Status Project (TSP)+ALC intervention posts based on focus groups with young adults who smoke and drink heavily, the existing Tobacco status project quit smoking intervention on Facebook, US Clinical Practice Guidelines for smoking cessation, and National Institute on Alcohol Abuse and Alcoholism (NIAAA) guidelines for changing alcohol use. It will be followed by usability testing with 30 young adults and revise the intervention according to feedback received. Phase II will evaluate the feasibility and initial efficacy of TSP+ALC compared to TSP, with 160 US young adults recruited online. Young adults who smoke and have heavy episodic drinking (HED) will be randomized to receive TSP or TSP+ALC. Both interventions will assign participants to a private Facebook group tailored to their readiness to quit tobacco and deliver a 90 day intervention including Facebook postings and weekly "The Dr. Is In" sessions. All participants will be offered 2-week introductory supply of nicotine patch. Participants will complete baseline, 3, 6, and 12 months follow-up assessments online. The primary outcome will be biochemically-verified 7-day point prevalence abstinence at each time point. Secondary outcomes include days of HED, dependence symptoms, readiness to quit, and thoughts about abstinence for smoking and HED.

California

Investigator:	Steven Shoptaw, Ph.D.
Institution:	University of California, Los Angeles Los Angeles, CA
Project Title:	Combating Craving with Contingency Management: Neuroplasticity and MA Abuse in South Africa
Research:	Clinical Research
Research Area:	Clinical Trials, Medication Development, Translational Research, Methamphetamine Research, Substance Use and HIV
Earliest Start Date:	6/19/2017
Housing:	Subsidized

Student Qualifications: Candidates should have completed at least two years of college. Basic knowledge of Excel and PowerPoint is required. Some familiarity with statistics is helpful. Our work will interest those pursuing a career in a clinical field such as psychology or medicine. Students should be comfortable working with people of diverse backgrounds and discussing sensitive behavioral issues, including drug use and high-risk behaviors. Must be able to maintain strict confidentiality of patient information.

Program Description: The UCLA Center for Behavioral & Addiction Medicine (CBAM) provides NIDA Interns with exposure to ongoing programs of addiction research including clinical trials of novel medications to treat drug dependence. Our work also includes HIV prevention research with high risk populations, especially those who use drugs. Interns work closely with faculty and staff over the course of the summer to develop a deeper understanding of addiction and the various evidence-based treatment approaches available. Interns are given the opportunity to see how addiction treatment is conducted in a primary care setting versus an outpatient research clinic setting and how researchers in Los Angeles work closely with community. Because the majority of our work is clinical, students generally will not work directly with study participants, but will meet one-on-one with staff and faculty involved in daily clinical research operations. Interns attend lectures and presentations and may work with research data. Interns attend regular Center meetings in order to learn the organizational structure of research and how to resolve questions and problems in carrying out study protocols.

Colorado

Investigator:	Nancy Rumbaugh Whitesell, Ph.D.
Institution:	University of Colorado Anschutz Medical Campus Aurora, CA
Project Title:	Culturally Grounded Early Substance Use Prevention for American Indian Families
Research:	Other Research
Research Area:	American Indians, Adolescent Substance Use Prevention, Family-based Prevention, Early Adolescent Substance Use
Earliest Start Date:	5/1/2017
Campus Housing Available:	Subsidized

Student Qualifications: Interest in public health research and interest in working with American Indian communities. This could be a good opportunity for an American Indian or Alaska Native student. Project will require travel to South Dakota reservation; ideally intern will spend much of the summer working on site in that community.

Project Description: The summer intern will work with the study team to plan for fall data collection on an ongoing study to evaluate a family-based substance use prevention program developed for young adolescents in a Northern Plains reservation community. The intern will work with the team on preparations for data collection (including logistical arrangements, preparation of materials, and recruiting of participants), and will also have opportunities to be involved in basic analysis of preliminary data from earlier cohorts in the study.

Connecticut

Investigator:	Frederick Altice, M.D., M.A.
Institution:	Yale University New Haven, CT
Project Title:	Prison Interventions and HIV Prevention Collaboration
Research:	Epidemiology Research
Research Area:	Opioid Agonist Therapy, Implementation Science, HIV Prevention, HIV Treatment, Methadone, Buprenorphine, Prisoners, Attitudes, Health Beliefs, Operations Research, Qualitative Research, People who Inject Drugs, Criminal Justice System
Earliest Start Date:	5/15/2017
Housing:	Campus

Student Qualifications: We conduct clinical behavioral research. A broad range of data analyses are available to the student, depending on his/her skill set. We have extensive qualitative data, quantitative survey data and mixed methods options. Basic understanding of epidemiologic research would be an asset. No work with animals or tissue samples is needed. Ideally should have some experience with QUALITATIVE METHODS and SOFTWARE (nVIVO, N*DIST, other)-OR- QUANTITATITVE METHODS and SOFTWARE (STATA, SAS, SPSS, or R)

Program Description: HIV incidence and mortality decreased globally, yet increased markedly in the Commonwealth of Independent States (CIS) of Eastern Europe and Central Asia. Consequently, HIV epidemics remain volatile, fueled primarily by people who inject drugs (PWIDs) with opioid use disorders (OUDs). HIV prevalence in PWIDs in the CIS is high (21.3%-49.8%), and PWIDs account for >70% of cumulative and 56% of new HIV infections. Drug policies favoring incarceration over community treatment regionally have resulted in high incarceration rates of people with psychiatric and substance use disorders (SUD) and people at risk for or living with HIV (PLH). Prisoners often engage in risky HIV behaviors both within prison and post-release. Research confirms that scaling up and combining medically assisted therapies (MAT) and antiretroviral therapy (ART) is the most effective HIV prevention strategy in CIS countries. Despite unambiguous evidence supporting MAT, <2% of PWIDs in Ukraine and Central Asia are receiving MAT, especially in prisons. Using an implementation science framework the investigators introduce or expand MAT offered to prisoners with OUDs and post release. The 2017 Summer Intern would work with investigators in the US and in Ukraine and CIS countries conducting quantitative and qualitative data analysis to assess organizational and client-level factors related to prisoners' utilization of MAT, linkage to community treatment, and retention post-release.

Connecticut

Investigator: Linda Mayes, M.D.
Institution: Yale University
New Haven
Project Title: Oxytocin and Brain Reward and Stress Responses to Infant Cues in Addicted Mothers
Research: Clinical Research
Research Area: Parenting, Addiction, Oxytocin, fMRI
Earliest Start Date: 6/1/2017
Housing: Subsidized

Student Qualifications: None listed

Program Description: This research project will examine whether the administration of the hormone oxytocin influences maternal brain responding in addiction. In this study, functional magnetic resonance imaging (fMRI) will be used to examine the brain response of mothers as they view photographs of their own and unfamiliar infant faces. Mothers are either substance-using or non-substance-using, and across two lab visits, they will complete the fMRI scan following either a placebo or oxytocin administration. Mothers will also complete interactions with their infants to provide a behavioral measure to examine alongside the neuroimaging data. Additionally, maternal attachment classification will be assessed.

District of Columbia

Investigator:	Joshua Corbin, Ph.D.
Institution:	Children's National Medical Center Washington, DC
Project Title:	Development of the Basal Telencephalic Limbic System
Research:	Basic Research
Research Area:	Developmental Neuroscience and Neural Circuit Function
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Potential career research interest and/or major in biology as well as a strong desire to learn and participate in team science. Previous research experience not necessary, most important qualifications are a positive attitude and strong work ethic. Students may work with animal tissue, but typically not with live animals.

Project Qualifications: Research in the Corbin lab is directed toward understanding the genetic mechanisms that govern the embryonic development of the limbic system of the brain. The limbic system of the brain regulates behaviors with emotional or social content. Altered development of this system is a hallmark feature of a variety of human disorders such as autism and addictive behaviors. Using the mouse as a model, projects in the lab are focused on a variety of questions regarding limbic system development, function and dysfunction, including as examples, 1) assessment of gene alterations in genetically engineered mice lacking genes critical for brain development, 2) tracing and visualizing of neuronal connections between different brain limbic system structures and/or 3) assessment of limbic-system behaviors in genetically altered mice.

Florida

Investigator:	Linda B. Cottler, Ph.D., M.P.H.
Institution:	University of Florida Gainesville, FL
Project Title:	ABCD-USA Consortium: Research Project
Research:	Epidemiology Research
Research Area:	Community-based Research, Adolescent Substance Use, and Epidemiology
Earliest Start Date:	5/15/2017
Housing:	Subsidized

Student Qualifications: Seeking undergraduate students with interests in behavioral research, ethics, and/or the inclusion of underrepresented minorities in research. Students with a declared major in anthropology, psychology, sociology, social work, nursing, or other related fields are preferred. Summer students must be dedicated, reliable, curious, independent, solution-oriented, have good attention to detail, and be able to interact with members of the community.

Program Description: The Department of Epidemiology at the University of Florida has opportunities available for Summer Scholars interested in a challenging, yet rewarding, summer experience. The 2017 Summer Scholars will work on an ongoing NIDA research project, the Adolescent Brain Cognitive Development Study, which investigates the effects of adolescent substance use on brain development. Summer Scholars will gain experience and appreciation for the conduct of research by conducting literature reviews, participating in faculty/staff meetings, and assisting in both data collection and data analysis. Summer Scholars will learn about community outreach, including assisting with recruitment and screening of participants, and they will see firsthand the coordination of a landmark study that will enroll and follow up 400 adolescents from North Central Florida using multimodal brain imaging, cognitive and clinical assessments, and mobile monitoring. The interdisciplinary nature of this study will expose Summer Scholars to a team science approach and serve as an introduction to drug abuse research.

Florida

Investigator:	Nazira El-Hage, Ph.D.
Institution:	Florida International University Miami, FL
Project Title:	Role of Autophagy in Microglia-induced NeuroAIDS in Substance Abuse
Research:	Basic Research
Research Area:	HIV, NeuroAIDS, Drugs of Abuse, Autophagy
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: The intern should be familiar with basic molecular biology and techniques such as western blotting, DNA gel electrophoresis and ELISA. In addition, intern must have knowledge in virology and life cycle of HIV. Intern must know sterile cell culture techniques and be able to grow cells (both primary and cell lines) without contamination. Intern must be willing to work with rodent.

Project Description: Microglia are macrophage-like resident immune cells in the brain that can be activated by HIV-1 infection, viral proteins, or in response to various cellular factors including secreted from infected cells. Prolonged or excessive activation of microglia produces inflammatory reactions in the brain, which are believed to be the primary cause of neuronal injury or dysfunction related to HAD pathology. Opiate drug abuse and HIV-1 are interlinked epidemics, and opiates such as heroin can exacerbate the neuro-pathogenesis of HIV-1 with a swift progression to neuroAIDS. The proposed project will investigate the role of autophagy in microglia-induced neuroAIDS and will determine the contribution of autophagy in the pathogenesis of HIV-neurodegenerative disorder in the context of opioid abuse. Dysregulation of autophagy has been associated with a variety of pathological conditions including cancer, as well as cardiovascular, pulmonary and neurodegenerative diseases. Description of project: Characterize at cellular levels the consequences of HIV-1 induced lysosomal dysfunction in microglia cells, and whether prior and/ or concurrent substance abuse modifies cell function. These novel findings should greatly improve our knowledge of the pathogenesis of HIV-1 resulting from substance abuse to provide insight for the design of candidate antiviral therapies targeting drug abusing individuals.

Florida

Investigator:	Madhavan Nair, Ph.D.
Institution:	Florida International University Miami, FL
Project Title:	Multifunctional Nanocarrier to Eradicate HIV from Latently Infected CNS Cells and to Treat Drug Addiction.
Research:	Basic Research
Research Area:	Nanotechnology, HIV and Drug Abuse.
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: The prospected student will be an undergraduate student preferably majoring in physical or biological sciences with an expressed interest in pursuing a doctoral degree in basic or medical sciences. Students will be required to work with animals as well as tissue samples thus it is important to possess basic laboratory skills and knowledge. Students will be allowed to work only after getting appropriate training requested by the law and FIU, and will not work with HIV virus or infected tissues.

Project Description: The elimination of HIV reservoirs from the central nervous system (CNS) remains as a challenge, because viral latency in the brain and the inability of antiretroviral therapy (ART) to penetrate the tightly closed blood brain barrier (BBB). Studies have shown that there is a high prevalence of HIV infection among drug users. Practice of nanotechnology in medicine has shown to be an exciting prospect for the development of a novel drug delivery system across the BBB. Target specificity, drug delivery, drug release and bioavailability of delivered drug at the targeted site are of significance for the success of the therapy. Thus, from a drug delivery point of view, a fast and effective way of delivering and releasing the drugs from the carrier in the brain is needed in order to eradicate the latent HIV in the brain. The Magneto Electric Nano-Particles (MENP) is a subgroup of multiferroic materials possessing significant coupling ability of its magnetic and electric fields at body temperature. The movement of MENP can be remotely controlled for its effective penetration in the BBB by applying a weak DC current. The research project will consist in the development and evaluation of the transport, on-demand and efficacy of MENP bound to a latency breaking agent, ART and a drug antagonist across the BBB. Further, we will evaluate the in vivo efficacy of the in vitro developed nanocarrier in HIVE SCID mouse model along with a neurobehavioral modulation.

Georgia

Investigator:	Michael Eriksen, Sc.D.
Institution:	Georgia State University Atlanta, GA
Project Title:	The Science of Decision Making: Connecting People to Policy
Research:	Basic Research
Research Area:	Tobacco Use, Novel Tobacco Products, Risk Perceptions, Decision Making, Point of Sell, Economic Impact Assessment, and Consumer Behavior
Earliest Start Date:	5/22/2017
Housing:	Campus

Student Qualifications: Outstanding undergraduate student in field relevant to regulatory science including pre-law, social sciences, economics, psychology, public health, and communications. 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 and tobacco control. Intern will not conduct research with animals, humans or tissue samples. No prior research or experience in the field is required.

Program Description: Summer students at the GSU TCORS will have the opportunity to assist research staff working on the project titled, "Conducting Consumer Behavior, Risk Perception and Media Research on Novel Tobacco on Products." This project includes both quantitative and qualitative research examining adults' risk perceptions about novel and alternative tobacco products, including electronic cigarettes and little cigars/cigarillos. The findings from this research will be used to develop a prototype of a media campaign designed to accurately inform consumers about the risks associated with use of these products.

The student will have the opportunity to assist with the following tasks to support the project:

- Analysis of quantitative data from the online survey
- Analysis of qualitative data from focus groups and key informant interviews
- Evaluation of a media campaign prototype
- Writing reports based on findings from the research
- Conducting literature reviews to support the research

Because there are several ongoing projects with the TCORS, the intern will have the opportunity to develop their skills in several areas through their mentored involvement in the research.

Hawaii

Investigator:	Scott K. Okamoto, Ph.D.
Institution:	Hawaii Pacific University, Honolulu, HI
Project Title:	The Development and Evaluation of the Ho'ouna Pono Drug Prevention Curriculum
Research:	Other Research
Research Area:	Health Disparities, Rural, Hawaiian Youth, and Prevention
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: This project requires students to work with humans only. It is appropriate for undergraduate students majoring in psychology, social work, public health, or another allied discipline. Students with knowledge and/or interest in rural, Native Hawaiian, and/or Pacific Islander youth populations are preferred. Although previous research experience is not required, students with strong attention to detail and communication skills are encouraged to apply.

Project Description: Building upon prior pre-prevention and pilot/feasibility prevention research, the primary goals of this project are to complete the development of the Ho'ouna Pono drug prevention curriculum and to evaluate the efficacy of the curriculum across all middle/intermediate schools on Hawai'i Island. Ho'ouna Pono is a culturally grounded drug prevention curriculum developed for rural Native Hawaiian youth. Summer Research with NIDA interns will assist in the collection, management, and/or analysis of data from public school students on Hawai'i Island. They may also assist in training teachers in the use of classroom lessons and accompanying video components in the curriculum. This project is appropriate for undergraduate students with interests in social/behavioral research in the area of drug prevention and health disparities. Students will collaborate with faculty and staff from multiple universities and may have opportunities to travel to Hawai'i Island for teacher training and/or data collection.

Illinois

Investigator:	Brian Mustanski, Ph.D.
Institution:	Northwestern University Chicago, IL
Project Title:	Multilevel Influences on HIV and Substance Use in a YMSM Cohort
Research:	Clinical Research
Research Area:	HIV; Young Men Who Have Sex With Men; Multilevel Influence, Drug, Sex, and Social Networks; Dyadic Influences; Substance Use; Stis; Mental Health; Viral Set Point; Plasma HIV Sequencing
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Interest in social behavioral research, HIV, and at--risk populations such as young men who have sex with men. Good academic standing. Have interest in pursuing graduate education and research in psychology, public health, or related field. Conscientious and detail orientated. Must be able to coordinate housing on their own. Students will be required to work with human participants. Previous research experience is preferred.

Project Description: The IMPACT Program at Northwestern University conducts community-based research which improves the health and well-being of LGBT adolescents. The goal of the current project, RADAR, is to identify and understand connections among sexually transmitted infections (STIs) and HIV, drug/alcohol use, and romantic/sexual relationship patterns over time among young men who have sex with men (YMSM). This project is the first time that one study will look at drivers of new HIV infections in YMSM at multiple levels–the genetics of the virus, effects of medications, individual behavior, sexual partner and relationship characteristics, networks, and community-level factors. Project aims are to 1) Understand how co-occurring problems (syndemics) of substance use, HIV/STIs, mental disorders, and violence develop among YMSM and their partners over time; 2) Determine how relationship characteristics influence HIV risk behaviors and transmission among YMSM; 3) Describe networks and social influences on syndemic development among YMSM; 4) Determine if/how substance use increases risk of HIV infection and HIV viral load. We are enrolling YMSM who have participated in other IMPACT research studies and their partners to build a cohort of 1,350 participants over this five-year study. The scientific team includes psychologists, physicians, virologists, network scientists, and statisticians. The Center on Halsted and Chicago Department of Public Health are also partners in this study.

Illinois

Investigator:	John Schneider, M.D., M.P.H
Institution:	University of Chicago Chicago, IL
Project Title:	HIV Intervention Models for Criminal Justice Involved Substance using Black MSM
Research:	Other Research
Research Area:	HIV, Criminal Justice Involvement, Social Network, YBMSM, MSM, Social Support, Risk, and Youth
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: The NIDA summer intern should be interested in sexual health, risk behaviors (including sexual risk and substance use), health disparities, criminal justice involvement and working in low resource settings. No research experience is required; however, the intern must have experience working with African Americans and preferably HIV and men who have sex with men.

Program Description: Intern will work with a multidisciplinary team that is developing HIV prevention interventions that engage young Black men who have sex with men and transwomen in Chicago, Houston and LA. The overarching goal is to simulate what types of "network shocks" occur as these clients are detained and then released back to the community. We believe these shocks have profound social impacts on health and well-being and potentially HIV transmission. The intern will work on with the team on preparing manuscripts, literature reviews and data management according to skill level.

Iowa

Investigator:	Ryan LaLumiere, Ph.D.
Institution:	University of Iowa Iowa City, IA
Project Title:	Isolating the Extinction Circuit for Cocaine Seeking
Research:	Basic Research
Research Area:	Cocaine, Self-administration, Rats, Circuitry, Behavior, Prefrontal cortex
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: The intern does not need to have prior research experience. However, the intern must be comfortable working with rats on a daily basis. The intern should also have a strong interest in discovering the neurobiological basis of behavior, especially addiction-related behavior, and preferably an interest in pursuing a career in neuroscience.

Project Description: Our laboratory investigates the neural mechanisms underlying cocaine-seeking behavior in rats. Therefore, the research project for the summer intern will involve conducting drug self-administration experiments in rats. The rats will then undergo extinction training, followed by reinstatement testing. The reinstatement serves as a model of relapse in drug-addicted individuals. During the reinstatement testing, activity in different brain regions can be altered to determine the role of those regions in regulating this behavior. In particular, the summer intern's project will focus on the role of the infralimbic cortex in cocaine seeking. Our prior work indicates that this region is involved in the extinction of cocaine-seeking behavior. Therefore, our continuing work has focused on the precise mechanisms in this structure that underlie extinction learning. The intern's project will examine how activation and blockade of different receptors within the infralimbic cortex influence the extinction of cocaine seeking. As part of this project, the intern will be involved in stereotaxic and catheter implantation surgeries, conducting the behavioral components of the task, and engaging in the necessary histology analysis following the experiment.

Iowa

Investigator:	Lane Strathearn, Ph.D.
Institution:	University of Iowa Iowa City, IA
Project Title:	Oxytocin and Brain Reward and Stress Responses to Infant Cues in Addicted Mothers
Research:	Clinical Research
Research Area:	Maternal, Oxytocin, Dopamine, Reward, Mother-Infant Synchrony, Functional MRI, Development
Earliest Start Date:	5/15/2017
Housing:	Campus

Student Qualifications: Previous research experience is not required. However, the student should be interested in developing his or her own research interest and to have a true research experience. They will not be working with animals but only human research. College students can major in any area of science, psychology or neuroscience.

Project Description: Maternal drug addiction constitutes a major public health problem for both women and affected children, with long lasting consequences on children's social, emotional and cognitive development. Current treatment strategies tend to focus on the mother and her current addiction, rather than her relationship with her child, and developmental processes that may perpetuate the addiction problems, such as unresolved childhood attachment trauma, neglect, and chronic stress. Unlike mothers who find engaging with their own infant to be a uniquely rewarding experience, mothers with addictions may be less able to respond appropriately to their infant's cues, finding them less intrinsically rewarding or salient, and more stress provoking. Oxytocin, a neuropeptide with decreased peripheral levels seen in addicted mothers, is integrally involved in maternal brain and behavioral responses and may reduce some of these negative effects. The Attachment and Neurodevelopment Lab at the University of Iowa is conducting a randomized, placebo-controlled study of intranasal oxytocin on maternal brain responses. We will use functional MRI to examine how oxytocin affects the response of drug-exposed mothers to seeing their infant’s face cues. Summer students will assist in enrolling mothers and their babies, conducting interviews and videotaping mother-infant interaction. Infant face images are collected and edited for presentation within the functional MRI brain scanner during a subsequent visit.

Maine

Investigator:	Elissa J. Chesler, Ph.D.
Institution:	The Jackson Laboratory Bar Harbor, ME
Project Title:	Discovery of Addiction-Related Genes with Advanced Mouse Resources
Research:	Basic Research
Research Area:	Behavioral Genetics, Diversity Outbred Mice, Drug-Self Administration, Bioinformatics
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: Experience in either mouse behavioral testing or statistical programming and data analysis is desirable but not required.

Program Description: Model organism studies of addiction related behaviors allow us to identify the genes and mechanisms involved in many different stages and processes of addiction. Genetic analysis of behavior and the expression of genes associated with behavior will enable the identification of new pathways, processes and mechanisms of addiction. Integrative bioinformatics analyses allow us to combine data across species and experiments to refine and extend the findings from genetic mapping studies. Summer students will work on behavioral data acquisition and analysis or applied bioinformatics analysis of the addiction genomics literature. Trainees with advanced computational or statistical experience may work on methods development or advanced data analysis projects.

Massachusetts

Investigator:	Margarita Alegria, Ph.D.
Institution:	Massachusetts General Hospital Boston, MA
Project Title:	International Latino Research Partnership
Research:	Clinical Research
Research Area:	Behavioral Health; Mental Health; Substance Use; HIV Risk and Prevention; Racial/Ethnic Disparities.
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Excellent organizational and interpersonal skills required. BA required, preferably in the social sciences. Strong writing and typing skills are necessary. Bilingual Spanish skills are also required.

Program Description: The RA will work on a NIDA-funded study that observes substance use and HIV risk in multicultural populations. Research tasks include conducting literature searches and preparing bibliographies for scholarly papers, creating tables and graphs, entering data, etc. Responsibilities also include some administrative tasks such as general office and meeting support.

Michigan

Investigator:	Tom Kerppola, Ph.D.
Institution:	University of Michigan Ann Arbor, MI
Project Title:	Visualization of Combinatorial Epigenetic Marks and Complexes in Animals
Research:	Basic Research
Research Area:	Embryonic Stem Cells, Fluorescence and Imaging
Earliest Start Date:	5/1/2017
Housing:	Campus

Student Qualifications: The summer student is expected to engage in their project full time during the entire period of the NIDA program. Students who have held summer internships in our laboratory in the past two years are now pursuing graduate studies at Harvard University and University of North Carolina.

Project Description: The Kerppola laboratory engages in many fields of research. Examples of research areas that a summer student can participate in include:
1. Interactions among transcription regulatory proteins mediate the combinatorial regulation of gene expression. We have developed a bimolecular fluorescence complementation (BiFC) assays for visualization of protein interactions and modifications in living cells and animals. These approaches provide the opportunity to investigate the cell-type and tissue-specificity of protein interactions and modifications in their normal cellular environments.
2. Epigenetic regulatory protein complexes maintain and control transitions between different cellular states. We have developed methods for visualization and characterization of epigenetic regulatory complex binding to chromatin in living cells. These methods provide the opportunity to investigate the mechanisms that establish and interpret the epigenetic state critical for stem cell maintenance.
3. Many cancers have complex genetic and epigenetic causes. We are pursuing new strategies for the development of therapies for rare cancers whole molecular causes have not been identified. These strategies are based on the investigation of candidate drugs that have favorable pharmacological and toxicological characteristics in animals. These strategies provide the opportunity to develop new therapies for patients who have no effective treatment options currently.

Michigan

Investigator:	Marc A. Zimmerman, Ph.D.
Institution:	University of Michigan Ann Arbor, MI
Project Title:	Intergenerational Transmission of Drug Use in an Urban Sample
Research:	Epidemiology Research
Research Area:	Alcohol, Tobacco, and Other Drug Use (ATOD) Parenting Style, Attitudes, and Behaviors Transmission of ATOD Use, Coping and Prosocial Behaviors Intervention Development, Multilevel and Longitudinal Data
Earliest Start Date:	5/1/2017
Housing:	Campus

Student Qualifications: Interns should have an interest in community-based research, childhood/adolescence, parenting behavior, or substance use behaviors. Interns will not have contact with human subjects, but will complete required human subjects/ethics training prior to joining the study. Interns should have strong writing skills and feel comfortable working/learning with others. Data analytic interest/skills are a plus, but not required. Previous research is not required.

Project Description: The study seeks to understand the intergenerational transmission of risk for alcohol, tobacco, and other drug use in a predominantly African-American sample, the first generation of which we have been following since 1994. Generation 1 in the proposed study includes parents of over 300 children aged 5-16 years old. The sample is unique in that the few studies on intergenerational transmission do not include a large sample of urban African-Americans with middle to low income backgrounds. The applicant will apply a socioecological developmental framework to study how familial and neighborhood environments, as well as the individual behaviors, attitudes, and experiences of a cohort of parents in middle adulthood (G1), influence parenting style, attitudes, and behaviors over time, and how these factors may influence the attitudes and behaviors of their children (G2).

The intern will assist with research implementation, data collection, analysis and, depending on experience, write-up. More specifically, the intern will be exposed to the data collection process and materials, and will assist in preparing surveys/interview protocols for the second round of data collection. Interns will have the opportunity to conduct guided data analyses on the first wave of data collection and will assist in data preparation and management. Interns will also contribute to preliminary reports of the findings and may participate in manuscript preparation for conference or academic outlets.

Missouri

Investigator:	Laura Bierut, M.D.
Institution:	Washington University St. Louis, MO
Project Title:	Nicotine Dependence to Smoking Cessation: Sequencing Common and Rare Variants
Research:	Clinical Research
Research Area:	Genetics and Smoking Cessation
Earliest Start Date:	6/1/2017
Housing:	Campus

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

Program Description: Smoking causes more than 480,000 deaths annually in the U.S. It has been determined that genetic variants influence smokers' ability to quit and response to smoking cessation pharmacotherapy. Our group identified a genotype by treatment interaction for smoking cessation involving CHRNA5. Specifically, those with high-risk genetic variants are more predisposed to have difficulty quitting without treatment, and this genetic risk can be ameliorated by aggressive pharmacological treatment. We are conducting a randomized trial to compare the two most effective cessation medications (combination nicotine replacement therapy and varenicline) vs. placebo in a large sample of smokers. Randomization to each arm is stratified prospectively based on CHRNA5 genotype. The goal is to determine the potential of genotypes to predict patient response (smoking abstinence) and medication adherence/side effects, so that medication can be tailored for optimal outcomes.

Opportunities for students include research project analysis and participation in research procedures. The analysis component will be tailored to student interest in examination of genetic and non-genetic predictors of nicotine dependence and smoking cessation. Research procedures include screening potential participants for study eligibility and interviewing research participants regarding personal health, use of alcohol and drugs, and history of smoking, including quit attempts.

Missouri

Investigator:	Patricia Cavazos, Ph.D.
Institution:	Washington University School of Medicine St. Louis, MO
Project Title:	Implications of Social Media Content and Engagement for Alcohol and Marijuana use
Research:	Epidemiology Research
Research Area:	Psychiatry, Social Media, and Mental Health
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Interest in mental health; Hold/plans for degree in health-related field; Ability to follow oral and written instructions; Verbal and written communication skills in English; Ability to pay attention to detail; Knowledge of social media platforms; Experience conducting qualitative data analysis; Experience developing and administering surveys; Ability to assist in writing scientific manuscripts; No direct human contact, but through online recruitment. Previous research experience not required.

Program Description: This research focuses on examining new and emerging trends in health risk behaviors. The NIDA intern(s) would be involved in cutting-edge research that examines mental health and substance use content across various social media platforms. Through this process, she/he will assist in assessing engagement, temporal trends and sentiment of this content. Additionally, the intern will have the opportunity to assist with the identification and recruitment of individuals posting about mental health and substance use on social media into an online study.

Missouri

Investigator:	Li-Shiun Chen, M.D., M.P.H., Sc.D.
Institution:	Washington University St. Louis, MO
Project Title:	Genetically Informed Smoking Cessation Trial
Research:	Epidemiology Research
Research Area:	Pharmacotherapy, Smoking Cessation, and Genetics
Earliest Start Date:	5/30/2017
Housing:	Campus

Student Qualifications: Research will require interaction with human research participants. Students should be comfortable interacting with patients and research participants from diverse backgrounds. Previous research experience is not required. Applicants must have the ability to follow oral and written instructions.

Program Description: This project is to study how people quit smoking cigarettes and what treatments help them. More specifically, we are studying human smoking behaviors, the natural history of smoking cessation, and quit attempts. We will examine various cessation milestones (initial quit, lapse, relapse, and continuous abstinence), genetic markers, environmental risks (peer and family smoking), nicotine dependence treatments, and comorbid psychiatric disorder. This work will help us understand the biology of smoking behaviors, and provide evidence for future studies of personalized smoking cessation treatments.

Missouri

Investigator:	Jose Moron-Concepcion, Ph.D. St. Louis, MO
Institution:	Washington University
Project Title:	In Vivo Imaging of Dynamic Structural Plasticity Driving Morphine Conditioned Place Preference
Research:	Basic Research
Research Area:	Mechanisms Underlying Opioid Dependence, Opioid Analgesic Tolerance during Chronic Pain and the Interaction between Chronic Pain and Opioid Abuse.
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: It is highly desirable that applicants have prior experience with animal research. However, if this is not the case appropriate training will be provided.

Project Description: A disturbing trend in the U.S. is the increasing non-medical use and abuse of prescription opiates. The most recent National Survey on Drug Use and Health (NSDUH) report, for example, revealed that approximately 7 million people used prescription pain relievers for non-medical purposes in 2012, and 1.9 million people were dependent on or abused prescription pain relievers. The continuing trend in the increase of non-medical use and abuse of prescription opiates (i.e. morphine) in the U.S. has resulted in increased morbidity, mortality, and economic costs at the individual, local, and national levels. Although opiates are used widely in clinical practice for the treatment of both acute and chronic pain (i.e. inflammatory pain), it is surprising that relatively few studies have examined the neural mechanisms underlying the abuse liability of commonly prescribed opiate medications during pain conditions.

Nebraska

Investigator:	Shilpa Buch, Ph.D.
Institution:	University of Nebraska Medical Center Omaha, NE
Project Title:	HIV Tat & Cocaine-Mediated Induction of Astrogliosis: Role of ER Stress in HAND
Research:	Basic Research
Research Area:	HIV; Cocaine; HIV-associated Neurological Disorders (HAND); Endoplasmic Reticulum Stress (ER Stress); HIV-1 Tat; Chronic Neuroinflammation; Glial Fibrillary Acidic Protein (GFAP); Cell Signaling; Astrogliosis; Cytokines
Earliest Start Date:	6/1/2017
Housing:	Campus

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

Program Description: In era of antiretroviral therapy, HIV-infected individuals are living longer and the incidence of HIV-associated dementia (HAD) is greatly reduced. However, increased survival rates have led to an increase in the prevalence of HIV-associated neurological disorders (HAND). Drugs of abuse have 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 astrocytes. This project will examine the role of HIV viral protein tat and/or cocaine on the activation of astrocytes and whether activation is mediated via endoplasmic reticulum stress (ER Stress). Astrocyte activation will be measured by increased expression of the structural protein glial fibrillary acidic protein (GFAP) as measured by western blot from cell lysates. The intern will learn to culture both primary mouse astrocytes and the human astrocytic cell line A172. The intern will then learn the entire process of performing western blots from making the gels to analyzing the resulting blots.

New Hampshire

Investigator:	Alan J. Budney, Ph.D.
Institution:	Dartmouth College Lebanon, NH
Project Title:	Behavioral Treatment of Adolescent Marijuana Use
Research:	Clinical Research
Research Area:	The major goal of this project is to further develop and test innovative behavioral treatments for adolescents who abuse marijuana, and to begin to understand the mechanisms of change involved in the treatment process. Working Memory Training and Intensified Contingency Management will be evaluated in a SMART design study.
Earliest Start Date:	6/21/2017
Housing:	Campus

Student Qualifications: Strong interest in research topic area or interest in clinical behavioral research methods; completion of senior year in high school and enrolled in undergraduate college; strong sense of responsibility; communicate effectively; ability to follow directions; attention to detail; at least 18 years old. No previous research experience is required, but is preferred. This position requires work with humans and potentially with biological specimens (urine, breath, saliva); no contact with animals.

Program Description: The intern will assist the existing clinical research staff with all aspects of conducting a clinical trial evaluating an outpatient treatment for adolescents with substance use problems. The project enrolls teens and families seeking treatment into one of two treatment conditions. Both involve behavioral counseling and abstinence-based incentive programs, and the experimental condition includes a computerized working memory training designed to improve executive function and help with impulsive decision making. Our intern will have the opportunity to observe interviews, assist with administering comprehensive assessments and data collection, data management, data interpretation, attend team meetings, engage in background reading, and attend seminars. Opportunities will also be available to observe and assist with other ongoing projects that use similar behavioral procedures (treatment of co-occurring marijuana and tobacco use, teen type 1 diabetes). Depending on the intern's interests, an independent project or review paper can be arranged.

New York

Investigator:	Timothy Cardozo, M.D., Ph.D.
Institution:	New York University School of Medicine New York, NY
Project Title:	Combined Cocaine and HIV Vaccine
Research:	Other Research
Research Area:	Anti-Addiction and Anti-HIV Vaccine Development
Earliest Start Date:	5/15/2017
Housing:	Subsidized

Student Qualifications: Completion of high school chemistry and biology is recommended. We recommend that the student be familiar with either a Mac or Windows based computer with a personal email address for easy contact during the internship. Other than this, no prior experience is required.

Project Description: The internship consists of a training phase for 4 weeks during which the student will attend classroom lectures on basic chemistry (periodic table, electrons, etc.) and basic biochemistry (amino acids and proteins). During the training phase, the student will also pursue a computer tutorial on molecular modeling on their own, and perform basic exercises in the laboratory such as making solutions, learning safety procedures etc. The general and specific project will also be described to the student during the training period. After the training period, the student will perform design and analysis experiments on the computer, and will perform experiments at the lab bench. Throughout the internship, the student will be asked to present their project in both written and oral form. During the last week of the internship, the student will present their results formally in the weekly lab meeting.

New York

Investigator:	Congwu Du, Ph.D.
Institution:	State University of New York at Stony Brook Stony Brook, NY
Project Title:	Calcium-related Neurotoxicity of Cocaine
Research:	Basic Research
Research Area:	Optical Neuroimaging, Cerebral Hemodynamic and Cellular Function, Chronic Cocaine, Dopamine Signaling, Brain Connectivity
Earliest Start Date:	6/8/2017
Housing:	Campus

Student Qualifications: Undergraduate students who are highly-motivated with research background in imaging, or experience with animal models or animal self-administration of drug are preferred

Project Description: Cocaine affects both cerebral blood vessels and neurons in the brain. Imaging technologies such as fMRI, PET, optical microscopy and near-infrared imaging have been used to assess the acute and chronic effects of cocaine. However, the mechanisms underlying cocaine's neurotoxic effects are still not fully understood, partially due to the technical limitations of current techniques to differentiate vascular from neuronal effects at sufficiently high temporal and spatial resolution. To solve this problem, we have developed a multimodal imaging platform by combing multi-wavelength laser speckle imager (MW-LSI) and optical coherence tomography (OCT). While MW-LSI provides a large FOV, high spatiotemporal resolution, and simultaneous mapping of hemodynamic, metabolic and cellular changes in responses to cocaine, OCT is capable of quantifying directional 3D CBF vascular network. The new imaging tool permits to distinguish the vascular versus the neuronal responses of the brain in response to a pharmacological challenge, thus complimenting other neuroimaging modalities (e.g., PET, fMRI) for investigating brain functional changes such as those induced by drug of abuse.

New York

Investigator:	Elise Dunlap, Ph.D.
Institution:	National Development and Research Institutes, Inc. New York, NY
Project Title:	Bath Salts & the Illicit Drug Market: Use, Violence & Health Consequences
Research:	Other Research
Research Area:	Adverse Effects; Amphetamines; Behavioral Health; Cathinones; Cities; Cocaine; Consumption; Designer Drugs; Drug Abuse; Drug Market; Drug User; Ecstasy; Ethnography; Focus Groups; Illicit Drugs; Ingredients and Chemicals; Legal; Life Experience; Methamphetamine; Mollies; Perception; Price; Process; Public Health Relevance; Risk; Safety; Sales; Salts; Social Environment; Surveys; Violence
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: The intern must be a college undergraduate who demonstrates an interest in learning about illicit drug markets, drug use and related social problems including HIV/AIDS and violence. Previous research experience is not required, but the student must have a good handle on using computers, email and software programs for Windows, and a willingness to learn new software. The student also should have good writing and organizational skills and the ability to conduct library and Internet searches.

Program Description: This project is investigating the social processes involved in the sale and consumption of synthetic cathinones ("bath salts") and related illicit substances in four U.S. cities: New York, New Orleans, Houston and Galveston, Texas. The study aims to document: 1) varieties of bath salts and related substances sold on the illicit drug market, how they are sold and how they change over time; 2) how and under what circumstances violence occurs in relation to bath salts use and sales; and 3) use practices, conduct norms and health consequences associated with use. Field staff in all sites are conducting individual qualitative interviews, focus groups and a computer-assisted survey. The student intern will be based in the New York City home site, and will work mainly with the qualitative data. S/he will receive training in qualitative data base management and will gain hands-on experience entering data and helping with quality control by listening to interview audio files and correcting transcription errors. The intern will also receive training in basic qualitative data coding and analysis to help the investigators prepare for fall presentation deadlines. The intern will attend biweekly meetings with New York field staff and project management, and with off-site field staff participating by telephone. The student also will be required to attend certain NDRI seminars and/or Training Institute courses, where s/he will learn about drug use and related social problems.

New York

Investigator:	Perry Halkitis, Ph.D.
Institution:	New York University New York, NY
Project Title:	Syndemic Production among Emergent Adult Men
Research:	Basic Research
Research Area:	HIV, STIs, Gay & Bisexual Men, Sexual Behavior, Substance Use, Mental Health
Earliest Start Date:	6/5/2017
Housing:	Campus

Student Qualifications: CHIBPS is looking for students who are comfortable working with diverse populations and discussing sensitive topics such as sexual behavior and drug use. We are also looking for students with strong interpersonal skills, great attention to detail, respect for confidentiality and the ability to multi-task. This research requires students to work with human subjects, specifically racially/ethnically diverse gay, bisexual and other men who have sex with men.

Project Description: The Project 18 Cohort Study follows the development of syndemics among a racially/ethnically diverse group of young gay, bisexual and other men who have sex with men. Participants are asked about their sexual behavior, substance use, mental health burden and relationships; they also receive HIV and STI testing. The intern's project will be to contribute to data collection and data entry for Project 18. They will contribute to data collection by assessing participants; this involves asking them about their social networks, sexual behaviors and substance use. Data entry involves inputting pen and paper surveys into programs like SPSS and Qualtrics. Interns will also contact participants for their follow-up appointments.

New York

Investigator:	Yasmin Hurd, Ph.D.
Institution:	Icahn School of Medicine at Mount Sinai New York, NY
Project Title:	Molecular Neurobiology of Human Drug Abuse
Research:	Basic research
Research Area:	Marijuana, Neurodevelopment, Mesocorticolimbic Brain Regions, Developmental Effects of Drugs, Adolescent, Prenatal, Nucleus Accumbens, Prefrontal Cortex, Stress, Depression, Addiction, Epigenetics, mRNA
Earliest Start Date:	6/1/2017
Housing:	Campus

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

Program 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 adoloescent and 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 opiate use disorders.

New York

Investigator:	Paul Kenny, Ph.D.
Institution:	Icahn School of Medicine at Mount Sinai New York, NY
Project Title:	Orexin Receptor Antagonists for Drug Addiction and Panic Disorder
Research:	Other Research
Research Area:	Addiction, Extended Access, Behavior, Catherization
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Running rodent behavioral tests and executing molecular biology experiments is challenging, and we require applicants to have the following skills:

- Comfortable handling animals
- Basic molecular biology skills
- Precise execution of experiments with attention to detail
- Good record keeping and observational skills
- Clean work habits

Project Description: Drug addiction can be viewed as resulting from maladaptation to the brain's natural reward processes. The signaling cascades and molecular processes underlying these maladaptive processes remain to be fully elucidated. Previous work in the Kenny laboratory has identified a key role for striatal microRNAs in regulating the reinforcing properties of cocaine. The current research project aims to further probe the role microRNAs and other non-coding RNAs play in the pathological maladaptations that underlie compulsive drug-seeking behaviors. We will adopt a multidisciplinary approach using complex rodent behavioral paradigms a well as manipulation of various components of reward relevant signaling cascades both in vitro and in vivo. The aim of the project is to facilitate the development of novel medications for human addicts.

New York

Investigator:	Thomas Mariani, Ph.D.
Institution:	University of Rochester Rochester, NY
Project Title:	Comparative Transcriptomic Signatures of Inhaled Tobacco Smoke
Research:	Other Research
Research Area:	Biomarkers, Transcriptomics, E-cigarettes, Toxicology, Lung biology, Respiratory disease
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: Applicants with at least nominal experience with molecular and/or cell biology procedures would be most productive in this internship environment. Likewise, this opportunity would be most suitable for someone with an interest in pursuing laboratory-based research as a primary career path.

Program Description: Rationale Tobacco smoke exposure, either primary or passive, cause's pulmonary inflammation or a significantly increased life-long risk for numerous lung diseases. Unfortunately, while the health risks of tobacco smoke exposure are widely-appreciated, and rapid progress is being made in the identification of smoke-induced disease mechanisms, there are no existing in vitro tests to ascertain risks associated with exposure burden or different types of tobacco products. This is an important knowledge gap we intend to address in a way that will help the FDA to fulfill its regulatory mission.

Hypothesis: Specific, reliable changes in the transcriptome can serve as quantitative and qualitative gene expression biomarkers of tobacco smoke exposures that are accurate and predictive of human disease risk.

Aim 1: Use cell models to develop regulatory-appropriate assays for tobacco smoke exposure.

Aim 2: Utilize animal models to define disease-relevant transcriptomic responses to inhalation of specific tobacco types and doses.

Aim 3: Assess the human disease relevance of specific gene expression biomarkers

New York

Investigator:	Paul Meyer, Ph.D.
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
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: Undergraduates with completed coursework in biology and other sciences is preferred. Interns should be comfortable working with rat test subjects. No previous research experience is required.

Project Description: Interns can participate in any projects in our laboratory (see below, and meyerlabscience.org for more information):

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 1600 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 this specific genes influence drug-taking in animal models of addiction. For more information on our mapping project see www.ratgenes.org.

New York

Investigator:	Gail Wasserman, Ph.D.
Institution:	Columbia University New York, NY
Project Title:	Translational Research on Interventions for Adolescents in the Legal System
Research:	Other Research
Research Area:	Implementation Science, Service System Linkage, Juvenile Justice, Substance Use Screening, Assessment and Referral, Juvenile Probation, Data-Driving Decision Making Training, Evidence-Based Practices
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: College Undergraduate, interest in services research, implementation science, improving identification and service linkage for youth in contact with the juvenile justice system via training on data-- driven decision making

Project Description: The burden of unmet mental health and substance use need and HIV risk among youths in the juvenile justice system is alarmingly high. A behavioral Continuum of Care approach, emphasizing coordination of services across multiple sectors of care, has promise for addressing unmet needs across these domains. Although evidence-based practices (EBPs) for identification, referral, and treatment of behavioral health problems in justice-involved youths exist, they are rarely implemented in routine practice. Based on our prior success in NYS juvenile probations, our expertise uniquely positions us to address identification and linkage, which initiates the operation of the behavioral health continuum. Compared to standard care, our earlier efforts boosted POs' use of targeted linkage practices that related, in turn, to increased service access. Here (Connect Plus) we expand earlier efforts to address substance use and HIV risk (via screening, referral practices, and interagency collaboration). We propose a multi-stakeholder Research Center to promote EBPs addressing challenges in juvenile probationers' linkage to behavioral health services. We are guided by the Comprehensive Framework for Implementation Research (CFIR) to support acceptability, feasibility, and sustainability.

North Carolina

Investigator: Kathryn J. Reissner, Ph.D.
Institution: University of North Carolina
Chapel Hill, NC
Project Title: Astrocyte-Mediated Mechanisms of Cocaine Seeking
Research: Basic Research
Research Area: Addiction, Cocaine, Astrocyte, Neuron, Rat, Self-Administration, Synaptic Plasticity, Reinstatement, Glutamate Transport
Earliest Start Date: 6/1/2017
Housing: Campus

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 daily training of rats, and some processing of brain tissue at the end of the experiment. Work with live vertebrate animals requires keen and constant attention to detail and to the well-being of the animal. The intern will be trained in all concepts and techniques.

Program 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 investigate how cocaine seeking after withdrawal affects three-dimensional structure of astrocytes, and astrocyte-neuron communication. 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 can also participate in morphometric analysis of astrocytes, using immunohistochemistry, expression of fluorescent markers, and confocal microscopy. Projects are also available to investigate the relationship between astrocyte retraction and expression of ionotropic glutamate receptors (NMDA, AMPA) in neurons. 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:	Lisa M. Tarantino, Ph.D.
Institution:	University of North Carolina Chapel Hill, NC
Project Title:	Organismal and Genetic Networks in Drug Reward and Reinforcement
Research:	Basic Research
Research Area:	Cocaine, Addiction, Genetics, Genomics, Behavior, Stress, Impulsivity, Dopamine
Earliest Start Date:	5/15/2017
Housing:	Campus

Student Qualifications: Our laboratory primarily conducts basic research using animal models in the areas of neurobiology, behavior and genetics. A particular set of skills is not required, but background in animal handling and basic laboratory techniques will be helpful. However, the student will be trained in these areas - therefore, no previous research experience is required - just an enthusiasm for science and a desire to learn and grow! Students will be required to work with live laboratory mice.

Program Description: Initial sensitivity to psychostimulants predicts future drug use and abuse in humans. In rodents, psychomotor stimulation in response to a drug is often used as a model for initial sensitivity and has a significant genetic component. Moreover, initial locomotor sensitivity is often correlated with propensity to self-administer psychostimulants in operant paradigms. We have identified an inbred mouse strain, I/LnJ, which shows normal locomotor activity but an exaggerated locomotor response to cocaine. I/LnJ mice show normal acquisition of cocaine self-administration, but are highly motivated to obtain drug under a progressive ratio schedule of reinforcement. Moreover, I/LnJ mice show a significantly extended response to acute stress indicating a potential link between the hypothalamic-pituitary-adrenal (HPA) axis and drug reward. Finally, I/LnJ mice show compulsive behavior – another predisposing factor for addiction liability. The summer research project will involve further characterization of these mice in additional behaviors including learning and memory, impulsivity and drug reward. In addition, baseline measures of dopamine both prior to and after exposure to cocaine and stress will be obtained using fast scan cyclic voltammetry in collaboration with another laboratory on the UNC campus. The data from these experiments will aid in the characterization and development of this line of mice as a model for addiction-like behavior and lead to further genetic analysis.

Oregon

Investigator:	Leslie Leve, Ph.D.
Institution:	University of Oregon Eugene, OR
Project Title:	Preventing Drug Use and HIV-Risk Behaviors in CWS-involved Adolescent Girls
Research:	Clinical Research
Research Area:	Adolescents, Girls, Maltreatment, Juvenile Justice, Intervention, Risky Sexual Behavior, Drug Use, Peers
Earliest Start Date:	6/15/2017
Housing:	Campus

Student Qualifications: Students must have a basic understanding of psychological research and an interest in pursuing graduate studies in psychology or a related discipline. Must be willing to be work collaboratively as part of a team. No prior research experience required. There are opportunities for human subject activity, but this is not a requirement.

Project Description: This project is part of a Center Grant focused on the prevention of drug abuse in child welfare settings. This research project has two phases. First, we conducted qualitative interviews with a sample of 15 young women (age 18-24 years old) who experienced difficult childhood experiences, such as childhood maltreatment, involvement in the juvenile justice system, or voluntary sexual activity prior to age 16. In the second phase, we recruited 122 girls between the ages of 13-18 to participate in a randomized intervention trial aimed at preventing sexual-risk behaviors, drug use, and delinquency and improving partner relationships. Youth and their current caregiver (foster parent, kinship care, or biological parent) participated in the intervention condition, or received community services as usual. Girls and their caregiver were interviewed at baseline and at 6- and 12-month follow-ups. Behaviors such as peer relationships, partner relationships, drug use, sexual behavior, delinquency, parenting, mental health, and temperament were measured. At the 12-month assessment, urine samples and juvenile justice records were obtained. The overall goal of the project is to examine adolescent development in this high risk sample, and evaluate the efficacy of the intervention in reducing and preventing drug use and related problems.

Oregon

Investigator:	Julie C. Rusby, Ph.D. John M. Light, Ph.D.
Institution:	Oregon Research Institute Eugene, OR
Project Title:	Peer Influence and Selection Mechanisms Underlying Adolescent Problem Behaviors
Research:	Epidemiology Research
Research Area:	Substance Use, Adolescence, Antisocial Behaviors, Risky Sexual Behaviors, Peer Networks, Ecological Momentary Assessments
Earliest Start Date:	6/19/2017
Housing:	Campus

Student Qualifications: An interest in technology would align with project use of computer-based assessments and repeated longitudinal iPod Touch surveys. We will be working on analyses/papers utilizing the momentary longitudinal assessments of moods and other variables; interns with the skill set to contribute may have the opportunity to be an author on publications. Intern(s) will be working with high school student participants assisting with summer iPod assessments. Spanish-speakers preferred but not required.

Program Description: Affiliation with deviant peers is known to increase the risk of substance use, antisocial behavior, and risky sexual practices during adolescence and into adulthood. This Oregon-based project aims to develop models that forecast the risk of such problems from exposure to different social environments. Over 1,100 students are participating in this study, completing school-based surveys three times each school year from the spring of 8th grade to the fall of 11th grade. In addition, almost 500 students are doing more intensive assessments four times each year, including a summer assessment. This subsample of students are loaned iPod Touches to complete short random surveys during their free time across four days; this method of data collection provides real-time information on student's activities, locations, social environment, and moods. About 40% of the student sample identify as Hispanic/Latino. Students are reporting high rates of alcohol, electronic cigarette (e-cigarette), and marijuana use. Summer research projects include further examination of substance use and an initial examination of antisocial behavior. Other areas of interest are how moods are related to problem behaviors and how physical activity is related to being around peers. Finally, there are opportunities to explore gender and ethnic differences across many variables of interest.

Oregon

Investigator:	Elizabeth A. Skowron, Ph.D.
Institution:	University of Oregon Eugene, OR
Project Title:	Targeting Neurobiological & Behavioral Mechanisms of Self-Regulation in High-Risk Families
Research:	Clinical Research
Research Area:	Parent Child Interaction Therapy, Early Childhood Drug Abuse Prevention, Child Abuse Prevention, Preschool Self-Regulation, Clinical Trial Research, Bio-behavioral Assessments, Autonomic physiology (RSA, PEP), EEG-ERP Assessment.
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: We are looking for motivated students who are interested in pursuing careers in Psychology, Neuroscience, Medicine, or related fields. Interns work directly with participants conducting structured biobehavioral assessments. We are looking for students that feel comfortable working in a professional and child friendly environment.

This internship will be a valuable experience for students who are interested in attending graduate school in the aforementioned fields.

Program Description: Child maltreatment (CM) is known to compromise children's developing self-regulation skills and amplify risk for substance use and other regulatory disorders. Parents are implicated in more than 80% of CM cases involving physical abuse and neglect. Parent–Child Interaction Therapy (PCIT) has been shown to improve positive parenting and child behavior and reduce CM recurrence.

This randomized clinical trial is testing the effects of PCIT for child welfare–involved families and attempting to identify biobehavioral pathways to positive change in parenting practices and children's self-regulatory outcomes. Families with children ages 3 to 8 years are recruited to participate in the evidence-based intervention.

As part of the PCIT experience parents interact with their child while a therapist coaches from behind a one way mirror. The therapist uses live camera feedback and interacts with the mother using an earpiece. This "real" time coaching allows the child to experience the mother as the agent of change. Families are assessed pre, post and at 1 year follow up. We use EEG equipment to assess brain activity and monitor autonomic physiology (RSA, PEP) while the parent and child perform cognitive, emotional, and behavioral challenge tasks both together and apart.

Oregon

Investigator:	Elizabeth Stormshak, Ph.D.
Institution:	University of Oregon Eugene, OR
Project Title:	Prevention of Substance Use in At-risk Students: A Family-Centered Web Program
Research:	Clinical Research
Research Area:	Longitudinal Research, Family Relationships, Early Adolescence, Prevention, Family Check-up, Intervention
Earliest Start Date:	5/1/2017
Housing:	Subsidized

Student Qualifications: Student intern will have direct contact with human subjects. Previous research experience is not required, although strongly preferred. Minimum Qualifications include: strong attention to detail; excellent organizational, written, and verbal communication skills; and a demonstrated ability to work as part of a team. Preferred Qualifications include: working towards BA/ BS degree in psychology, sociology, or related field; and experience working with families from diverse cultures.

Program Description: Over the past 20 years we have developed the Family Check-Up (FCU), a school-based, model-driven intervention that targets early adolescence, reduces problem behavior and substance use, and promotes successful transition into high school. It is designed to motivate parents to engage in positive parenting practices and to change problematic parenting. It has been shown to reduce substance use and antisocial behavior, depression, and teacher-reported risk behavior.

We are currently conducting two research studies involving the FCU; an intern can choose to participate in data collection/ analysis for one or both projects. In one study we are developing an internet version of the FCU for families of middle school youth and will examine the efficacy of this version in a sample of 300 families. We will examine the effect of the FCU-Online on parenting skills, positive youth adjustment, academic achievement, and reductions in youth problem behavior over the course of one year.

In another study we are following up an existing community sample of 593 youth and families who were originally recruited at age 11 for the middle school FCU. Participating youth are now 20-22 years old. Families assigned to the original treatment condition are now being offered an additional intervention that targets parent–youth relationships during early adulthood, and provide critical information about developmental changes in family processes that protect youth from substance abuse during this period.

Pennsylvania

Investigator:	Prasun Datta, Ph.D.
Institution:	Temple University Philadelphia, PA
Project Title:	Project 1 Reciprocal Interaction of Cocaine and HIV-1 on Glycolytic Pathways in Macrophages and Microglia Cells
Research:	Basic Research
Research Area:	NeuroAIDS, HIV-1, Macrophage, Microglia, Glycolysis, Metabolism, Drug Abuse, and Cocaine
Earliest Start Date:	6/26/2017
Housing:	Campus

Student Qualifications: Undergraduate students in Biology, Molecular Biology, Biochemistry are preferred. Students must have a GPA above 3.1 and should have basic biology lab skills, and communication skills. Students must be interested in conducting basic research. Students must be punctual, reliable, and hardworking and have the ability to follow instructions. The candidate applying for internship should have high antibody titer against Hep B to work on this project, and cannot be waived under any circumstances.

Program Description: Research in this laboratory is directed toward understanding how HIV-1 and drugs of abuse such as cocaine hijacks the genetic and cellular mechanisms involved in expression of the enzymes in the glycolytic and TCA cycle pathway in macrophages and microglia. A summer program in this laboratory will enable the student not only to learn basic molecular biology techniques such as cell culture, isolation and culture of macrophages, western blot analysis, real-time PCR but also cutting edge techniques as use of lentivirus and Cas9 technology to silence gene expression. Trainees are teamed up with postdoctoral researchers to learn specific techniques and basic concepts of metabolism and viral replication.

Pennsylvania

Investigator:	Wenzhe Ho, M.D., M.P.H.
Institution:	Temple University Philadelphia, PA
Project Title:	Opioids, HIV/HCV and Host Cell Innate Immunity
Research:	Other Research
Research Area:	Drug abuse, HCV/HIV, Neuro AIDS, Viral Immunology, and Innate Immunity
Earliest Start Date:	7/3/2017
Housing:	Subsidized

Student Qualifications: Prefer to have students with biology major, having a great interest in research (with or without experience, although research experience is preferred). Students should have attributes of paying attention to detail, being a good listener, following instructions, getting along with others, and having ability to organize/present data. Students also have excellent communication skill, and are able to read and write in English.

Project Description: Dr. Ho's laboratory is using multidisciplinary approaches to understand virus-host interactions and the basic mechanisms that control virus replication and strategies for enhancing the innate immunity against viral infections, particularly HIV and HCV (a major etiology of liver disease). Working closely with drug abusing populations in the regions of Philadelphia and China, the Ho laboratory is also investigating whether drugs of abuse such as heroin and methamphetamine have a cofactor role in promoting HIV and/or HCV diseases. Since HIV and/or HCV infection are frequently found in injection drug users (IDUs) and these two pathogens are likely to be responsible for the highest infectious disease morbidity and mortality rates among IDUs, Dr. Ho's laboratory is investigating the role of drug abuse in the immunopathogenesis of HIV and/or HCV diseases. Dr. Ho and his research team use in vitro, ex vivo and in vivo models to directly address the question of whether drugs of abuse (opioids and methamphetamine) have the ability to suppress host immune responses and promote HIV and/or HCV diseases. In collaboration with the investigators from the University of Pennsylvania and Wuhan CDC, studies in the Ho's laboratory have shown that drugs of abuse such as opioids and methamphetamine impair antiviral functions of host innate immune cells (natural killer cells and CD56+ natural T cells) and facilitate HIV or HCV infection/replication.

Pennsylvania

Investigator:	Charles P. O'Brien, M.D., Ph.D., Sc.D.
Institution:	University of Pennsylvania Philadelphia, PA
Project Title:	Pilot Implementation Project of Methadone and Suboxone or Injecting Drug Users
Research:	Clinical Research
Research Area:	Psychiatry-Addictions
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: The intern should have a connected degree or interest in the behavioral sciences or an interest in medicine or health care.

Project Description: The Program is an 8 week, 40 hours a week placement, supervised by a Principal investigator, and a designated program Director. The program will consist of introduction to addiction research including the understanding of clinical protocols and psychopharmacology, and includes the following:

- Psychiatry 105 coursework (Didatics); understanding of the Diagnosis and Treatment of Substance Abuse
- Participation in science meetings -Weekly Speaker Sessions hosted by various investigators from the field and within the University
- Data collection activities & data analysis
- Active research study preparation, including CRF work and Assessments (may include patient contact)
- Laboratory experience/experiments (optional) includes animal research Library research
- Group activities - includes mentor meetings and other group activities
- Final Oral Presentations on topics or studies covered during the internship.

South Carolina

Investigator:	Arthur Riegel, Ph.D.
Institution:	Medical University of South Carolina Charleston, SC
Project Title:	Relapse to Cocaine-Seeking: Cellular Adaptations in the VTA
Research:	Basic Research
Research Area:	Addiction, Cocaine, Stress, DREADDs, Optogenetics, Drug Self-Administration; Relapse, Behavior, Immunocytochemistry
Earliest Start Date:	6/15/2017
Housing:	Subsidized

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 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 MUSC Department of Neurosciences in Charleston SC brings together a large group of expert neuropharmacological researchers and a range of laboratory facilities to create outstanding opportunities for young people interested in a research career in the neurosciences of addiction. We are seeking an intern to assist with characterizing the expression and efficacy of novel genetic tools in operant behavioral tests to determine mechanisms responsible for relapse to drug seeking. Areas of focus include addiction, stress and environmental cues.

Texas

Investigator:	Kathryn Cunningham, Ph.D.
Institution:	University of Texas Medical Branch Galveston, TX
Project Title:	Translational Addiction Sciences Center: Administration, Communication, and Integration Core
Research:	Basic Research
Research Area:	Addiction Research; Addiction Sciences; Pharmacology; Toxicology; Neuroscience
Earliest Start Date:	6/5/2017
Housing:	Campus

Student Qualifications: Excitement about science; Team Player; preferred background in Neuroscience, Psychology, Pharmacology, or Behavioral Science; Understanding of the importance of animal research to advancing our understanding of addiction.

Project Description: Cocaine abuse and dependence continue to extract considerable personal, health and societal tolls in the U.S. and the world. The cycling progressive nature of this disorder stymies efforts to stay abstinent with relapse oft precipitated by impulsive behavior and craving in the face of exposure to cocaine-associated cues (cue reactivity). Serotonin (5-HT) neurotransmission is a strategic nexus that mechanistically connects these phenotypes. The Translational Addiction Sciences Center (TASC) is comprised of a translational team bridging from molecules to cells to animals to humans with the long-term research goal to definitively reveal the role of 5-HT in addiction neurobiology and to integrate this knowledge into the dominant theoretical constructs of addiction. The central research theme of the TASC is that impulsive action and cue reactivity are mechanistically-linked to disrupted 5-HT signaling through the 5-HT2A receptor (5-HT2AR) and 5-HT2CR localized to prefrontal-striatal-thalamic circuitry. Our premise is that restoration of the 5-HT2AR:5-HT2CR balance will repair corticostriatal deficits and ameliorate relapse. The TASC is led by an experienced, translational team that melds classical and state-of-the-art methodologies, bridging chemistry, cellular biology and pharmacology with human and animal psychopharmacology to address this problem.

Texas

Investigator:	Laura O'Dell, Ph.D.
Institution:	University of Texas at El Paso El Paso, TX
Project Title:	Sex Differences in the Mechanisms that Promote Nicotine Reward and Withdrawal
Research:	Basic Research
Research Area:	Neuroscience; Drug Abuse; Tobacco Use; Addiction; In Vivo Micro Dialysis; Behavior; Molecular Biology
Earliest Start Date:	5/22/2017
Housing:	Campus

Student Qualifications: Biology or Chemistry Background, Physiological Psychology
Animal Handling experience, preferably Graduate School bound

Project Description: The summer student will be a part of our NIDA-funded summer training program entitled, "SMART: Minds." Students will focus on studies related to the parent grant ("Sex Differences in the Mechanisms that Promote Nicotine Reward and Withdrawal"-DA021274). The projects will examine sex differences to the behavioral effects produced by nicotine and withdrawal from this drug. They will learn to use place-conditioning procedures to assess the rewarding and aversive effects of nicotine across these groups. The student will present their work at the end of the summer at the local Summer Undergraduate Research Symposium. The student will also be involved in studies comparing the rewarding effects of nicotine in adolescent, adult, and adult animals that were exposed to nicotine during adolescence using self-administration procedures. This project is directly from the parent grant and will also be completed this summer. The students will be heavily involved in the data collection of this project and will learn valuable presentation skills. As part of the summer REU they will also receive training in bioethics and other professional skills. These projects are important for the overall hypotheses in the parent grant, and publication of this work will also help the students to also improve their writing skills. As a Hispanic female, I am particularly dedicated to the success of a diverse range of students and I look forward to continuing to mentor students through this valuable NIDA program.

Texas

Investigator: Carlos Paladini, Ph.D.
Institution: University of Texas San Antonio
San Antonio, TX
Project Title: Mechanisms of Cocaine Hypersensitivity following Chronic DBH Inhibition
Research: Basic Research
Research Area: Dopamine, Addiction, Drug Abuse, Circuitry of Reward Behavior, Brain, Electrophysiology, and In Vivo
Earliest Start Date: 6/1/2017
Housing: Subsidized

Student Qualifications: No prior experience is required. The lab does use animals in experiments, so the student should be comfortable seeing animals euthanized and handling tissue.

Project Description: The neurotransmitter dopamine directs responses to natural rewards and pathological responses to drugs of abuse. The goal of this research is to determine how dopamine signaling and drug addiction is modulated by another related neurotransmitter, norepinephrine. This work may define new targets for the treatment of addiction.

Norepinephrine (NE) provides excitatory drive onto midbrain dopamine (DA) neurons and modulates responses to dopaminergic drugs, including psychostimulants. Chronic loss of noradrenergic tone impairs DA neuron firing and DA release, leading to compensatory alterations in postsynaptic DA receptor signaling and a paradoxical hypersensitivity to dopaminergic drugs. The goal of this proposal is to identify the molecular and cellular mechanisms underlying the behavioral hypersensitivity to cocaine following chronic inhibition of the NE biosynthetic enzyme, dopamine β-hydroxylase (DBH). Based on our preliminary data, we propose that a chronic loss of NE produces a decrease in β-arrestin2 (βArr2) in the nucleus accumbens (NAc), which promotes a reversal in the valence of D2 responses from inhibitory to excitatory, potentially via a Gαi-to-Gαs switch in D2 receptor coupling. Completion of these Specific Aims will contribute to our understanding of noradrenergic modulation of mesolimbic DA transmission, the plasticity of DA receptor signaling pathways, and NE-DA interactions underlying aversive responses to drugs of abuse.

Texas

Investigator:	Jia Zhou, Ph.D.
Institution:	University of Texas Medical Branch Galveston, TX
Project Title:	5-HT2CR Allosterc Modulators as Novel Pharmacotherapy in Cocaine Use Disorder
Research:	Other Research
Research Area:	Cocaine Addiction, Drug Abuse, Chemical Biology, Medicinal Chemistry, Small Molecules, Haptens, 5-HT2C Receptor, GPCR, Allosteric Modulators, Drug Discovery, Translational Research, Chemistry
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualifications: Previous research experience is not required. College students that have taken chemistry courses, have a safety sense of handling chemical synthesis, and are interested in chemical biology, medicinal chemistry, organic synthesis, and small molecule drug discovery are encouraged to apply.

Project Description: Our research interests are broadly based on the interface of synthetic organic chemistry and medicinal chemistry, and in particular on the drug discovery of bioactive molecules to probe biological systems or act as potential therapeutic agents in neuroscience and drug addiction. With this general idea in mind, and in active collaboration with other biologists and pharmacologists, we would like to establish a strong and creative research program that applies state-of-the-art chemical approaches to biological problems impacting diagnosis, prevention and treatment of human diseases.

In the current project, our objective is to optimize 5-HT2CR PAMs with a favorable drug metabolism and pharmacokinetics (DMPK) profile, and analyze select molecules in proof-of-concept behavioral models to support therapeutic potential for cocaine use disorder. To accomplish our objective, we will: (1) design, synthesize and optimize 5-HT2CR PAMs; (2) define selectivity and specificity and DMPK profiles of 5-HT2CR PAMs in vitro; and (3) determine DMPK in vivo and efficacy of optimized 5-HT2CR PAMs in rodent models of impulsivity and cue reactivity. This innovative, potentially high impact small molecule development project will elucidate important new information about the chemical neurobiology of 5-HT2CR allosteric modulation, and drive new concepts and directions in cocaine use disorder and anti-relapse medications.

Washington

Investigator:	Ann Duerr, M.D., Ph.D., M.P.H.
Institution:	Fred Hutchinson Cancer Research Center Seattle WA
Project Title:	Modulating the Impact of Critical Events in Early HIV Infection: Effect of ART Initiation and Alcohol Use
Research:	Epidemiology Research
Research Area:	Alcohol Use Disorder, HIV transmission, Men who have Sex with Men, Peru
Earliest Start Date:	6/1/2017
Housing:	Subsidized

Student Qualifications: Undergraduate students interested in medicine, science or public health: the student will be mentored in epidemiologic methodology and analyses. The project includes biology and explores potential biases in self-reported data on sensitive topics. Prior laboratory experience and experience in molecular biology is not required. No contact with biologic samples, study participants or laboratory animals.

Project Description: Alcohol use disorders (AUD) are associated with HIV risk behaviors (i.e. increased number of sexual partners and unprotected anal intercourse) and sub-optimal HIV treatment such as delays in linkage to HIV care, decreased retention in care, and decreased adherence to anti-retroviral therapy (ART). The AHORA-L study was a trial conducted in Lima, Peru of Naltrexone (NTX), a drug used to treat AUD, among HIV-infected men who have sex with men (HIV+ MSM) with AUD (N=159). The goal of the AHORA-L study was to test whether use of oral NTX to treat AUD improved retention in HIV care, adherence to ART, and suppression of HIV viral load.

HIV+ MSM were randomly assigned to NTX or a placebo that looked identical; neither participants nor staff knew which participants got which. The study used several measures to follow adherence to NTX/placebo and ART; each collected slightly different information and comparing them can help explain why NTX did not improve HIV outcomes in this study. The NIDA Summer Research student will: 1) Compare adherence using 3 different measures: self-report, an electronic medication monitoring system, and pharmacy pill counts, and measure the correlation between these measurements. 2) Compare alcohol consumption using 2 different measurement types: self-reported alcohol consumption and alcohol metabolites in hair and blood, and measure the correlation between self-report and biologic measures (alcohol metabolites).

Washington

Investigator:	Jashvant Unadkat, Ph.D.
Institution:	University of Washington Seattle, WA
Project Title:	Mechanisms of Drug Disposition during Pregnancy
Research:	Basic Research
Research Area:	Pharmacokinetics of Drugs, Pregnancy, Maternal-Fetal Exposure to Drugs, Mechanisms of Changes in Pharmacokinetics, PBPK Modeling and Simulations
Earliest Start Date:	6/1/2017
Housing:	Campus

Student Qualification: Students who will best fit as interns will be those who have some laboratory research experience and do not have objections to working with animals or animal/human tissues. Students should be enrolled in four year college and should be sophomores, juniors or seniors majoring in a biological science or engineering.

Project Description: This program project will study the mechanisms of disposition of drugs of abuse and those used to treat abuse during pregnancy. Human, animal and in vitro studies in cells will address the aims stated in each of the three projects. A physiological model will also be created to predict the disposition of these drugs in the human maternal-fetal unit. A student who is interested in working on this project will be involved in research conducted by any one of the three projects of this grant. However, only one project is listed.

Project 1: This project will systematically investigate hepatic metabolism (e.g. buprenorphine) and placental transport (e.g. norbuprenorphine, methadone, and bupropion) of drugs that are commonly used to treat pregnant women who abuse drugs. Despite their clinical importance in the treatment of drug abuse of pregnant women, very little is known about the metabolism and placental transport of these drugs during pregnancy, and thus clinical data about changes in the pharmacokinetics (PK) or fetal exposure of these drugs are scare. This is of concern as we have previously shown that activity and/or expression of drug metabolizing enzymes (e.g. hepatic CYP3A4) and transporters (e.g. placental P-gp and BCRP) are significantly altered during pregnancy. Such changes can lead to administration of sub- or supra-therapeutic doses of drugs to pregnant women, resulting in either lack of efficacy or enhanced toxicity of drugs to the mother and/or her fetus

Wisconsin

Investigator:	Paul Gasser, Ph.D.
Institution:	Marquette University Milwaukee, WI
Project Title:	Glucocorticoid Regulation of Dopamine Clearance, Cocaine Seeking, and Reward
Research:	Basic Research
Research Area:	Addiction, Motivation, Reward, Cocaine, Stress, Corticosterone, Rat, Relapse, Dopamine, Nucleus Accumbens, Preclinical
Earliest Start Date:	5/25/2017
Housing:	Campus

Student Qualification: Qualified students will be college students entering the sophomore, junior or senior year who have a strong interest in neuroscience and who are pursuing a degree in a biology-, neuroscience-, or psychology related field. Prior research experience is preferred but not required. Students must be willing to work with animals (rats and mice).

Project Description: The full-time 8-week internship opportunity will consist of mentored addiction neuroscience research in the lab of Dr. Paul Gasser at Marquette University in Milwaukee, WI and participation in the Marquette University College of Health Sciences Biomedical Sciences Summer Research Program (SRP). The student's project will involve the use of preclinical rat models to investigate the neurobiological processes through which stressful stimuli can modulate motivation and reward processes and promote relapse to drug use. Specifically, mechanisms by which the stress hormone corticosterone modulates monoaminergic neurotransmission will be examined. Through participation in the SRP, the student will complement his/her undergraduate research projects with involvement in a range of scientific, educational, and social activities, including a weekly student-oriented faculty mentor seminar series, weekly data discussions, and a 2-day lecture and brain dissection mini-course. At the end of the 8-wk period, the student will be expected present his/her work, in poster format, to faculty, staff and other students at an undergraduate student research-focused event.

Wisconsin

Investigator:	John Mantsch, Ph.D.
Institution:	Marquette University Milwaukee, WI
Project Title:	Glucocorticoid-Regulated Endocannabinoids and Stress-Potentiated Cocaine Seeking
Research:	Basic Research
Research Area:	Addiction, Cocaine, Stress, Corticosterone, Rat, Relapse, Endocannabinoid, Prefrontal Cortex, Preclinical
Earliest Start Date:	5/29/2017
Housing:	Campus

Student Qualification: Qualified students will be rising college sophomores, juniors or seniors with a strong interest in neuroscience and who are pursuing a degree in a biology-, neuroscience-, or psychology related field. Prior research experience is preferred but not required. Students must be willing to work with animals (rats and mice).

Project Description: The full-time 8-week internship opportunity will consist of mentored addiction neuroscience research in the lab of Dr. John Mantsch at Marquette University in Milwaukee, WI and participation in the Marquette College of Health Sciences Biomedical Sciences Summer Research Program (SRP). The mentored project will involve the use of preclinical rat and mouse models to investigate the neurobiological processes through which stressful stimuli can promote relapse to drug use. More specifically, mechanisms in the prelimbic prefrontal cortex the control drug use during periods of stress will be examined. Through participation in the SRP, the student will complement his/her undergraduate research projects with involvement in a range of scientific, educational, and social activities, including a weekly student-oriented faculty mentor seminar series, weekly data discussions, and a 2-day lecture and brain dissection mini-course. At the end of the 10-wk period, the student will be expected present his/her work, in poster format, to faculty, staff and other students at an undergraduate student research-focused event.

Wisconsin

Investigator: Christopher M. Olsen, Ph.D.
Institution: Medical College of Wisconsin
Milwaukee, WI
Project Title: Environmental modulation of cocaine seeking
Research: Basic Research
Research Area: Addiction, Cocaine, and Ensemble
Earliest Start Date: 5/25/2017
Housing: Campus

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, and 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 re-activated 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.