National Institute on Drug Abuse

2013 Summer Research with NIDA for Underrepresented Students

"Providing students with valuable drug abuse research experiences"

NIDA NATIONAL INSTITUTE ON DRUG ABUSE

NATIONAL INSTITUTES OF HEALTH

DEPARTMENT OF HEALTH & HUMAN SERVICES USA

PROGRAM

The *Summer Research with the NIDA (National Institute on Drug Abuse) for Underrepresented Students* program encourages students from groups underrepresented in the sciences to pursue careers in biomedical and behavioral research. Through this program, high school and undergraduate students from underrepresented groups are introduced to the field of substance abuse and addiction research by participating in research internships with some of NIDA's most distinguished scientists at universities across the United States. Students work with leading scientists for 8-10 weeks during the summer. The internship may include laboratory experiments, data collection, data analysis, formal courses, participation in meetings, interviewing, 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 *Summer Research with NIDA* program is in its seventeenth year. Since the program's inception in 1997, more than 750 students have gained experience in substance abuse and addiction research.

ELIGIBILITY

This program supports summer research internships for high school and undergraduate students who are from racial/ethnic groups that are nationally underrepresented in the biomedical, behavioral, and clinical sciences (African Americans, Hispanics, American Indians/Alaska Natives, Pacific Islanders), although all racial/ethnic groups can apply.

Applicants must be at least 15 years of age (unless a specific project indicates otherwise) and **must be U.S. citizens or permanent residents (no exceptions). Applicants under the age of 18 can only be placed at research sites within daily-commuting distance from their home.**

Individuals who have already participated in the *Summer Research with NIDA* program for two summers are not eligible to apply.

SCOPE OF SUPPORT

High school students will receive stipend amounts based on the rate agreed upon with each research site, not to exceed $8.00 per hour for a maximum stipend of $3,200 for 10 weeks. Graduating high school seniors will be paid at the high school level. Please note that your research site will set up your pay schedule and method.

Undergraduate students will receive stipend amounts based on the rate agreed upon with each research site, not to exceed $10.00 per hour for a maximum stipend of $4,000 for 10 weeks. Please note that your research site will set up your pay schedule and method.

Distant Sites: Only students who are 18 years old and older may be placed at sites greater than daily-commuting distance from their homes. In cases where students are placed at distant sites, investigators can request up to $2,500 for travel, costs associated with lodging and per diem expenses for these students. In most cases, investigators/research sites will locate/secure housing for students. If lodging is available at the research site, it is indicated in the site description. On-campus housing is not available for students under 18 years old or for undergraduate students who live within daily commuting distance of their assigned internship site.

APPLICATION PROCEDURES

Please review the research sites listed in this brochure and read the **complete project descriptions at www.drugabuse.gov/pdf/sposummer.pdf.** After reviewing the descriptions, indicate on the application form the three sites that best match your research interests and experience. **A complete application packet including: an *Application Form*, an official transcript, two letters of recommendation, and a *Statement of Research Career Interest* is due to NIDA by Friday, February 15, 2013.**
Please refer to the *Application Form* for mailing information and other details.

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2013 Summer Research with NIDA for Underrepresented Students

Application Form

The selection of internship recipients will be based on applicant qualifications, career interests, and letters of recommendation.

Personal Information

Last Name:	First Name:	Date of Birth: mm/dd/yy
Current Address: Street	City	State Zip
Current Phone: ( )		
Email:	Alternate Email:	
Permanent Address: Street	City	State Zip
Permanent Phone: ( )		
Ethnicity:	US Citizen or Permanent Resident? ☐ Yes ☐ No	Sex: ☐ Male ☐ Female

If under 18 years old, name of Parent or Guardian:
Phone: ( ) Email:

Academic Information

School Presently Attending:

☐ High School ☐ College/University		☐ Fr. ☐ So. ☐ Jr. ☐ Sr.
Major:		Minor:
GPA for Major:		Cumulative GPA:

Site Selections

For full research project descriptions, please visit:

www.drugabuse.gov/pdf/sposummer.pdf

Provide your top three (3) research site choices, by number, in order of preference.
Enter the site number only; do not enter the site name or the investigator's name.

[1]_____ [2]_____ [3]_____

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Qualifications

Indicate your qualifications for the research projects you selected. Submitting a resume does not substitute for providing a response for this item.

This internship requires a full-time (i.e., 40 hours per week) commitment from selected interns for 8 to 10 weeks. Therefore, before you apply, make sure you will be available for the internship on the indicated start date and for the duration of the internship. Your schedule should be free of commitments (e.g., vacations, summer classes, jobs, etc.) that conflict with your participation. Prolonged absences from the internship are not permitted.

Do you have any schedule conflicts with the time periods of your selected sites? ☐ Yes ☐ No

*If yes, please explain:

☐ I have read the research project descriptions online and I meet the qualifications outlined in them.

Signature: _____

Your application must contain the following information to be considered complete:

1. Transcript. Submit an official transcript from your school.

2. Statement of Research Career Interest. Submit a statement that describes your interest in substance abuse/addiction research, career goals, and educational plans beyond your high school or undergraduate studies. **Do not exceed two pages double-spaced.**

3. Two Letters of Recommendation. Letters of recommendation from an advisor, teacher(s) or professor(s) must be submitted in sealed envelopes and included with this *Application Form*.

For more information, contact Dr. Albert Avila at aavila@nida.nih.gov or (301)496-8804.
A complete application packet including: an *Application Form*, official transcript, two letters of recommendation, and a *Statement of Research Career Interest*, is due to NIDA by **Friday, February 15, 2013.**

If necessary, your school can send your transcript separately, but all other items must be sent together. To ensure NIDA's timely receipt of your application package, you should mail your package **at least 4 days in advance of the due date to:**

Regular Mail:

Charlotte Annan
Special Populations Office
National Institute on Drug Abuse
6001 Executive Boulevard, Room 3105, MSC 9567
Bethesda, MD 20892-9567

FedEx:

Charlotte Annan
Special Populations Office
National Institute on Drug Abuse
6001 Executive Boulevard, Room 3105
Rockville, MD 20852
(301) 443-0441

NIDA NATIONAL INSTITUTE ON DRUG ABUSE

Application Checklist

Complete the checklist below before submitting your application packet by:

Friday, February 15, 2013.

Please note this is not a postmark deadline; your complete application must arrive at NIDA by this date. Incomplete applications will not be considered.

	Yes	No	Comments
I have visited **www.drugabuse.gov/pdf/sposummer.pdf** to review the research site(s) I am interested in.			
I have completed every section of the program *Application Form*.			
My *Statement of Research Career Interest* is included with my application.			
I have signed the *Application Form.*			
My official transcript is included with my application. **OR** I have ordered my official transcript and it will be sent directly to NIDA by my school.			
My letters of recommendation are included with my application.			
*My 1st research placement site selection meets my housing needs.			*If No, please select a site that meets your housing needs.*
*My 2nd research placement site selection meets my housing needs.			*If No, please select a site that meets your housing needs.*
*My 3rd research placement site selection meets my housing needs.			*If No, please select a site that meets your housing needs.*

***NOTE: If you require housing, please be sure to select sites that indicate housing is available. On-campus housing is not available for students under 18 years old or for undergraduate students who live within daily commuting distance of their assigned internship site.**

2013 Summer Research with NIDA

Site List by State




For full research project descriptions, please visit:

www.drugabuse.gov/pdf/sposummer.pdf

2013 Summer Research with NIDA Site List by State

State	Site Name	Project Title	Site Number	Housing Available	High School Students	Undergraduate Students
California	Azusa Pacific University Azusa, CA	Mobile Continuing Care Project for Youth	1	●	●	●
	University of California, Irvine Irvine, CA	Smoking, Neurocircuitry, and Genes in Adult ADHD	2			●
	University of California, Irvine Irvine, CA	Twitter-Enabled Mobile Messaging for Smoking Relapse Prevention	3			●
	The Scripps Research Institute La Jolla, CA	Neuronal Substrates of Cocaine Reward	4			●
	The Scripps Research Institute La Jolla, CA	Role of Hippocampal Neurogenesis of Reducing Relapse to Methamphetamine Seeking	5		●	●
	University of California, San Diego La Jolla, CA	Brain Basis of Negative Reinforcement in Stimulant Dependent Individuals	6			●
	University of California, Los Angeles, School of Nursing Los Angeles, CA	Health Promotion Coaching/ Vaccine for Homeless Parolees	7	●		●
	University of California, Los Angeles Los Angeles, CA	Pharmacogenetics of Naltrexone for Methamphetamine Use Disorders	8	●		●
	University of California, San Diego San Diego, CA	Targeting Prospective Memory to Improve HIV Adherence in Persons at Risk for Substance Abuse	9			●
	University of California, San Francisco San Francisco, CA	RCT of an Integrative Intervention for Non-Treatment Seeking Meth Users	10	●		●
	University of California, Santa Barbara Santa Barbara, CA	GeneX Environment Interactions and Cocaine Seeking	11	●	●	●
Connecticut	Yale Child Study Center New Haven, CT	Impact of Maternal Substance Abuse on Neural Circuitry of Parental Care	12	●		●
District of Columbia	American University Washington, DC	Drug Policy, Incarceration, Community Re-entry, and Race Disparities in HIV	13	●		●
	Children's National Medical Center Washington, DC	Development of the Basal Telencephalic Limbic System	14		●	●
Florida	University of Florida Gainesville, FL	Transformative Approach to Reduce Research Disparities toward Drug Users	15	●	●	●
	University of Florida Gainesville, FL	Amphetamine and Methamphetamine Differentially Regulate Dopamine Transporter	16			●

2013 Summer Research with NIDA Site List by State

State	Site Name	Project Title	Site Number	Housing Available	High School Students	Undergraduate Students
	University of Florida Gainesville, FL	Four-Arm RCT of Brief MI vs. Couples-Based HIV/STI Prevention in South Africa	17	●		●
	Scripps Florida Jupiter, FL	The Role of 5-HT1A Receptors in Cocaine Addiction and Co-Morbid Depression	18	●		●
	University of Miami Miller School of Medicine Miami, FL	Small Molecule Identification for the Nociceptin Receptor to Treat Cocaine Abuse	19			●
	Florida State University Tallahassee, FL	Ontogeny of Drug Exposure and Mood Dysregulation	20			●
Hawaii	Hawaii Pacific University Kaneohe, HI	The Development of a Video-Enhanced Drug Prevention Program for Rural Native Hawaiian Youth	21			●
Illinois	University of Illinois, Urbana-Champaign – Champaign, IL	Mechanisms of Amphetamine-Induced Plasticity in Adolescents compared to Adults	22	●		●
	Ann & Robert H. Lurie Children's Hospital of Chicago Chicago, IL	Syndemic Development and HIV Risk among Vulnerable Young Men	23			●
Indiana	Indiana University School of Medicine Indianapolis, IN	Chemokine-Mediated Modulation of Opioid-Induced Pain	24		●	●
Kansas	University of Kansas Medical Center Kansas City, KS	HIV/Cocaine Mediated Human Pulmonary Vascular Remodeling: Role of PMPR Signaling	25			●
	University of Kansas Lawrence, KS	Chemistry of Drug Abuse	26	●	●	●
Kentucky	University of Kentucky Lexington, KY	Development of a Cocaine-Metabolizing Enzyme for Drug Overdose Treatment	27	●	●	●
Louisiana	Louisiana State University Health Science Center New Orleans, LA	Cannabinoid Epigenomic and miRNA Mechanisms impact HIV/SIV Disease Progression	28			●
Maryland	Johns Hopkins Bloomberg School of Public Health Baltimore, MD	Exploring Neuronal & Endocrine Determinants of Risk Behavior Decision-Making: the HONESTY Project (HOrmonal & NEurological Survey of Texting Youth)	29		●	●
	Johns Hopkins University Baltimore, MD	The Role of Narp in Drug Abuse	30	●	●	●
	Johns Hopkins University, Behavioral Pharmacology Research Unit - Baltimore, MD	Zonisamide Augmentation of Varencicline for Smoking Cessation	31			●

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State	Site Name	Project Title	Site Number	Housing Available	High School Students	Undergraduate Students
	Probation Office (affiliated with Univ. of North Texas and George Mason University) Baltimore, MD	In Person vs. Computer Interventions to Increase Probation Compliance	32			●
	University of Maryland College Park College Park, MD	Studying Adolescent Risk Taking in the Laboratory	33		●	●
Massachusetts	Tufts University Medford, MA	Neuropeptides, Social Stress, and Drugs of Abuse	34		●	●
	Boston University Boston, MA	Cognitive Aspects of Addiction Related Behavior	35	●		●
	Boston Medical Center Boston, MA	Implementing Opioid Risk Reduction Strategies into Primary Care Practice	36			●
	McLean Hospital, Harvard Medical School Belmont, MA	Nabilone for Cannabis Dependence: Imaging and Neuropsychological Performance	37			●
	McLean Hospital Belmont, MA	The Role of GABA-A Receptor Subtypes in Benzodiazepine Abuse Liability	38		●	●
	Harvard Medical School, Massachusetts General Hospital Boston, MA	Development of Medical Imaging Technology to Monitor Epigenetics	39			●
Michigan	University of Michigan Ann Arbor, MI	Intensive Measurement of Drug Use during the Transition to Adulthood	40	●		●
	University of Michigan Ann Arbor, MI	Variation in Motivational Properties of Reward Cues: Implications for Addiction	41			●
	University of Michigan Ann Arbor, MI	Dopamine D2/D3 Receptors in Compulsive Disorders	42	●		●
	Wayne State University School of Medicine Detroit, MI	MR Spectroscopy and Behavior after Clinically Relevant Administration of MDMA	43			●
Minnesota	University of Minnesota Minneapolis, MN	An Integrated Work Safety – Smoking Cessation Program for Small Worksites	44	●		●
	University of Minnesota St. Paul, MN	Effectiveness of a Web-Enhanced Parenting Program for Military Families	45	●		●
Missouri	University of Missouri – Kansas City Kansas City, MO	Targeting Acid-Sensing Ion Channel 1a to Prevent Drug Addiction	46		●	●
	Washington University St. Louis, MO	Research Education Program in Aspects of Statistical Genetics and Addiction	47	●		●

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Nevada	University of Nevada Las Vegas Las Vegas, NV	Evaluation of Family Behavior Therapy in Collegiate Athletes	48	●		●
New Jersey	Institute of Neuroimmune Pharmacology South Orange, NJ	CNS Inflammation and Substance Abuse	49	●	●	●
New York	State University of New York – Buffalo Buffalo, NY	Buprenorphine and Methadone for Chronic Pain	50		●	●
	University at Buffalo, SUNY Buffalo, NY	Modulation of Dopaminergic VTA Neurons by Urotensin II	51	●		●
	Cornell University Ithaca, NY	In Vivo Detection and Imaging of Epigenetic Histone Modifications and Modifying Enzymes using Multivalent RNA Aptamers	52	●		●
	Columbia University, Mailman School of Public Health New York, NY	Post Exposure Prophylaxis among IDU Syringe Customers Pharmacy Pilot Intervention	53			●
	Columbia University, NYSPI New York, NY	Imaging the Neurochemistry of Negative Reinforcement in Cocaine Abuse	54			●
	Columbia University Medical Center New York, NY	Mechanisms Underlying Opiate-Induced Neuroplasticity at the Synapse	55			●
	Columbia University New York, NY	Preventing Drug Abuse among Hispanic Adolescents	56			●
	Mount Sinai School of Medicine New York, NY	Predicting Adverse Cardiovascular Events in Drug Overdose Emergencies	57			●
	New York University School of Medicine New York, NY	Drug Use and Problem Behaviors in Minority Youth	58			●
	New York University New York, NY	Syndemic Production among Emergent Adult Men	59	●	●	●
	Weill Cornell Medical College New York, NY	The Role of L-type Calcium Channels in Cocaine-Induced AMPA Receptor Plasticity	60	●		●
	University of Rochester Rochester, NY	Studies on the Mechanism(s) by which HIV-1 Infection and Methamphetamine Impair Cerebral Blood Flow	61	●		●
	University of Rochester Rochester, NY	Dopamine and the Role of Anterior Cingulate Cortex	62	●		●
	State University of New York at Stony Brook Upton, NY	Optical Neuroimaging to Study the Functional Change of Brain In Vivo	63			●

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North Carolina	University of North Carolina at Chapel Hill Chapel Hill, NC	HIV Latency, Epigenetics, and Therapeutics	64			●
	University of North Carolina at Chapel Hill Chapel Hill, NC	Whole Genome Sequence Analysis to Identify Sequence Variation that Predispose to Addiction	65	●		●
	Duke University Durham, NC	Neurobiology and fMRI Research in HIV Infection and Cocaine Dependence	66			●
	Duke University Durham, NC	Center for the Neuroeconomics of Addiction	67	●		●
	East Carolina University Greenville, NC	Behavior Impact of Drugs of Abuse and its Regulatory Mechanism by Small RNAs	68	●	●	●
Oregon	Oregon Research Institute Eugene, OR	Child and Adolescent Predictors of Substance Abuse in Emerging Adulthood	69			●
	Oregon Social Learning Center Eugene, OR	Long-Term Effects of a School Readiness Intervention for Foster Children	70			●
Pennsylvania	Temple University Philadelphia, PA	Drug Abuse, Innate Immunity and HIV/HCV	71			●
	University of Pennsylvania Philadelphia, PA	Treatment Study Using Depot Naltrexone	72	●	●	●
	Duquesne University Pittsburgh, PA	Computational and Experimental Study of Dopamine and Serotonin Transporters	73	●	●	●
	University of Pittsburgh Pittsburgh, PA	Cocaine-Induced Adaptation in NMDA Receptors	74			●
Puerto Rico	Institute of Neurobiology, University of Puerto Rico San Juan, PR	Regulation of GPCR Recycling at the Plasma Membrane	75		●	●
Rhode Island	Rhode Island Hospital, Brown University Providence, RI	Brief Interventions to Decrease Drug Misuse among Emergency Department Patients	76			●
South Carolina	Medical University of South Carolina Charleston, SC	Alterations in Pre- and Infralimbic Cortex in Cocaine Self-Administration Animals	77		●	●
	Medical University of South Carolina Charleston, SC	Corticostriatal Neuroplasticity and Cognition in Methamphetamine Addiction	78			●
Tennessee	Meharry Medical College Nashville, TN	Cocaine Downregulates Anti-HIV MicroRNAs in CD4+ T Cells	79			●

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	Peabody College, Vanderbilt University Nashville, TN	Effectiveness of Recovery High Schools as Continuing Care	80	●		●
Texas	University of Texas Southwestern Medical Center Dallas, TX	Attenuation of Corticosteroid-Induced Hippocampal Changes	81		●	●
	The University of Texas at El Paso El Paso, TX	Nico-Teen: Mechanisms of Nicotine Reward and Withdrawal During Adolescence	82	●		●
	University of Texas Medical Branch Galveston, TX	Molecular and Behavioral Neuroscience of Addiction	83	●		●
	University of Texas Health Science Center San Antonio, TX	Relating Brain Maturation to Impulse Control and Substance Use Development	84			●
	University of Texas Health Science Center San Antonio, TX	Consequences of Adolescent Substance Use on the Development of Impulse Control	85			●
Utah	University of Utah Salt Lake City, UT	Hippocampus and Relapse Associated with Drug Addiction	86	●		●
Virginia	Old Dominion University Norfolk, VA	Secondary Effects of Parent for Drug Abuse on Children	87	●		●
	Virginia Commonwealth University Richmond, VA	Synthetic Cathinones: A New Class of Illicit Drugs (Bath Salts) affecting Dopamine and Serotonin Transporters	88		●	●
Washington	University of Washington Seattle, WA	Gene-Environment Interplay in the Development of Drug Abuse, HIV Sexual Risk Behavior and Related Outcomes	89	●		●

California

1

Investigator: Rachel Gonzales, Ph.D., M.P.H.
Institution: Azusa Pacific University, Azusa, CA
Research Area: Continuing Care for Youth Substance Use Recovery; Mobile Technology Approaches
Project Title: Mobile Continuing Care Project for Youth
Start Date, Program Length: 06/24/2013 – 8 weeks
Housing Available: Yes
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Social Science majors with an interest in prevention, recovery, youth, and clinical trials.

Project Description

Students will receive research experience and assist with work related to a NIDA-funded grant aimed to identify the utility and effectiveness of using mobile technology as a recovery support/continuing care approach with youth. The grant is currently being implemented in the Los Angeles County community. Training will be provided in the ethical conduct of research and data safety/ monitoring protocols. Responsibilities include assisting the team with data collection follow-up, recruitment and discharge, data entry and cleaning procedures, and other grant-related office tasks, including conducting literature reviews and grant management.

2

Investigator: Jean Gehricke, Ph.D.
Institution: University of California - Irvine, Irvine, CA
Research Area: Brain Imaging, Smoking, and ADHD
Project Title: Smoking, Neurocircuitry, and Genes in Adult ADHD
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students interested in research careers in medicine, clinical psychology, and drug abuse treatment and prevention are preferred.

Project Description

This research group examines why people use drugs and what can be done to help them. Ongoing studies focus on why individuals with ADHD have higher smoking rates and lower cessation rates compared to the general population. Students will learn about the effects of nicotine, cigarette smoke, and marijuana on human behavior and brain circuitry, as well as the genetic and environmental risk factors that lead to drug abuse and addiction.

3

Investigator: Connie Pechmann, Ph.D.
Institution: University of California - Irvine, Irvine, CA
Research Area: Using social media to research participants quit smoking.
Project Title: Twitter-Enabled Mobile Messaging for Smoking Relapse Prevention
Start Date, Program Length: 06/10/2013 – 8 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students must have great communication skills with email and phone, have a positive and friendly attitude, deal with

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multiple participants around the country, good time management skills, and the ability to deal with several different timed tasks each day. Experience with Microsoft Excel preferred.

Project Description

In this study, participants are placed into small support groups that communicate via mobile texting and Twitter to help each other quit smoking. A list of students' tasks can vary, ranging from distributing surveys and contacting participants to collecting data on participants' progress. This is behavioral work involving the social sciences, although other than contacting participants for surveys, there will be no communication between the staff and participants.

4

Investigator: George F. Koob, Ph.D.
Institution: The Scripps Research Institute, La Jolla, CA
Research Area: Neurobiology of Addictions
Project Title: Neuronal Substrates of Cocaine Reward
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students with a major in Psychology/Cognition/Biology/Neuroscience are preferred, but high school students with an interest in animal behavior and/or brain anatomy are encouraged.

Project Description

This mini-program intends to give a comprehensive view of cocaine addiction research by giving the opportunity to work both on behavioral and molecular studies investigating the neuropsychological and neurobiological mechanisms underlying relapse to cocaine in an animal model. Experience will include behavioral testing in rats.

5

Investigator: Chitra D. Mandyam, Ph.D.
Institution: The Scripps Research Institute, La Jolla, CA
Research Area: Adult Neural Stem Cells, Brain Repair and Recovery using Clinically Relevant Models of Drug Addiction and Drug Dependence
Project Title: Role of Hippocampal Neurogenesis in Reducing Relapse to Methamphetamine Seeking
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Students majoring in Biochemistry or Neuroscience preferred. Students should have an interest in animal behavior dealing with methamphetamine self-administration, biochemical experiments including western blotting and immunohistochemistry. Students with experience in animal handling, pipetting, tissue handling, gel preparation are desired.

Project 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. The student intern will

assist the postdoctoral fellow to determine if stimulating neurogenesis during withdrawal in Meth SA animals will reduce or prevent relapse, and use this model as a putative model of regenerative therapy for addiction-induced brain dysfunction. Specifically, the student intern will determine whether animals that are treated with a novel neurogenic small molecule isoxazole-9 during withdrawal from Meth SA will exhibit reduced reinstatement to Meth seeking compared to vehicle treated animals, and whether these effects are due to specific effects of isoxazole-9 on neurogenic niche in the hippocampus. The overall goal of the summer internship will be to assess if isoxazole-9 alters the process of spontaneous neurogenesis during withdrawal and if stimulation of neurogenesis during withdrawal contributes to repair and recovery.

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Investigator: Martin P. Paulus, M.D.
Institution: University of California – San Diego, La Jolla, CA
Research Area: Drug-Taking Behavior in Humans, Behavioral Paradigms, Functional Neuroimaging (fMRI).
Project Title: Brain Basis of Negative Reinforcement in Stimulant Dependent Individuals
Start Date, Program Length: 06/01/2013 – 9 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students must be able to work with human subjects, be respectful and keep information confidential.

Project Description
The students will be involved in conducting functional neuroimaging studies of individuals with stimulant dependence. These studies will involve (a) behavioral and clinical assessment; (b) experimental testing outside and inside the fMRI scanner; and (c) collection of functional magnetic resonance imaging (fMRI) data. These data will be analyzed using AFNI and R, two software packages that are implemented on Linux computers. The students will learn about the basics of fMRI analyses and the statistical tools that are used to compare groups of subjects. A strong interest in quantitative analyses and some familiarity with Linux computers is helpful.

7

Investigator: Adeline Nyamathi, A.N.P., Ph.D., F.A.A.N.
Institution: University of California Los Angeles, School of Nursing, Los Angeles, CA
Research Area: HIV/Hepatitis Prevention
Project Title: Health Promotion Coaching/Vaccine for Homeless Parolees
Start Date, Program Length: 06/10/2013 – 8 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students with a declared major in Nursing and Social Science are preferred. Students interested in vulnerable populations who are currently using or at risk for drug addiction, as well as HIV/AIDS or other closely related infections.

Project Description
The purpose of the study is to conduct a three-group study that randomly assigns 700 parolees scheduled to enter a community residential drug treatment program to enter one of three groups: 1) a PCPC (Parolee Comprehensive Care + Phone Coaching Program), which includes nurse case management and specialized hepatitis education sessions and referrals, the Hepatitis A/B virus (HAV/HBV) vaccination series (to all eligible) and coach-facilitated mentoring (mostly by cell-phone); 2) a Parolee Brief Hepatitis Education + HAV/HBV vaccination + Phone Coaching (PBCP) Program, which

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includes brief hepatitis/HIV education, the HAV/HBV vaccination and coach-facilitated mentoring; or 3) a Usual Care (UC) control program, which includes brief general health information and the HAV/HBV vaccine. For the randomized parolees, the primary aims will be to examine: reincarceration (any vs. none), number of days to first reincarceration, completion of HAV/HBV vaccination (among those HBV-negative), and completion of six months of the Amity community-based residential drug treatment program. Secondary aims are to examine program-related differences in potential mediating variables, such as reduction in drug and alcohol use and sexual risk behaviors, visit to healthcare or social service providers, and improved knowledge of Hepatitis/HIV and communication skills, between 6 and 12 months or over the one-year study period, depending on the measure, and to assess the relative costs of the three programs. This study will advance our knowledge about drug treatment and HAV/HBV vaccine completion and recidivism among homeless parolees. Findings from this study can inform targeted interventions and lay the groundwork for health policy decisions that may impact hepatitis and HIV risk reduction and recidivism in this group who are a reservoir for these viruses in the general population, and are returning to prison at unprecedented numbers.

8

Investigator:	Lara Ray, Ph.D.
Institution:	University of California Los Angeles, Los Angeles, CA
Research Area:	Clinical Neuroscience of Addiction. This involves studies of clinical populations (e.g., alcohol dependent, methamphetamine dependent) that employ pharmacology, experimental psychopathology, neuroimaging, and genetics.
Project Title:	Pharmacogenetics of Naltrexone for Methamphetamine Use Disorders
Start Date, Program Length:	06/24/2013 – 10 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Third/fourth year undergraduates majoring in Psychology, Psychobiology, or Neuroscience are preferred. Students interested in a Ph.D. in Clinical Psychology or Human Neuroscience are desired.

Project Description

Students will be involved in all phases of a study of naltrexone for methamphetamine dependence. Students will interact with research participants over the phone (for screening) and in person for behavioral and clinical assessments. Students will also assist with data collection during the inpatient component of the study, which comprises daily assessments, a neurocognitive battery, and a controlled infusion of methamphetamine conducted by the study physician. Students will also participate in a neuroimaging session in which we measure participants' craving for methamphetamine during the presentation of both drug cues and neutral cues. Under the direct supervision of the Principal Investigator (Dr. Ray) and a graduate student mentor, students will develop and test an independent research question, based on the available data from the study. Students will submit their work for poster presentation at UCLA Summer Research Conference and may decide to present their work at an outside addiction-related research conference as well.

9

Investigator:	Steven Paul Woods, Psy.D.
Institution:	University of California - San Diego, San Diego, CA
Research Area:	Combined Effects of HIV and Substance Abuse (e.g., methamphetamine dependence) on Cognitive Abilities (e.g., memory functioning) and everyday functioning outcomes, such as adherence to HIV medications.
Project Title:	Targeting Prospective Memory to Improve HIV Adherence in Persons at Risk for Substance Abuse
Start Date, Program Length:	06/01/2013 – 10 weeks

Housing Available:	No
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Advanced undergraduate students majoring in Psychology and/or Neuroscience who are interested in pursuing research careers in Clinical Psychology and/or Neuropsychology.

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continued

Project Description

This research project aims to determine the combined impact of HIV and substance abuse (e.g., methamphetamine dependence) on cognitive abilities (e.g., memory) and everyday functioning outcomes (e.g., medication adherence, employment, and quality of life). In particular, there is an interest in the ways in which one's ability to "remember to remember" (i.e., prospective memory) influences how one navigates various normal activities of daily living, including adherence to HIV medications. As such, this laboratory is multidisciplinary and involves contributions from clinical neuropsychologists, psychiatrists, neurologists, and infectious disease physicians, along with predoctoral and postdoctoral fellows. The lab is well-suited to training advanced undergraduate students who wish to pursue research careers in clinical neuroscience of addictions (e.g., neuropsychology). Opportunities are available to gain experience in collecting, coding, and analyzing clinical behavioral science data (e.g., cognition, mood, substance use, everyday functions), as well as conducting literature reviews, preparing scientific presentations, and assisting with the writing of manuscripts for publication.

10

Investigator:	Adam Carrico, Ph.D.
Institution:	University of California – San Francisco, San Francisco, CA
Research Area:	HIV-Related Health Disparities among Stimulant Users
Project Title:	RCT of an Integrative Intervention for Non-Treatment Seeking Meth Users
Start Date, Program Length:	05/28/2013 – 10 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students with declared majors in Psychology, Sociology, or Cognitive Science. Preferred student research interests include substance use, nicotine dependence, HIV/AIDS, and organizational behavior. 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. Students from underrepresented populations are highly encouraged to apply.

Project Description

Dr. Adam Carrico leads the 2013 Summer Research with NIDA program at the University of California, San Francisco (UCSF). The program offers research opportunities for undergraduate students in the behavioral and social sciences and is aimed at those applying for a Ph.D. program. The goal of the 10-week program is to provide undergraduate students interested in substance abuse and health services research with advanced research experience in applied settings. Mentors are UCSF faculty who are affiliated with the NIDA-funded San Francisco Treatment Research Center, and who are conducting a variety of studies on innovative treatments for substance abuse, including nicotine dependence. Summer interns will gain exposure to the application of substance abuse research methods in real world treatment settings. Research projects include trials of efficacy and effectiveness of psychosocial and pharmacologic treatments of substance abuse and dependence including, a study of a positive affect intervention designed to optimize the effectiveness of contingency management to achieve long-term reductions in stimulant use and HIV viral load among HIV positive men who have sex with men, a

10 continued

study of motivational strategies designed to increase smoking cessation rates among substance abuse treatment patients, and studies of behavioral and combined behavioral and pharmacological treatments for nicotine dependence for Asian American populations, and opioid-dependent smokers receiving buprenorphine treatment. NIDA summer interns participate in UCSF Summer Research Training Program (SRTP), which consists of social and academic events with other summer interns at UCSF. The SRTP offers seminars to prepare students to become more competitive candidates for graduate education including panel discussions about the graduate school application process, life as a graduate student, and career options for researchers, as well as skill-building workshops focusing on abstract writing, oral presentation skills, and how to create effective poster presentations. Students also participate in a weekly journal club where they present a journal article relevant to their summer research project and lead a group discussion about the material, and a substance abuse seminar. Summer interns develop and conduct a research project using existing data, and present the results at the SRTP. Summer interns are also provided the opportunity to attend GRE preparation classes, if desired.

11

Investigator:	Tod Kippin, Ph.D.
Institution:	University of California Santa Barbara, Santa Barbara, CA
Research Area:	Addiction Vulnerability
Project Title:	GeneXEnvironment Interactions and Cocaine-Seeking
Start Date, Program Length:	06/01/2013 – 10 weeks
Housing Available:	Yes
High School Students:	Yes
Undergraduate Students:	Yes
Student Attributes:	Students should have an interest in the biological basis of behavior, particularly addiction-related behavior. Some research experience is preferred, but not necessary. Students must be comfortable with the use of animals in scientific research.

Project Description

Students will work in a modern behavioral neuroscience laboratory examining the biological basis of addiction vulnerability using animal models. Research involves behavioral experiments including surgical preparation for intravenous drug self-administration, histological assessment, endocrine measurements, and molecular biology. Specific areas of focus are the role of early life history in addiction vulnerability, sex differences in drug seeking, and the impact of drug exposure of molecular mediators of drug seeking.

Connecticut

12

Investigator:	Linda C. Mayes, M.D.
Institution:	Yale Child Study Center, New Haven, CT
Research Area:	Impact of Addiction on Parental Sensitivity to Infant Emotional Cues
Project Title:	Impact of Maternal Substance Abuse on Neural Circuitry of Parental Care
Start Date, Program Length:	06/01/2013 – 8 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduates majoring in Psychology or Neuroscience are preferred. Student must be interested in the study of adolescence and early adult development, especially transition to parenthood; and express an interest in behavioral research and/or a need for a senior research project.

Project Description
This laboratory is engaged in two large studies. One is a continued follow-up of a cohort of prenatally cocaine exposed and non-cocaine exposed children who are now late adolescents and young adults. The lab is now focusing on studies of substance use initiation, as well as stress reactivity, and using neuroimaging and electrophysiology methods. The second large study explores the impact of substance use on parenting and the underlying neural circuitry involved in parental care. In this line of work, parents and non-parents participate in imaging and electrophysiology studies, as well as experimental studies of distress tolerance. Students interning in this laboratory have the opportunity to learn about neuropsychological testing, neuroimaging, and neurophysiology. Students are also exposed to basic database management and data analysis techniques. Past summer interns have been able to work on manuscripts and posters for national meetings.

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District of Columbia

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Investigator:	Kim Blankenship, Ph.D.
Institution:	American University, Washington, DC
Research Area:	Race Disparities, U.S. Drug Policy, Criminal Justice System, and HIV Risk
Project Title:	Drug Policy, Incarceration, Community Re-entry, and Race Disparities in HIV
Start Date, Program Length:	06/01/2013 – 10 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students interested in developing research skills in the social sciences (e.g. Sociology, Public Health, Anthropology, and Social Work). Students should be interested in the topics of HIV prevention and the criminal justice system. Placement for this experience can be either at American University in Washington DC, or Yale University in New Haven, CT. Students who elect to be placed at the New Haven site will interact with study participants (formerly incarcerated people). Students with an interest or skills in methods of basic descriptive and/or multivariate statistics are welcome, but such skills are not necessary. Preference will be given to students with professional experience, or academic coursework on the subjects of race, health disparities, social problems, HIV/AIDS, criminal justice system and/or research methods. Students should have a demonstrated ability to work in a diverse workplace.

Project Description
"Drug Policy, Incarceration, Community Re-entry, and Race Disparities in HIV/AIDS" is a mixed-methods research project to analyze how movement between the criminal justice system and the community, produced in large part by US drug policies, contributes to race disparities in HIV-related sexual risk, among drug offenders in Connecticut. The research also examines whether the neighborhood in which offenders reside contributes to the relationship between this movement and race disparities in HIV risk. Understanding race disparities in US HIV/AIDS rates is critical for controlling the epidemic. While African Americans comprise only 13% of the population, they represent 46% of all AIDS cases reported in the US. The rate of new cases of HIV among Black men is six times the rate of new cases in White men (CDC, 2010). In 2008, African-American women had an HIV diagnosis rate 19 times greater than White women, and African-American men had a rate of eight times greater that of White men (CDC, 2011). Explanations for the race disparity in HIV/AIDS rates often focus on individual risk behaviors—suggesting that the differences occur because Blacks engage in more risk behaviors than Whites. However, African-Americans report less risky drug use and sexual behaviors than their White counterparts. To understand race disparities, then, there is a need to focus not on individual behaviors

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per se, but on how the social context shapes the behavioral choices available to people. This research examines what is arguably one of the most pronounced features of the social context: the movement between prison and the community, produced in great part by drug policies, and disproportionately impacting Blacks. In the summer of 2013, the project will be conducting the third round of data collection with participants for both quantitative and qualitative data. Planned efforts involve conducting, recording, and transcribing interviews and administering a structured survey. Additionally, the project will engage in analyzing baseline and first follow up data, conducting literature reviews on relevant topics, and writing up results for presentation and publication.

14

Investigator:	Joshua Corbin, Ph.D.
Institution:	Children's National Medical Center, Washington, DC
Research Area:	Neuroscience, brain circuits and control of innate and learned behaviors with emotional and social relevance, optogenetics, drug addiction, embryonic development of the mammalian limbic system, animal behavior
Project Title:	Development of the Basal Telencephalic Limbic System
Start Date, Program Length:	06/03/2013 – 10 weeks
Housing Available:	No
High School Students:	Yes
Undergraduate Students:	Yes
Student Attributes:	Students with declared majors in a biological science and a strong interest specifically in neuroscience or career goals in biomedical research or medicine are preferred. Students should have some biology coursework, with an amount equivalent to their years in school. Previous research experience is desirable, but not required.

Project Description

Research in this laboratory is directed toward understanding the genetic and cellular mechanisms regulating embryonic development of the mammalian limbic system. The limbic system is an interconnected set of nuclei that includes the olfactory system, amygdale, and hypothalamus and is dedicated for the processing of information with emotional or social relevance. Altered development and/or function of the limbic system are hallmark features of numerous human disorders, including addiction and autism spectrum disorders. Using the mouse as a model and employing a combination of cutting-edge tools, the lab is currently exploring how genetic networks establish the formation of limbic system neural circuitry that controls specific learned and innate behaviors. A summer program in this laboratory will include exposure to tools of analysis of genetically-engineered mice that include, but are not limited to, gene expression, optogenetics, circuit formation, and animal behavior. Trainees are teamed up with postdoctoral researchers to learn specific techniques and basic concepts of modern developmental neuroscience.

Florida

15

Investigator:	Linda B. Cottler, Ph.D., M.P.H.
Institution:	University of Florida, Gainesville, FL
Research Area:	Community-Based Participatory Research, Substance Abuse, Nosology, HIV
Project Title:	Transformative Approach to Reduce Research Disparities toward Drug Users
Start Date, Program Length:	06/07/2013 – 8 weeks
Housing Available:	Yes
High School Students:	Yes

Undergraduate Students: Yes
Student Attributes: Students with declared majors in Anthropology, Psychology, Public Health, Sociology, Social Work, Nursing, or other related fields are preferred. Students must be dedicated, reliable, curious, work well independently, and solution- and detailed-oriented. This is an ideal opportunity for students with an interest in behavioral research, community engaged research, ethics, or specific interest in drug use stigma and/or the inclusion of underrepresented minorities in research.

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continued

Project Description
Students will gain hands-on experience in community outreach and research working on an ongoing NIDA research study entitled "Transformative Approach to Reduce Research Disparities toward Drug Users." This randomized-controlled trial is fielded through HealthStreet, a community outreach initiative that is part of the Clinical and Translational Science Award (CTSA) Institute at the University of Florida. The study aims to test the effectiveness of an Ambassador model versus an extension of the CTSA street-based outreach model, to recruit underrepresented populations with drug use histories in appropriate research and retain them in that research. Summer scholars will receive Sentinel Network Community Health Worker training, gain skills in community-engagement and health assessment, and have the opportunity to pursue activities based on their initiative and interests. Additionally, students will participate in research team meetings and a variety of community activities. All students will present their work to faculty and staff. Previous student work has resulted in professional presentations and publications.

16

Investigator: Habibeh Khoshbouei, Ph.D.
Institution: University of Florida, Gainesville, FL
Research Area: Understanding the Mechanism of Methamphetamine Regulation of Dopamine Transmission in the Brain
Project Title: Amphetamine and Methamphetamine Differentially Regulate Dopamine Transporter
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduates with an interest and skills in biology and natural or physical sciences are preferred.

Project Description
The overall goal of this research program is to understand how the dopamine transporter (DAT) regulates biological responses and how this regulation is modulated by structural differences in ligands acting at DAT and by DAT-interacting proteins. As an example, by discovering the mechanisms by which the DAT ligand methamphetamine induces its unique addictive qualities, the research will not only reveal novel therapeutic targets for intervention/prophylaxis of disorders associated with dysregulation of the dopaminergic system, but almost certainly ascertain new molecular mechanisms for transporter-effected signal transduction. This research laboratory will provide an outstanding venue for the training of undergraduate, doctoral and postdoctoral trainees. The research program at Khoshbouei lab involves basic biomedical laboratory work requiring students with interests and skills in life, natural, or physical science.

17

Investigator: William Latimer, Ph.D., M.P.H.
Institution: University of Florida, Gainesville, FL
Research Area: HIV Prevention Interventions; HAART Adherence Interventions; Smoking Cessation Interventions; Advanced Neuropsychology

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Project Title: Four-Arm RCT of Brief MI vs. Couples-Based HIV/STI Prevention in South Africa

Start Date, Program Length: 06/03/2013 – 9 weeks

Housing Available: Yes

High School Students: No

Undergraduate Students: Yes

Student Attributes: Undergraduate students interested in or majoring in a social science (e.g., Psychology, Sociology, Health Education), or allied health (e.g., Nursing; Medicine; Public Health) fields are preferred.

Project Description

The Summer Research with NIDA program at the University of Florida is designed for undergraduate students interested in gaining a broad range of educational, research, and clinical experiences in the field of substance use and abuse prevention, treatment, epidemiology, and the consequences of substance abuse, including infectious diseases like HIV and other sexually transmitted infections. Students benefit from the presence of several active NIDA-funded research studies in the substance abuse field, including randomized trial studies and epidemiologic studies. Students benefit from formal instruction on substance abuse and infectious disease, as well as enrichment activities led by experts in the field of substance use, HIV prevention, and neuropsychology at the University of Florida. The program is comprised of activities organized under five distinct headings: 1) mentorship by NIDA-funded researchers and research meetings; 2) specialized training in cognitive-behavioral and family-based interventions to prevent and/or treat substance abuse, infectious disease, and adolescent tobacco use; 3) coursework and seminars in addiction and infectious disease; 4) research methods; and 5) grant writing, manuscript preparation, and dissemination. Clinical experiences also complement the didactic instruction with a wide range of opportunities, including training on psychodiagnostic assessment, neuropsychological assessment, risk behavior assessment, and behavioral interventions. Each student's program is tailored to meet their individual needs with respect to the balance of educational, research, and clinical experiences.

18

Investigator: Sunmee Wee, Ph.D.

Institution: Scripps Florida, Jupiter, FL

Research Area: Neurobiology of drug addiction, understanding which brain circuitry and neurotransmitters are involved in the development of addictive behaviors.

Project Title: The Role of 5-HT1A Receptors in Cocaine Addiction and Comorbid Depression

Start Date, Program Length: 06/01/2013 – 10 weeks

Housing Available: Yes

High School Students: No

Undergraduate Students: Yes

Student Attributes: Undergraduate students should be able to work with animals (rats and mice) and be confident with mathematical calculations. Students should be able to think independently and be respectful and polite in communication.

Project Description

This research focuses on investigating the neurobiology of drug addiction using an animal model of drug self-administration. Addiction to drugs is a pandemic problem across ages and genders in society. It is characterized by the loss of control of drug seeking and preoccupation with obtaining and using the drug despite deleterious consequences. Animals self-administer most of the drugs abused by humans, and if permitted unlimited access, animals will self-administer drugs until they die. Using this animal model, the current research examines the role of serotonin 5-HT1A receptors in cocaine addiction. The lab previously found that increased serotonergic tone in the brain attenuated the motivation for

drug intake in laboratory animals when measured by gradually increasing the workload for each drug administration. The serotonin system is well-established to play key roles in mood, cognition, and feeding. However, little is known about the mechanism of serotonergic changes in these disorders. Serotonergic activity is mainly controlled by 5-HT1A autoreceptors on serotonergic neurons in the dorsal raphe nucleus (DRN), controlling serotonin release in projection areas and within the DRN. Therefore, the lab seeks to elucidate the mechanism of serotonergic adaptations in drug addiction by understanding changes in 5-HT1A autoreceptor functions. By evaluating the effects of manipulating 5-HT1A receptor activity in specific brain regions by microinjecting drugs and immunohistochemical analysis, the lab is now investigating changes in 5-HT1A receptors in cocaine addiction.

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Investigator: Claes Wahlestedt, M.D., Ph.D.
Institution: University of Miami Miller School of Medicine, Miami, FL
Research Area: Therapeutic identification and development for addiction diseases, target discovery and small molecule treatments for addiction diseases, such as cocaine dependence.
Project Title: Small Molecule Identification for the Nociceptin Receptor to Treat Cocaine Abuse
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students with a strong preference for Molecular Biology, Biochemistry, Physiology, or Biology are preferred. An interest in basic bench work or possibly animal work in cocaine self-administration and conditioned place preference models is a plus.

Project Description
Illicit substance abuse and dependence represents a considerable health and economic burden on society with available pharmacotherapies demonstrating insufficient efficacy. This research project has designed novel, potent, and selective nociceptin receptor agonists as tools for research on cocaine dependence with potential as clinically effective therapeutic agents. Currently available nociceptin receptor small molecule agonists have mu or kappa opioid receptor activity, limiting their usefulness as research tools. The project's preliminary data show several promising novel molecules that are selective for the nociceptin receptor over the mu and kappa opioid receptors. These molecules have been tested for *in vitro* activity and pharmacokinetic parameters. The compounds show high brain penetrance, and long half life *in vivo*. In animal models of cocaine self-administration and reward, these compounds show promising results that suggest some potential for future clinical translation. This research involves many aspects of drug development by working with medicinal chemistry teams and in the fields of pharmacology, toxicology, behavioral biology, and related fields. The project utilizes the compounds for two purposes, the first being the clinical translation of these efforts to useful addiction drugs; and the second, to use small molecules for understanding the underlying neurobiology of addiction processes.

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Investigator: Carlos Bolaños, Ph.D.
Institution: Florida State University, Tallahassee, FL
Research Area: Nicotine Exposure and Development of Comorbid Behaviors
Project Title: Ontogeny of Drug Exposure and Mood Dysregulation
Start Date, Project Length: 06/01/2013 – 8 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes

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Student Attributes: Undergraduate students interested in basic science research or in pursuing medical school are preferred. Students should be independent, energetic, self-motivated, curious, and reliable. Preferred candidates will have previous research experience in a laboratory setting and knowledge of biochemical assays and molecular biology.

Project Description

The laboratory focuses on the neurobiological consequences of drug exposure and stress across the lifespan using animal models. The students will have the opportunity to learn basic laboratory techniques including: immunoblotting, immunohistochemistry, psychopharmacology, and a variety of rodent behavioral paradigms relevant to biological psychiatry.

Hawaii

21

Investigator: Scott Okamoto, Ph.D.
Institution: Hawaii Pacific University, Kaneohe, HI
Research Area: Health Disparities, Prevention, Indigenous Youth Populations
Project Title: The Development of a Video-Enhanced Drug Prevention Program for Rural Native Hawaiian Youth
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students majoring in Psychology, Social Work, Public Health, or another allied discipline are preferred. Students with a knowledge and/or interest in rural, Native Hawaiian and/or Pacific Islander populations are a plus. Applicants must be at least 18 years old by the program start date.

Project Description

The primary goal of the project is to develop and pilot test a culturally-grounded drug prevention program for rural Native Hawaiian youth on Hawaii Island. Summer Research with NIDA interns will assist in the pilot testing of the program, including survey data collection and management and/or focus group observation and transcription. Opportunities to assist in qualitative and quantitative data analysis may also occur, depending on the qualifications and interests of the intern(s). This project is appropriate for 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 Hawaii Island for data collection purposes.

Illinois

22

Investigator: Josh Gulley, Ph.D.
Institution: University of Illinois, Urbana-Champaign, Champaign, IL
Research Area: Behavioral Neuroscience; Neuropsychopharmacology; Alcohol; Amphetamine; Methamphetamine
Project Title: Mechanisms of Amphetamine-Induced Plasticity in Adolescents compared to Adults
Start Date, Program Length: 06/01/2013 – 8 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes

Student Attributes: Undergraduate students majoring in Psychology and other neuroscience-related fields are preferred, as are students who are highly motivated, very attentive to details, and work well in a team environment. Students with a general interest in the neuroscience of abused drugs, the effects of early life exposure to stress or stress-inducing experiences (e.g., drug exposure), adolescence, drug-induced neuroadaptation, and cognitive functioning are ideal.

22 continued

Project Description

Students enrolling in the summer research experience in Dr. Gulley's lab would be studying cognitive flexibility, decision-making and impulsivity in rats exposed to amphetamine during adolescence or adulthood. These behavioral pharmacology studies would expose students to operant behavior techniques, pharmacological interventions, and behavioral analysis. Students would also get some exposure to *in vivo* electrophysiological techniques in freely behaving rats.

23

Investigator: Robert Garofalo, M.D., M.P.H.
Institution: Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL
Research Area: HIV, Lesbian, Gay, Bisexual and Transgender (LGBT), Gender Identity
Project Title: Syndemic Development and HIV Risk among Vulnerable Young Men
Start Date, Program Length: 06/03/2013 – 8 to10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Student Attributes: Yes
Undergraduate students able to work as part of a multidisciplinary team, independent thinker, comfortable with the LGBT populations, creative problem solver, and comfortable with a mixed service/research model.

Project Description

This is largely a translational research unit with funding related to primary and secondary HIV prevention for at-risk subpopulations of youth including YMSM and transgender youth. The transgender youth piece is funded by NIMH.

Indiana

24

Investigator: Fletcher A. White, Ph.D.
Institution: Indiana University School of Medicine, Indianapolis, IN
Research Area: Off Target Effects of Opioids; Opioid-Induced Hyperalgesia
Project Title: Chemokine-Mediated Modulaton of Opioid-Induced Pain
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Pre-medicine or life science students are preferred.

Project Description

Morphine is a powerful pain reliever for cancer and non-cancer pain, but also a potent inducer of tolerance. Opiate tolerance refers to a phenomenon in which exposure to a opiate results in the diminution of an analgesic effect (pain relief). Tolerance to the analgesic effect of morphine is a poorly understood phenomenon and is sometimes referred to as opioid-induced hyperalgesia (OIH). OIH can clearly present major pain management difficulties in some patients. Better understanding of the events associated with the development of OIH may provide the necessary framework for the design of agents effectively reduce analgesic tolerance.

Kansas

25

Investigator: Navneet K. Dhillon, Ph.D.
Institution: University of Kansas Medical Center, Kansas City, KS
Research Area: Understanding the Pathogenesis of HIV-Associated End Stage Diseases, particularly Cardio-Pulmonary Disorders; understanding mechanistically how HIV-1 and drugs of abuse contribute alone and in concert to the vascular dysfunction; understand the interplay of macrophages, cytokines and chemokines in lung infections associated with HIV-infection and cigarette smoking.
Project Title: HIV/Cocaine Mediated Human Pulmonary Vascular Remodeling: Role of BMPR Signaling
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students majoring in Biology, Molecular Biology or Biochemistry are preferred.

Project Description

Research in this laboratory is focused on unraveling the molecular pathways involved in HIV-infection associated pulmonary disorders, particularly vasculature dysfunction associated with cardio-pulmonary complications. The importance of this work relies on the fact that there are an increasingly significant number of HIV-infected individuals who are showing pulmonary arteriopathy. Intravenous (IV) drug abuse is one of the most common risk factors in these individuals. However, not many laboratories are trying to elucidate the mechanism(s) behind this clinical manifestation and the interaction of HIV-1 with drugs of abuse. The lab has observed increased pulmonary arteriopathy in human lung sections from HIV-infected IV drug users compared to HIV non-drug users. Furthermore, the research has demonstrated for the first time the additive/synergistic interactions of HIV-viral proteins and drugs of abuse in causing pulmonary endothelial and smooth muscle dysfunction. These findings have recently been published in the top most journals in the field of pulmonary research and were a subject of published commentary (Am J Respir Crit Care Med. 2012 Jun 1;185(11):1144-6). Current research is aimed at: elucidating the underlying molecular mechanism(s) involved in the augmentation of HIV-protein related pulmonary smooth muscle hyperplasia in the presence/absence of illicit drugs; exploring the role of growth factors and extracellular matrix proteins; determining the involvement of anti-proliferative bone morphogenetic protein receptor axis and its post-transcriptional regulation; and defining the mechanistic pathway(s) responsible for tight junction protein disassembly that results in augmentation of HIV- related pulmonary endothelial dysfunction.

26

Investigator: Thomas Prisinzano, Ph.D.
Institution: University of Kansas, Lawrence, KS
Research Area: Medicinal and Natural Products Chemistry
Project Title: Chemistry of Drug Abuse
Start Date, Project Length: 06/01/2013 – 10 weeks
Housing Available: Yes
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: High school and undergraduate students majoring in Chemistry or Biology, and Organic Chemistry are preferred. Applicants should be interested in biologically active molecules and working at the interface of chemistry and biology and have a sense of humor.

Project Description
The research in this laboratory involves drug design, organic synthesis, natural product isolation, and medicinal chemistry of potential medications for the treatment of drug abuse. Students will get hands-on experience with natural product isolation and organic synthesis techniques with small molecules that are designed to interact with specific targets involved in drug abuse. They also will get familiar with the concepts of medicinal chemistry and iterative structure-activity relationships. Compounds isolated and/or synthesized will be characterized using state of the art analytical techniques.

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continued

Kentucky

27

Investigator: Chang-Guo Zhan, Ph.D.
Institution: University of Kentucky, Lexington, KY
Research Area: Anti-Cocaine Medication
Project Title: Development of a Cocaine-Metabolizing Enzyme for Drug Overdose Treatment
Start Date, Program Length: 06/15/2013 – 10 weeks
Housing Available: Yes
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Students interested in drug abuse research.

Project Description
Development of a truly effective anti-cocaine medication has been very challenging, particularly for treatment of cocaine overdose. There is still no FDA-approved anti-cocaine medication. Enhancing cocaine metabolism by administration of butyrylcholinesterase (BChE) has been recognized as a promising treatment strategy for cocaine abuse. However, the catalytic activity of this plasma enzyme is low against the naturally occurring (-)-cocaine. This lab's recent integrated computational-experimental effort has led to discovery of high-activity mutants of human BChE, known as cocaine hydrolases (CocHs), with >1,000-fold improved catalytic efficiency against cocaine compared to wild-type BChE. *In vivo* evidences indicate that discovered CocHs are promising candidates for development of an anti-cocaine medication, especially for the overdose treatment. This proposed project focuses on the selection and optimization of the most promising CocH as a novel therapeutic candidate for cocaine overdose treatment through a combined use of various *in silico*, *in vitro*, and *in vivo* approaches. Accomplishment of this proposed investigation will result in the identification and development of the most promising CocH entity that has a high *in vivo* potency in the protective and rescuing effects, a high stability, and a sufficiently long biological half-life without immunogenicity. The CocH entity optimized in this investigation is expected to be highly-effective and safe as an exogenous enzyme for cocaine overdose treatment in humans. The research program involves basic biomedical laboratory work requiring students with interests in life sciences.

Louisiana

28

Investigator: Patricia E. Molina, M.D., Ph.D.
Institution: Louisiana State University Health Science Center, New Orleans, LA
Research Area: Cannabinoid Modulation of Simian Immunodeficiency Virus Infection; immunology analysis that will determine the stem cell populations in bone marrow from SIV-infected THC-treated macaques; PCR analysis for verification of gene expression, and cell based assays to determine functional relevance of altered epigenomic mechanisms.

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continued

Project Title: Cannabinoid Epigenomic and miRNA Mechanisms impact HIV/SIV Disease Progression

Start Date, Program Length: 06/03/2013 – 8 weeks

Housing Available: No

High School Students: No

Undergraduate Students: Yes

Student Attributes: Undergraduate students majoring in Biology or Neuroscience with an interest in inflammation are preferred. Students must be punctual, reliable, hard and independent workers, self-starters, have the ability to follow instructions, and work with precious samples under controlled conditions. Previous lab experience is a plus. Student must view this as a research opportunity and not as a summer employment opportunity.

Project Description

Δ9-THC is the major psychoactive cannabinoid in marijuana. Advanced understanding of its pharmacology and the major cannabinoid receptor subtypes (CB1 and CB2) as well as their localization (CB2 predominantly on B lymphocytes and natural killer cells) has resulted in identification of multisystemic biomedical effects. Particularly important is the potential of Δ9-THC modulation of immune function in human immunodeficiency virus (HIV) infected individuals. This research indicates that chronic Δ9-THC treatment attenuates viral load and tissue inflammation in simian immunodeficiency virus (SIV) infected non-human primates, significantly decreasing morbidity and mortality from SIV infection. In addition, Δ9-THC decreased viral replication in an *in vitro* assay. While the ability of cannabinoids to suppress inflammation and viral replication has been reported by others and confirmed by the lab's ongoing studies, the mechanisms involved are not known. Preliminary data obtained in preparation for this application revealed increased expression of a distinct miRNA profile associated with decreased immune activation and anti-inflammatory properties (based on predicted targets) in CD4+ T lymphocytes, intestinal mucosa, and brain of THC-treated SIV-infected animals. These findings clearly suggest that the overall mechanisms mediating the protective effects of cannabinoids involve novel epigenomic regulatory factors/mechanisms in need of systematic investigation. The overall hypothesis of this proposal is that chronic Δ9-THC treatment decreases pro-inflammatory gene expression and viral replication through epigenomic (non-coding RNAs and DNA methylation) mechanisms. As a result, chronic cannabinoid treatment delays disease progression in SIV-infected non-human primates.

Maryland

29

Investigator: Jacinda K. Dariotis, Ph.D., M.A.S., M.S.

Institution: Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Research Area: Adolescent HIV Risk-Taking Decision Making from a Biosocial Perspective: Sexual Behaviors and Substance Use

Project Title: Exploring Neurological & Endocrine Determinants of Risk Behavior Decision-Making: The HONESTY Project (HOrmonal and NEurological Survey of Texting Youth)

Start Date, Program Length: 06/01/2013 – 10 weeks

Housing Available: No

High School Students: Yes

Undergraduate Students: Yes

Student Attributes: Students interested in adolescent development, psychology, sociology, neuroscience, and biology are preferred. Microsoft Word and Excel skills, general computing skills, social skills (interacting favorably with participants), writing skills, and promptness are needed attributes.

Familiarity with statistical programs (SAS, SPSS, STATA) is a plus. Neuroscience undergraduate majors will have opportunities for preprocessing imaging data and working toward publications.

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continued

Project Description

The HONESTY Project is studying emotional regulation, executive cognitive functioning, and hormones associated with risk behavior in regard to HIV and other health consequences in HIV-negative 18-24 year old men and women in the Baltimore Metro Area. At each of the two in-person visits, conducted one year apart (Time 1 and Time 2), each of the 130 participants (35 black females and 35 white females, as well as 30 black males and 30 white males) visit campus and (1) drop-off collected salivary passive drool samples and also provide on-site collected salivary passive drool samples for measuring hormones (including testosterone and cortisol); (2) complete Audio-Computer Assisted Self-Interview (ACASI) survey items assessing perceived stress, sexual risk-taking behaviors, substance use behaviors and other risk behaviors (e.g., violence, delinquency), contextual factors (e.g., family experiences, peers, partners), intentions, attitudes, personality/ temperament, sensation-seeking, planfulness, and depressive symptomotology, and HIV knowledge; (3) provide on-site urine samples for drug; (4) provide cheek swabs for HIV testing; (5) provide on-site self-collected vaginal/penile swabs to measure STIs; (6) undergo on-site functional and anatomical Magnetic Resonance imaging to assess brain region activity and development, and (7) complete cognitive tasks outside the magnet. Each visit lasts approximately seven hours. During the 12-month interval between in-person visits, survey items about sexual behaviors, substance use behaviors, and violence behaviors are collected on a weekly basis via text (SMS) messaging, a state-of-the-art method for collecting the most reliable and proximate data to the behavior of interest. Once a week for 52 weeks, respondents will be asked to reply to a series of questions sent via SMS message to their personal cell phone. Students interning with this project will be involved in Time 2 data collection, as well as the continued text messaging data collection. Interns will be involved in walking participants to and from the imaging facility (on campus), quality checking data (for the most part, data will be collected electronically; so, students will not have to spend their time entering a lot of data... they will perform some checks to make sure there is not systematic missing data), troubleshooting participant questions about the survey (if they need to go back to a question or other technical issues), and dropping off biological samples to labs on campus.

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Investigator:	Irving Reti, M.B.B.S.
Institution:	Johns Hopkins University, Baltimore, MD
Research Area:	Behavioral Neuroscience
Project Title:	The Role of Narp in Drug Abuse
Start Date, Program Length:	06/01/2013 – 10 weeks
Housing Available:	Yes
High School Students:	Yes
Undergraduate Students:	Yes
Student Attributes:	Students interested in behavioral science and drug addiction with a strong interest in neuroscience, neuropharmacology and/or biological psychiatry are preferred. Students must interact with other lab members, troubleshoot, and multitask. Prior research experience is not required.

Project Description

Evidence linking neuronal immediate early genes to enduring forms of neuronal plasticity has heightened interest in their role in mediating behavioral alterations induced by drugs of abuse and other forms of brain stimulation. As these genes are rapidly induced by neuronal stimulation, they represent a mechanism by which drug administration could elicit long-term adaptations in neuronal function that underlie their reinforcing properties. This lab has focused on one of these immediate early genes, Narp, which clusters AMPA receptors and is expressed selectively in limbic brain regions regulating behavior. A series of studies that the lab has conducted suggests Narp signaling pathways may represent a potential therapeutic target for drug addiction and possibly other motivated

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behaviors. For example, the research has found that Narp knockout mice are deficient in extinction of drug craving. To learn more about molecular mechanisms and circuitry underlying this finding, the lab is utilizing viral vectors to locally regulate Narp expression in vivo and field recordings to determine how Narp deletion affects learning in brain reward pathways. The student will learn about molecular, pharmacological and behavioral research into the biological mechanisms underlying drug addiction. The student will have an opportunity to learn basic laboratory techniques including immunoblotting, immunohistochemistry and a variety of rodent behavioral paradigms. The student will also learn about more complex studies involving intra-accumbal pharmacology, brain injections of viral vectors and electrophysiological studies. This lab is seeking students with an interest in human behavior and the neuroscience underlying motivation, drive and learning. Although the research focuses on the biological mechanisms underlying drug addiction, many of the ideas and principles the student will learn will be relevant to other psychological and behavioral states.

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Investigator: Annie Umbricht, M.D.
Instituton: Johns Hopkins University, Behavioral Pharmacology Research Unit, Baltimore, MD
Research Area: Coordination of Medical Care during Substance Abuse Treatment. Detection and Treatment of Psychiatric comorbidity during Substance Abuse Treatment. Integration of pharmacologic and behavioral treatment.
Project Title: Zonisamide Augmentation of Varenicline for Smoking Cessation
Start Date, Program Length: 06/03/2013 – 8 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduates with declared majors in Biology, Neuroscience, Psychology, or related fields are preferred. Students must be self-motivated, intrinsically driven to do good work, eager to explore new opportunities, and proactive in their own education and development. Students with an interest in public health issues, pharmacology, behavior, research design, and/or neuroscience are ideal. No professional experience is necessary.

Project Description
The purpose of BPRU's Student Internship Program is to coordinate the placement of student interns in a series of labs which are conducting clinical behavioral pharmacology research related to substance abuse and dependence disorders. Students will be involved in the recruitment of participants, running data collection sessions, data entry, management, and analysis. Students will also have the opportunity to participate in department-sponsored lectures, classes, and presentations. For more info see: http://www.hopkinsmedicine.org/psychiatry/research/BPRU/.

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Investigator: Faye S. Taxman, Ph.D.
Institution: Probation Office, (affiliated with University of North Texas and George Mason University), Baltimore, MD
Research Area: Interventions for Substance Abusing Offenders, Experimental Designs, Qualitative Methods, Access to Treatment
Project Title: In Person vs. Computer Interventions to Increase Probation Compliance
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes

Student Attributes: Undergraduates in behavioral health (Nursing, Counseling, Social Work, Criminology, and Sociology) are preferred, with an interest in learning research procedures and randomized controlled trials.

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Project Description

Although drug and alcohol treatment are common mandates in the U.S. criminal justice system, only a minority of clients actually initiate treatment. This study involves a randomized trial consisting of a two-session, web-based intervention, counselor driven MI sessions, and standard probation intake to increase treatment initiation and self-change among criminal justice clients with drug treatment mandates. The counselor or web-based program integrates substance abuse, criminology, and HIV risk behaviors into an intervention designed to affect multiple risk behaviors. MAPIT (Motivational Assessment Program to Initiate Treatment) draws from theories such as motivational interviewing, the Extended Parallel Process Model, and Social Cognitive Theory. It begins with a personalized, interactive module on likelihood of probation success, and emphasizes the roles of substance abuse and HIV risk behaviors; it also elicits endorsement of motivational statements in these areas. The process includes key domains that affect probation success, such as social ties and stability. Later portions of the intervention help clients to identify social support and develop a short-term plan for change. MAPIT is being tested in a randomized treatment trial in two large U.S. probation agencies. In this study, the student will assist with assessing eligibility of clients for the study, working with researchers to process data, working with probation staff to identify clients, working on databases, and participating in focus groups and other activities to learn about the clients' experience with the intervention. The student will spend half of the time in a probation office and half of the time in the research office. The student may also work with clients by administering the computerized intervention.

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Investigator: Carl Lejuez, Ph.D.
Institution: University of Maryland College Park, College Park, MD
Research Area: Laboratory Research to Understand the Personality Processes that Underlie Adolescent Risk Taking
Project Title: Studying Adolescent Risk Taking in the Laboratory
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: No previous research experience is needed, but students must appreciate the importance of basic laboratory research while also being comfortable interacting with youth and their parents on topics of a sensitive nature. Although not a requirement, students desiring to obtain a Ph.D. in Clinical Psychology or a related field are of most interest.

Project Description

This study involves the continuation of a longitudinal investigation of how personality processes contribute to adolescent risk-taking behavior. The study focuses on a small number of laboratory computer tasks that can be used to understand youth risk behavior. In addition to personality processes, other variables examined include supportive and challenging environments, psychopathology, and selected genetic vulnerabilities. Responsibilities include light data entry, extensive participant contact, opportunity to learn basic computer programming for the tasks used in the study, data analysis with close supervision, and verbal/written participation on presentation of the results. Close supervision will be provided by Dr. Lejuez, as well as several other faculty, fellows, and graduate students in this research Center.

Massachusetts

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Investigator: Klaus A. Miczek, Ph.D.
Institution: Tufts University, Medford, MA
Research Area: Social Stress, Aggression, Intravenous and Oral Self-Administration, Cocaine, Alcohol, Opiates, Monoamines, Neuropeptides, BDNF, Limbic System
Project Title: Neuropeptides, Social Stress, and Drugs of Abuse
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Students must have some experience with animals and have no allergies.

Project Description

The experimental work aims to learn about the link between social stress and increased liability to self-administer alcohol or cocaine. In particular, the role of neuropeptides such as corticotrophic releasing factor and its effects on GABA and glutamate inputs into monoamine pathways to the prefrontal cortex are a focus of investigation. The experimental work relies on quantitative ethological methodology for the analysis of species-normative and escalated forms of aggression and social stress, voluntary oral alcohol or intravenous cocaine self-administration, real-time PCR, *in situ* hybridization histochemistry, genetic manipulations, *in vivi* microdialysis and HPLC, and intracerebral microinfusions.

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Investigator: Kathleen M. Kantak, Ph.D.
Institution: Boston University, Boston, MA
Research Area: Behavioral Neuroscience - Preclinical (rat) Research Examining Comorbidity between Cocaine Addiction and Attention Deficit/ Hyperactivity Disorder
Project Title: Cognitive Aspects of Addiction-Related Behavior
Start Date, Program Length: 05/01/2013 – 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students with a background in psychology or neuroscience and an active interest in conducting preclinical research in rats that has translational relevance to drug addiction and mental health are preferred.

Project Description

Advances in neurobiology suggest that a dysfunctional prefrontal cortex underlies not only cocaine addiction, but also attention deficit hyperactivity disorder. Moreover, ADHD and cocaine addiction are often comorbid. There remains disagreement concerning the use of stimulant medication and whether it makes adolescents treated for ADHD more vulnerable or less vulnerable to later cocaine addiction. This study investigates this question with validated rat models of ADHD and cocaine addiction.
In one series of studies, the lab seeks to determine if rats with an ADHD phenotype exhibit 1) dysfunction of the prefrontal cortex during adolescence that is prevented by treatment with either the stimulant medication methylphenidate or the non-stimulant medication atomoxetine; 2) augmented vulnerability to cocaine addiction during adulthood if never medicated; 3) a greater vulnerability to cocaine addiction during adulthood if methylphenidate treatment is given during adolescence and then discontinued, but not if atomoxetine treatment is given during adolescence and then discontinued; and 4) reduced vulnerability to cocaine addiction during adulthood if methylphenidate

and atomoxetine treatments are continued into adulthood. In a second series of studies, the lab investigates via pharmacological analysis with selective antagonists, the importance of postsynaptic D1 and α2A receptor function within the prelimbic and orbital prefrontal cortex for mediating the altered vulnerability to cocaine addiction during adulthood. In a third series of studies in collaboration with the University of Kentucky, the lab evaluates, via neurochemical analysis within prefrontal cortex (prelimbic and orbital subregions) and striatum, the methylphenidate- and atomoxetine-induced changes in presynaptic DAT, NET and/or VMAT2 transport functions. Collectively, this work will advance the lab's knowledge of the consequences of stimulant and non-stimulant medication use in adolescents with ADHD on later vulnerability to cocaine addiction.

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Investigator:	Jane Liebschutz, M.D., M.P.H.; Karen Lasser, M.D., M.P.H.
Institution:	Boston Medical Center, Boston, MA
Research Area:	General Internal Medicine
Project Title:	Implementing Opioid Risk Reduction Strategies into Primary Care Practice
Start Date, Program Length:	06/24/2013 – 10 weeks
Housing Available:	No
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students with an interest in medicine or psychology and a background in biology or the social sciences are preferred. A high level of detail, flexibility, strong work ethic, positive attitude, and sense of humor are required. Students with previous clinical research and/or knowledge of research methodology are preferred.

Project Description

The student will work on a $2.67 million grant at Boston Medical Center in the Department of Medicine entitled Implementing Opioid Risk Reduction Strategies into Primary Care Practice. The goal of this project is to implement and evaluate a new model of care in primary care settings aimed at decreasing the misuse of and addiction to opioids among patients with chronic pain. Implementing Opioid Risk Reduction Strategies into Primary Care Practice is a five-year project including a randomized trial that will be implemented at three Federally-Qualified Health Centers (FQHC) in the Boston area and an urban safety net hospital. The investigators will follow patients and providers for 12 months after the intervention has been implemented and will evaluate how primary care physicians adhered to the chronic opioid therapy guidelines. They also will monitor the rates of opioid misuse among patients. Summer students will help the investigators as they roll out the pilot phase of the intervention in one primary care practice. In addition, they may help in analyzing and writing up the baseline data analysis. Their day-to-day duties will offer opportunities for clinical exposure in primary care settings focused on underserved urban populations, as well as involvement in a productive clinical research group based in primary care. Students will support the research team in the qualitative assessment of barriers and facilitators to intervention implementation. Students will attend weekly research meetings of the study investigators, conduct literature reviews, participate in the preparation of articles or presentations and assist with grant proposals. There is also a curriculum for medical students and other undergraduate and graduate students conducting summer projects, including opportunities to observe addiction medicine and internal medicine clinicians. There may be other projects within the department of General Internal Medicine Clinical Addiction Research and Education Unit for the student to become involved with as his/her time and skills allow.

Investigator:	Kevin P. Hill, M.D., M.H.S.
Institution:	McLean Hospital, Harvard Medical School, Belmont, MA
Research Area:	Treatment for Marijuana Addiction

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Project Title: Nabilone for Cannabis Dependence: Imaging and Neuropsychological Performance
Start Date, Project Length: 06/01/2013 – 8 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students considering a future in psychiatry or psychology are preferred.

Project Description
Participants in this summer research experience will be involved in a clinical trial aimed at developing a medication for patients addicted to marijuana. McLean Hospital, Harvard Medical School's freestanding psychiatric hospital, carries out important research to improve the care of patients with psychiatric and addiction problems. The trial is being conducted out of the McLean Hospital Behavioral Psychopharmacology Research Laboratory (BPRL), which has a long history of providing outstanding educational opportunities to undergraduate students. Patients have weekly visits that involve clinical assessments and laboratory tests. Patients also undergo functional MRI and neuropsychological testing while in the trial. Students will learn about all of these things from Dr. Hill and other staff from the BPRL. This patient-centered trial involves behavioral work geared toward students with interests in the social and life sciences.

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Investigator: Uwe Rudolph, M.D.
Institution: McLean Hospital, Belmont, MA
Research Area: Pharmacological functions of GABA-A receptor subtypes, specifically abuse liability. In a larger context, the research wants to make predictions whether novel subtype-specific drugs would have the desired effects of benzodiazepines, e.g. anxiolysis, but not the undesired effects, e.g. abuse liability.
Project Title: The Role of GABA-A Receptor Subtypes in Benzodiazepine Abuse Liability
Start Date, Program Length: 06/17/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Students with an interest in studying the neural basis of behavior and drug action, have a positive attitude towards experimentation with laboratory animals and willing to handle mice are preferred. Previous experience with mice or rats is a plus, but not required.

Project Description
Benzodiazepines are among the most widely abused drugs, and like other drugs of abuse, they apparently "hijack" the brain's dopaminergic reward system, in which several GABA-A receptor subtypes are expressed in different neuronal cell types. The modulation of the reward system and of benzodiazepine self-administration by distinct GABA-A receptor subtypes is only poorly understood. This research project, seeks to test the hypothesis that GABA-A receptors bi-directionally modulate these behaviors. In the absence of chemical compounds which are truly specific for a GABA-A receptor subtype, the lab proposes to use a novel combined genetic and pharmacological approach to create a model system which will enable highly specific modulation of the activity of individual GABA-A receptor subtypes. The proposed system will consist of the use of non-selective benzodiazepine drugs diazepam and midazolam in triple point-mutated mice, in which these drugs are a true alpha1-specific, alpha2-specific, alpha3-specific, or alpha5-specific full agonists, respectively. This system will make it possible to test whether potentiation of a particular GABA-A receptor subtype is sufficient for reward enhancement and benzodiazepine self-administration.

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Investigator: Jacob M. Hooker, Ph.D.
Institution: Harvard Medical School, Massachusetts General Hospital, Boston, MA
Research Area: Medical Imaging, Positron Emission Tomography, MRI, Neuroscience, Chemistry, Biochemistry, Epigenetics
Project Title: Development of Medical Imaging Technology to Monitor Epigenetics
Start Date, Project Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students with a background/major in Chemistry, Chemical Biology, or Biochemistry are preferred. Previous research experience in a chemical laboratory is advantageous but not required. Students with a strong interest in pursuing graduate studies at the interface of chemistry and neurobiology, are creative and energetic, and work well in a group environment are desired.

Project Description

Dr. Hooker's research laboratory within the Martinos Center for Biomedical Imaging at Massachusetts General Hospital works to develop new imaging agents, which will help to provide information about chemistry occurring in the human brain. The research within the group spans all aspects of basic and translational science from chemical synthesis and methods to non-invasive neuroimaging. Members of the group work in a laboratory setting as a dynamic and energetic team. Undergraduates are paired with postdoctoral research fellows on projects aimed at maximum knowledge transfer. This stimulating environment makes learning exciting. Summer projects through the NIDA program will focus on organic chemistry and synthesis. Students will learn to synthesize, purify, and analyze complex molecules that address targets in the brain. In addition, students will characterize the molecules they synthesize using biology and chemical biology screening techniques (such enzyme-coupled assays). Ultimately, students will participate in the design and radiochemical labeling of these molecules for use in autoradiography and PET (positron emission tomography) imaging.

Michigan

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Investigator: Megan E. Patrick, Ph.D.
Institution: University of Michigan, Ann Arbor, MI
Research Area: Substance Use during the Transition to Adulthood
Project Title: Intensive Measurement of Drug Use during the Transition to Adulthood
Start Date, Program Length: 06/01/2012 – 8 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students majoring in Social Science with an interest in attending graduate school in a related field are preferred. Students interested in substance use research or survey methodology are encouraged to apply. Students should have experience in library research and literature review preparation; and experience with data analysis would be helpful, but is not required. Students should have excellent writing and research skills and be able to work independently.

Project Description

This social science research project is designed to examine substance use behaviors (i.e., alcohol use, marijuana use, other illicit drug use) across the transition out of high school. High-intensity web-based survey assessment (i.e., a measurement burst design) will be used to document variability and co-variation in substance use, other health behaviors, and social role changes. Three specific aims will be

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addressed. 1) Describe and explain substance use across the transition out of high school in relation to dynamic movement into new social roles and contexts. 2) Examine within-person associations of drug and alcohol use with other health behaviors (i.e., sexual, eating, sleeping, physical activity behaviors) and consequences (i.e., substance use problems; difficulties in school, work, and relationships). 3) Inform methodological designs by documenting initial response rates and investigating potential effects of repeated assessments in a web-based measurement burst design on behaviors, response patterns, and attrition.

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Investigator:	Terry Robinson, Ph.D.
Institution:	University of Michigan, Ann Arbor, MI
Research Area:	The role incentive stimuli play in controlling drug-seeking behavior and relapse. Neuropsychopharmacology, motivation, learning and memory pathways. Behavioral techniques: IV drug self-administration, repeated psychostimulant administration, Pavlovian conditioning, and tests for impulsivity.
Project Title:	Variation in Motivational Properties of Reward Cues: Implications for Addiction
Start Date, Program Length:	06/03/2013 – 10 weeks
Housing Available:	No
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students should have a keen interest in behavioral neuroscience and/or neuropsychopharmacology and be highly motivated, reliable and responsible with good organizational skills and the ability to be a "team player". Previous laboratory experience is valued, but not required. Students will have the opportunity to assist with jugular catheterization surgeries, behavioral testing of the animals, cryostat sectioning of brain tissue, and neuroanatomical analyses, among other things.

Project Description

This lab is interested in the role incentive stimuli play in controlling drug-seeking behavior and relapse, and the neurobiological systems by which they exert their control. Specifically, the work aims to address the following questions: Why do some individuals, but not others, have difficulty resisting reward cues, including drug cues? Why do reward cues act as potent incentive stimuli, motivating and controlling behavior to a much greater degree in some individuals than others? To address these questions, the lab utilizes a rodent model of individual differences in the extent to which cues attain incentive motivational value and gain control over behavior. The lab's work over the past few years indicates that there is large individual variation in the degree to which reward-related cues are attributed with incentive salience. Using a classical Pavlovian conditioning paradigm, research has shown that for some individuals, sign-trackers, a reward cue attains great incentive motivational value; whereas for others, goal-trackers, the reward cue serves merely as a predictor. Thus, sign-trackers find reward cues attractive and will approach and manipulate the cue as if it were the reward itself. In contrast, upon cue presentation, goal-trackers will immediately go to the location of reward delivery (i.e. the food cup). Thus, this animal model allows the lab to parse the psychological and neurobiological components underlying these distinct forms of stimulus-reward learning and will shed light on the processes that go awry in addicts. Students will gain experience in the areas of neuropsychopharmacology and classical Pavlovian learning mechanisms in a basic biomedical laboratory setting. The procedures routinely used in the laboratory include a number of behavioral techniques such as intravenous drug self-administration, repeated psychostimulant administration (i.e. psychomotor sensitization), Pavlovian conditioning, and tests for impulsivity. In addition, neuroanatomical and immunohistochemical procedures are being employed. Students will have the

opportunity to assist with jugular catheterization surgeries, behavioral testing of the animals, cryostat sectioning of brain tissue, and neuroanatomical analyses, among other things.

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Investigator: James H. Woods, Ph.D.
Institution: University of Michigan, Ann Arbor, MI
Research Area: Pharmacology, Behavioral Pharmacology
Project Title: Dopamine D2/D3 Receptors in Compulsive Disorders
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students who are responsible, enthusiastic, and proactive with an excellent work ethic and dedicated to acquiring new skills are desired. A willingness to handle rodents is a must – proper training will be provided.

Project Description
In the field of behavioral pharmacology, preclinical animal models are developed to assess the effects of drugs on behavior and how environmental changes modulate those drug effects. In this laboratory, students can participate in one of several ongoing projects developing animal models with rodents as experimental subjects. One project is focused on developing behavioral procedures to assess whether drugs have rewarding or aversive effects. Rewarding or aversive effects suggest potential problems with abuse liability or treatment compliance, respectively, prior to clinical trials. Another project involves developing an animal model of compulsive behavior through the impact of dopamine-receptor agonists on reward-associated behavior. Dopamine-receptor agonists have been used in the treatment of Parkinson's disease and other disorders. These drugs have been implicated in the occurrence of compulsive behavior (e.g., compulsive gambling, hypersexuality) in a subpopulation of those patients. Tasks and responsibilities: Students are expected to familiarize themselves with the relevant literature. Students will be involved in all aspects of the project, which include: conduct experimental sessions, prepare drug solutions, administer drugs to animals, enter and manage data on Excel, data analysis, and writing abstracts. It is not expected that students will have experience in these tasks, so the necessary training will be provided and independence in the conduct of tasks will be gained throughout the year. Weekly meetings with a supervisor and/or research team will aid in acquisition of skills and knowledge.

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Investigator: Shane A. Perrine, Ph.D.
Institution: Wayne State University School of Medicine, Detroit, MI
Research Area: Neuronal underpinnings Driving Maladaptive Behaviors that occur during Drug Abstinence; the Enduring Effects of Psychostimulants, particularly MDMA (Ecstasy); Use of a Rodent Model of Post-Traumatic Stress Disorder (PTSD) to study comorbid drug abuse and PTSD.
Project Title: MR Spectoscopy and Behavior after Clinically Relevant Administration of MDMA
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes

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Student Attributes: Undergraduates majoring in Biology and Psychology with an interest in neuropsychopharmacology, substance abuse, and anxiety disorders, namely posttraumatic stress disorder are preferred. Studies will be using behavioral tests and models, traditional molecular techniques such as immunoblotting, and advanced MR neuroimaging modalities including proton magnetic resonance spectroscopy and manganese-enhanced MRI.

Project Description

This preclinical research focuses on understanding the neuronal underpinnings that drive maladaptive behaviors that occur during drug abstinence. The project focuses on the enduring effects of psychostimulants, particularly MDMA (Ecstasy), using behavioral tests and models, traditional molecular techniques such as immunoblotting, and advanced MR neuroimaging modalities including proton magnetic resonance spectroscopy and manganese-enhanced MRI. A second line of research interest includes the use of a rodent model of post-traumatic stress disorder (PTSD) to study comorbid drug abuse and PTSD.

Minnesota

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Investigator: Deborah Hennrikus, Ph.D.
Institution: University of Minnesota, Minneapolis, MN
Research Area: This research is a randomized trial of an integrated work safety - smoking cessation program designed for small manufacturing businesses. The program being assessed is designed to both improve work safety and promote smoking cessation in a way that is feasible for businesses with very limited resources.
Project Title: An Integrated Work Safety - Smoking Cessation Program for Small Worksites
Start Date, Program Length: 06/01/2013 - 8 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduates skilled and interested in website and social media design to promote health are preferred.

Project Description

This study examines how to help small manufacturing businesses incorporate changes in the work environment, worksite policies and health promotion programs to decrease both tobacco use and work injuries among their employees. Specifically, this project intends to examine the use of the internet and social media to disseminate information on best practices to worksite managers and enable them to share information on useful approaches.

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Investigator: Abigail Gewirtz, Ph.D., L.P.
Institution: University of Minnesota, St. Paul, MN
Research Area: Prevention Research
Project Title: Effectiveness of a Web-Enhanced Parenting Program for Military Families
Start Date, Program Length: 05/01/2013 – 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students majoring in Psychology or other Social Science

majors are preferred. Students should have an interest in prevention/intervention research, enthusiasm and interest for working with military families, ability to work in a large team, have initiative and independence, and an interest in working with a "people-intensive" research study.

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Project Description

This study is a randomized controlled trial of a prevention program to enhance parenting among military families with a parent deployed to a combat zone (Iraq or Afghanistan). Families with children ages 5-12 are recruited on a rolling basis with a total N=400. Students will be involved in different types of study activities. These may include: tracking online recruitment and conducting assessments in families' homes, including gathering observational data via video camera, self-report measures, and physiological (heart rate and vagal tone) data, and executive functioning measures. Students may also be involved in intervention activities (helping to coordinate the intervention, mapping out participant locations in order to identify intervention locations, assisting intervention facilitators, observing intervention activities where possible), as well as in recruitment activities, participating in outreach (in person and online) with National Guard and Reserve groups to inform families about the study. At the end of the summer, students have the opportunity to produce a poster for submission to a national conference, focused on study data, and related to their summer work.

Missouri

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Investigator: Xiangping Chu, M.D., Ph.D.
Institution: University of Missouri-Kansas City, Kansas City, MO
Research Area: Acid-Sensing Ion Channels Involved in Drug Addiction
Project Title: Targeting Acid-Sensing Ion Channel 1a to Prevent Drug Addiction
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Students (high school or college, GPA over 3.5) with a strong interest in rodent behavior in response to drugs are preferred.

Project Description:

Improving the treatment and prevention of drug addiction is an important goal for modern medicine, and ion channels have become attractive targets in the search for novel pharmacotherapies of drug addiction. Extracellular proton concentrations in the brain may be an important signal for neuronal function. Proton concentrations change both acutely, when synaptic vesicles release their acidic contents into the synaptic cleft, and chronically during ischemia, seizures, and other progressive neurological disorders. Acid-sensing ion channels (ASICs) are proton-gated cationic channels that are activated by a drop in extracellular pH. They are enriched in the mammalian brain with a high synaptic density. Accumulating evidence suggests that ASIC1a contributes to synaptic activity related to learning/memory and fear conditioning, and also plays a critical role in neurodegenerative diseases. Recently, we reported that functional ASIC1a is enriched in striatal medium spiny neurons as a dominant ASIC subtype. This subtype is sensitive to the psychostimulant cocaine, and its expression and function (ASIC currents) are upregulated in response to chronic cocaine administration. Further, the ASIC antagonist amiloride decreased sensitized motor responses to repeated cocaine and also decreased cocaine self-administration. These pilot studies also reveal that ASIC1a, but not ASIC2, null mice showed a lack of behavioral sensitization to repeated cocaine. These findings raise an important question as to whether chronic cocaine treatment could progressively upregulate ASIC1a, leading to behavioral sensitization. In this application, a series of coherent experiments to evaluate the role of ASIC1a is proposed, for the first time, in regulating behavioral sensitivity to repeated cocaine administration. The study's hypothesis is that upregulation of ASIC1a activity contributes to behavioral sensitization to cocaine. The following two Specific Aims are proposed: 1) Define neurochemical and biophysical adaptations of ASICs to chronic cocaine administration; 2) Explore the functional role of

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ASIC1a in behavioral sensitivity to repeated cocaine. Data from this project will provide evidence and insights for a new molecular mechanism underlying drug addiction, and will ultimately contribute to the development of novel pharmacotherapies, by targeting ASIC1a, for the treatment of various mental illnesses stemming from substance abuse. This lab will use a multidisciplinary approach to test the study's hypothesis.

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Investigator:	Pamela Madden, Ph.D.
Institution:	Washington University, St. Louis, MO
Research Area:	Gene Discovery for Use and Dependence on Nicotine. Test and apply new statistical and computational models to address genetics-based problems in addiction.
Project Title:	Research Education Program in Aspects of Statistical Genetics and Addiction
Start Date, Program Length:	06/03/2013 – 9 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students with a background in the areas of math, quantitative methods, and computer science with an interest in the development and/or application of such methods to problems associated with addiction genetics are preferred. College students interested in working alongside our postdoctoral program participants and their mentors during the summer would be welcomed into our program.

Project Description

This research education program is designed to train scientists to develop novel statistical or computational tools to address problems in addiction genetics. The program provides its postdoctoral trainees (program participants) with mentors that are either clinical or basic researchers in addiction, and with pertinent statistical or computational modeling expertise. Undergraduate summer trainees are invited to work under the guidance of one of the program's postdocs and their mentors. Currently the program has postdoctoral level scientists involved in the development of a wide-range of tools, including genetic pathway analysis for nicotine dependence, an epigenome browser to assist researchers in the examination of genomics and genetic data sets in a highly visual way, the development of graph-theoretic methods to identify and quantify large scale brain networks using resting-state fMRI data, tools for discovering novel CNVs, and a statistical method for genome-wide gene-gene interaction analysis. Each summer the Midwest Alcoholism Research Center (MARC) at Washington University sponsors a nationally competitive summer program (Alcoholism Research Training Summer Students: ARTSS) for motivated undergraduate students interested in working investigators on an alcoholism-related research topic. There is a week of didactic work to introduce students to various aspects in the research and treatment of alcoholism and other addictive disorders, supported by the MARC and the NIDA R25 educational program, as well as other seminars on other research-related topics given throughout the remaining eight weeks of this program given by junior faculty involved in addiction and methodological research. Dr. Madden is also a member of the research team supporting ARTSS, and students from the NIDA summer program will be invited to participate in all relevant seminars currently supported by the MARC and the R25 educational research program.

Nevada

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Investigator: Brad Donohue, Ph.D.
Institution: University of Nevada Las Vegas, Las Vegas, NV
Research Area: Family Behavior Therapy in Sport Psychology; Outcome Study Research
Project Title: Evaluation of a Family Behavior Therapy in Collegiate Athletes
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduates majoring in Psychology, Social Work, Counseling, and Education with an interest in sports psychology are preferred. An athletic background is a plus.

Project Description

Substance abuse of alcohol, stimulants, marijuana, and performance enhancing drugs is highly prevalent and especially dangerous in collegiate student athletes (SAs), leading many of the top scientists in the world to acknowledge drug and alcohol abuse in SAs as a National Public Health Concern warranting immediate intervention development. Indeed, collegiate student counseling centers have historically been ill equipped to address the cultural uniqueness of sports, and needs of highly-skilled athletes. Perpetuating this endemic problem, SAs are especially likely to deny and resist mental healthcare. In an effort to prevent substance abuse in SAs, the NCAA now mandates random drug screens. These efforts have led to more SAs being identified to need mental health services. However, such testing does not appear to reduce substance use in SAs. Furthermore, no psychotherapies have been found to significantly decrease illicit drug or alcohol use (or commonly evidenced comorbid psychiatric symptoms) in controlled trials involving SAs who have been identified to abuse substances. In recent controlled trials, prevention programs have been shown to reduce alcohol use in SAs who are at-risk for alcohol abuse. These recent studies indicate particular improvements when family members are prescriptively involved in treatment. However, prevention programs are not designed to manage abuse and dependence. The proposed trial will, therefore, extend family-based treatment to SAs evidencing substance abuse or dependence. The essential intervention protocols of Family Behavior Therapy (FBT) (an established NIDA-supported intervention for substance abuse) will be integrated into evidence-supported engagement and cultural enlightenment interventions. Family involvement, which is essentially absent in collegiate student counseling centers, will be made possible with innovative video- and telephone-conferencing. The resulting comprehensive treatment will involve tailored sport-specific scenarios that are expected to be exciting and relevant to SAs, assisting in their retention. The primary specific aims are relevant to evaluating the proposed sport-specific FBT in a controlled trial involving 157 SAs who are referred for problems associated with alcohol and drug use. Unique to existing treatments, the proposed FBT will comprehensively address (a) illicit drug and alcohol use, (b) risk of HIV and STDs, (c) sport performance, and (d) comorbid psychiatric problem behaviors that have been found to exist in SAs. The controlled comparison will be conducted between FBT and “treatment as usual” (TAU) (urn random assignment of participants to experimental conditions).

New Jersey

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Investigator: Sulie L. Chang, Ph.D.
Institution: Institute of Neuroimmune Pharmacology
Seton Hall University, South Orange, NJ
Research Area: NeuroAIDS and Substances of Abuse
Project Title: CNS Inflammation and Substance Abuse

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continued

Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: Yes
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: High school and undergraduate students with a declared major in Biology, Chemistry, Biochemistry, or intend to major in one of these or a related major are preferred. Students must have a GPA above 3.1 and should have basic biology, chemistry, biochemistry laboratory skills, very good IT and communication skills. Students must be interested in drug abuse research and conducting basic research in the biomedical field.

Project Description

This Institute of Neuroimmune Pharmacology is dedicated to the investigation of the a) alcohol-related behavior disorders in adolescents; b) molecular mechanisms underlying nicotine's modulatory effects on learning behaviors in the presence of HIV-1 viral proteins; c) age-dependent developmental changes in neurotransmitter systems in the brain; and d) feedback interactions between substances abuse and microbial infection, including HIV infection, in the central nervous system. This project will offer a unique 10-week research intensive opportunity for high school and undergraduate students. The long-term goal of this research project is to delineate the interaction between the nervous and immune systems. The short-term goal is to investigate the association between neuronal disease and behavioral disorders as a result of abuse of substances such as morphine, alcohol, nicotine, and methamphetamine. Currently, two main lines of our research are that we comprehensively investigate the bidirectional relationship between CNS inflammation and abuse of addictive substances at both the molecular and behavioral levels; and we determine if targeting brain inflammation could be a potential therapeutic strategy to treat substance abuse-related behavioral disorders. The NIDA summer researcher will study 1) the feedback interactions between drug abuse and both viral and bacterial infections in the brain; 2) nicotine's effects on learning in the presence of HIV-1 infection; 3) age-dependent changes in neurotransmitter systems in the brain; and 4) binge drinking-related physiological and behavior disorders in adolescents.

New York

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Investigator: Richard Blondell, M.D.
Institution: State University of New York - Buffalo, Buffalo, NY
Research Area: Addiction Medicine, Pain Management, Physician Education: In this randomized clinical trial, patients with chronic back pain due to the "Failed Back Syndrome" and a co-existent opioid addiction receive either buprenorphine/naloxone maintenance or methadone for pain.
Project Title: Buprenorphine and Methadone for Chronic Pain
Start Date, Program Length: 06/03/2013 – 8 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Pre-medical students are preferred. Students will help with participant recruitment and enrollment, data collection, assist physicians with the medical care, and help with data analysis, or manuscript preparation. Students must have functional skills in a Windows operating system; Word processing (Microsoft Word 2007), database/spreadsheet applications (Microsoft Access/Excel 2007), graphics/presentation software (Microsoft PowerPoint 2007); and basic skills in statistical analysis (SPSS) are desirable and advanced skills are a plus.

Project Description
In this randomized clinical trial, patients with chronic back pain due to the "Failed Back Syndrome" and a co-existent opioid addiction receive either buprenorphine/naloxone maintenance or methadone for pain. The student would help with participant recruitment and enrollment, data collection, assist physicians with the medical care, and help with data analysis or manuscript preparation. Expertise needed: The student will need to have functional skills in Windows operating system; Word processing (Microsoft Word 2007), database/spreadsheet applications (MicrosoftAccess/Excel 2007), graphics/ presentation software (Microsoft PowerPoint 2007); Basic skills in statistical analysis (SPSS) desirable and advanced skills are a plus.

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Investigator:	Stewart Clark, Ph.D.
Institution:	University at Buffalo, SUNY, Buffalo, NY
Research Area:	The Role of Neuropeptides in Reward-Related Behaviors
Project Title:	Modulation of Dopaminergic VTA Neurons by Urotensin II
Start Date, Program Length:	06/01/2013 – 10 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students interested in pursuing a research career in biomedical science, with an emphasis on behavioral psychology, neuroscience, or pharmacology are preferred. Students driven to succeed, are intellectually curious, not afraid to ask questions, make mistakes, or admit they made a mistake are ideal.

Project Description
Neuropeptide systems produce both acute and long-lasting effects on neuronal physiology. While the opioid system is the best known example, it is just one of many neuropeptide systems which modulate the "reward circuitry." This research project is currently elucidating the biological function of the novel neuropeptide urotensin II (UII). The UII receptor is expressed by cholinergic neurons of laterodorsal and pedunculopontine tegmental nuclei, an area known to be involved in sensory-motor gating, learning, and motivated behaviors. The project is using behavioral paradigms such as Conditioned Place Preference and Locomotor Sensitization to explore UII's role in reward-related behaviors. The project's ultimate research goal is to elucidate the endogenous function of UII. The team's belief is in order to exploit a neuropeptide system for therapeutic intervention, one first has to know its role in normal physiology. This lab strongly believes in supporting the development of young scientists, in particular those who wish to contribute to society through the advancement of knowledge and technology. Summer Research students in this lab will be part of the University at Buffalo's CLIMB Program (Collaborative Learning and Integrated Mentoring in the Biosciences). The students will participate in an integrative career skills development program which entails a variety of networking and skill building activities: 'Introduction to Lab Skills' and 'Laboratory Safety Training', "Identifying Targets for Drug Discovery in the 21st Century" weekly seminar series, and the "Buffalo Wing Social." Students will present their research findings as oral presentations at the CLIMB Program Research Day and have the chance to present at the School of Medicine and Biomedical Sciences "Summer Undergraduate Students' Research Day." The lab's overall goal is to introduce students to research in bioscience, to facilitate understanding of recent advances in the pharmacological and toxicological sciences, and to mentor students toward graduate careers in these disciplines.

Investigator:	John T. Lis, Ph.D.
Institution:	Cornell University, Ithaca, NY
Research Area:	Molecular Biology, Genomics, Gene Regulation, Transcription Control, RNA Aptamers

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Project Title: In Vivo Detection and Imaging of Epigenetic Histone Modifications and Modifying Enzymes using Multivalent RNA Aptamers

Start Date, Project Length: 06/01/2013 – 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students should have some laboratory experience in chemistry, biochemistry, or molecular biology, and an interest in genes, the genome, or gene regulation, and a passion for discovery are preferred. Previous work experience in any related area is desired.

Project Description

The Lis Lab develops and uses a variety of strategies to probe the structure of promoters and genes and the regulation of their activities in living cells. This lab's model is the heat shock genes, a highly-regulated set of genes that are well-suited for the investigation of inducible mRNA production. The lab investigates the factors that participate in the heat shock gene induction response, determine when, where, and with whom the factors act during the process of gene activation, and evaluate the functional and structural consequences of rapid inactivation of these factors. The resulting information is critical in establishing molecular models for the various steps in the transcriptional activation of genes and coupled RNA processing events. While the lab's primary model system is the highly-inducible heat shock (HS) genes in Drosophila, they have recently performed genome-wide studies in Drosophila and mammalian cell lines, including mouse stem cells and differentiated cells to assess the generality of our findings. Over the years, the research team has become increasingly interested in developing genetic, optical and biochemical approaches that can be applied *in vivo* to study transcription and its regulation. Studying transcription regulation requires highly sensitive tools for "imaging" specific macromolecular interactions. Determining the associations of transcription factors along a promoter and gene during the kinetics of gene activation can limit the possible models for the roles of these factors. This research examines interactions both optically, using microscopy to actually see where factors are, and molecularly, using biochemical techniques. The imaging approach is dramatically enhanced by additional strategies that lead to the disruption of specific factors or their macromolecular interactions. Re-examining (re-imaging) the consequences of disruption a specific factor can provide critical clues to mechanisms. Disruption can be achieved in several ways, each with specific advantages and drawbacks. Some are easy and generally applied, such as RNAi, but may not be good at sorting primary from secondary effects. Others are harder to implement, but are better at rigorously identifying the direct effects of a factor, such as RNA aptamers. RNA aptamers are of particular interest to us as they provide alternatives to small-molecular-weight "drugs" and can be selected *in vitro* from a combinatorial sequence pool for their affinity to a target molecule. The chemical and biological properties of RNAs that allow efficient production and regeneration have made such aptamers versatile molecular probes of biological mechanisms like transcription regulation. RNA aptamers possess tremendous potential relative to small organic compounds in experimental and therapeutic manipulations. When expressed under the control of specific promoters, they are able to modulate or perturb molecular interactions with high temporal and spatial precision in tissue culture cells or animals.

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Investigator: Crystal M. Fuller, Ph.D., M.P.H.
Institution: Columbia University, Mailman School of Public Health, Department of Epidemiology, New York, NY

Research Area: Community-Based Infectious Disease and Drug Abuse Epidemiologic Studies, particularly Design and Conduct of Structural and Multilevel Intervention Studies, HIV prevention among HIV negative injection drug users and their peers in New York City, health disparities research.

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Project Title: Post Exposure Prophylaxis among IDU Syringe Customers-Pharmacy Pilot Intervention
Start Date: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students majoring in any of the Social Sciences, Applied Health, or basic sciences with an interest in social and biologic intervention studies, particularly among low-income, marginalized community-based populations are preferred. Previous experience is a plus, but not required. Those interested in conducting research as an ultimate professional goal are desired.

Project Description
This social, behavioral and structural research program involves working with heavy illicit drug users and other street-recruited high risk groups, particularly with the goal of preventing HIV and eliminating racial disparities in HIV through intervention research. The specific research for this program involves the investigation of IDUs and their peers obtaining post-exposure prophylaxis (PEP) directly from pharmacists in the event of an exposure to HIV. Research assistants will have the opportunity to train pharmacy staff on study protocol and monitor and support their research activities as well as collect data through computer-assisted personal interviews. The conduct of audio computer-assisted self-interviews among IDU's and peers recruited in the pharmacy will be part of the research experience. Other research activities the intern will be exposed to include monitoring survey and participant enrollment, phone and in-person interviews with pharmacy staff and sometimes IDU participants, data entry and filing participant information, assisting with development of study protocols, monthly reporting on recruitment and enrollment, managing creating recruitment spreadsheets, performing literature reviews, assisting with study maintenance and Institutional Review Board correspondence, updating Access databases and recruitment spreadsheets, and assisting with coordination of study meetings and trainings. Finally, the intern will have an opportunity to attend summer classes via the summer institute EPIC, and attend Grand Rounds and monthly seminars held by Dr. Fuller's recently funded T32 Substance Abuse Training Program in Epidemiology.

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Investigator: Diana Martinez, M.D.
Institution: Columbia University, NYSPI, New York, NY
Research Area: PET imaging in Drug and Alcohol Abuse/Addiction
Project Title: Imaging the Neurochemistry of Negative Reinforcement in Cocaine Abuse
Start Date, Program Length: 06/01/2013 - 4 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students that are diligent, inquisitive, respectful of research participants, and responsible are preferred.
Project Description One of the most difficult aspects of treating cocaine dependence is the propensity for relapse to cocaine use after a period of abstinence. While previous research has focused on positive reinforcement and relapse, recent studies have begun to explore the neurobiology of negative reinforcement. Drug use in setting of stress provides negative reinforcement by relieving the stress. Preclinical studies show that kappa receptor activation mediates stress-induced, but not cocaine-induced, cocaine-seeking behavior, suggesting that that kappa receptor activation is selective for negative reinforcement. Previous postmortem studies in cocaine dependence have shown that the kappa receptor

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is unregulated in this disorder. However, studies investigating the behavioral significance of this change have been lacking due to the inability to image this receptor in vivo. In this application, this project will use the newly-developed kappa receptor selective PET radiotracer [11C]GR103545 to explore this alteration in neurochemistry in cocaine abuse. In addition, given that dynorphin is known to closely regulate striatal dopamine transmission, we use the Monetary Incentive Delay Task, which produces reproducible activation of the striatum, and has been shown to correlate with striatal dopamine transmission. Thus, this project will compare alterations in neurochemistry and striatal function in cocaine abusers and matched controls for the first time. Additionally, within the cocaine abusing subjects, this project will use a laboratory model of stress-induced cocaine seeking behavior in order to explore the correlation between the neurobiology and negative reinforcement. This project will also include a group of cocaine abusers who undergo cocaine self-administration sessions following a priming dose of cocaine, in order to demonstrate the specificity of the kappa receptor system for stress-induced cocaine seeking behavior. A final specific aim of this application is to investigate in humans, a well-documented preclinical phenomenon in which binge dosing of cocaine significantly increases dynorphin levels. To investigate this, the cocaine abusing volunteers will participate in binge cocaine self-administrations sessions. Following the sessions, the imaging scans and the stress-induced cocaine self-administration sessions will be repeated, in order to investigate the effect of increased dynorphin in the brain.

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Investigator:	Jose Moron-Concepcion, Ph.D.
Institution:	Columbia University Medical Center, New York, NY
Research Area:	Neuroplasticity of Opiates, Mechanisms Underlying Opiate-Induced Pain
Project Title:	Mechanisms Underlying Opiate-Induced Neuroplasticity at the Synapse
Start Date, Program Length:	06/03/2013 – 8 weeks
Housing Available:	No
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students with previous experience in biochemical techniques and experience with animals are preferred.

Project Description

While abuse and addiction to opiates has been a long-standing problem, the recent surge in abuse of opiate analgesics foreshadows the potential for rising rates of addiction to opiates. Repeated administration of drugs of abuse, such as morphine, causes a progressive and persistent sensitization of its locomotor stimulant and positive reinforcing effects. Sensitization to morphine can be sustained for several months after drug cessation and serves as a useful animal model of plasticity and the neuroadaptations associated with repeated administration of opioids having abuse potential. Studies show that sensitization has a close relationship with relapse, compulsive drug-seeking, and drug-taking behavior. Recent evidence suggests a role for the hippocampus in controlling these long-lasting behavioral adaptations. Investigation of an opiate-induced sensitization may help to better understand the relapse mechanisms and provide new strategies for the treatment of drug addiction. Additionally, the key role of hippocampal synapses in learning and memory suggests that an understanding of the role of its specialized subcellular compartments in addictive processes is essential. Glutamatergic systems are thought to be involved in opiate-induced neuronal and behavioral plasticity although the mechanisms underlying these effects are only beginning to be understood. This lab analyzes the role of synaptic AMPA glutamate receptors in the neuronal adaptations associated with repeated

administration of morphine. More specifically, this lab studies how morphine administration modulates synaptic transmission and plasticity at hippocampal synapses by altering the expression and composition of AMPA glutamate receptors, and how these adaptive effects will persist over time leading to neuroadaptions in glutamatergic synaptic function which could be responsible for the long-term behavioral sensitization induced by repeated morphine administration.

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Investigator: Steven Schinke, Ph.D.
Institution: Columbia University, New York, NY
Research Area: Drug Abuse Prevention with Adolescents
Project Title: Preventing Drug Abuse among Hispanic Adolescents
Start Date, Program Length: 06/01/2013 – 8 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students interested in the behavioral sciences and drug abuse prevention are preferred.

Project Description

This study will develop, test, and disseminate an interactive program to delay the onset of drug use and to prevent harmful use and abuse among Hispanic youths. Grounded in social learning theory, the prevention program will equip youths with cognitive and behavioral skills to address ethnic-specific and pan-ethnic risk and protective factors associated with drug use among Hispanic adolescents. Youths will access the program's 10 initial sessions and annual booster sessions via mobile computing devices. The program will help youths acquire, try out, receive feedback on, and master new interpersonal skills. Cultural content woven into every programmatic session, together with sessions expressly dedicated to issues of acculturation, Hispanic traditions, and bicultural stress will give the program thematic coherence and enhance its attraction and value. The study design is a randomized clinical trial. Enrolled youths will complete baseline measures, intervention-arm youths will receive the initial prevention program, and all youths will complete post-intervention and 12-, 24-, and 36-month follow-up measures. Intervention-arm youths will additionally receive pairs of booster sessions after they complete 12- and 24-month follow-up measurements. Hypothesis testing analyses will examine 30-day drug use rates between arms and across follow-up measurement occasions. In addition, this study will analyze intervention effects on mediator variables associated with drug use risk and protective factors and assess the extent to which changes on mediator variables explain drug use differences. The research team will examine gender differences, and, to the extent possible, immigration status and ethnic background differences in study outcomes. At the conclusion of the trial, and assuming that longitudinal findings support the tested prevention approach, the team will revise the program to increase its appeal for Hispanic youth across America, and disseminate the revised program through a variety of online resources. Throughout, program dissemination will be monitored.

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Investigator: Alex Manini, M.D., M.S.
Institution: Mount Sinai School of Medicine, New York, NY
Research Area: Medical Toxicology and Emergency Medicine, Cardiovascular Complications of Acute Drug Overdose
Project Title: Predicting Adverse Cardiovascular Events in Drug Overdose Emergencies
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students interested in drug overdosing, toxicology, and cardiovascular complications are preferred.

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Project Description

During the summer months of June through August, an eight-week program will be conducted. Students of the summer program will participate in an intensive orientation, weekly research meetings, didactic sessions, and data collection in the Emergency Department. Students will be given the opportunity to be closely involved in various aspects of clinical research. Students are paired with physician or nurse investigators and work closely with them on one or more research studies. The program involves clinical research with some opportunities for students with interest in social sciences, however there is no basic laboratory opportunity at this time.

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Investigator:	Judith S. Brook, Ed.D., Ph.D.; Dr. Kerstin Pahl, Ed.D., Ph.D.
Institution:	New York University School of Medicine, New York, NY
Research Area:	Psychosocial Factors Related to Drug Use and Problem Behaviors in Minority Youth
Project Title:	Drug Use and Problem Behaviors in Minority Youth
Start Date, Project Length:	06/01/2013 – 10 weeks
Housing Available:	No
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Psychology or Sociology undergraduate majors with a course, or courses in research methodology; an interest in ethnic studies and research; and some experience in working on a research project are preferred.

Project Description

This lab's research goal is to investigate developmental pathways to substance use, dependence, and cessation, and to identify protective factors that will offset risks for substance use and dependence in adulthood. The sample includes African American and Puerto Rican adults who were interviewed at four points in time, from early adolescence to adulthood. The most recent wave of data collection aims to accomplish the following: 1) examine the interactions of risk and protective factors such as personality, family, peers, ecological context, acculturation/cultural values, and ethnic/racial identity as they affect the course of substance use/abuse/dependence, and 2) study the consequences of early alcohol and drug use and other problem behaviors on adult functioning. The intern will participate in a number of research activities, including data collection, data management, statistical techniques, developing hypotheses, literature reviews, and the preparation of manuscripts for publication.

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Investigator:	Perry N. Halkitis, Ph.D.
Institution:	New York University, New York, NY
Research Area:	Substance Use, HIV/AIDS, Adolescent, Emergent Adult Syndemics, Mental Health
Project Title:	Syndemic Production among Emergent Adult Men
Start Date, Program Length:	06/03/2013 – 10 weeks
Housing Available:	Yes
High School Students:	Yes
Undergraduate Students:	Yes
Student Attributes:	Students must demonstrate flexibility; comfort with diverse populations; respect for confidentiality; strong team work skills; excellent attention to detail; the ability to document their work; and experience with a statistical package (SPSS) is helpful, but not necessary.

Project Description

Young men who have sex with men (YMSM) continue to experience health disparities with greater frequency than their heterosexual peers. These disparities include increased incidence of substance

abuse, HIV infection, and various mental health burdens. Collectively these mini-epidemics have been theorized to operate synergistically forming a syndemic. This study seeks to explore the theory of syndemic production among YMSM. Project 18 (P-18) is a longitudinal investigation exploring the developmental pathways of risk and resiliencies with regard to substance use, sexual risk-taking and mental health burden in a sample of 675 18 year-old young men who have sex with men. Seven waves of data will be collected over the course of three years. The P-18 team consists of researchers from a variety of disciplines including developmental psychology, counseling psychology and public health and social work. Together, we bring a multidisciplinary approach to our study. The primary goals of P-18 include: Explore the trajectories of drug use, sexual risk-taking and mental health burden across time; delineate the risk and protective bases of physical, relational, and psychosocial factors; and determine the extent to which the development of syndemics varies by race/ethnicity, social class and residential instability. The Center for Health, Identity, Behavior & Prevention Studies (CHIBPS) at New York University, directed by Dr. Perry Halkitis, is seeking undergraduate and graduate interns to join its research team. For more information about CHIBPS, visit its website: www.chibps.org. CHIBPS work is nested within the theories of health, counseling, and developmental psychology, and focuses on human development, mental health, and risk-taking, including substance use and HIV transmission. Interns will work on P-18, a psychologically-based longitudinal investigation of the risk and protective bases for substance use, sexual risk-taking and mental health burden in a sample of 600 young men who have sex with men. Interns should demonstrate a desire to work in a multi-cultural environment with a commitment to diversity, and be team-oriented, yet able to work independently. Intern Responsibilities: Conduct assessments with participants; supporting research team in literature review, data compilation, and writing; assisting senior researchers with projects; coordination and transcription of discovery (qualitative) interviews; quantitative data coding and analysis. This is an excellent opportunity to hone research and analytical skills, especially for those interested in applying to social science graduate programs or pursuing a career in public health.

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Investigator:	Anjali Rajadhyaksha, Ph.D.
Institution:	Weill Cornell Medical College, New York, NY
Research Area:	The research seeks to understand the role of the L-type calcium channels in cocaine-induced AMPA receptor plasticity. Genetic mutant mice, mouse behavioral models of addiction, molecular biology, cocaine exposure, and neuroscience.
Project Title:	The Role of the L-type Calcium Channels in Cocaine-Induced AMPA Receptor Plasticity
Start Date, Program Length:	06/01/2013 – 8 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students majoring in Neuroscience, Biology, Biochemistry or Psychology with an interest in cocaine addiction and the use of mouse behavioral models to better understand this neuropsychiatric disease are preferred. Some lab experience would be beneficial, but is not necessary.

Project Description

This lab utilizes a combination of genetic mutant mice, mouse behavioral models of addiction and molecular biology to investigate the role of the L-type calcium channels in cocaine-induced AMPA receptor plasticity. The lab is interested in students who would like to learn and perform basic biomedical lab work, including genetics and molecular biology and those interested in learning and performing mouse behavioral studies. Specifically, the lab's research has shown that a cocaine-induced increase in cell surface levels of the GluA1 subunit of AMPA receptors underlies expression of cocaine-induced psychomotor sensitization. Psychomotor sensitization is a commonly used model of behavioral plasticity that has aided in our understanding of the actions of cocaine. This

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model is composed of two phases, development and expression. Development of sensitization is a progressive increase in psychomotor activity following repeated cocaine treatment that has been shown to involve activation of molecular mechanisms in the ventral tegmental area. Expression of sensitization is a persistently elevated drug challenge-induced locomotor response observed following an extended withdrawal period, and several lines of evidence have found that adaptations in the nucleus accumbens mediate this long-term sensitized response. This change in GluA1 localization is accompanied by an increase in phosphorylation of this subunit at its serine 831 (S831) residue and is dependent on Cav1.2 L-type calcium channel (LTCC)-activated CaM kinase II (CaMKII) and extracellular signal-regulated kinase 2 (ERK2). In parallel, the study has shown that a decrease in GluA1 cell surface levels, accompanied by a decrease in phosphorylation of GluA1 at serine 845 (S845) occurs in the dorsal striatum. To further probe the role of phosphorylation of both of these GluA1 sites in a cocaine conditioned place preference (CPP) paradigm that includes acquisition, and an extinction and reinstatement phase, the study has utilized mice with a substitution of an amino acid at the PKA (S845A) and CaMKII (S831A) phosphorylation sites on GluA1. The lab's preliminary studies find that wild-type, heterozygous and homozygous S831A mutant mice similarly acquire cocaine CPP. However, S831A homozygous mutant mice fail to extinguish the place preference, suggesting that this phosphorylation site may be critical for mediating extinction of a drug-induced place preference. The lab plans to examine changes in cell surface levels of GluA1 and GluA2 subunits to examine the role of AMPAR trafficking in mediating cocaine extinction learning. The lab is additionally performing experiments to test the involvement of the S845 site in acquisition, extinction and reinstatement of cocaine CPP by utilizing S845A mutant mice and would involve a summer student in all of these ongoing projects.

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Investigator:	Stephen Dewhurst, Ph.D.
Institution:	University of Rochester, Rochester, NY
Research Area:	HIV-associated neuroinflammation, methamphetamine exposure, cerebral blood flow, small animal model systems (mice), imaging methods (two photon *in vivo* imaging, laser doppler flowmetry).
Project Title:	Studies on the Mechanism(s) by which HIV-1 Infection and Methamphetamine Impair Cerebral Blood Flow
Start Date:	06/24/2013 – 10 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students with a future interest in a research doctorate (Ph.D.) are preferred, but not required.

Project Description

This is a basic biomedical science project that will involve studies in a small animal (model) for HIV-1 infection of the central nervous system (CNS). This project's goal is understand the mechanism(s) by which HIV-1 infection of the CNS, and methamphetamine exposure, can independently and synergistically disregulate cerebral blood flow (CBF). This is a complex physiologic process that can be studied only in living animals. Methodologies used in this research include *in vivo* two-photon imaging, as well as laser doppler flowmetry - in addition to microsurgical techniques, and analysis of underlying animal physiology. Training will be provided on unfamiliar techniques, and day-to-day mentoring provided by experienced lab members.

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Investigator:	Benjamin Hayden, Ph.D.
Institution:	University of Rochester, Rochester, NY
Research Area:	Primate Single Unit Recordings, Primate Behavior, Decision-Making, Economic Preference, Neuroeconomics

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Project Title: Dopamine and the Role of Anterior Cingulate Cortex
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduates majoring, or with course work in neuroscience, computational neuroscience, and neuroeconomics are preferred.

Project Description
This project is a primate model to study the cognition and neuroscience of the brain's reward system. Most of this lab's ongoing research involves developing decision-making tasks for rhesus monkeys and training them to perform simple economic decisions repeatedly. The lab then either 1) records brain activity using extracellular electrodes while they perform the task; 2) examines behavior by itself (which is often a good way to understand mental processes); or 3) examines the influence of drugs of abuse on behavior. The specific questions studied involve self-control and risky choice (gambling decisions).

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Investigator: Congwu Du, Ph.D.
Institution: State University of New York at Stony Brook, Upton, NY
Research Area: Optical Neuroimaging, cocaine research, neuropharmacology
Project Title: Optical Neuroimaging to Study the Functional Change of Brain In Vivo
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students who are highly-motivated with a background in imaging, or experience with animal models and the animal's self-administration of cocaine 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, the project has 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. This 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.

North Carolina

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Investigator: David Margolis, M.D.
Institution: University of North Carolina at Chapel Hill, Chapel Hill, NC
Research Area: Epigenetic Regulation of HIV Expression and Latency
Project Title: HIV Latency, Epigenetics, and Therapeutics
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes

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Student Attributes: Undergraduate students with some molecular biology experience are preferred.

Project Description

Drugs of abuse, most notably cocaine, can alter cellular function via epigenetic modification. The durable, epigenetic effect of such environmental influences on memory T cells and persistent HIV infection is unexplored. A more complete understanding of how epigenetics modulate HIV proviral quiescence, and whether latent infection is altered by exposure to cocaine is needed. To achieve this, the study will comprehensively evaluate the following hypotheses using transformed and primary cell models of latency, and latently infected cells obtained from patients, including patients with a history of cocaine exposure.

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Investigator: Kirk Wilhelmsen, M.D., Ph.D.
Institution: University of North Carolina- Chapel Hill, Chapel Hill, NC
Research Area: Genetic Analysis and Whole Genome Sequencing to Identify Genetic Variants that Affect Behavior, including Susceptibility to Addiction
Project Title: Whole Genome Sequence Analysis to Identify Sequence Variation that Predispose to Addiction
Start Date, Program Length: 06/01/2013 - 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Student Attributes: Yes
Undergraduate students interested in biomolecular research are preferred. Students must have basic programming experience and experience working in a Linux/Unix environment.

Project Description

UNC's Summer of Learning and Research (SOLAR) Program is an intensive 10-week experience designed to prepare under-represented minority students for graduate research and careers in science. The program is open to rising juniors and seniors from under-represented populations. Our goal is to provide undergraduate students interested in careers in biomolecular research with an opportunity to carry out independent research projects under the guidance of a UNC faculty mentor. This intense summer research experience will introduce you to cutting-edge research and will provide you with a realistic view of graduate school and biomedical research careers. You will be immersed in the research process, including the design of a research project, methods for conducting controlled experiments, data collection, data analysis, and team-work. We will help you develop strong scientific communication skills and you will have the opportunity to present your work in the cross-campus summer research poster session at the end of the summer. More information can be found at http://www.med.unc.edu/oge/stad/solar.

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Investigator: Christina S. Meade, Ph.D.
Institution: Duke University, Durham, NC
Research Area: HIV/AIDS and Drug Abuse
Project Title: Neurobehavioral and fMRI Research in HIV Infection and Cocaine Dependence
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students with a background in Psychology, Neuroscience, or Biomedical Engineering with an interest in patient-oriented research are preferred. Students must be highly motivated, reliable, and

mature, able to multi-task and learn new tasks quickly, and have strong interpersonal and organizational skills with an excellent attention to detail. Most importantly, students must be highly respectful of, and feel comfortable working with, diverse populations. Students should come prepared to work as an active team member in recruiting and enrolling participants, conducting assessments and literature reviews, and entering/managing data. Familiarity with SPSS and/or Matlab is preferred, but not required. The position is ideal for students interested in pursuing graduate training in clinical psychology or medical school. Applicants must be at least 18 years old by the program start date.

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continued

Project Description

This laboratory conducts patient-oriented research that examines the impact of drug abuse on behavioral and clinical outcomes among individuals living with or at high risk for HIV/AIDS. Summer interns will have the opportunity to work on an ongoing study of > 150 patients that aims to identify neurobehavioral effects of cocaine dependence and HIV infection. Specifically, we are interested in how these diseases impact impulsivity and decision making processes that may contribute to health risk behaviors. This observational study utilizes techniques from clinical psychology and neuroscience, including neuropsychological testing and functional neuroimaging. This integration of behavioral and cognitive neuroscience techniques is novel and innovative. This lab hopes results will shed light on the mechanisms underlying neuropsychiatric disorders characterized by risk taking and impulsivity. Interns will have the opportunity to learn about other ongoing research projects, including two studies examining HIV risk among methamphetamine users in South Africa, during weekly lab meetings.

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Investigator:	Michael L. Platt, Ph.D.
Institution:	Duke University, Durham, NC
Research Area:	Neuroeconomics, Neurobiology of Reward and Decision Making
Project Title:	Center for the Neuroeconomics of Addiction
Start Date, Program Length:	06/01/2013 – 10 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students with a strong interest in laboratory research and previous research experience is preferred, but not required.

Project Description

Duke provides an unparalleled opportunity to participate in laboratory-based research at the cutting edge of neuroscience and decision-making, with powerful potential to increase understanding of the processes that go awry in addiction. The Institution's faculty provides expertise and laboratory experiences in neurophysiology, brain imaging, optogenetics, clinical research, and behavior. If accepted into the program, students will have the opportunity to spend 10 weeks as a full-time research intern, and interact with students in other parallel research programs, including the Duke Institute for Brain Sciences Summer Program in Research and the Mechanisms of Behavior Program. Independent, self- motivated and inquiry-based research experiences will be useful to students regardless of whether they wish to go on to graduate scholarship in the neurosciences, to professional training in the health and clinical sciences, or on to other careers in business, law, or public policy. Students also participate in a two-day Orientation Conference at the outset of the program, and meet several times each week thereafter for seminars by participating faculty, as well as for tutorials and workshops covering topics such as experimental design and analysis, science writing and oral presentation, science ethics, career paths in neuroscience, and applying to graduate school. At the conclusion of the program, students report on their work at an Undergraduate Research Conference held jointly with other summer research programs.

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Investigator: Baohong Zhang, Ph.D.
Institution: East Carolina University, Greenville, NC
Research Area: Toxicogenomics, Behavior Sciences, Pharmacology, Molecular Biology
Project Title: Behavior Impact of Drugs of Abuse and its Regulatory Mechanism by Small RNAs
Start Date, Program Length: 06/08/2013 – 10 weeks
Housing Available: Yes
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Students majoring in Biology, Pharmacology, Psychology, Physiology, Neurology or Chemistry are preferred. Laboratory experience is a plus, but is not required.

Project Description
The students will work on the behavior impact of drugs of abuse using a well-designed animal model C. elegans. They will test how nicotine exposure affects the survival and reproductive behaviors at a time and dose-dependent manner. The molecular mechanism regulating this behavior change will also be investigated. Through this project, the students will gain basic knowledge and skills in this field and feel more sense about the effect of drugs of abuse on our human life. The students will learn the advanced technology by first-hand experience and facilitate their interest in the drug abuse field for their future study and future.

Oregon

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Investigator: Judy A. Andrews, Ph.D.
Institution: Oregon Research Institute, Eugene, OR
Research Area: Etiology of Substance Use, e.g., Identification of Risk and Protective Factors
Title: Child and Adolescent Predictors of Substance Abuse in Emerging Adulthood
Start Date, Program Length: 06/10/2013 – 8 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students with an interest in pursuing a career in Psychology, Sociology, Biology, or a related field are preferred. Students will possibly work directly with participants as part of a structured assessment and must feel comfortable working with others in a professional environment. Students should be interested in the etiology of substance use, emerging adulthood, and/or biomarkers associated with substance use and stress. This experience is valuable for students interested in attending graduate school in psychology or a related scientific field.

Project Description
The overall purpose of the Oregon Youth Substance Use (OYSUP) project is to examine etiological factors across childhood and adolescence that are associated with the development of substance use during this period, and that are potentially predictive of substance use and abuse in emerging adulthood. The original study began with the assessment of 1,075 youth, their parents and teachers, when youth were in first through fifth grade, enabling a multi-source assessment of etiological factors measured at a young age. Annual assessments across 11 years have provided extensive data on over 950 youth. Annual assessments are continuing until youth are one-year post high school, and added is an intensive assessment done when youths are age 20/21. This assessment consists of a diagnostic interview and a social stress task to obtain cortisol reactivity. The summer intern would actively participate in this project, by participating in the social stress task as a role-play “audience”

member and by doing literature reviews and working with data analysts to test hypotheses about substance abuse and addiction in the sample as emerging adults. The intern(s) will be mentored by Dr. Erika Westling, but will also meet with the Principal Investigator, Dr. Judy Andrews, on a regular basis. The intern will attend colloquia at the Oregon Research Institute (ORI) on a variety of research topics, be exposed to researchers at the University of Oregon who collaborate on the OYSUP project, and generally learn about the work conducted at a behavioral research institute. The intern may also do routine project tasks, such as scanning documents, data checking questionnaires, and filing. The intern will be an active participant in a dynamic and collegial work environment, focused on scientific excellence. Interning with this program will be a valuable career-building experience. The program involves primarily behavior work more suitable for students with interests in the social sciences.

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Investigator:	Katherine Pears, Ph.D.
Institution:	Oregon Social Learning Center, Eugene, OR
Research Area:	Preventive Intervention with Child Welfare Populations
Project Title:	Long-Term Effects of a School Readiness Intervention for Foster children
Start Date, Program Length:	06/03/2013 – 10 weeks
Housing Available:	No
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students majoring in Psychology, Sociology, and Education with experience in and/or a high level of interest in working with children and their families are preferred. Students will assist with data collection, learning several of the project's assessment tools (including standardized tests of achievement, structured interviews about substance use knowledge and beliefs, and standardized questionnaires). Students would be required to complete training in working with human research subjects and in maintaining confidentiality.

Project Description

The Oregon Social Learning Center (OSLC), located in the Eugene-Springfield, Oregon metropolitan area, is a collaborative, multidisciplinary center dedicated to increasing the scientific understanding of social and psychological processes related to healthy development and family functioning. The Kids in Transition to School (KITS) project is a follow-up study of a randomized efficacy trial of a preventive intervention to enhance psychosocial and academic school readiness in foster children. The original KITS grant followed the children in the project from pre-kindergarten through the end of 2nd grade. The currently funded project will follow the children and families who have participated in the study through the end of the 5th grade, and some of the children into middle school, to examine intervention effects on school functioning (academic and socioemotional competence) and psychosocial functioning (drug-use risk behaviors, drug use, aggressive/antisocial behaviors, deviant peer association, and internalizing behavior). The participating children and families are assessed yearly at the end of the school year. Students would have the opportunity to participate in a large-scale research project, to observe how science is used to test effective interventions, and to participate in behavioral assessments of participating children and families. They would receive training and experience in conducting the laboratory assessments that comprise the KITS evaluation. These include standardized tests of achievement, structured interviews about substance use knowledge and beliefs, and standardized questionnaires. Students would also have the opportunity to learn about and possibly participate in the administration of the neurophysiological measures used on the project, including salivary cortisol and electroencephalogram data.

Pennsylvania

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Investigator: Wenzhe Ho, M.D., M.P.H.
Institution: Temple University, Philadelphia, PA
Research Area: Drug Abuse and Immunology of HIV/HCV Infection, innate immunity against viral infections, immunopathogenesis of SIV and/or TB infection of Chinese monkeys.
Project Title: Drug Abuse, Innate Immunity and HIV/HCV
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students majoring in Biology with a interest in research with, or without experience, although research experience is preferred. Students should be highly detailed, a good listener, able to follow instructions, get along with others, and have the ability to organize and present data. Students must have excellent communication skills and be 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 human immunodeficiency virus (HIV) and hepatitis C virus (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 (China), 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. Current research in the Ho's laboratory is investigating the specific effects of opioids such as heroin and morphine on type 1/III IFN-mediated intracellular immunity that control HIV or HCV infection and replication. In addition, to determine whether drugs of abuse (opioids and methamphetamine) and/or HIV impair the innate immunity in human neurons and compromise the efficacy of HIV treatment (HAART) is also a focus of Dr. Ho's research.

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Investigator: Charles P. O'Brien, M.D.
Institution: University of Pennsylvania, Philadelphia, PA
Research Area: Psychiatry-Addictions
Project Title: Treatment Study Using Depot Naltrexone
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: Yes
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Undergraduate students should have an interest in the behavioral sciences with clinical trials in addiction.

Project Description

The program at The University of Pennsylvania has been designed to facilitate placements for undergraduate students who are not in close proximity to a participating NIDA grantee, and high school students who are in close daily commuting proximity of a participating NIDA grantee. Daily supervision through monitored activities, secured dormitory housing accommodations, and secured placement positions supervised by professional and responsible investigators, junior investigators, and staff available. As a current NIDA grantee, the University provides research placements for participating students. The Program is a 10-week, 40 hours a week placement, supervised by a Principal investigator, and a designated program Director. The program will consist of: 1) Formal course work, Psychiatry and GRE Training classes (Optional); 2) Participation in meetings -Weekly Speaker Sessions hosted by various investigators from the field; 3) Data collection activities & data analysis; Active research study preparation, including CRF work and Assessments (may include patient contact); 4) Laboratory experience/experiments, includes animal research; 5) Library research; 6) Group activities include mentor meetings and other group activities; and 7) and Final Oral Presentations. Additionally, the program provides mentorship to the participating students for the 10-week placement, in which Medical school entrance and other items are discussed.

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Investigator: Jeffry D. Madura, Ph.D.
Institution: Duquesne University, Pittsburgh, PA
Research Area: Computational and Experimental Neuroscience
Project Title: Computational and Experimental Study of Dopamine and Serotonin Transporters
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: Yes
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: High school and undergraduate students interested in drug design with a willingness to learn about the collaboration between molecular modeling and experimental methods preferred. No specific computational skills are necessary.

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Project Description

This summer research experience involves students working closely with experimentalist and computational scientists to study the structure, function, and dynamics of monoamine transporters. A typical project would find the student using computational models to find new compounds that inhibit one of the monoamine transporters, e.g. serotonin. The student would then experimentally determine the binding and re-uptake of these new compounds. Another potential project would be to covalently link a substrate to one of the monoamine transporters and then use mass spectrometry to find where the covalent bond formed with the transporter. As part of the summer research experience the students will be introduced to computational and experimental techniques through four half-day workshops. All students receive ethics training and participate in weekly seminars aimed to introduce the student to other areas in neuroscience as well as potential careers.

Investigator: Yan Dong, Ph.D.
Institution: University of Pittsburgh, Pittsburgh, PA
Research Area: Cellular and Behavioral Studies of Cocaine Dependence
Project Title: Cocaine-Induced Adaptation in NMDA Receptors
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes

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Student Attributes: Undergraduate students must have an interest in cellular and behavioral neuroscience and have a pair of skillful hands (training available) as many subtle and precise operations are involved.

Project Description

Our long-term research goal is to understand the neural mechanisms underlying emotional and motivational responses. We focus on animal models related to drug addiction. Addictive drugs are among the most effective and efficient external stimuli that evoke the strongest emotional and motivational states. Once "hijacked" into the addictive state, an individual will be primarily motivated by an exceedingly strong emotional state, the drug-seeking/craving state. We hypothesize that strong incentive stimuli, such as experience of drugs of abuse, shift the emotional and motivational states by rewiring the neural circuits in the brain reward pathway. To test this hypothesis, we have been examining several novel forms of neural plasticity upon exposure to cocaine.

Puerto Rico

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Investigator: Guillermo Yudowski, Ph.D.
Institution: Institute of Neurobiology, University of Puerto Rico, San Juan, PR
Research Area: G Protein-Coupled Receptor Function; Receptors Transducing External Stimuli into the Cell; Cellular and Molecular Techniques with Live-Cell Imaging Approaches to study trafficking of selected GPCRs at the plasma membrane.

Project Title: Regulation of GPCR Recycling at the Plasma Membrane

Start Date, Program Length: 06/03/2013 – 8 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Students should have a general interest in life science, particularly in studying cellular and molecular events at the single cell level. Basic knowledge of biology and mathematics would be necessary.

Project Description

This laboratory is interested in the molecular events controlling neuronal sensitivity to the external environment. This provides a basic understanding of the molecules and events regulating neuronal function while providing novel therapeutic targets. This research involves cellular and molecular techniques, combined with live cell imaging approaches to track single receptors located at the plasma membrane of neurons. This information is obtained by utilizing single cells transfected with fluorescently tagged receptors. Rapid imaging is performed and receptor responses to specific agonist are analyzed. The main receptor currently studied is the cannabinoid receptor 1.

Rhode Island

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Investigator: Roland C. Merchant, M.D., M.P.H.
Institution: Rhode Island Hospital, Brown University, Providence, RI
Research Area: Drug and Alcohol Misuse, Brief Interventions to Decrease Substance Misuse and the Negative Consequences of Substance Misuse, HIV and Hepatitis C Screening, Interventions to Decrease HIV and Hepatitis C Risk and Increase Uptake of HIV and Hepatitis C Screening in the Emergency Department Setting

Project Title: Brief Interventions to Decrease Drug Misuse among Emergency Department Patients

Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Bilingual (English- and Spanish-speaking) undergraduate students with an interest in having a hands-on experience in conducting social-behavioral research in a busy emergency department clinical setting are preferred. Students motivated to be a part of this research experience are likely to have future goals in clinical medicine, psychology, social work, or nursing, and are considering a career that involves research in social-behavioral interventions to reduce drug misuse are ideal. Because this research experience involves direct interaction with patients, it is preferable that students have previous work or volunteer experience in direct patient care (e.g., patient interpreter, volunteer, nursing assistant, research assistant).

Project Description

This project, Brief Intervention for Drug Misuse among Emergency Department (BIDMED) patients, is a prospective, longitudinal, clinical trial that aims to investigate the effectiveness of a brief intervention to reduce drug misuse, the behaviors associated with drug misuse, and the negative consequences associated with drug misuse. The study is conducted at the Rhode Island Hospital and The Miriam Hospital Emergency Departments, which are affiliates of the Alpert Medical School of Brown University. Summer students who join this research team will be engaged in a hands-on research experience associated with the BIDMED project. The research experience will include: assisting with the conduct of the BIDMED study, learning how to recruit patients into the study and assess their drug misuse, and completing a worthwhile research sub-project. The research sub-project entails recruiting English- or Spanish-speaking Emergency Department patients into a study, in which their drug misuse and sexual risk-taking behaviors are assessed, and administering an intervention to reduce their sexual risk-taking behaviors and encouraging them to be tested for sexually transmitted infections. Training is provided on how to conduct the study, recruit and interview patients, and administer the intervention. Students will help prepare the findings of their summer project for presentation at a national research meeting and for publication in a medical journal.

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South Carolina

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Investigator: Antonieta Lavin, Ph.D.
Institution: Medical University of South Carolina, Charleston, SC
Research Area: Cellular and Synaptic Adaptations in Prefrontal Cortex
Project Title: Alterations in Pre- and Infralimbic Cortex in Cocaine Self-Administered Animals
Start Date, Project Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Undergraduate students interested in conducting basic hands-on research on problems related with drugs of abuse. Students must be comfortable working with rats and mice. Students must be expected to read scientific material and discussed with their mentor.

Project Description

The primary objective of this proposed R25 Program is to provide annual short-term (10 weeks) research education experiences for four talented high school and six to eight undergrad students in order to expose them to Neuroscience research, in particular in the field of drug addiction and

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introduce them to career possibilities in the field. The long-range goal is to increase the number of researchers in this area through interest generated by exposure to a broad spectrum of research and educational activities. The program builds upon MUSC's established strength in Neurosciences, its strong commitment to providing meaningful research training experiences for students at all levels, and its track record of introducing students from underrepresented groups and non-research oriented institutions to biomedical research. The core of the research education experience is the laboratory-based, research training experience in which the student progresses to relative independence by incorporating a continuum of research activities: searching the literature, planning the project, learning the techniques, formulating a hypothesis, planning and conducting the experiments, obtaining data, overcoming problems, analyzing data, interpreting the results, and disseminating the information. A 10-week period is not sufficient time for a student to fully develop an independent project. Most research projects in neurosciences require a series of experiments to test the scientific question or hypothesis. With these inherent constraints, student projects are configured for obtaining results within the 10-week timeframe. The mentor provides the framework for a short-term project that can be modified as the work progresses and results obtained. The proposed plan also includes a set of didactic lectures, skills development, and social interactions that broaden the research education experience, extending it beyond the walls of a neuroscience laboratory. The plan draws upon several components of the Institution's Summer Undergraduate Research Program (SURP) that has benefited from continual improvement and refinement over the years. At the same time, Dr. Lavin's NIDA R25 program will maintain a distinctive identity by providing experiences designed specifically for his cadre of students. The autonomy of the NIDA R25 Program is maintained in the recruitment and selection process, pairing with mentors in Neuroscience areas, assessment of the individual research experiences, and program evaluation and process improvement activities. Specifically, all students will register for CGS 761 entitled "Laboratory Observation and Apprenticeship," which is the laboratory rotation part of the summer curriculum. In this course students are graded by their laboratory mentors on a 4.0 grading scale. In addition, students will participate in a three credit hour Lecture Series, which consists of didactic lectures and a required exam (multiple choice) at the end. Students in the NIDAR25 Neuroscience program will track into a special series of seminars focused on Neuroscience research and drug addiction. Students will participate for 10 weeks in the summer from early June until early August, and will receive a transcript from MUSC for a total of 15 credit hours. These hours may be accepted by their home institutions and calculated into their undergraduate GPAs. For the majority of the program, students spend approximately 90% of their time in their research laboratories and approximately 10% attending seminars and other functions. The last week of the program is devoted largely to preparing their written and oral presentations and attending the oral presentations of the other students. Usually only one student per summer is placed with a given mentor in order to maximize the interaction time students have with their individual mentors. The research involves basic biomedical and/or behavioral work.

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Investigator:	Ronald E. See, Ph.D.
Institution:	Medical University of South Carolina, Charleston, SC
Research Area:	Neurobiology of Addiction, particularly the Neural Circuitry of Relapse
Project Title:	Corticostriatal Neuroplasticity and Cognition in Methamphetamine Addiction
Start Date, Project Length:	06/01/2013 – 10 weeks
Housing Available:	No
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students with a declared major in Psychology, Biology, and Neuroscience with an interest in the neurobiology of addiction are preferred. Previous experiences in handling laboratory animals or lab bench procedures are a plus.

Project Description
In this basic biomedical laboratory, a variety of rodent models of addiction and relapse to drugs of abuse have been developed in order to determine the neural pathways that underlie relapse. Among the critical factors under investigation, the lab has research focused on the environmental cues associated with drug-taking and their role in relapse, the impact of stress on relapse, cognitive dysfunctions produced by methamphetamine and their relationship to addiction, and the role of sex differences and hormonal regulation of drug-seeking behavior. The discoveries of the fundamental behavioral and neural substrates of addiction help direct the lab's ongoing development of interventions for the attenuation of craving and relapse, with the ultimate goal of successful treatments in the clinic. This work requires dedicated students who have a passion for learning and applying basic behavioral and biological techniques to study drug addiction in animal models. In the summer experience, students will learn how to conduct drug self-administration in rats and a variety of biological techniques to study the impact of chronic psychostimulant exposure on brain pathways that underlie addiction.

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Tennessee

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Investigator: Chandravanu (CV) Dash, Ph.D.
Institution: Meharry Medical College, Nashville, TN
Research Area: Effects of Drugs of Abuse on HIV-1 Replication
Project Title: Cocaine Downregulates Anti-HIV MicroRNAs in CD4+ T Cells
Start Date, Program Length: 06/03/2013 – 9 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students interested in addiction research with knowledge in life science are preferred.

Project Description
Research in the Dash laboratory mainly focuses on understanding how drugs of abuse influence HIV/AIDS. The lab has discovered that cocaine enhances HIV-1 replication in CD4+ T cells by targeting the anti-viral immunity conferred by the cellular miRNAs. By using genome-wide miRNA expression analysis, several miRNAs that are targeted by cocaine have been identified. Currently, experiments are underway to understand the mechanism by which cocaine downregulates these cellular miRNAs. It is believed that delineating these pathways will help identify therapeutic targets. The lab is also interested in understanding the molecular details of interplay between drugs of abuse and HIV associated neurocognitive disorders (HAND). The lab has discovered that cocaine treatment targets the critical metabolic pathways in neuronal cells and believes that understanding the molecular details of cocaine and HIV-induced alterations in neuronal metabolism will help better understand HAND pathogenesis. To achieve the goals of this research, cutting edge technologies at the intersection of retrovirology, drug abuse biology, and epigenetic mechanisms are used.

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Investigator: Andrew Finch, Ph.D.
Institution: Peabody College, Vanderbilt University, Nashville, TN
Research Area: Adolescent Substance Abuse Recovery and High Schools
Project Title: Effectiveness of Recovery High Schools as Continuing Care
Start Date, Program Length: 06/17/2013 – 8 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes

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Student Attributes: Undergraduate students interested in the behavioral social sciences, such as psychology, counseling, mental health, or drug abuse/recovery and aim to pursue a research career are preferred.

Project Description

Recovery high schools support adolescents recovering from substance use disorders by providing an alternative environment to support their recovery, usually after treatment. For students, returning to their previous high school will likely expose them to old peer groups and contexts that previously facilitated their substance use. Recovery schools provide a fresh start, surrounding adolescents with peers who share in the struggles of battling a substance use disorder. Previous research has provided extensive descriptions of recovery schools; however, there has been no direct evaluation of whether recovery high school students experience superior recovery outcomes compared to students who are recovering while attending a regular high school. The goal of the current study is to rigorously address this question, focusing on a group of well-developed recovery high schools in Minnesota. The two primary specific aims of this research are: 1) To assess behavioral outcomes for recovery high school students (alcohol and other drug use, mental health symptoms, and delinquent behavior) compared to similar recovering students who attend traditional high schools; and 2) to assess academic outcomes for recovery school students (GPA, standardized test scores, attendance, drop-out rates) compared to similar recovering students who attend traditional high schools. This program involves behavioral work and requires a student with interest in the social sciences. This lab welcomes a student who is interested in adolescent substance abuse recovery or organizational processes within the school/recovery setting. Research activities may include working with collected qualitative data, reviewing the literature, and writing conference abstract proposals in collaboration with other authors on the project.

Texas

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Investigator: E. Sherwood Brown, M.D., Ph.D.
Institution: University of Texas Southwestern Medical Center, Dallas, TX
Research Area: Effects of Stress on the Brain
Project Title: Attenuation of Corticosteroid-Induced Hippocampal Changes
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: High school and undergraduate students interested in majoring in psychology, neuroscience or medicine who want to learn more about patient-centered research are preferred.

Project Description

The Psychoneuroendocrine Research Program is focused in two different areas: dual diagnoses (i.e., depression or bipolar disorders concurrent with medical illness or substance abuse) and the effects of corticosteroids (e.g., prednisone) on mood and memory. This project focuses on effects of stress and corticosteroids on the brain that have implications for a number of illnesses including mood and anxiety disorders, substance use disorders, and dementia. The summer research student will be involved in patient screening, observe mood and cognitive assessments, day-to-day clinical research activities and will have the opportunity to work on a publication.

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Investigator: Laura O'Dell, Ph.D.
Institution: The University of Texas at El Paso, El Paso, TX
Research Area: Rodent Models of Tobacco Abuse; Age and Sex Differences to Tobacco Abuse, Specifically Focused on Nicotine; Neurochemical and Molecular

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	Mechanisms of Drug Addiction; Neural Circuitry of Drug Reward and Withdrawal; Drug Abuse in Subjects with Metabolic Disorders, such as Diabetes
Project Title:	Nico-Teen: Mechanisms of Nicotine Reward and Withdrawal During Adolescence
Start Date, Program Length:	06/01/2013 – 10 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduate students over the age of 18 with a background in biology, are willing to work with animal models (rodents) and are interested in drug addiction are preferred.

Project Description

This research program is focused on the role of age and sex differences in modulating the behavioral effects of nicotine exposure and withdrawal from this drug. The O'Dell laboratory combines behavioral, neurochemical, and molecular approaches to study the mechanisms in the brain that mediate nicotine reward and withdrawal. The lab's work in this area has led to a hypotheses regarding enhanced nicotine reward and reduced nicotine withdrawal during adolescence. Recent work has further developed the lab's hypothesis at a more molecular level by comparing changes the expression of particular genes shown to modulate nicotine withdrawal. The lab's interest in tobacco abuse recently widened to include other vulnerable populations. Specifically, we the lab has begun to examine whether diabetic states lead to greater vulnerability to tobacco abuse. The team is currently applying behavioral and biochemical tools to examine whether nicotine intake is enhanced in an animal model of diabetes. Over the course of Dr. O'Dell's career, she has demonstrated a record of building a research program based on close student/mentor relationships. Her lab is committed to the mission of increasing diversity in science and is committed to the success of the students that work in her laboratory. UTEP is a minority serving institution, and as a female Hispanic neuroscientist, Dr. O'Dell looks forward to mentoring students interested in pursuing a career in Neuroscience. Dr. O'Dell is pleased to participate in a program that will foster student development in the area of Neuroscience.

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Investigator:	Kathryn A. Cunningham, Ph.D.
Institution:	University of Texas Medical Branch, Galveston, TX
Research Area: Project Title:	Molecular and Behavioral Neuroscience of Addiction Molecular and Behavioral Neuroscience of Addiction
Start Date, Program Length:	06/10/2013 – 10 weeks
Housing Available:	Yes
High School Students:	No
Undergraduate Students:	Yes
Student Attributes:	Undergraduates with a background in neuroscience, psychology, pharmacology, or behavioral science are preferred. Students should be team players and understand the importance of animal research to advance the understanding of addiction.

Project Description

This project's goals are to uncover the mechanisms underlying drug-seeking behavior to characterize the biomolecular profile of addiction and uncover the path to designing new diagnostic and therapeutic approaches to addiction. Example questions: I. How does impulsivity cause vulnerability to addiction and relapse? The lab is studying the molecular and behavioral mechanisms that underlie this vulnerability. The lab is designing, synthesizing and evaluating new medication candidates for suppressing these vulnerabilities. II. Can environmental enrichment provide molecular and behavioral protection against vulnerability to addiction and/or relapse? III. How can we improve diagnosis and treatment in addiction? The lab is using RNA microarray technologies to identify a blood biomarker

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panel for early and late cocaine and methamphetamine self-administration and early and late withdrawal. Once there is a biomarker panel, the lab will work with a company to develop diagnostic tests. The following methods will be employed: A. Observations of rodent behavior, locomotor activity, stereotypy, serotonin syndrome; B. Operant behavior, esp. rat drug self-administration and reinstatement models; C. Virally-mediated gene transfer technologies; D. Protein biochemistry and mass spectrometry; E. RNA expression and quantification; and F. Drug discovery, design, synthesis and validation in cellular and behavioral models of new chemical moieties for addiction

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Investigator: Ashley Acheson, Ph.D.
Institution: University of Texas Health Science Center, San Antonio, TX
Research Area: Frontostriatal circuitry, impulse control development, and progression of substance use involvement across adolescence, brain development, adolescent behavior, and substance abuse to advance the understanding of risks and consequences of adolescent substance use.
Project Title: Relating Brain Maturation to Impulse Control and Substance Use Development
Start Date: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduates with an interest in psychology, neuroscience, substance abuse, neuroimaging, and adolescent development are preferred.

Project Description

Adolescent substance use is common and associated with both significant negative individual consequences and substantial costs to society. The proposed study will capitalize on a cost-effective opportunity to identify neurobiological mechanisms underlying risks for, and consequences of, adolescent substance use. Tests will be conducted in adolescents with high (n= 68) and low (n = 34) familial risk for substance use disorders, selected from a larger ongoing longitudinal study that is testing causal relationships between the development of impulse control and substance use. This project seeks to identify relationships between maturation of frontostriatal circuitry, impulse control development, and progression of substance use involvement across adolescence. The project proposes to measure frontostriatal circuitry in 11- to 14-year-old adolescents at risk for substance use disorders and to repeat assessments annually for a five-year period. The project will compare circuitry between adolescents at high or low risk for substance use disorders (based on family history) before regular drug use begins (Aim 1); determine how individual differences in early adolescent frontostriatal circuitry development, before regular drug use, predict onset and severity of substance use (Aim 2); and examine how trajectories of frontostriatal circuitry development are affected by both familial risk and adolescent substance use (Aim 3). This application posits that a) impulsive reward-focused behaviors emerging during adolescence are driven, at least in part, by inadequate regulation of the striatum due to delayed maturation of the prefrontal cortex, and b) that adolescents are uniquely vulnerable to substance use disorders and resultant cognitive impairments. This framework allows for testable hypotheses to examine neurobiological mechanisms underlying relationships observed between impulse control and substance use disorders across adolescent development. This is an opportunity to study the etiology of adolescent substance use by examining neurobiological mechanisms underlying risk for substance use disorders, impulse control development, and effects of substance use on adolescent brain development. This study has the unique advantage of recruiting from an established and well-characterized cohort that is being followed longitudinally. A strong interdisciplinary research team is in place, which combines unique expertise in substance abuse research, advanced imaging methodology, adolescent behavioral assessment, and statistical modeling. Specifically, this study integrates distinct bodies of research on brain development, adolescent behavior, and substance abuse to advance understanding of risks and consequences of adolescent substance use.

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Investigator: Donald M. Dougherty, Ph.D.
Institution: University of Texas Health Science Center, San Antonio, TX
Research Area: Adolescent Substance Use: Impulsivity and Impulse Control
Project Title: Consequences of Adolescent Substance Use on the Development of Impulse Control
Start Date, Project Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students majoring in Psychology, Neuroscience, or Statistics with an interest in adolescent substance use disorder research are preferred. Students with an enthusiasm for research; a motivation to learn new information; and are organized, punctual and able to work as part of a team are ideal. Previous laboratory or clinical experience is a plus, but is not required.

Project Description

This is a five-year longitudinal study to determine how preadolescent impulse control predicts, and/or later substance use involvement alters, development of adolescent impulse control. A cohort of 360 preadolescent boys and girls, 10 to 12 years old, who had not yet initiated regular substance use, but many of whom were at risk for later substance use involvement have been recruited. Within this sample, two groups of adolescents, with and without family histories of substance use disorders, were matched on several demographic characteristics. These two groups completed a longitudinal assessment battery upon study entry and are currently being assessed every six months. This assessment battery includes self-reports, parent-reports, diagnostic and clinical interviews, and laboratory behavioral measures that will be used to monitor developmental changes in substance use involvement, environmental stressors, maturation, and impulse control. This study will advance the understanding of how the development of impulse control and environmental influences occurring during adolescence interact with one another to lead to problems with substance use. Understanding these relationships will aid in the identification of the antecedents and consequences of substance use on key processes of adolescent development. During a 10-week experience, the trainee will be immersed in the daily operations of this longitudinal study. To ensure the trainee develops knowledge about selected areas of interest, the trainee will be assigned readings related to the project. The trainee will meet weekly with the PI, Co-I, or postdoctoral fellow to discuss the readings and related topics. In addition, the trainee will receive training in each aspect of the study, and will interact with research participants. Last, the trainee will develop an independent project on a topic of his/her choice.

Utah

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Investigator: Raymond P. Kesner, Ph.D.
Institution: University of Utah, Salt Lake City, UT
Research Area: Neurobiology of Learning and Memory
Project Title: Hippocampus and Relapse Associated with Drug Addiction
Start Date, Program Length: 06/07/2013 – 9 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students interested in psychology, cognition, neuroscience, and outdoor activities are preferred.

Project Description

Drug addiction and relapse associated with the return to drug-seeking and drug-taking behavior after a prolonged period of abstinence represent a serious problem for society. This problem provides

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continued

a challenge in terms of understanding the processes that support addiction and relapse and the development of drugs that can attenuate or prevent relapse. Pattern completion functions of the CA3 subregion of the hippocampus and disruption of pattern completion following drug infusion into the CA3 region provides a new and novel approach to the understanding of the role of the hippocampus in supporting relapse and drug-seeking behavior. In addition, the determination of increases in activity in arc mRNA within the CA3 region would provide for converging evidence of the importance of this pattern completion process during relapse and drug-seeking behavior. The first aim of this proposal is to use a variant of the conditioned place preference task in which the number of available cues is parametrically adjusted to assess the role of pattern completion in cue-induced reinstatement of drug-seeking behavior and to determine whether disruption of pattern completion secondary to infusion of naloxone into the CA3 region disrupts cue-induced reinstatement for cocaine. It is predicted that naloxone will disrupt the reinstatement (preference for cocaine conditioned cues) for a single cue, but not for all four cues, suggesting a significance impact of pattern completion within the CA3 region. The second goal of this proposal is to assess immediate early gene expression in the CA3 region in the cue preference paradigm to further delineate the involvement of the CA3 region in cue pattern completion. It is predicted that there will be an increase in arc mRNA expression during the initial drug addiction phase and the reinstatement phase following abstinence within the CA3 region in the 1-cue, but not the 4-cue condition, supporting a pattern completion interpretation.

Virginia

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Investigator: Michelle L. Kelley, Ph.D.
Institution: Old Dominion University, Norfolk, VA
Research Area: Effects of Parental Treatment for Substance Abuse on Children in their Homes
Project Title: Secondary Effects of Parent Treatment for Drug Abuse on Children
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduates majoring in Psychology with an interest in a research career addressing treatments for substance abuse are preferred.

Project Description
The student(s) will take part in all aspects of a clinical research trial designed to determine whether a couples-based treatment versus individual treatment for parent substance abuse has the most benefit for children in their homes. As part of the study, students will help advertise the study and help with assessment of parents and children at pretreatment, post-treatment, and six-month follow-up. As part of the assessment process students will become familiar with administering SICD modules and the administration of well-established psychological assessments of parent and child functioning, with child and parent interviewing. They will become familiar with APA ethical guidelines for the treatment of research participants including children. They will transcribe audiotapes of participant therapy sessions and help with fidelity coding. They will help with data entry and learn or become more facile with SPSS. Moreover, they will assist in literature reviews. In short, the students will become familiar with all aspects of a research project designed to test whether there are secondary benefits of parental treatment for substance abuse on children in their homes. In addition, they will join a large research team of undergraduate, graduate students, faculty members and a licensed clinical psychologist. They will also be able to participate directly with the clinical staff at the participating treatment site and become more familiar with a community agency whose goal is to assist adults and families who are in need of substance use treatment. This opportunity is ideal for students who would like to enter a doctoral program in clinical or counseling psychology and have a strong interest in substance abuse research.

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Investigator: Louis J. De Felice, Ph.D.
Institution: Virginia Commonwealth University, Richmond, VA
Research Area: Serotonin (5HT), Dopamine (DA), and Norepinephrine (NE) Transporters, Mechanism of Neurotransmitter Uptake and Release at Synapses. How to Control Selective Release. Experiments involving drugs of abuse, pharmacology, molecular biology, cell lines, and electrophysiology.
Project Title: Synthetic Cathinones: A New Class of Illicit Drugs (Bath Salts) Affecting Dopamine and Serotonin Transporters
Start Date, Program Length: 06/01/2013 – 10 weeks
Housing Available: No
High School Students: Yes
Undergraduate Students: Yes
Student Attributes: Students willing to learn biology or chemistry with a 3.0 or better GPA are preferred; lab experience is not necessary.

Project Description

Would you like to know how psychostimulants work, such as methamphetamine or cocaine? This laboratory focuses on serotonin (5HT), dopamine (DA), and norepinephrine (NE) transporters, which are the primary mechanisms for clearing out 5HT, DA, or NE from the synapse. Cocaine non-specifically inhibits 5HT, DA, and NE uptake, causing an increase in extracellular transmitter and the stimulant effect of cocaine. Unlike cocaine amphetamine, methamphetamine, and related compounds are transported into neurons and release 5HT, DA, or NE. Molecular biology, radio-labeled uptake experiments, electrophysiology, fluorescent microscopy, and structural modeling allow this group to study how drugs of abuse modulate transporters at the molecular level. The lab has joined forces with medicinal chemists to synthesize compounds related to cathinone, and have teamed up with behavioral neuroscientists to test *in vivo* predictions based on the lab's *in vitro* experiments. The lab uses cloned transporters transfected into HEK cells, frog oocytes, or native neuronal cell lines in tissue culture to measure the ionic currents using patch clamp. The lab also uses two-microelectrode voltage clamp in frog oocytes to complement patch-clamp experiments in mammalian cells. Recently, the lab has begun the study of synthetic cathinones, also known as bath salts, especially two important ingredients of bath salts, mephedrone and MDPV. This lab's research aims to understand the mechanism of neurotransmitter uptake and release at synapses and also how to control selective release to benefit the treatment of drug abuse and mental disorders.

Washington

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Investigator: Karl G. Hill, Ph.D.
Institution: University of Washington, Seattle, WA
Research Area: Social-Developmental Approach to Substance Use Disorder Etiology and Prevention
Project Title: Gene-Environment Interplay in the Development of Drug Abuse, HIV Sexual Risk Behavior and Related Outcomes
Start Date, Program Length: 06/03/2013 – 10 weeks
Housing Available: Yes
High School Students: No
Undergraduate Students: Yes
Student Attributes: Undergraduate students majoring in Psychology, Social Work, Public Health and allied disciplines are preferred. Students should have a strong interest in genetic and environmental factors related to addiction and drug prevention. Although sophisticated research and statistical skills are not required, the students should be comfortable

with a quantitative social science approach. Social science/statistical research skills are among the skills the students will gain. Although not a requirement, there may be an opportunity for students to attend the annual Society for Prevention Research meeting.

Project Description

This lab would enjoy mentoring one or two (preferably two) undergraduate students interested in working to understand how genes and environmental factors work together to affect the development of addiction. The Seattle Social Development Project (SSDP) is a long-term study that looks at the development of positive and problem behaviors among adolescents and young adults. J. David Hawkins founded the study in the early 1980s, and Karl G. Hill is currently the Principal Investigator. The SSDP study began in 1985 with 808 fifth-grade students from 18 elementary schools in the Seattle Public School District. These participants and their parents have been interviewed thirteen times, most recently at age 35. For the present gene-environment study, SSDP has partnered with two other longitudinal studies: the Raising Healthy Children Project (RHC, Richard F. Catalano, PI) and projects from the Minnesota Center for Twin and Family Research (MCTFR, Matthew McGue, and William Iacono, PIs). The goal of the study is to learn how, at different developmental periods, environmental factors might amplify or reduce genetic vulnerability to tobacco and alcohol problems. The genetic and environmental data have all been collected, and the lab is now in the analysis phase of the study. The student interns would join the SSDP team of five investigators and four doctoral students, who would also help mentor their development. SSDP and RHC are two studies at the larger research center called the Social Development Research Group. SDRG is a nationally-recognized, interdisciplinary team of researchers working to understand and promote healthy behaviors and positive social development among diverse populations. SDRG conducts research on factors that influence development, develops and tests the effectiveness of preventive interventions, and works with communities to design and adopt science-based solutions to health and behavior problems. The student interns will also benefit from becoming involved in the SDRG-wide community and activities.

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