National Institute on Drug Abuse
Summer Research Internship Program

2021
Program:
The NIDA Summer Research Internship Program supports all students with a focus on increasing underrepresented populations in drug abuse research. Through this program, undergraduates age 18 and older are introduced to the field of drug abuse and addiction research by participating in research internships with NIDA's distinguished scientists at universities across the United States. Students work with leading scientists for eight weeks during the summer. The internship may include laboratory experiments, data collection, data analysis, formal courses, participation in lab meetings, patient interviews, manuscript preparation, and literature reviews. In addition, it is expected that each intern will deliver a formal presentation on his/her research project at the end of the internship.

The NIDA Summer Research Internship Program is in its 24th year. Since the program's inception in 1997, more than 1200 students have gained experience in drug abuse and addiction research.

Eligibility:
- This NIDA Summer Research Internship program is designed to train individuals from diverse backgrounds, including those from groups underrepresented in the biomedical, behavioral, clinical and social sciences research workforce, to conduct research and to prepare for careers in the biomedical, behavioral, clinical and social sciences such as individuals from racial and ethnic groups that have been shown by the NSF to be underrepresented in health-related sciences on a national basis (see data at http://www.nsf.gov/statistics/showpub.cfm?TopID=2&SubID=27 and the report Women, Minorities, and Persons with Disabilities in Science and Engineering). The following racial and ethnic groups have been shown to be underrepresented in biomedical research: Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native Hawaiians and other Pacific Islanders. In addition, it is recognized that underrepresentation can vary from setting to setting; individuals from racial or ethnic groups that can be demonstrated convincingly to be underrepresented by the grantee institution should be encouraged to participate in this program. For more information on racial and ethnic categories and definitions, see NOT-OD-15-089.
- Although this program is designed to enhance underrepresented populations in science, all racial/ethnic populations are eligible to apply.
- Applicants must be at least 18 years old by May 31, 2021 and must be U.S. citizens or permanent residents of the United States (No Exceptions).
- Graduating 2020 college seniors are also eligible to apply.
- Individuals who have already participated in the NIDA Summer Research Internship Program are no longer eligible to apply.

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

Housing Accommodations:
There are two different housing options for the research sites included in the NIDA Summer Research Internship program. For both options, the housing is funded by NIDA and will be
reimbursed to the intern by the host research institution. For research sites with the “Campus Housing Available” option, the intern will be able to stay in on-campus housing which is coordinated through the research site, institution, and intern. For research sites with the “Housing Subsidized” option, housing will still be funded by NIDA, however for these research sites, the intern will be responsible for securing their own housing accommodations. Some research sites have local housing resource guides that they share with interns.

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

Application components include:

- completed application form
- current transcripts (unofficial transcripts are acceptable)
- two letters of recommendation (should be on letterhead)

***If unable to complete in one sitting, press SUBMIT and your entries will be saved. At any time prior to the application due date, you may access your application to enter updates/edits. To retrieve it, click on the link sent to the email address entered in the application and enter the token code included in the email. Complete/update the application and press SUBMIT. Your last, most recent electronic submission will be the one recorded in the application system and used during the evaluation period.

All application materials must be submitted by 11:59 pm EST, Monday, February 12, 2021.

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

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

For additional information see the FAQs.

Contacts:
Feel free to contact Julie Huffman, julie.huffman@nih.gov, phone 301-443-9798; or Albert Avila, Ph.D., aavila@nida.nih.gov.
<table>
<thead>
<tr>
<th>State</th>
<th>Research Institution</th>
<th>Project Title</th>
<th>Research Site Number</th>
<th>Housing Availability</th>
<th>Virtual (Yes or No)</th>
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<tr>
<td>Arizona</td>
<td>University of Arizona</td>
<td>The Role of Ryanodine Receptors in Drug Seeking</td>
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<td>Subsidized</td>
<td>Yes</td>
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<td>Arkansas</td>
<td>University of Arkansas for Medical Sciences</td>
<td>Tobacco Addiction, fMRI, Distress Tolerance, Behavioral, Smoking Cessation</td>
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<td>Campus</td>
<td>No</td>
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<td>Arkansas</td>
<td>University of Arkansas for Medical Sciences</td>
<td>The Sex-Specific Roles and Neural Processing Correlates of Future-Oriented Estimation in the Drug Addiction Process</td>
<td>3</td>
<td>Campus</td>
<td>Yes</td>
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<td>California</td>
<td>Charles R. Drew University</td>
<td>Nicotine Exacerbates High Fat Diet-Induced Hepatic Steatosis and Skeletal Muscle Abnormalities in Obese Mice</td>
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<td>Campus</td>
<td>No</td>
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<tr>
<td>California</td>
<td>Gladstone Institutes / University of California</td>
<td>A A Gene Drive Therapy for HIV: Single-Administration Intervention for High-risk Groups (Phase-I trial included)</td>
<td>5</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>California</td>
<td>San Diego Biomedical Research Institute</td>
<td>Dopamine System as Reporter of HIV Status and Inflammation in Meth Abusers</td>
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<tr>
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<td>Scripps Research Institute</td>
<td>Immunotherapy to Counteract Lethal Doses of Carfentanil</td>
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<td>Subsidized</td>
<td>No</td>
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<tr>
<td>California</td>
<td>Scripps Research Institute</td>
<td>Extrahypothalamic PPARS and Compulsive Food Intake</td>
<td>8</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>California</td>
<td>Stanford University</td>
<td>Thalamic Circuits Underlying Opioid Seeking</td>
<td>9</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>California</td>
<td>Stanford University</td>
<td>Computational Methods for Identification of Genetic Factors Affecting the Response to Drug Abuse</td>
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<td>Campus</td>
<td>Yes</td>
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<td>California</td>
<td>University of California Irvine</td>
<td>Impact of THC on Extracellular Vesicle Signaling</td>
<td>11</td>
<td>Subsidized</td>
<td>No</td>
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<tr>
<td>California</td>
<td>University of California Irvine</td>
<td>DAT-Disruptive Impact of Morphine-Related Cues on Goal-Directed Behavior</td>
<td>12</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>California</td>
<td>University of California Irvine</td>
<td>ICAL: Impact of Cannabinoids Across Lifespan: Behavioral Project</td>
<td>13</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>California</td>
<td>University of California Irvine</td>
<td>Interactions Between Orbitofrontal Cortex and Mediodorsal Thalamus in Cue-</td>
<td>14</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>State</td>
<td>Research Institution</td>
<td>Project Title</td>
<td>Research Site Number</td>
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<td>University of California Irvine</td>
<td>ICAL: Impact of Cannabinoids Across Lifespan</td>
<td>15</td>
<td>Subsidized</td>
<td>No</td>
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<tr>
<td>California</td>
<td>University of California Irvine</td>
<td>Prevention of Adolescent Risky Behaviors: Neural Markers of Intervention Effects</td>
<td>16</td>
<td>Subsidized</td>
<td>No</td>
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<td>California</td>
<td>University of California Los Angeles</td>
<td>Machine Learning for HIV Prevention Among Substance Using GBMS</td>
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<td>Yes</td>
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<td>California</td>
<td>University of California Los Angeles</td>
<td>Integrated Behavioral Activation and HIV Risk Reduction Counseling for MSM with Stimulant Abuse</td>
<td>18</td>
<td>Campus</td>
<td>Yes</td>
</tr>
<tr>
<td>California</td>
<td>University of California Los Angeles</td>
<td>MSM and Substances Cohort at UCLA Linking Infections Noting Effects (mSTUDY)</td>
<td>19</td>
<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
<td>California</td>
<td>University of California Riverside</td>
<td>Methamphetamine Effect on HIV Persistence</td>
<td>20</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>California</td>
<td>University of California San Francisco</td>
<td>kINSHIP: Peer Navigators Addressing Intersectional Stigma to Improve HIV Prevention Among Criminal Justice Involved Women</td>
<td>21</td>
<td>Subsidized</td>
<td>Yes</td>
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<tr>
<td>California</td>
<td>Woebot Health</td>
<td>RCT of Woebot for Substance Use Disorders</td>
<td>22</td>
<td>Subsidized</td>
<td>Yes</td>
</tr>
<tr>
<td>Colorado</td>
<td>Colorado State University</td>
<td>Substance Use Among American Indian Youth: Epidemiology &amp; Etiology</td>
<td>23</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>Colorado</td>
<td>University of Colorado Boulder</td>
<td>Identification of Genes and Genetic Networks Contributing to Opioid Use Disorder Traits in the Hybrid Rat Diversity Panel</td>
<td>24</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Colorado</td>
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<td>Novel Approaches to Understanding the Role of Cannabinoids and Inflammation in Anxiety</td>
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<td>Subsidized</td>
<td>No</td>
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<tr>
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<td>University of Colorado Boulder</td>
<td>Exploring the Anti-Inflammatory Properties of Cannabis and their Relevance to Insulin Sensitivity</td>
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<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
<td>Colorado</td>
<td>University of Colorado Boulder</td>
<td>Genetic Dissection of Ventral Tegmental Area Glutamate and GABA Neurons in Reward and Aversion</td>
<td>27</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
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<td>University of Colorado, Anschutz</td>
<td>Novel Approaches to Assessing Cannabis Impaired Driving</td>
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<td>Subsidized</td>
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<tr>
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<td>Research Institution</td>
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<td>Medical Campus</td>
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<td>Connecticu</td>
<td>Harvard Medical School</td>
<td>Effectiveness of an Integrated Treatment to Address Smoking Cessation and Anxiety/Depression in People Living with HIV</td>
<td>29</td>
<td>Subsidized</td>
<td>Yes</td>
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<tr>
<td>Connecticu</td>
<td>University of Connecticut School of Medicine</td>
<td>Promoting Employment in Persons Living With HIV/AIDS</td>
<td>30</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Connecticu</td>
<td>Yale University</td>
<td>Expanding Medication Assisted Therapy in Ukraine (ExMAT)</td>
<td>31</td>
<td>Subsidized</td>
<td>No</td>
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<tr>
<td>Connecticu</td>
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<td>Functional Genomic Resource and Integrative Model of Dopaminergic Circuitry Associated with Psychiatric Disease</td>
<td>32</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>Connecticu</td>
<td>Yale University</td>
<td>Integrative Epigenomic Mapping of Co-Morbid OUD and PTSD</td>
<td>33</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Connecticu</td>
<td>Yale University</td>
<td>Acetylcholine Signaling Allows Cognitive Processes in the Brain to Regulate Physiological Responses to the Environment: The Example of Central Control of Opiate Tolerance</td>
<td>34</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>Connecticu</td>
<td>Yale University</td>
<td>Defining the Impact of Injection Drug Use on Antiretroviral Therapy and HIV Treatment Outcomes: An (Epi)Genomic Approach</td>
<td>35</td>
<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
<td>Florida</td>
<td>Florida International University</td>
<td>Targeting Inflammasome With Stable Endocannabinoid Ligand AMG315. CRISPR/Cas9 And Nanotechnology Study in The Context of HIV and Cannabinoid</td>
<td>36</td>
<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
<td>Florida</td>
<td>Florida International University</td>
<td>Synthesis And In Vitro And In Vivo Screening of Fused and Tethered Heterocyclic Peptidomimetics For the Discovery of New Analgesics with Decreased Side Effects</td>
<td>37</td>
<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
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<td>Research Institution</td>
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<td>Florida</td>
<td>Florida International University</td>
<td>Homogeneous Nuclease-Assisted SELEX for Rapid Isolation of Cross-Reactive, Functionalized Aptamers for Synthetic Cannabinoids</td>
<td>38</td>
<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
<td>Florida</td>
<td>Florida State University</td>
<td>Neuron Subtype Specific Role of DNA Methylcytosine Dioxygenase TET1 In Cocaine Addiction</td>
<td>39</td>
<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
<td>Florida</td>
<td>Florida State University</td>
<td>Between versus Within-Subject Models of the Protective Effect of Substance-Free Reward on Alcohol, Nicotine, and Marijuana Use and Problems</td>
<td>40</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>Florida</td>
<td>University of Florida</td>
<td>National Drug Early Warning System Coordinating Center</td>
<td>41</td>
<td>Campus</td>
<td>Yes</td>
</tr>
<tr>
<td>Florida</td>
<td>University of Florida</td>
<td>A Novel Model of Oxycodone Seeking That Considers Sex and Stress Susceptibility</td>
<td>42</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>Florida</td>
<td>University of Florida</td>
<td>Circuitry and Function of Ventral Striatum Subregions</td>
<td>43</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>Florida</td>
<td>University of Florida</td>
<td>Social Influence Strategies during a Web-based Smoking Prevention Intervention for Adolescents</td>
<td>44</td>
<td>Campus</td>
<td>Yes</td>
</tr>
<tr>
<td>Florida</td>
<td>University of Miami</td>
<td>Culturally Modified Family Based Therapy for Haitian Youth and Their Families in South Florida</td>
<td>45</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Georgia</td>
<td>Emory University</td>
<td>Non-Invasive Vagal Nerve Stimulation in Patients with Opioid Use Disorders</td>
<td>46</td>
<td>Campus</td>
<td>No</td>
</tr>
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<td>Emory University</td>
<td>Mining Social Media Big Data for Toxicovigilance: Automating the Monitoring of Prescription Medication Abuse via Natural Language Processing and Machine Learning Methods</td>
<td>47</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
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<td>Georgia State University</td>
<td>Impact of Advanced Age on Opiate Analgesia</td>
<td>48</td>
<td>Subsidized</td>
<td>Yes</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Hawaii Pacific University</td>
<td>The Implementation, Adoption, and Sustainability of Ho'ouna Pono</td>
<td>49</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>Illinois</td>
<td>Northwestern University</td>
<td>Center for Chronic Pain and Drug Abuse</td>
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<td>Yes</td>
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<td>State</td>
<td>Research Institution</td>
<td>Project Title</td>
<td>Research Site Number</td>
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<td>Developing and Testing a Social Network Data Capture Tool to Improve Partner Services</td>
<td>51</td>
<td>Subsidized</td>
<td>Yes</td>
</tr>
<tr>
<td>Illinois</td>
<td>Northwestern University</td>
<td>Multilevel Influences on HIV and Substance Use in a YMSM Cohort</td>
<td>52</td>
<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
<td>Indiana</td>
<td>Indiana University</td>
<td>Maternal Use of Prescribed Opioid Analgesics and Risk of Adverse Offspring Outcomes</td>
<td>53</td>
<td>Subsidized</td>
<td>Yes</td>
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<tr>
<td>Indiana</td>
<td>Indiana University School of Medicine</td>
<td>Neural Response to Risky Decision Making in Youth at High Risk for Substance Use Disorder and HIV</td>
<td>54</td>
<td>Campus</td>
<td>Yes</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Northern Kentucky University</td>
<td>Contribution of NMDA NR2B Subunit to Risky Choice and Economic Demand for Cocaine</td>
<td>55</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>Kentucky</td>
<td>University of Kentucky</td>
<td>Neuroinflammatory and Glutamatergic Mechanisms of Nicotine Seeking</td>
<td>56</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Kentucky</td>
<td>US WorldMeds</td>
<td>Accelerated Development of Lofexidine for Neonatal Opioid Withdrawal Syndrome</td>
<td>57</td>
<td>Campus</td>
<td>No</td>
</tr>
<tr>
<td>Louisiana</td>
<td>Louisiana State University</td>
<td>A Dynamic Diversity of Dopamine Neurons</td>
<td>58</td>
<td>Campus</td>
<td>Yes</td>
</tr>
<tr>
<td>Maine</td>
<td>The Jackson Laboratory</td>
<td>Genetic Control of Addiction by Host and Microbiome</td>
<td>59</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>Maine</td>
<td>The Jackson Laboratory</td>
<td>Sequencing Mutant Mice with Altered Cocaine Responses</td>
<td>60</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>Maryland</td>
<td>CHADIS</td>
<td>Online System for Primary Care to Prevent and Address Teen Substance Use</td>
<td>61</td>
<td>Subsidized</td>
<td>Yes</td>
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<td>Maryland</td>
<td>Johns Hopkins University</td>
<td>Ending the HIV Epidemic: Peer-Supported Collaborative Care for Mental Health and Substance Use Disorder Care Integration into HIV Care Settings</td>
<td>62</td>
<td>Subsidized</td>
<td>Yes</td>
</tr>
<tr>
<td>Maryland</td>
<td>Johns Hopkins University</td>
<td>Extracellular Vesicle and Extracellular RNA Biomarkers of HIV-1 Central Nervous System Pathogenesis and Cigarette Use</td>
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<td>Subsidized</td>
<td>Yes</td>
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<td>Maryland</td>
<td>University of Maryland College Park</td>
<td>Evaluating the Role of Peers to Reduce Substance Use Stigma and Improve HIV Care Outcomes in South Africa</td>
<td>64</td>
<td>Subsidized</td>
<td>Yes</td>
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<tr>
<td>Massachusetts</td>
<td>Boston University</td>
<td>MassHEAL – Reducing Overdose Deaths by 40% (2019-2023)</td>
<td>65</td>
<td>Subsidized</td>
<td>Yes</td>
</tr>
<tr>
<td>State</td>
<td>Research Institution</td>
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<td>Research Site Number</td>
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<td>Massachusetts</td>
<td>Boston University</td>
<td>A Reduced Complexity Cross in BALB/C Substrains to Identify the Genetic Basis of Oxycodone Dependence Phenotypes</td>
<td>66</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>Massachusetts</td>
<td>Clear Scientific, Inc</td>
<td>Therapeutic Agent for Rapid Reversal of Methamphetamine Intoxication</td>
<td>67</td>
<td>Subsidized</td>
<td>No</td>
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<tr>
<td>Massachusetts</td>
<td>Harvard Medical School</td>
<td>Novel PET Tracers for Imaging Monoacylglycerol Lipase in Endocannabinoid Signaling</td>
<td>68</td>
<td>Subsidized</td>
<td>No</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Harvard Medical School</td>
<td>Telemedicine for Treatment of Opioid Use Disorder</td>
<td>69</td>
<td>Subsidized</td>
<td>Yes</td>
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<td>Massachusetts</td>
<td>Massachusetts General Hospital</td>
<td>Advancing the Science on Recovery Community Centers to Support Persons Treated with Medications for Opioid Use Disorder</td>
<td>70</td>
<td>Subsidized</td>
<td>Yes</td>
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<tr>
<td>Massachusetts</td>
<td>Massachusetts General Hospital</td>
<td>Treatment of Chronic Low Back Pain with Transcutaneous Auricular Vagus Nerve Stimulation</td>
<td>71</td>
<td>Subsidized</td>
<td>Yes</td>
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<td>Massachusetts</td>
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<td>Affective and Inflammatory Reactivity to Pain in Opioid Use Disorder</td>
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<td>Massachusetts</td>
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<td>Neuropeptides, Social Stress and Drugs of Abuse</td>
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<td>Development of Long-Lasting Stable Fentanyl Antagonist to Reverse Opioid Overdose</td>
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<td>Individual Differences in Epigenetic Regulation of Emotional Learning</td>
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<td>Wayne State University</td>
<td>Effects of Cocaine Taking and Seeking on Histone Deacetylase Class IIa Enzyme Activity in the Nucleus Accumbens of Rats</td>
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<td>Delineation and Vulnerabilities of HIV-1 Escape from Neutralizing Antibodies</td>
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<td>Feasibility of Using Wearable Technology for Just-In-Time Prediction of Smoking Lapses</td>
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<td>Impact of Marijuana Legalization: Comparison of Two Longitudinal Twin Cohorts</td>
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<td>Dissecting Circuits Mediating Pain-Induced Alterations in Motivated Behavior</td>
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<td>Trans-Synaptic Optogenetics: Reversible Temporal Control of Activity at Defined Synaptic Projections</td>
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<td>Dissecting the Role of Ventral Pallidal Projections to Nucleus Accumbens In Reward Processing</td>
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<td>Mhealth To Help Pregnant and Postpartum Women in Recovery for Opioid Use Disorder</td>
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<td>Boys Town National Research Hospital</td>
<td>Signatures of Cannabis Abuse in NeuroHIV (SCAN): An Integrated Molecular and Imaging Approach</td>
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<td>HIV Tat &amp; Cocaine-Mediated Alterations in Microglial Migration &amp; Activation Involve Epigenetic Regulation of MiRNAs</td>
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<td>Intranasal Delivery of Exosomes Loaded with MiRS -223 and -124 as a Therapeutic Strategy for Hand in Cocaine Users</td>
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<td>New Hampshire</td>
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<td>Leveraging Social Media to Develop the Cannabis Exposure Index (CEI), A Standardized Measure of Cannabis Use</td>
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<td>CRCNS Research Proposal: Cortico-Amygdalar Substrates of Adaptive Learning</td>
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<td>RBHS-New Jersey Medical School</td>
<td>Outcome Assessments of Demographically Diverse Long-term Cohorts of Persons at High HIV Risk Enrolled from Drug Abuse Treatment Programs in the 1980s across the U.S.</td>
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<td>New Jersey</td>
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<td>Using Combined EEG and Non-Invasive Brain Stimulation to Examine and Improve Reward Functioning in Opioid Use Disorder</td>
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<td>Defining the Differential Roles of Glutamatergic and GABAergic Projections from the Lateral Preoptic Area to the Lateral Habenula in Reward, Aversion, and Drug-Seeking Behavior</td>
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<td>New York</td>
<td>Albert Einstein College of Medicine</td>
<td>Effect of Drugs of Abuse on CNS HIV-1 Reservoirs and Neuropathogenesis</td>
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<td>Nucleus Accumbens Processing of Reward-Predictive Cues</td>
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<td>Computational and Neural Modeling of Cue Reactivity in Addiction</td>
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<td>Elucidating the Mechanisms of Cannabinoids on HIV-1 Infection and Inflammasome Activation</td>
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<td>New York</td>
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<td>Drug Use Among Nightclub and Dance Festival Attendees In New York City</td>
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<td>New York</td>
<td>Partnership to End Addiction</td>
<td>Fidelity Training and Feedback System for Adolescent Externalizing Problems</td>
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<td>New York</td>
<td>Roswell Park Comprehensive Cancer Center</td>
<td>Do E-cigarette Design Features Impact Cigarette Initiation, Cessation &amp; Relapse?</td>
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<td>A novel phase and spectroscopic imaging technique to evaluate mitochondrial dynamics</td>
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<td>Substance Use in Reservists: Social and Environmental Influences</td>
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<td>Campus</td>
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<td>Calcium-Related Neurotoxicity of Cocaine</td>
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<td>Cannabinoid Modulation of EV Composition and Function in HIV/SIV Infection</td>
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<td>Opioids and Maternal Brain-Behavior Adaptation During the Early Postpartum</td>
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<td>Fatty Acid Binding Protein - Mediated Control of Endocannabinoid Signaling and Drug Addiction</td>
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<td>New York</td>
<td>University of Rochester School of Medicine</td>
<td>Transitions Clinic Network: Post Incarceration Addiction Treatment, Healthcare, and Social Support (TCN-PATHS) study</td>
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<td>New York</td>
<td>Weill Cornell Medicine</td>
<td>DAT 18-06 Feasibility and Acceptability of HIV, HCV, and Opioid Use Disorder Services in Syringe Service Programs</td>
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<td>North Carolina</td>
<td>High Point University</td>
<td>Low-Efficacy Dopamine D4 Receptor Partial Agonists for Cocaine Addiction</td>
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<td>North Carolina State University</td>
<td>Genetic and hormonal contributions to sex differences in vulnerability to drug use.</td>
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<td>Integrating Multiple Omics to Illuminate Gene Networks Underlying Cigarette Smoking and Opioids</td>
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<td>University of North Carolina at Chapel Hill</td>
<td>Rapid Identification of Cocaine Sensitivity Genes Using A Novel Reduced Complexity Cross</td>
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<td>Identification of Cells and Signaling Mechanisms Underlying Opioid Analgesia and Side Effects</td>
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<td>Neurobiological Susceptibility to Peer Influence and Drug Use in Adolescence</td>
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<td>RG52 Regulation of D2 Receptor Signaling</td>
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<td>Ohio</td>
<td>Case Western Reserve University</td>
<td>Identification of Immune Protective Pathways Dysregulated by Opioid Use in HIV Infection, Using A Systems Biology-Based Approach, Toward the Goal of Pharmacological Restoration of Immune Function</td>
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<td>Impact of Flavor on Youth &amp; Young Adults Use Intention, Abuse Liability and Perceptions of Cigarillos</td>
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<td>University of Cincinnati</td>
<td>Maternal Opioid Exposure and Executive Function Evaluation in The Mouse</td>
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<td>Omics Analysis of HIV During Synthetic Opioid Exposure</td>
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<td>Data Sharing Practices and Reproducibility of Addiction</td>
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<td>Oregon</td>
<td>Legacy Research Institute</td>
<td>Identifying Prefrontal Cortex Neural Ensembles in Cocaine-associated Memories</td>
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<td>The Impact of Naltrexone Treatment on Opioid-Induced Immune and Viral Dysregulation During HIV-Infection</td>
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<td>Mechanisms of Maladaptive Memory Formation and Suppression in A Preclinical Model of the Comorbidity Between PTSD and Addiction</td>
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<td>Implementation, Outcomes, and Cost of a Novel Medicaid Policy to Reduce Opioids for Back Pain</td>
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<td>A Novel Role for the Medial Amygdala in the Modulation of Sex Differences in Cocaine Reward</td>
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<td>Chronic Morphine: Regulation of Ion Conductance’s</td>
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<td>Prevention Research Center: Parenting Among Women Who Are Opioid Users</td>
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<td>Integrating Preclinical Models to Develop Converging Mechanistic Data in Co-</td>
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<td>Sex Differences in Stress Inoculation of Addiction-Like Phenotypes</td>
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<td>Examining Mechanisms Underlying Drug-Associated Memory Erasure by Zeta-</td>
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<td>Unraveling Epigenetic Mechanisms of Opioid Addiction Susceptibility Using</td>
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<td>Role of miRNA in Methamphetamine/HIV-Mediated Immune Activation</td>
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<td>Characterization of Cocaine Induced Signaling Pathways that Enhances HIV</td>
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<td>Implementing Contingency Management in Opioid Treatment Centers Across New</td>
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<td>England: A Hybrid Type 3 Trial</td>
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<td>Causal Inference Methods for HIV Prevention Studies Among</td>
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<td>Medical University of South Carolina</td>
<td>The Role of Ventral Pallidal Cannabinoid and Opioid Signaling in Cross-Sensitization Between THC And Cue-Induced Heroin Seeking</td>
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<td>Impact of Dead Box RNA Helicase 3 Signaling on HIV-1 Tat- and Cocaine-Induced Neurotoxicity</td>
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<td>The Role of Adenosine A(2A) Receptor Activation on the Behavioral and Plasticity Response to Nicotine in a Rodent Model of Schizophrenia</td>
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<td>Hypocretin Contributions to Compulsive Methamphetamine Self-Administration in Rats</td>
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<td>Tennessee</td>
<td>University of Tennessee Health Science Center</td>
<td>Monocytic and Exosomal Cytochrome P450s In Smoking-Mediated HIV-1 Pathogenesis</td>
<td>150</td>
<td>Subsidized</td>
<td>Yes</td>
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<tr>
<td>Tennessee</td>
<td>Vanderbilt University</td>
<td>Defining the Role of Cortical Circuit Dynamics in Learning and Addiction</td>
<td>151</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>Texas</td>
<td>Houston Methodist Hospital</td>
<td>Development of a Point-of-Care Volumetric Bar-Chart Chip for Drug Quantitation</td>
<td>152</td>
<td>Subsidized</td>
<td>No</td>
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<tr>
<td>Texas</td>
<td>University of Texas Medical Branch at Galveston</td>
<td>BRD4 Inhibition for Opioid Pharmacotherapy</td>
<td>153</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>Texas</td>
<td>Texas A&amp;M University</td>
<td>Cocaine and HIV Influence Mitochondrial Epigenetics in Astrocytic Networks</td>
<td>154</td>
<td>Subsidized</td>
<td>No</td>
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<tr>
<td>Texas</td>
<td>Texas Biomedical Research Institute</td>
<td>Epigenetic Mechanisms Underlying Cannabinoid Modulation of Neuroinflammation in HIV/SIV Infection</td>
<td>155</td>
<td>Subsidized</td>
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<tr>
<td>Texas</td>
<td>Texas Tech University health Sciences University</td>
<td>Mechanisms of Cannabinoid Tolerance</td>
<td>156</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Texas</td>
<td>University of Texas Health Science Center at Houston</td>
<td>Gene-environment interactions in COCCAINE Use Disorder: Collaborative Case-Control Initiative in Cocaine Addiction</td>
<td>157</td>
<td>Subsidized</td>
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<tr>
<td>State</td>
<td>Research Institution</td>
<td>Project Title</td>
<td>Research Site Number</td>
<td>Housing Availability</td>
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<tr>
<td>Texas</td>
<td>University of Texas Health Science Center San Antonio</td>
<td>Development of Impulse Control</td>
<td>158</td>
<td>Subsidized</td>
<td>No</td>
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<tr>
<td>Utah</td>
<td>University of Utah</td>
<td>Greater Intermountain Node</td>
<td>159</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Virginia</td>
<td>George Mason University</td>
<td>Role of Extracellular Vesicles in Methamphetamine and HIV Induced Neurotoxicity</td>
<td>160</td>
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<td>Virginia</td>
<td>George Mason University</td>
<td>JCOIN Coordination and Translational Center</td>
<td>161</td>
<td>Campus</td>
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<tr>
<td>Virginia</td>
<td>University of Virginia</td>
<td>Endocannabinoid Biosynthesis in Inflammation and Pain</td>
<td>162</td>
<td>Campus</td>
<td>Yes</td>
</tr>
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<td>Virginia</td>
<td>Virginia Commonwealth University</td>
<td>20/21 ABCD-USA Consortium: Research Project Site at VCU</td>
<td>163</td>
<td>Subsidized</td>
<td>Yes</td>
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<tr>
<td>Virginia</td>
<td>Virginia Commonwealth University</td>
<td>Genetics Basis of Nicotine Withdrawal in A Reduced</td>
<td>164</td>
<td>Subsidized</td>
<td>No</td>
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<tr>
<td>Virginia</td>
<td>Virginia Commonwealth University</td>
<td>Using Mobile-Based Contingency Management to Promote Daily Self-Monitoring of Pain Severity and Prescription Opioid Use in a Primary Care Sample of Chronic Pain Patients</td>
<td>165</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Washington</td>
<td>University of Washington</td>
<td>Implementation Science Research on PrEP Delivery and Costing Within MAT and NSP Services for PWUD in Uganda</td>
<td>166</td>
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<td>Yes</td>
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<tr>
<td>Washington</td>
<td>University of Washington</td>
<td>Ecological Momentary Assessment of Negative Urgency's Effects on Alcohol and Marijuana Misuse</td>
<td>167</td>
<td>Campus</td>
<td>Yes</td>
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<tr>
<td>Washington</td>
<td>University of Washington</td>
<td>Neural Circuit Elements That Orchestrate Cue-Reward Associations</td>
<td>168</td>
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<td>Washington</td>
<td>University of Washington</td>
<td>Mechanisms of Drug Disposition During Pregnancy</td>
<td>169</td>
<td>Campus</td>
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<td>Washington</td>
<td>University of Washington</td>
<td>Clinical Trials Network - Pacific Northwest Node</td>
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<tr>
<td>West Virginia</td>
<td>Marshall University</td>
<td>Mechanisms of Cannabinoid Tolerance</td>
<td>171</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>Wisconsin</td>
<td>University of Wisconsin</td>
<td>Data Driven Strategies for Substance Misuse Identification in Hospitalized Patients</td>
<td>172</td>
<td>Campus</td>
<td>No</td>
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<tr>
<td>State</td>
<td>Research Institution</td>
<td>Project Title</td>
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<td>Housing Availability</td>
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<tr>
<td>Wisconsin</td>
<td>University of Wisconsin-Madison</td>
<td>Real-Time Predictors of Prescription Drug Misuse by College Students and Assessment of Misuse on Their Developmental Trajectories</td>
<td>173</td>
<td>Subsidized</td>
<td>Yes</td>
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</table>
Arizona

Investigator: Art Riegel, Ph.D.
Institution: University of Arizona
Project Title: The Role of Ryanodine Receptors in Drug Seeking
Research: Basic Research
Research Area: Cellular Signaling; Physiological Mechanisms; Prefrontal Cortex; Ryanodine Receptors; Operant Behavior; Patch-Clamp Electrophysiology; Viral-Mediated Gene Expression; Rodent Model of Drug Seeking; Transgenic FOS-TRAP Mice; Transgenic FOS-GFP Rats; 2-Photon Calcium Imaging; Immunohistochemistry

Earliest Start Date: 5/31/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

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

Investigator: Merideth Addicott, Ph.D.
Institution: University of Arkansas for Medical Sciences
Little Rock, AR
Project Title: Neural Correlates of Distress Tolerance in Tobacco Addiction
Research: Behavioral Research
Research Area: Tobacco Addiction; fMRI; Distress Tolerance; Behavioral; Smoking Cessation
Earliest Start Date: 5/26/2021
Housing: Campus
Option for Virtual Internship: No

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

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

Investigator: Clinton Kilts, Ph.D.
Institution: University of Arkansas for Medical Sciences
Little Rock, AR
Project Title: The Sex-Specific Roles and Neural Processing Correlates of Future-Oriented Estimation in the Drug Addiction Process
Research: Clinical Research
Research Area: Individual and Sex Differences; Neuroimaging; Episodic Future Thinking; Addiction Risk Factors; Adolescence; Temporal Discounting; Attentional Bias Effect Child Health and Development
Earliest Start Date: 5/29/2021
Housing: Yes
Option for Virtual Internship: Campus

Student Qualifications: Interns must have an interest in human behavior and neuroscience. Prior training in neuroscience, computer programming, or statistics is not necessary but preferred. Interns will interact with human participants and analyze data acquired from human populations, including questionnaires and neuroimaging data. Previous research experience is preferred but not required.

Project Description: The intern will be engaged in guided instruction and hands-on training related to the human drug addiction process in the Brain Imaging Research Center of the University of Arkansas for Medical Sciences. The research project will explore the role of future oriented thing in biasing decision making in the drug addiction processes across adolescence and adulthood. Interns would gain experience in structured assessments, functional magnetic resonance imaging, and the use of tasks as processing demands for episodic future thinking, drug incentive motivation, and the temporal discounting of future gains or losses, as well as human neurodevelopment. Experience extensions into the area of resilience, computational modeling, coding, real-time fMRI, and adverse/protective childhood experience mapping and outcomes are additionally possible. The intern will also gain research experience in cross-disciplinary team science approaches to translational addiction research. There will be opportunities to interact and learn with the medical students, graduate students, postdoctoral fellows and psychiatry residents currently participating as trainees in the UAMS NIDA T32 training program ("Translational Training in Addiction"). The intern will work with the mentor to develop a project tailored to his or her research interests.
Investigator: Theodore Friedman, M.D., Ph.D.
Institution: Charles R. Drew University
Los Angeles, CA
Project Title: Nicotine Exacerbates High Fat Diet-Induced Hepatic Steatosis and Skeletal Muscle Abnormalities in Obese Mice
Research: Behavioral Research
Research Area: Nicotine, Smoking; Diabetes; Obesity; Hepatic Steatosis; Nhanes; Addiction; Dopamine
Earliest Start Date: 5/17/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: The following skills are preferred:
- Molecular Biology skills
- Animal handling skills
- Computer skills (excel, word, and PowerPoint)

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

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

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

Investigator: Leor Weinberger, Ph.D.
Institution: Gladstone Institutes | University of California, San Francisco, CA
Project Title: A Gene Drive Therapy for HIV: Single-Administration Intervention for High-risk Groups (Phase-I trial included)
Research: Drug Development research
Research Area: Virology; Immunology; HIV Therapeutics; Gene Therapy; SARS COV-2
Earliest Start Date: 5/31/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Education: Major in biology, molecular biology, bioengineering, chemistry, or related field Experience: Some prior experience in a lab (outside of lab coursework) strongly preferred, 2 years of coursework minimum Skills: Outstanding communications skills, close attention to detail, and the ability to work with a diverse group of scientists. Research will require that intern works with human CD4+ T cells obtained from a PWID cohort maintained by researchers at UCSD.

Project Description: “Superspreader” populations drive viral transmission in many viral epidemics. In HIV/AIDS, these superspreader populations including people who inject drugs (PWID) and are difficult to identify and treat with existing intervention strategies. Related superspreading events also drive SARS-CoV-2 transmission. Dr. Weinberger and his lab have a pioneered first-in-class antiviral countermeasure composed of ‘molecular parasites’ of viruses engineered to out-compete the wild-type virus for genetic materials, inhibit the virus, and spread along viral pathways to automatically reach and harness superspreading events. These parasites co-evolve with the virus, thereby overcoming problems of viral mutation and ‘escape’, and thus have the capacity to act as resistance-proof therapies. Consequently, the approach would constitute a single-administration medical countermeasure to circumvent adherence and compliance issues, reaching the highest-risk groups who most need therapy. At the time of the internship, lab members will be testing the antiviral efficacy of this therapy against HIV and SARS-CoV-2 using novel cell cultures of patient cells from PWID. They are preparing the therapy for safety and efficacy trials.
California

Investigator: Maria Cecilia Marcondes, Ph.D.
Institution: San Diego Biomedical Research Institute
San Diego, CA
Project Title: Dopamine System as Reporter of HIV Status and Inflammation in Meth Abusers
Research: Basic Research
Research Area: HIV; Neurological Disorders; Dopamine; Peripheral Biomarkers; Substance Use Disorders; Methamphetamine; Hyperthermia; Neuroimmunology
Earliest Start Date: 05/31/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Curiosity is a must. A little bit of experience with computers, maybe enjoy Math, might be helpful.

Project Description: The summer intern will be examining the relationship between the expression of inflammatory markers in the peripheral blood and the dopamine receptor genotype, in a 2 by 2 design, where individuals are HIV positive or negative, and methamphetamine users or not. We are investigating the hypothesis that the individual differences in the genes that encode dopamine receptors may dictate the susceptibility to inflammation, detectable in the periphery. This is because inflammatory cells express dopamine receptors and are responsive to high levels of dopamine that become available during drug exposure.
California

**Investigator:** Kim Janda, Ph.D.
**Institution:** Scripps Research
La Jolla, CA

**Project Title:** Immunotherapy to Counteract Lethal Doses of Carfentanil
**Research:** Drug Development Research

**Research Area:** Development of Vaccines (Both Active and Passive) Against Drugs of Abuse.

**Earliest Start Date:** 6/01/2021
**Housing:** Subsidized
**Option for Virtual Internship:** No

**Student Qualifications:** I have no requirements of skill sets for interns. I typically try to maximize their interests. Thus, I seek to have students who are enthusiastic about working on problems related to addiction. We will work with them to maximize their skill sets and ultimately provide a positive experience. My goal is to stimulate their scientific interests so that they ultimately can go on to seek a higher-level degree.

**Project Description:** The research will investigate the deadliest of all synthetic opioids, Carfentanil. The goal will be to develop either active or passive vaccines that can protect against opioid-induced respiratory depression as well as alter the bio distribution to the brain of this drug.
California

Investigator: Eric Zorrilla, Ph.D.
Institution: Scripps Research Institute
La Jolla, CA
Project Title: Extrahypothalamic PPARs and Compulsive Food Intake
Research: Basic Research
Research Area: Food Addiction; Compulsive Eating; Reinforcement; Nucleus Accumbens; Dorsal Striatum; Peroxisome Proliferator-Activated Receptor; Lipid Transcription Factor; Dopamine D1 And D2 Receptors; Adenosine 2A Receptor; Cre/Lox Recombination; Translational Research; Eating Disorders; Obesity
Earliest Start Date: 06/15/2021
Housing: Campus
Option for Virtual Internship: Yes

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

Project Description: The intern will participate in molecular and behavioral pharmacologic studies test to help mechanistically test the overarching hypothesis that striatal peroxisome proliferator-activated receptor-delta (PPARδ) receptors modulate compulsive eating behavior. We are using cre/lox recombination approaches to dissect changes in expression of PPARδ and its target genes that develop in a model of compulsive eating within dopamine D1-expressing "direct pathway" vs. Adora2A-expressing "indirect pathway" neurons of striatal compartments. We also are testing the effects of modulating PPARδ action in these circuits using genetically targeted PPARδ knockout and translationally relevant candidate agonist approaches. The studies will inform the neurobiology and a potential novel therapeutic approach to compulsive eating disorders, such as binge eating and obesity, as well as addictive disorders more broadly.
California

Investigator: Xiaoke Chen, Ph.D.
Institution: Stanford University
Stanford, CA

Project Title: Thalamic Circuits Underlying Opioid Seeking
Research: Basic Research
Research Area: Opioid Withdrawal; Neural Circuits Dissection; Examining Circuitry Mechanism Underlying Opioid-Associated Memories

Earliest Start Date: 06/15/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: The intern needs to have experiences working with mice and a strong interest in neuroscience. Experience in stereotaxic surgery and immunohistochemistry will be ideal.

Project Description: We will combine optogenetic pathway manipulation and morphine-conditioned place preference assay to dissect the contribution of each output pathway from the paraventricular nucleus of the thalamus to opioid-associated memory.
California

Investigator: Gary Peltz, M.D., Ph.D.
Institution: Stanford University
Stanford, CA
Project Title: Computational Methods for Identification of Genetic Factors Affecting the Response to Drug Abuse
Research: Basic Research
Research Area: Genetics; Computational Methods; Mouse Genome (CRISPR) Engineering
Earliest Start Date: 05/31/2021
Housing: Campus
Option for Virtual Internship: Yes

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

Project Description: The interns will: 1) help to develop computational methods for analysis of genetic and genomic data; or 2) aid engineering the genome of mice using CRISPR to produce lines that can be tested for response to drugs of abuse.
**California**

**Investigator:** Christie Fowler, Ph.D.  
**Institution:** University of California Irvine  
**Project Title:** Impact of THC on Extracellular Vesicle Signaling  
**Research:** Basic Research  
**Research Area:** Drug Addiction; THC; Cannabinoid; Self-Administration; Extracellular Vesicles; Exosomes; RNA; Epigenetics; Genetics

**Earliest Start Date:** 06/01/2021  
**Housing:** Subsidized  
**Option for Virtual Internship:** No

**Student Qualifications:** Background in biology, neuroscience or related field preferred.  
Prior experience in handling rats or mice (preferred, not required).  
Must be willing to work with animals, cell culture, and tissue samples.  
Career interests to pursue graduate studies in drug addiction and/or neuroscience.

**Project Description:** The Fowler lab is focused on discovering the genetic, epigenetic and molecular mechanisms underlying THC/cannabis and nicotine/tobacco dependence. A current focus of the lab is to elucidate the factors localized in extracellular vesicles, or exosomes, which are found circulating in biofluids of the brain and body. Cerebrospinal fluid-derived extracellular microvesicles have been recently identified to contain a variety of signaling factors, such including multiple RNA species. For this research project, the student will be involved in rodent studies to determine the uptake of extracellular vesicles from the cerebrospinal fluid into neurons of the brain. The investigations will involve multiple approaches to isolate, label and inject extracellular microvesicles, as well as examination of the impact on neuronal signaling mechanisms during drug self-administration.
California

Investigator: Briac Halbout, Ph.D.
Institution: University of California Irvine
Irvine, CA
Project Title: DAT-Disruptive Impact of Morphine-Related Cues on Goal-Directed Behavior
Research: Basic Research
Research Area: Opioid Addiction; Reward Learning; Decision Making; Chemogenetic; Immediate Early Genes Expression
Earliest Start Date: 05/31/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Undergraduate students with a major in biology, neuroscience or psychology and showing an interest in the psychology and neurobiology of learning and decision making and addiction would be preferred. Interns will conduct experiments in rodents (i.e. rats).

Project Description: Our project investigates the mechanisms through which opioid use can cause cognitive dysfunctions. Interns will work alongside faculty and staff, exploring the specific effects of opioid exposure on decision making processes. They will conduct innovative behavioral neuroscience research in rodents by using a variety of techniques such as operant conditioning in rats, chemogenic manipulations using Designer Receptors Exclusively Activated by Designer Drugs (DREADDs) and immunohistochemistry labeling to quantify markers of neuronal activity.
**California**

**Investigator:** Stephen Mahler, Ph.D.

**Institution:** University of California Irvine
   Irvine, CA

**Project Title:** ICAL: Impact of Cannabinoids Across Lifespan: Behavioral Project

**Research:** Basic Research

**Research Area:** Behavioral Neuroscience; Neurodevelopment; Addiction; Cannabis; THC; Adolescence; Early-Life Adversity; Reward Circuits; Drugs of Abuse; Motivation; Drugs; Drug Relapse Models; Rats; Conditioned Stimuli; Motivation

**Earliest Start Date:** 06/01/2021

**Housing:** Campus

**Option for Virtual Internship:** Yes

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

**Project Description:** The project seeks to determine in rats how administering THC, the main drug in cannabis, to the adolescent brain can disrupt its development. We expose adolescent male and female rats to low and moderate doses of THC while they are adolescent, either by systemic injection (maximizing dosing control), or by vapor inhalation (maximizing translational relevance). We then allow the rats to grow into adulthood and examine how they differ from control-treated rats in behavior, reward circuit function, neural activity, and endocannabinoid system function.

This is an ongoing collaboration with 3 other UC Irvine labs, so the potential for interactions with other prominent scientists researching similar topics is high.

The intern will also be exposed to our other ongoing projects in the lab, in which we study how 1) early life stress impacts reward circuit development, and 2) neural circuits involving the ventral pallidum participate in decision making, and relapse to heroin and cocaine seeking.
Investigator: Sean Ostlund, Ph.D.
Institution: University of California Irvine
Irvine, CA
Project Title: Interactions Between Orbitofrontal Cortex and Mediodorsal Thalamus in Cue- and Value-Based Decision Making
Research: Basic Research
Research Area: Neural Circuit Mapping; Chemogenetics; Cue-Motivated Behavior; Goal-Directed Decision Making
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Interns should have a strong interest in rodent behavioral analysis and should be familiar with basic concepts in experimental psychological and behavioral neuroscience. A background in computer programming and/or data analysis is advantageous but not required. Planned research will involve handling live rats and working with rat brain tissue.

Project Description: Reward-seeking actions are flexibly chosen based on the current desirability of potential rewards (value-based decision making) and the presence of environmental cues that signal reward availability (cue-based decision making). These two modes of action selection are normally adaptive and promote well-being but can become maladaptive in psychiatric conditions such as drug addiction, schizophrenia, and obsessive-compulsive disorder. It is important to improve understanding of the neural circuitry supporting adaptive decision making under normal conditions so that we can identify how dysfunction within these pathways gives rise to pathological behaviors. The current project uses an integrative approach that combines sophisticated rodent behavioral analyses with pathway-specific chemogenetic manipulations to investigate how subregions of the orbitofrontal cortex interact with each other and with the mediodorsal thalamus to support value- and cue-based decision making.
California

Investigator: Daniele Piomelli, Ph.D.
Institution: University of California Irvine
Irvine, CA
Project Title: ICAL: Impact of Cannabinoids Across Lifespan
Research: Basic Research
Research Area: The long-term consequences of adolescent exposure to cannabinoid drugs on brain plasticity and behavior and the molecular mechanisms underlying such effects.

Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Previous experience in a biomedical, neuroscience, molecular or cellular biological research laboratory is required. Preferred skills are handling rodents, tissue isolation, and protein/DNA/RNA/lipid biochemistry. High levels of motivation for Science, work ethics, organization, and responsibility are required.

Project Description: Adolescent administration of Δ9-tetrahydrocannabinol (THC) causes long-lasting neurobehavioral impairments in mice and rats. The project will test the hypothesis that these enduring effects result from excessive activation of CB1-type cannabinoid receptor (CB1R), which triggers epigenetic processes resulting in region- and circuit-specific down-regulation of endocannabinoid (ECB) signaling. We will examine whether acute or prolonged exposure to THC during adolescence alters molecular components of the ECB system, and/or the ability of this system to be engaged by environmental stimuli. We will test, in mice and rats of both sexes, acute and prolonged THC regimens designed to mimic occasional or daily cannabis use in teenagers. We will determine the effects of acute or prolonged adolescent THC exposure on (i) lipid, protein and gene constituents of the ECB complex; (ii) epigenetic modifications; and (iii) stimulus-dependent ECB signaling in vitro and in vivo. A deep understanding of the enduring actions of THC at the genetic, epigenetic and biochemical level will guide the future discovery of predictive biomarkers of exposure outcomes as well as for the rational development of medications aimed at correcting the neurobehavioral consequences of teenage cannabis use.
California

Investigator: Uma Rao, M.D.
Institution: University of California Irvine
Irvine, CA
Project Title: Prevention of Adolescent Risky Behaviors: Neural Markers of Intervention Effects
Research: Clinical Research
Research Area: Child, Adolescent; Life Skills; Risky Behavior; MRI; Ethnicity/Race; African American
Earliest Start Date: 6/1/2020
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: This is a clinical research project involving interaction with human research subjects. Certification in human subject’s protection and Good Clinical Practices (GCP) is critical for observing the research assessments. NIH sponsored certification is acceptable. Obtaining the training prior to joining the internship will facilitate better use of the 8-week program. Students should have a background in psychology, public health, biological sciences, psychobiology, neuroscience, or related fields.

Project Description: Adolescents face many challenges as they begin to gain independence and prepare for adult roles in society. Due to covert and overt racial discrimination in our society, Black (African American) youth experience more challenges during this transition. The investigator’s research team has developed a culturally sensitive family intervention program, Pathways for African American Success (PAAS), which helps youth and parents to cope with such challenges. This 6-week parent-child program has been shown to be effective in promoting positive outcomes in later adolescence and young adulthood. In the current project, 11-14-year-old Black (African American) youth (both boys and girls) are recruited. Using magnetic resonance imaging (MRI) technology, brain scans are performed before and after PAAS to learn more about the brain changes associated with positive outcomes in response to the PAAS program. A better understanding of the brain network changes will help us to fine-tune the program or develop alternative strategies for those who don’t show significant benefit.
California

Investigator: Ian Halloway, Ph.D.
Institution: University of California Los Angeles
Los Angeles, CA
Project Title: Machine Learning for HIV Prevention Among Substance Using GBMS
Research: Preventative Research
Research Area: Men Who Have Sex with Men; HIV Prevention; Social Networking Sites; Apps; Technology
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Preferred qualifications: Majoring in public health, health science, social welfare, or related majors. The participant will be working with human subjects on the phone and over Zoom and should be comfortable and/or familiar with LGBTQ issues and substance use issues. Experience conducting public health or health sciences literature review. Should be proficient at using Microsoft Excel and Word.

Project Description: The summer intern will be helping with recruitment and enrollment of research subjects that fit the target population, completing tasks related to data collection, tracking, and cleaning, and conducting simple data analyses, such as frequency tables. The summer intern may complete tasks such as checking surveys, learning to troubleshoot the software, checking the data for any inconsistencies, and contacting participants to get updated contact information. The summer intern will also assist with manuscript development and reporting procedures, such as conducting literature review.
**Investigator:** Matthew Mimiaga, ScD, MPH  
**Institution:** University of California Los Angeles  
Los Angeles, CA  
**Project Title:** Integrated Behavioral Activation and HIV Risk Reduction Counseling for MSM with Stimulant Abuse  
**Research:** Behavioral Research  
**Research Area:** HIV/AIDS; Sexual and Gender Minorities; Substance Use; Mental Health  
**Earliest Start Date:** 06/20/2021  
**Housing:** Campus  
**Option for Virtual Internship:** Yes

**Student Qualifications:** Experience working with sexual and gender minorities (LGBTQ individuals), and in the field of HIV prevention. Interests in 1) developing and testing psychosocial treatments for substance use disorder, 2) HIV prevention and 3) LGBTQ health. Ability to use statistical programs (e.g., SAS, R, SPSS) to conduct basic analyses, including logistic and linear regression. Students who plan to pursue a career in clinical psychology, public health, or medicine.

**Project Description:** Problematic stimulant use is a prevalent and treatment refractory problem in men who have sex with men (MSM), and highly predictive of both condomless sex and HIV infection. The study is a NIDA funded R01 to test the efficacy of a behavioral intervention to reduce high-risk sex in MSM with stimulant use disorder who are at risk for HIV acquisition. The intervention incorporates risk reduction counseling with behavioral activation (BA) to help participants re-engage in enjoyable and meaningful life activities not involving drugs.

The research position includes a mix of participating in study team meetings; helping with participant retention and scheduling; conducting follow-up assessment visits with enrolled study participants; conducting community outreach with the goal of recruiting new participants into the study; screening potential participants for eligibility, using the baseline, conducting analyses for a scientific manuscript that the mentee will lead (the analysis plan will be determined in collaboration with the PI), manuscript preparation, and career development activities that are available at UCLA.
California

Investigator: Steven Shoptaw, Ph.D.
Institution: University of California Los Angeles
Los Angeles, CA
Project Title: MSM and Substances Cohort at UCLA Linking Infections Noting Effects (mSTUDY)
Research: Clinical Research
Research Area: Addiction and HIV
Earliest Start Date: 06/07/2021
Housing: Subsidized
Option for Virtual Internship: No

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

Project Description: The UCLA Center for Behavioral & Addiction Medicine is a multidisciplinary center that seeks to advance the prevention and treatment of chronic illnesses, especially in communities with health disparities. We work at the intersection of academia and community with a focus on treating addiction and preventing the spread of HIV. People who use substances are at much greater risk of acquiring HIV and for those with HIV, use of substances hinders viral suppression (a key measure of health for those with HIV). The intern will work closely with faculty, staff and postdoctoral fellows to gain a general understanding of addiction and how it affects (and is affected by) other medical, behavioral, and social conditions.
Investigator: Marcus Kaul, Ph.D.
Institution: University of California Riverside
Riverside, CA
Project Title: Methamphetamine Effect on HIV Persistence
Research: Basic Research
Research Area: Methamphetamine; HIV-1 Infection; Viral Persistence; Anti-Retroviral Therapy; Immunity; Inflammation; Neurotoxicity; Animal Models; In Vivo; In Vitro; Cell Culture; Cell Signaling; Cell Stress
Earliest Start Date: 05/31/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Interest in the link between drug use and infectious diseases, basic lab experience, basic knowledge of cell biology and chemistry, basic experience with tissue culture or small animal work is advantageous. Depending on skill level and previous experience, there will be an opportunity to work with recombinant viral proteins or virus.

Project Description: The summer project will investigate how methamphetamine affects the biological function of cellular receptors of HIV-1 and the response of cells to antiviral treatment and immune factors.
California

Investigator: Emily Dauria, Ph.D.
Institution: University of California San Francisco
San Francisco, CA
Project Title: kINSHIP: Peer Navigators Addressing INtersectional Stigma to Improve HIV Prevention Among Criminal Justice Involved Women
Research: Behavioral Research
Research Area: HIV-Prevention; Women's Health; Criminal Justice; Intervention Development; Patient Navigation; Intersectional Stigma
Earliest Start Date: 05/03/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

Project Description: Women involved in the criminal justice system have complex and highly stigmatized sexual and substance use risk profiles and are particularly vulnerable to HIV. Pre-exposure prophylaxis (PrEP) is an efficacious HIV prevention strategy, however, women at high-risk of HIV infection in the US are largely absent from national efforts to improve PrEP awareness and uptake. Criminal justice settings represent an important opportunity to address disparities in HIV by linking high-risk women, who experience multiple, intersecting stigmas with innovative HIV prevention strategies, like PrEP. Peer-led patient navigation interventions have demonstrated efficacy in building trust and reducing stigma and discrimination-related barriers to healthcare engagement and hold strong potential to address complex barriers to PrEP access for criminal justice involved women. The purpose of Project kINSHIP is to develop and test a peer-led patient navigator PrEP linkage intervention for justice-involved women at risk for HIV acquisition in San Francisco, CA. The summer intern will assist with collecting and analyzing qualitative and quantitative data from the pilot phase of the kINSHIP intervention. Results will be used to refine the content and structure of the intervention for the larger randomized trial. The intern will join a multi-cultural, multi-lingual research team (Juvenile Justice Behavioral Health Lab; UCSF) dedicated to reducing health disparities among justice-involved populations.
California

Investigator: Athena Robinson, Ph.D.
Institution: Woebot Health
San Francisco, CA
Project Title: RCT of Woebot for Substance Use Disorders
Research: Clinical Research
Research Area: Digital Therapeutics; Mental Health Automated; Conversational Agent; Mobile smartphone application; Randomized Clinical Trial; Substance Use Disorder; Cognitive Behavioral Therapy
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

Project Description: The Summer Intern will be part of a cross-functional research team evaluating the efficacy of an artificial-intelligence (AI) powered chatbot for mental health. Woebot for Substance Use Disorders leverages psychotherapeutic strategies and techniques derived from Cognitive Behavioral Therapy, Interpersonal Psychotherapy, and Motivational Interviewing to address substance abuse issues. This research project is a collaboration between academic researchers at Stanford University and industry partners at Woebot Health. It involves a Randomized Controlled Trial (RCT) that uses rigorous research methods to evaluate whether engaging with Woebot can decrease substance abuse and improve mental health outcomes such as anxiety and depression.
Colorado

Investigator: Linda Stanley, Ph.D.
Institution: Colorado State University
Fort Collins, CO
Project Title: Substance Use Among American Indian Youth:
Epidemiology & Etiology
Research: Epidemiology Research
Research Area: Substance Use Among Adolescents living on or Near American Indian Reservations
Earliest Start Date: 05/16/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Prior experience working with large datasets, and experience with Access or another database that can be used for the harmonization. Some basic programming skills are appreciated but not required.

Project Description: The Tri-Ethnic Center for Prevention Research at Colorado State University has been surveying 7th-12th grade students attending schools on or near reservations about their substance use and other related factors for many years. This work is both epidemiological (tracking substance use rates on a large scale) and etiological (understanding why some students are more likely to engage in substance use than others). Data from this project exists in different datasets that differ depending on the survey time period (e.g., 1995-2002), and at times, the measurement of some variables has changed. In order to maximize the usefulness of decades of data, the data must be brought together into one cohesive data set (i.e., data harmonization). Data harmonization is becoming more and more important in demography and sociology research, due to the rapidly growing volume of data and the need to share existing data. Further, outside of academia, businesses are beginning to appreciate and use data harmonization techniques to enhance their business plans.

The intern will have the opportunity to participate in science communication panels, ethics, and professional development workshops with other undergraduate students participating in a Summer Research Experience in the natural sciences.
Investigator:       Ryan Bachtell, Ph.D.
Institution:       University of Colorado Boulder
                   Boulder, CO
Project Title:     Identification of Genes and Genetic Networks Contributing
t                   to Opioid Use Disorder Traits in the Hybrid Rat Diversity
                   Panel
Research:          Basic Research
Research Area:     Substance Use Disorder; Opioid Use Disorder; Behavioral
                   Genetics; Neurogenetics; Gene Expression; Gene Networks;
                   Self-Administration; Analgesia
Earliest Start Date: 06/01/2021
Housing:           Campus
Option for Virtual Internship: Yes

Student Qualifications: The most important qualification is a high level of motivation and
genuine interest in the project. The interdisciplinary nature of the project is welcoming to a
variety of educational backgrounds and majors, including biology, physiology, neuroscience, and
genetics. Interns will be working with rats and rat tissue samples. Experience with handling
rodents is preferred, although this experience does not need to be specific to the procedures
used in this project.

Project Description: Summer research interns will be involved with multiple aspects of the
research project. Research interns will aid in conducting the rodent behavioral procedures,
including the tail immersion test to evaluate the analgesic effects of oxycodone and the
operant drug self-administration procedure to evaluate the propensity of animals to
volitionally administer oxycodone. Following the behavioral assays, research interns will learn
to extract brain tissue from specific brain regions and prepare the tissue for RNA-sequencing.
Research interns will also have the opportunity to learn about different genetic approaches to
identify quantitative trait loci, RNA expression differences, and gene networks associated with
oxycodone administration.
Colorado

Investigator: L. Cinnamon Bidwell, Ph.D.
Institution: University of Colorado Boulder
Boulder, CO

Project Title: Novel Approaches to Understanding the Role of Cannabinoids and Inflammation in Anxiety

Research: Clinical Research
Research Area: Health Effects of Legalized Cannabis
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

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

Project Description: We are conducting a study to understand the relationship of legalized cannabis use to the biological and behavioral factors related to anxiety. Interestingly, cannabis acutely can increase anxiety, but is related to lower anxiety levels overtime. We will study this paradox by examining the impact of cannabis strains that differ in the amount of THC and CBD (the two major cannabinoids in cannabis) on biological processes in order to inform individual choices regarding the use of cannabis and policy decisions regulating cannabis strains.
Colorado

Investigator: Angela Bryan, Ph.D.
Institution: University of Colorado Boulder
Boulder, CO
Project Title: Exploring the Anti-Inflammatory Properties of Cannabis and their Relevance to Insulin Sensitivity
Research: Clinical Research
Research Area: Health Effects of Legalized Cannabis
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

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

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

Investigator: David Root, Ph.D.
Institution: University of Colorado Boulder
Boulder, CO
Project Title: Genetic Dissection of Ventral Tegmental Area Glutamate and GABA Neurons in Reward and Aversion
Research: Basic Research
Research Area: Motivated Behavior; Reward; Aversion; Glutamate; Dopamine; GABA; VTA; Co-Release
Earliest Start Date: 05/10/2021
Housing: Campus
Option for Virtual Internship: Yes

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

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

Investigator: Ashley Brooks-Russell, Ph.D.
Institution: University of Colorado, Anschutz Medical Campus
Aurora, CO
Project Title: Novel Approaches to Assessing Cannabis Impaired Driving
Research: Behavioral Research
Research Area: Marijuana or Cannabis; Cannabis Impairment; Cannabis Tolerance; Driving Safety; Driving Under Influence; Detecting Impairment

Earliest Start Date: 05/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

Project Description: The student will be assisting with a research project that is examining objective behavioral methods to detect impairment from cannabis related to driving performance. Specific activities will include assisting with participant recruitment and/or screening, shadowing and/or assisting with data collection activities, literature review and data analysis related to the student's research project, attending project meetings with the investigator team, and other similar research project activities.
Investigator: Conall O’Cleirigh, Ph.D.
Institution: Harvard Medical School
Farmington, CT
Project Title: Effectiveness of an Integrated Treatment to Address Smoking Cessation and Anxiety/Depression in People Living with HIV
Research: Behavioral Research
Research Area: Smoking Cessation; HIV Treatment; Cognitive Behavioral Therapy; Behavioral Intervention Research
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications:
- An interest in substance use clinical intervention research
- An interest in research oriented clinical psychology/public health
- A basic understanding of statistics

Project Description: There will be multiple opportunities for the Summer Intern. These can include mentored experiences associated with research operations or management, data analysis on a specific project that aligns with the interns training goals, authoring/co-authoring a manuscript for publication, preparing a conference presentation, and participation in weekly research meetings.
Investigator: Carla Rash, Ph.D.  
Institution: UConn Health School of Medicine  
Farmington, CT  
Project Title: Promoting Employment in Persons Living With HIV/AIDS  
Research: Behavioral Research  
Research Area: HIV; Contingency Management; Incentives  
Earliest Start Date: 05/01/2021  
Housing: Campus  
Option for Virtual Internship: Yes  

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

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

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>Frederick L. Altice, M.D., M.A.</th>
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<tbody>
<tr>
<td>Institution:</td>
<td>Yale University</td>
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<td></td>
<td>New Haven, CT</td>
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<tr>
<td>Project Title:</td>
<td>Expanding Medication Assisted Therapy in Ukraine (ExMAT)</td>
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<tr>
<td>Research:</td>
<td>Epidemiology Research</td>
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<tr>
<td>Research Area:</td>
<td>People Who Use Drugs (PWUD), Substance Use; Methadone Maintenance Program; HIV Prevention; Risk Compensation; Opioid Use Disorder; Implementation Science; Ukraine</td>
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<td>Earliest Start Date:</td>
<td>6/1/2021</td>
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<tr>
<td>Housing:</td>
<td>Subsidized</td>
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<tr>
<td>Option for Virtual Internship:</td>
<td>No</td>
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**Student Qualifications:** The ideal candidate will have a basic background in epidemiological research methods—including basic statistical analysis—and be working towards a degree in medicine or public health. No Russian or Ukrainian language skills required, but experience working in international settings is an advantage. Good scientific-writing skills, basic analytical skills, and familiarity with statistical packages (e.g. STATA, SAS, SPSS, R) are required.

**Project Description:** The NIDA Summer Intern will work under the direct supervision of Samy Galvez, MPH, on a NIDA-funded project entitled, "Expanding Medication-Assisted Therapies in Ukraine" (Project ExMAT, R01DA033679, Altice, PI). The Intern will work with staff in the US and Ukraine. Meetings with Ukraine staff will be conducted using Zoom or Microsoft Teams. The Intern will assist with data cleaning and analysis of survey data that were collected among >1600 people who inject drugs (PWIDs) in Ukraine who are either currently on opioid substitution therapy (OST), who have never been on it, or who were previously on OST. Analysis will be conducted using either SAS, SPSS, R, or STATA. The Intern will also work on the NiaTX model, which is being conducted to promote process changes among OST providers in Ukraine. Expert NiaTx consultants, Lynn Madden and Scott Farnum, from Apt Foundation in New Haven, CT will work with the Intern to oversee activities related to NiaTx. As time permits, the Intern will become familiar with Dr. Altice's domestic projects conducted at 270 Congress Avenue in New Haven and assist with data management for these studies including quality improvement, data collection, and analysis. The Intern will also have the opportunity to spend time with staff on the Community Health Care Van (CHCV), a mobile medical clinic that conducts primary care, harm reduction, HIV, HCV, STI, and TB testing in at least 4 of New Haven's most vulnerable neighborhoods.
Connecticut

Investigator: Kristen Brennand, Ph.D.
Institution: Yale University School of Medicine
           New Haven, CT
Project Title: Functional Genomic Resource and Integrative Model of
              Dopaminergic Circuitry Associated with Psychiatric Disease
Research:
Research Area: Epigenetics; Addiction; Schizophrenia; Stem Cells;
              Dopaminergic Neurons
Earliest Start Date: 05/01/2021
Housing: Campus
Option for Virtual Internship: No

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

Project Description: We propose to develop methods for integrating a broad range of
genomic and epigenetic data collected from hundreds of postmortem brain samples, and
genetic data collected from hundreds of thousands of living subjects to build a much needed
resource connecting genetic risk architecture of common psychiatric disease with
neurobiology, including dopaminergic neurons as a key cell type critical important for the
pathophysiology and treatment of mood and psychosis spectrum disorders and drug
addiction.
Investigator: Janitza Montalvo-Ortiz, Ph.D.
Institution: Yale University School of Medicine
New Haven, CT
Project Title: Integrative Epigenomic Mapping of Co-Morbid OUD and PTSD
Research: Basic Research
Research Area: Epigenetics; Psychiatry Disorders; Neuroscience; Neurogenetics; Substance Abuse; Trauma; Post-Traumatic-Stress Disorder; Neuroepigenomics; Opioid Use Disorder
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: The intern will have an interest in learning about an exciting emerging field of neuroepigenomics. The intern will acquire initial training in applying bioinformatic approaches to analyze and integrate multi-omics datasets to identify gene networks associated with comorbid opioid use disorder and post-traumatic stress disorder. The intern will also learn how to conduct fluorescence-activated nuclei sorting, bisulfite sequencing, library preparation, and preprocessing of sequencing data.

Project Description: This study will focus on studying the neuroepigenomic landscape of substance use disorders and trauma. We will use cutting-edge bioinformatic approaches to dissect the neuronal epigenomic architecture in human postmortem brain tissue of individuals with a history of comorbid opioid use disorder and post-traumatic stress disorder. We will integrate multiomics datasets to understand better the underlying biological mechanisms of these disorders.
Connecticut

Investigator: Marina Piccoitto, Ph.D.,
Institution: Yale University School of Medicine
New Haven, CT

Project Title: Acetylcholine Signaling Allows Cognitive Processes in the Brain to Regulate Physiological Responses to the Environment: The Example of Central Control of Opiate Tolerance

Research: Basic Research
Research Area: Opiates; Contextual Learning; Peripheral Nervous System; Brain-Body Integration; Acetylcholine

Earliest Start Date: 05/24/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: It is important that an intern be willing to work with live mice and some experience handling mice is preferred. In addition, neuroscience coursework would be helpful.

Project Description: We are interested about how the brain senses changes in the body and associates that with responses to the environment. We think the neurotransmitter acetylcholine is important for both sensing those changes, enhancing learning of the environment, and changing the body's response to opiates in response to learned cues in advance of receiving the drug. We think this is important for protecting the body against opiate effects that can lead to overdose. Our experiments use mice to examine behavioral responses to opiates, changes in acetylcholine signaling and neuronal activity using fiber photometry, molecular changes using proteomics and biochemistry and manipulations of cholinergic signaling using chemogenetics, optogenetics, and molecular genetic alterations of receptors for acetylcholine.
Connecticut

Investigator: Ke Xu, Ph.D.
Institution: Yale University School of Medicine
New Haven, CT
Project Title: Defining the Impact of Injection Drug Use on Antiretroviral Therapy and HIV Treatment Outcomes: An (Epi)Genomic Approach
Research: Other Research
Research Area: HIV Infection; Drug Misuse; DNA Methylome; Transcriptome
Earliest Start Date: 07/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: The project is involved in computer coding. Candidate who is interested in coding and genetics are preferred.

Project Description: The goal is to identify differentially expressed genes between intravenous drug users (IDU) and non-IDU in the context of HIV infection. We have data of RNA-seq for approximately 200 subjects. It will be ready for analysis in the summer of 2021.
Student Qualifications: The prospect student will be an undergraduate student preferably majoring in physical or biological sciences with an expressed interest in pursuing a doctoral degree in basic or medical sciences. Students will be required to work with nanoparticles and tissue samples thus it is important to possess basic laboratory skills and knowledge. Students will be allowed to work only after getting appropriate training requested by the law and FIU and will not work with HIV virus or infected tissues.

Project Description: Although the use of cannabis for medical purposes has shown great promise for the treatment of certain medical conditions, cannabinoid abuse exerts significant impairments in neurocognitive and behavioral functions and these effects are exacerbated in patients with HIV infection. Studies suggest that even after HIV-1 suppressing combined antiretroviral therapy (cART), HIV-1 Tat is being produced in the brain from proviral DNA and implicated as a causative agent for latent infection and development of inflammasome mediated neuroinflammation in HIV infected patients. CRISPR/Cas9 gene-editing technology has been shown to be effective for excising the HIV genome integrated into the host genome. Preliminary studies using a recently discovered and potent metabolically stable endocannabinoid analog AMG315 demonstrate that this synthetic cannabinoid exerts anti-inflammatory properties by suppressing NLRP3 inflammasome and HIV infection. The hypothesize is that elimination of the HIV-1 Tat gene in CNS cells using Tat specific CRISPR/Cas9 and suppression of inflammasome with CB1-specific stable endocannabinoid analog AMG315 can eliminate active HIV infection/induce permanent latency and prevent neurodegeneration, respectively. However, AMG-315 and CRISPR are impenetrable to the brain in sufficient quantities necessary to prevent HIV-infection, inflammasome activation, and subsequent neurodegeneration. To overcome this, we will use our patented magneto-electric nanoparticles (MENP).
Investigator: Adel Nefzi, Ph.D.
Institution: Florida International University
Port St. Lucie, FL
Project Title: Synthesis And In Vitro And In Vivo Screening of Fused and Tethered Heterocyclic Peptidomimetics For the Discovery of New Analgesics with Decreased Side Effects
Research: Basic Research
Research Area: Synthesis of small molecule compounds from modified short peptides and their screening for the identification of orally active, metabolically stable peripherally restricted opioid agonists.
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Qualifications would include interest in chemistry and medicinal chemistry and drug discovery. Laboratory experience is not required but is a plus.

Project Description: Guided by computational chemistry, we will synthesize in parallel bis-imidazolidin-2-imines (BIM), mono imidazolidin-2-imines, piperazines, bis-piperazines, bis-imidazolones and fused heterocyclic (FDC) libraries. The goal is to replace the peptide backbone to heterocyclic scaffold while retaining the pharmacophoric groups (e.g., amino acid side chains) of the parent peptide. This promotes metabolic stability, thereby potentially increasing bioavailability. All compounds will initially be screened with competition radioligand binding assays to determine affinity for μ- (MOR), δ- (DOR), and κ- (KOR) opioid receptors. The best compounds will be advanced to invivo studies for antinociceptive characterization and evaluation of potential liabilities.
Florida

Investigator: Yi Xiao, Ph.D.
Institution: Florida International University
Miami, FL
Project Title: Homogeneous Nuclease-Assisted SELEX for Rapid Isolation of Cross-Reactive, Functionalized Aptamers for Synthetic Cannabinoids
Research: Basic Research
Research Area: Aptamer Isolation; Biosensor; Drug detection; Electrochemical Aptamer-Based Sensors
Earliest Start Date: 05/18/2020
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: I prefer for the interns to have chemistry and biochemistry background.

Project Description: Electrochemical aptamer-based (E-AB) sensors have great potential for on-site drug detection due to their sensitivity, specificity, ease of use, portability, and robust performance in complex samples. Sensitive detection of targets using E-AB sensors requires structure-switching aptamers, which undergo large conformational changes upon target binding. We will utilize an exonuclease-based method to adopt structure-switching functionality into the aptamer that bind UR-144. We will perform exonuclease III digestion of this aptamer (46-nt in length) in the presence and absence of UR-144. Exonuclease digestion of both aptamers in the presence of target will be halted several nucleotides prior to the target-binding domain, yielding a major product with structure-switching functionality. Isothermal titration calorimetry experiments will be used to determine target-binding affinity. Moreover, circular dichroism experiments will be used to confirm that the exonuclease-truncated aptamer will perform target-induced conformational change. Finally, we will use this aptamer to fabricate UR-144-detecting E-AB sensor.
Investigator: Jian Feng, Ph.D.
Institution: Florida State University
Tallahassee, FL
Project Title: Neuron Subtype Specific Role of DNA Methylcytosine Dioxygenase TET1 In Cocaine Addiction
Research: Basic Research
Research Area: Epigenetics; DNA Methylation; Mouse; Addiction; Genomics; Epigenomics; Behavior; Molecular Biology
Earliest Start Date: 06/07/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Prior mouse handling or basic molecular biology experience is preferred.

Project Description: The project is to study the DNA epigenetic underpinning of drug addiction with a focus on TET1, a methylated DNA dioxygenase that leads to DNA demethylation. The overall goal is to elucidate the behavior role of TET1 and its mediated DNA methylation turnover in the two major neuronal subtypes of ventral striatum, a key brain reward region. The study will not only elucidate a novel molecular mechanism of drug addiction within specific neuron types that are differentially engaged in drug addiction, but also provide a plausible path for therapeutic manipulation of addiction behavior through DNA methylation editing.
Florida

Investigator: Keanan Joyner, Ph.D.
Institution: Florida State University
Tallahassee, FL
Project Title: Between versus Within-Subject Models of the Protective Effect of Substance-Free Reward on Alcohol, Nicotine, and Marijuana Use and Problems
Research: Behavioral Research
Research Area: Ecological Momentary Assessment (EMA); Electroencephalogram (EEG); Behavioral Economics; Reward Sensitivity
Earliest Start Date: 05/16/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Psychology and neuroscience majors are preferred. The internship will be most helpful for those students who seek to pursue a graduate degree in psychology or neuroscience and want to go on to an academic career or an industry career related to human neuroscience. Interns will be working with human subjects. Past human subjects research experience and experience with MATLAB, R, or Python coding is preferred but not required. All required skills will be taught during the internship period.

Project Description: Summer research interns would get an opportunity to learn to both collect and analyze electroencephalogram (EEG) data, with the goal of helping identify neural processes that contribute to the development of substance use disorders. EEG involves putting small electrodes on the scalp that capture instantaneous neural activity in the form of electrical activity generated by postsynaptic potentials (i.e., when neurons fire in the brain, they generate a small electrical signal, and we can pick that up on the scalp!). Interns will be taught how to then process that EEG data in MATLAB. Additionally, interns will learn about doing research using smartphones, called 'ecological momentary assessment' (EMA), where participants answer prompts several times throughout the day. Research interns will then work on a project with the PI that could be turned into a poster for a conference presentation about neural processes implicated in substance use disorders.
Florida

Investigator: Linda Cottler, RN, Ph.D., M.P.H.
Institution: University of Florida
Gainesville, FL
Project Title: National Drug Early Warning System Coordinating Center
Research: Epidemiology Research
Research Area: Emerging Drug Trends; Surveillance; New Psychoactive Substances; Data Harmonization
Earliest Start Date: 5/17/2021
Housing: Campus
Option for Virtual Internship: Yes

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

Project Description: The Department of Epidemiology at the University of Florida has opportunities available for Summer Scholars interested in a challenging, yet rewarding, summer experience. The 2021 Summer Scholars will work on an ongoing NIDA cooperative agreement, National Drug Early Warning System Coordinating Center, which maintain surveillance for emerging drug trends across the US. The Coordinating Center will collaborate across 18 sites to collect community-level data indicators to assess trends in availability, use and consequences of new psychoactive substances. NDEWS will utilize novel surveillance methods, then harmonize data across sites for quick dissemination to key stakeholders.

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

Investigator: Marek Schwendt, Ph.D.
Institution: University of Florida
Gainesville, FL
Project Title: A Novel Model of Oxycodone Seeking That Considers Sex and Stress Susceptibility
Research: Behavioral Research
Research Area: Substance Use Disorder; PTSD; Opioids; Neurobiology of Behavior; Animal Models of Addiction; Animal Models of Anxiety
Earliest Start Date: 05/03/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: No prior research experience is necessary, but students interested in biological mechanisms of behavior/addiction/anxiety are preferred. Students should be willing to work with rodents and are expected to learn various wet lab techniques to analyze rat brain tissue. Ample supervision and guidance will be provided by the mentor and his diverse group of graduate students.

Project Description: There is substantial comorbidity between Post Traumatic Stress Disorder (PTSD) and Substance Use Disorder (SUD). Progress in the development of treatment for those diagnosed with both disorders is hampered by a lack of animal models considering such comorbidity. The present research project aims to develop such a model with a focus on an often-abused prescription opioid drug, oxycodone. Students will assist with experiments designed to study oxycodone seeking in un-stressed controls, stress-susceptible (“PTSD-like”) rats, and stress-resilient rats. Students will assist with brain tissue analysis that will support the long-term goal of this project, to uncover unique neurobiology underlying comorbid PTSD and SUD.
**Florida**

**Investigator:** Dan Wesson, Ph.D.  
**Institution:** University of Florida  
Gainesville, FL  
**Project Title:** Circuitry and Function of Ventral Striatum Subregions  
**Research:** Basic Research  
**Research Area:** Electrophysiology in Behaving Animals; Optical Imaging in Behaving Animals; Optogenetics; Motivation; Decision Making; Cocaine Relapse; Viral Vectors; Ventral Striatum; Tubular Striatum; Nucleus Accumbens; Dopamine

**Earliest Start Date:** 06/01/2021  
**Housing:** Campus  
**Option for Virtual Internship:** No

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

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

**Investigator:** Georges Khalil, Ph.D., MPH  
**Institution:** University of Florida  
**Gainesville, FL**  
**Project Title:** Social Influence Strategies during a Web-based Smoking Prevention Intervention for Adolescents  
**Research:** Basic Research  
**Research Area:** Tobacco Prevention; Tobacco Cessation; Nicotine Addiction; Vaping; Electronic Cigarettes; Adolescents; Games for Health; Web-Based Programs; Intervention; Social Network  
**Earliest Start Date:** 05/11/2021  
**Housing:** Campus  
**Option for Virtual Internship:** Yes

**Student Qualifications:** Previous research experience is preferred, but not required. Although not required, preferred majors include Psychology, Sociology, Communication, Health Sciences, Social Sciences, Public Health, Community Health, Health Education, and other related fields. This internship is best suited for candidates who are interested in tobacco prevention and control through behavioral science, and/or adolescent health. This internship will require students to work with human subjects.

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

Investigator: Louis Herns Marcelin, Ph.D.
Institution: University of Miami
Coral Gables, FL
Project Title: Culturally Modified Family Based Therapy for Haitian Youth and Their Families in South Florida
Research: Behavioral Research
Research Area: Family Therapy; Haitian Adolescents; Drug Use; Juvenile Justice System; Ethnography; Qualitative Research
Earliest Start Date: 05/17/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Masters level preferred. Qualitative/Ethnographic analysis skills, writing skills. The intern will complete training and receive CITI certification. Interest in substance use and abuse among juvenile justice involved youth, conducting literature reviews on ethnographic research. Depending on the experiences and skills of the intern, they may also participate in quantitative analysis.

Project Description: The Family and Adolescent Intervention Study works with juvenile justice involved youth of Haitian descent in Miami-Dade County ages 13-17. The intervention study is a clinical trial in which up to 88 youth in the Juvenile Services Department (JSD) are followed for a period of up to 18 months and half (up to 44) are provided with a family-based therapy using the Culturally Informed and Flexible Family Based Therapy for Adolescents (CIFFTA) and the remaining half (up to 44) receive the JSD’s Standard of Care. All 88 families will complete several assessments at four points in the intervention and undergo ethnographic interviews and observations.

The intern will also learn about the ethics of conducting research with human subjects; how to conduct ethnographic research (e.g., observations, interviews, focus groups); draft field notes; and code interviews, focus groups and ethnographic observations. The intern will participate in qualitative or ethnographic data coding, review of literature, statistical analysis, and, possibly, help in drafts for publications.
Georgia

Investigator: J. Douglas Bremner, MD
Institution: Emory University
Atlanta, GA
Project Title: Non-Invasive Vagal Nerve Stimulation in Patients with Opioid Use Disorders
Research: Clinical Research
Research Area: Opioids; Opioid Use Disorders; Neuromodulation; Inflammation; Brain Imaging; Vagus Nerve Stimulation; Interleukins; Craving
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: No

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

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

Investigator: Abeed Sarker, Ph.D.
Institution: Emory University
Atlanta, GA
Project Title: Mining Social Media Big Data for Toxicovigilance: Automating the Monitoring of Prescription Medication Abuse via Natural Language Processing and Machine Learning Methods
Research: Other
Research Area: Artificial Intelligence; Data Science; Social Media Mining; Prescription Drug Abuse; Natural Language Processing; Biomedical Informatics
Earliest Start Date: 05/17/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: The most important attribute required is a strong interest in research and the desire to contribute to the welfare of the community through research. The intern will not be required to work with animals, humans or tissue samples--only publicly available social media data will be included in the analyses. Ability to use basic tools such as Microsoft Excel is required. Interns with some programming skills (e.g., python) are preferred. No prior experience in research is required but is desirable.

Project Description: The broader focuses on utilizing social media data for understanding and characterizing prescription drug abuse. Publicly available information regarding prescription drug misuse and abuse are detected over social media and analyzed to identify aggregated information regarding the trends and trajectories of misuse and abuse, both at the population-level and cohort-level.

The summer project will focus on performing qualitative and quantitative analyses of social media data collected from Twitter and/or Reddit. The qualitative analyses, for example, will focus on manually identifying common co-ingestion information, dosage information and information regarding social and clinical consequences of drug addiction and abuse. Quantitative analyses will focus on quantifying and comparing misuse/abuse information for distinct prescription drugs, co-ingestion and non-standard dosage patterns.
Georgia

Investigator: Anne Z. Murphy, Ph.D.
Institution: Georgia State University
Atlanta, GA
Project Title: Impact of Advanced Age on Opiate Analgesia
Research: Basic Research
Research Area: Pain; Morphine; Sex Differences; Age; Inflammation
Earliest Start Date: 06/07/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: The ideal candidate will have a strong background in neuroscience and some previous laboratory experience. As tissue has already been collected from adult and aged male and female rats, the fellow will not be required to work with live animals.

Project Description: Our research examines the impact of advanced age on the ability of morphine to alleviate pain in both male and female rats. We have previously shown that aged male rats require 2x the amount of morphine to produce comparable levels of pain relief as adults. Similar results have been reported clinically. Morphine inhibits pain via an action at the mu opioid receptor (MOR). Our studies specifically examine if there are age induced changes in MOR expression using receptor binding, in situ hybridization, autoradiography and qPCR, and if these changes our comparable between males and females. MOR is a G-protein coupled receptor and additional studies in the lab are examining the signaling cascade of MOR using the GTPgS assay.
Hawaii

Investigator: Scott Okamoto, Ph.D., M.S.W.
Institution: Hawaii Pacific University
Honolulu, HI
Project Title: The Implementation, Adoption, and Sustainability of Ho'ouna Pono
Research: Preventive Research
Research Area: Implementation Science; Native Hawaiians; Youth; Community-Based Participatory Research
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: No

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

Project Description: The Summer Research with NIDA intern will participate in collection, management, and/or analysis of survey data from community and educational stakeholders on Hawai'i Island. The survey is focused on examining the implementation barriers and facilitators to a culturally grounded, school-based, substance use prevention curriculum for Hawai'i Island youth (Ho'ouna Pono). The findings from the survey will be used to develop regionally tailored implementation plans for schools and communities on Hawai'i Island to support the ongoing use of the curriculum in public middle and intermediate schools.
Illinois

Investigator: A Vania Apkarian, Ph.D.
Institution: Northwestern University
Chicago, IL
Project Title: Center for Chronic Pain and Drug Abuse
Research: Basic Research
Research Area: Chronic Pain; Human; Rodent; Neuroimaging; Patch Clamp;
Behavior; Opiates; Addictive Behavior

Earliest Start Date: 6/1/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Major career interest should be neuroscience in general, but also human
or rodent studies of brain mechanisms of chronic pain, opiates, addiction, addictive behaviors.
There are opportunities to work either with humans or with rodent models. We are a large
group with 6 scientists working together. Therefore, there will be ample sources of learning and
of exposure to distinct lines of research.

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

Investigator: Michelle Birkett, Ph.D.
Institution: Northwestern University
Evanston, IL
Project Title: Developing and Testing a Social Network Data Capture Tool to Improve Partner Services
Research: Other
Research Area: Public Health; HIV; STIs; Partner Services; Infectious Disease; Sexual and Gender Minorities; Substance Use; Multilevel Influence; Network Data; Data Collection; Social and Behavioral Health; Prevention; Population Dynamics; Digital Tools; Software; Social Stigma; Surveys
Earliest Start Date: 6/21/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Knowledge or interest in health disparities research, LGBTQ+ populations, HIV/infectious disease, public health, and/or community outreach and dissemination. Detail-oriented with strong written and oral communication skills. Majors in social sciences (e.g. sociology, psychology), public health or related field preferred. Basic computer proficiency required, and interest in software development a plus. Student should be comfortable engaging members of the public in a professional capacity.

Project Description: This project aims to help modernize the process of disease investigation conducted by health departments to trace and intervene upon HIV and other STIs. The first phase of the study will include a broad national needs assessment to identify current challenges faced by public health officials and disease investigation specialists administering Partner Services - the evidence-based intervention that connects individuals newly diagnosed with HIV or other STIs to care, elicits names of recent sexual and/or drug use partners who may have been exposed, and conducts case-seeking to identify these individuals. The findings from this need’s assessment will be used to inform the reconfiguration of Network Canvas, a digital survey tool designed by researchers at Northwestern University’s Institute for Sexual and Gender Minority Health and Wellbeing, which allows for easy network data collection. Once reconfigured, a small pilot implementation of Network Canvas within Partner Services programming will be conducted at the Chicago Department of Public Health (CDPH). This pilot will provide the formative work to evaluate the feasibility and acceptability of implementing Network Canvas in Partner Services and lay the groundwork for future efforts to scale Network Canvas as a public health disease investigation tool.

The intern will participate in transcription and coding of Key Informant Interviews, feedback activities, such as summarizing feedback from CDPH on iterations of Network Canvas
Illinois

Investigator: Brian Mustanski, Ph.D.
Institution: Northwestern University
Chicago, IL
Project Title: Multilevel Influences on HIV and Substance Use in a YMSM Cohort
Research: Epidemiology Research
Research Area: HIV; Young Men Who Have Sex with Men; Multilevel Influence; Drug, Sex, and Social Networks; Dyadic Influences; Substance Use; Stis; Mental Health; Viral Set Point; Plasma HIV Sequencing; LGBTQ; Gay and Bisexual

Earliest Start Date: 05/14/2021
Housing: Subsidized
Option for Virtual Internship: No

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

Project Description: The Institute for Sexual and Gender Minority Health and Wellbeing at Northwestern conducts community-based research to improve LGBTQ+ health. The goal of the RADAR Project is to identify and understand connections among sexually transmitted infections (STIs) and HIV, drug/alcohol use, and romantic/sexual relationship patterns over time among young men who have sex with men (YMSM). This project is the first time that one study will look at drivers of new HIV infections in YMSM at multiple levels—the genetics of the virus, effects of medications, individual behavior, sexual partner and relationship characteristics, networks, and community-level factors. Project aims are to: (Aim 1) we will keep a pulse on emerging trends in drug use, HIV risk/preventive behaviors, and care continuum engagement. (Aim 2) we will continue to enroll cohort members’ new serious partners. We will extend our prior work by longitudinally examining the key role that dyadic processes play in the development of substance use problems and HIV risk behaviors and transmission among coupled YMSM. (Aim 3), we will build on our provocative findings of high levels of systemic inflammation in the RADAR cohort regardless of HIV status by collecting pathogenic biomarkers of substance use to begin forecasting later-life morbidities for HIV+ and HIV- YMSM. The scientific team includes psychologists, physicians, virologists, network scientists, and statisticians. see: https://isgmh.northwestern.edu/radarproject/
Indiana

Investigator: Brian Donofrio, Ph.D.
Institution: Indiana University
Bloomington, IN
Project Title: Maternal Use of Prescribed Opioid Analgesics and Risk of Adverse Offspring Outcomes
Research: Epidemiology Research
Research Area: Epidemiology; Pharmacology; Opioid Analgesics; Maternal Health; Pregnancy; Birth Outcomes; Neurodevelopmental Disorders

Earliest Start Date: 05/17/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: An ideal intern would be a college student with some initial training in psychology and/or public health with an interest in clinical psychology, developmental psychology, and/or epidemiology. Training in statistics would be helpful, too.

Project Description: The research program will include several components. An intern will complete directed readings and receive training in the etiology and treatment of substance use disorders, developmental psychopathology, behavior genetics, and epidemiology. Depending on the intern's interest and previous training, additional experiences will include some combination of conducting literature reviews, writing a thesis paper, conducting preliminary analyses, and presenting their work.
Indiana

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>Leslie Hulvershorn, M.D.</th>
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<tbody>
<tr>
<td>Institution:</td>
<td>Indiana University School of Medicine</td>
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<tr>
<td></td>
<td>Indianapolis, IN</td>
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<tr>
<td>Project Title:</td>
<td>Neural Response to Risky Decision Making in Youth at High Risk for Substance Use Disorder and HIV</td>
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<tr>
<td>Research:</td>
<td>Clinical Research</td>
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<tr>
<td>Research Area:</td>
<td>Brain Imaging; Substance Use Disorder; Risky Decisions; Behavioral Issues</td>
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<td>Earliest Start Date:</td>
<td>05/15/2021</td>
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<tr>
<td>Housing:</td>
<td>Campus</td>
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<tr>
<td>Option for Virtual Internship:</td>
<td>Yes</td>
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</tbody>
</table>

**Student Qualifications:** Interns must be detail-oriented and willing to learn new skills. Students with an interest in medicine, psychology, psychiatry, social services, or other biological sciences would be well-suited for this project. Student interns must be comfortable working with adolescent participants and participant families.

**Project Description:** Interns will assist in an observational study looking at risky behaviors in middle to late adolescents. This project investigates brain mechanisms in high and typical risk youth that underlie decision-making, prior to the effects of drug use on their brain. Interns will have the opportunity to shadow clinicians in a multi-disciplinary team treating adolescents with substance abuse and behavioral health disorders.
Investigator: Justin Yates, Ph.D.
Institution: Northern Kentucky University
Highland Heights, KY
Project Title: Contribution of NMDA NR2B Subunit to Risky Choice and Economic Demand for Cocaine
Research: Behavioral Research
Research Area: Neural Mechanisms of Risky Choice and Cocaine Self-Administration
Earliest Start Date: 6/1/2021
Housing: Campus
Option for Virtual Internship: No

**Student Qualifications:** The main qualification is that the intern needs to be comfortable working with rats (specifically, Sprague Dawley rats). Ideally, this student will have some background in psychology and/or biology and has an interest in attending graduate/medical school. However, I am not overly picky. I have mentored a wide range of students with varying majors during my time at NKU.

**Project Description:** Rats will be tested in a measure of risky choice (the risky decision task). In the risky decision task, rats will make a choice between two rewards. One reward is smaller in magnitude (1 sucrose pellet) and has no risk associated with it. The other reward is larger in magnitude (4 pellets), but subjects have a chance of receiving a foot shock for choosing this option. The probability of receiving foot shock will increase across the session (0, 25, 50, 75, 100%). Following behavioral training, rats will be tested in a 14-day cocaine self-administration paradigm. After the first 7 days (these first 7 days serve as a baseline), rats will be either treated with vehicle or the glutamate N-methyl-D-aspartate (NMDA) GluN2B subunit antagonist Ro 63-1908 (1.0 mg/kg). The goals of the experiment are to determine: 1) if high risk-taking behavior is associated with increased cocaine self-administration and 2) if Ro 63-1908 decreases cocaine self-administration. The student will be responsible for weighing and handling rats, testing rats in the behavioral paradigms described above, recording data, and analyzing data.
Kentucky

**Investigator:** Cassandra Gipson-Reichardt, Ph.D.  
**Institution:** University of Kentucky  
**Lexington, KY**  
**Project Title:** Neuroinflammatory and Glutamatergic Mechanisms of Nicotine Seeking  
**Research:** Basic Research  
**Research Area:** Neuroinflammation; Glutamate; Plasticity; Nicotine; Relapse  
**Earliest Start Date:** 04/01/2021  
**Housing:** Campus  
**Option for Virtual Internship:** Yes  

**Student Qualifications:** Preferred (but not required) skills include rodent handling, career interest in addiction neuroscience, and a major in areas such as biology, chemistry, psychology, or similar. Interns will directly work with rats and brain tissue samples. Career goals of post-undergraduate education are preferred.  

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

Investigator: Kristen Gullo, B.S.
Institution: US WorldMeds
Louisville, KY
Project Title: Accelerated Development of Lofexidine for Neonatal Opioid Withdrawal Syndrome
Research: Drug Development Research
Research Area: Neonatal Opioid Withdrawal Syndrome; Neonatal Abstinence Syndrome; Pediatric Formulation Development; Clinical Trial Material Manufacturing; Nonclinical Toxicology and Pharmacology; Clinical Pharmacology; Bioavailability Study; Pharmacokinetics; Analytical; Bioassay; Regulatory
Earliest Start Date: 6/1/2021
Housing: Campus
Option for Virtual Internship: No

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

Project Description: US WorldMeds is developing a non-opioid product for the treatment of Neonatal Opioid Withdrawal Syndrome (NOWS). In this early stage of drug development, three critical components of research are in progress: nonclinical safety and pharmacology studies to inform safety margins for the treatment of neonates, formulation development to support the particular dosing needs of neonates, and the conduct of a Phase 1 study in adult volunteers to characterize the pharmacokinetics of the neonate formulation prior to evaluating the drug in the target population. Intern(s) will be placed with mentors responsible for the executional oversight of one or more of these development program components. The intern will participate in a number of activities to learn about drug development requirements, assist with documents, perform literature reviews, compile resources and/or data required for program decisions, support vendor communications and compliance oversight, tabulate and trend data, support internal cross-functional meetings to align research activities across stakeholders, and provide organizational and/or writing assistance with regulatory communications required under an Investigational New Drug Application.
Louisiana

Investigator: Carmen Canavier, Ph.D.
Institution: Louisiana State University
New Orleans, LA
Project Title: A Dynamic Diversity of Dopamine Neurons
Research: Basic Research
Research Area: Computational Neuroscience; Multicompartmental Models; Dynamical Systems
Earliest Start Date: 05/30/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: The student must be able to code in C or python or R and be familiar with working in the UNIX/Linux environment. An interest in neuroscience is required.

Project Description: Dopamine neurons in the mammalian midbrain are spontaneous pacemakers and also emit bursts of action potentials that are important reward-related signals. The electrical activity of distinct populations will be simulated by calibrating computational models to fit the electrophysiological data on diversity in the ionic currents expressed in these neurons. The simulation package NEURON will be used for these simulations.
Inventigator: Jason Bubier, Ph.D.
Institution: The Jackson Laboratory
Bar Harbor, ME
Project Title: Genetic Control of Addiction by Host and Microbiome
Research: Basic Research
Research Area: Computational Neuroscience; Multicompartamental Models; Dynamical Systems
Earliest Start Date: 05/30/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: The student must be able to code in C or python or R and be familiar with working in the UNIX/Linux environment. An interest in neuroscience is required.

Project Description: Dopamine neurons in the mammalian midbrain are spontaneous pacemakers and also emit bursts of action potentials that are important reward-related signals. The electrical activity of distinct populations will be simulated by calibrating computational models to fit the electrophysiological data on diversity in the ionic currents expressed in these neurons. The simulation package NEURON will be used for these simulations.
Investigator: Vivek Kumar, Ph.D.
Institution: The Jackson Laboratory
Bar Barbor, ME
Project Title: Sequencing Mutant Mice with Altered Cocaine Responses
Research: Basic Research
Research Area: My lab uses genetic and genomic methods to discover new genes and pathways that regulate addiction.
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Background in biology, with emphasis on genetics is preferred. Computational experience is not required and will be taught.

Project Description: There are a number of projects depending on the intern's interests that are in line with the overarching goals of the lab - to understand the functioning of the mesolimbic reward circuit at a molecular level. These can be highly computational, such as computer vision projects that analyze mouse behaviors using artificial intelligence methods and computational genomic methods to analyze "omics" data. We also have behavioral projects to look at drug response in mouse models. Interns with broad expertise and interest who are interested in studying the problem of drug addiction are encouraged to apply.
Maryland

Investigator: Barbara Howard, MD
Institution: CHADIS
Baltimore, MD
Project Title: Online System for Primary Care to Prevent and Address Teen Substance Use
Research: Behavioral Research
Research Area: Prevention; Substance use; Substance abuse;
Primary care; Motivational interviewing; Screening;
Training; Tobacco Use; Alcohol Use; Marijuana; Prescription Drug
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

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

The project will also include development of graphics for provider training modules. Provider training modules will enhance provider activities relative to teen substance use risk identification, behavior change motivation, support of goals and making appropriate referrals.
Investigator: Oluwaseun Falade-Nwulia, MPH
Institution: Johns Hopkins University
Baltimore, MD
Project Title: Ending the HIV Epidemic: Peer-Supported Collaborative Care for Mental Health and Substance Use Disorder Care Integration into HIV Care Settings
Research: Clinical Research
Research Area: Substance Use Disorder and Infectious Disease Care Integration; Peer Care Models; Social Network Research
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

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

Investigator: Kenneth Witwer, Ph.D.
Institution: Johns Hopkins University
Baltimore, MD
Project Title: Extracellular Vesicle and Extracellular RNA Biomarkers of HIV-1 Central Nervous System Pathogenesis and Cigarette Use
Research: Basic Research
Research Area: Extracellular Vesicles; Immunity; Central Nervous System; Cigarette Smoking; HIV
Earliest Start Date: 05/17/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: While basic laboratory skills and a focus on the life sciences are preferred and would aid in rapid progress, no prior research experience is required. Because the lab works with several infectious agents, interns must agree to follow instructions carefully and implement biosafety procedures that will be taught at the outset. Students may work with cell cultures and handle cigarettes (in a fume hood).

Project Description: Extracellular vesicles are nano-sized bubble-like structures that are released by all known cells. These vesicles and their cargo are known to influence other cells, including various cell types in the brain. In this project, the summer intern will conduct experiments to learn more about the ways in which inflammatory insults such as cigarette smoking affect cells of the brain. Specifically, the intern will learn and apply standardized methods of generating cigarette smoke extracts, use the extracts to treat cultured cells, and follow standard operating procedures to separate and characterize extracellular vesicles released by the cells. Functional experiments will then be conducted, in which different types of brain cells are exposed to purified vesicles, followed by assessments of cell health and behavior.
Maryland

Investigator: Jessica Magidson, Ph.D.
Institution: University of Maryland College Park
College Park, MD
Project Title: Evaluating the Role of Peers to Reduce Substance Use Stigma and Improve HIV Care Outcomes in South Africa
Research: Behavioral Research
Research Area: Global Health; Global Mental Health; Stigma; Low-Resource Setting; Implementation Science; HIV; TB; Behavioral Research
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: We prefer that interns are pursuing majors in psychology, public health, or a similar field (e.g., global health, community health). Interns who are not pursuing these majors should have a strong interest in psychology and public health. As we work with stigmatized communities (e.g., people living with HIV, people struggling with substance use, people struggling with depression) in a low-resource and foreign setting, interns should be open-minded and comfortable working on such issues.

Project Description: South Africa is home to the largest number of people living with HIV in the world (over 7 million). Among people living with HIV, substance use is common, and when untreated, can contribute to poor outcomes for people living with HIV, such as poor adherence to HIV treatment and disengagement from care. Yet, stigma towards substance use among health care workers use is a barrier to treating substance use in HIV care. Peers may be a promising solution for addressing substance use stigma among HIV care providers while also helping to improve engagement in HIV care. Peer models of care have rapidly expanded in the US, but they have yet to be tested in a low-income setting with a significant HIV burden, such as South Africa. This study aims to develop a peer model for addressing substance use in community-based HIV care efforts in Cape Town, South Africa.

During the summer internship, this lab will be developing and piloting the peer program to assess if the training program is feasible to deliver in this low-resource setting. The results from this pilot work will go on to inform the next phase of the study. To help with this project, the intern will specifically: join video calls with the team in South Africa; help transcribe and analyze interviews from formative work; and help prepare for the larger study by assisting with administrative tasks (e.g., assist with IRB documents, help test surveys).
Massachusetts

Investigator: Jeffrey Samet, MD, MPH
Institution: Boston University
Boston, MA
Project Title: MassHEAL – Reducing Overdose Deaths by 40% (2019-2023)
Research: Clinical Research
Research Area: Addiction; Alcohol; HIV; Research Training; International Research; Health Professional Substance Use Education
Earliest Start Date: 05/17/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Pursuing a bachelor’s or associate degree. Able to work independently and as part of a team. Willing to be creative and flexible. Must be able to maintain strict confidentiality of all personal/health sensitive information.

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

Our objective is to leverage existing programs at Boston University to increase diversity, equity, inclusion and belonging in addiction related fields. We have 3 approaches to achieve this objective:

- Approach 1: Extending outreach in existing addiction medicine training programs.
- Approach 2: Integrating addiction-related case studies, research, shadowing, games and theater into existing programs engaging underrepresented groups in STEM fields. Goals: 1) To introduce addiction as an exciting and viable career path, 2) to increase knowledge around substance use disorders and their prevention & treatment, 3) to reduce stigma surrounding substance use disorders, and 4) to increase the diversity of ideas to prevent, treat and reduce the harms of addiction. The main outcome for Approach 2.
- Approach 3: Supporting retention of diverse faculty doing addiction-related work by linking them to funded research projects.

We would appreciate a NIDA Summer Research Intern to assist with the implementation and evaluation of the program we designed to achieve these objectives with particular emphasis on Approach 2.
Massachusetts

Investigator: Camron Bryant, Ph.D.
Institution: Boston University School of Medicine
Boston, MA

Project Title: A Reduced Complexity Cross In BALB/C Substrains to Identify the Genetic Basis of Oxycodone Dependence Phenotypes

Research: Basic Research

Research Area: QTL; Behavioral Genetics; Opioid; Withdrawal; Reward; Conditioned Place Preference; Anxiety; Elevated Plus Maze; RNA-Seq; Transcriptome; Gene Expression; Naloxone; Naltrexone; Conditioned Place Aversion; Addiction Liability; Spliceome; Splice Variants; Binge Eating; Food Addiction; Reward; Translational Genetics; Reinforcement; Intermediate Phenotype; Systems Genetics; Eqtl; QTL; GWAS; Genome-Wide; Gene Editing; Genome Editing; CRISPR; RNA Binding Protein; RBP; CLIP; Self-Administration; ICSS; Intracranial Self-Stimulation; Substance Use Disorders; Neonatal Abstinence Syndrome

Earliest Start Date: 06/07/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Basic knowledge of molecular biology and/or experience in the statistical software Environment R are desired, but not required. Some experience in pipetting is required. Some background in classical genetics would be helpful. Motivation, carefulness, and pride in their work (no matter how large nor how small the task) and attention to detail are the key ingredients. A career interest in the genetic and neurobiological basis of psychiatric disorders would be beneficial.

Project Description: Substance abuse disorders are heritable psychiatric conditions whose genetic basis remains largely unknown. Mammalian model organisms offer a powerful, complementary tool for accelerating the discovery of novel genetic factors and neurobiological mechanisms in humans. The Laboratory of Addiction Genetics integrates classical forward genetics in mice with contemporary genome editing and transcriptomics to understanding the mechanisms that confer susceptibility versus resistance toward the addictions. We are committed to the development and refinement of behavioral models across multiple abused substances that most directly gauge the contribution of natural genetic variation to behavior and bridging these discoveries with –omics and molecular genetics to validate candidate genes, functional variants and neurobiological mechanisms. This multi-pronged approach leverages our ability to make discoveries that could translate to new pharmacotherapeutic avenues for treatment and prevention. Potential activities for the trainee could include video tracking and data curation for quantitative genetic analysis and training in running the R package R/qtl for various behavioral traits. Additional training includes DNA extractions and real-time quantitative PCR for measuring gene expression of candidate genes and immunoblotting for measuring protein levels. Pending prompt animal training and protocol approval, the student could also potentially be involved in running behavioral studies.
Massachusetts

Investigator: Xinhua Li, Ph.D.
Institution: Clear Scientific, Inc
Cambridge, MA
Project Title: Therapeutic Agent for Rapid Reversal of Methamphetamine Intoxication
Research: Drug Development
Research Area: Drug Abuse; Methamphetamine; Opioids; Drug Development; Antidote
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: The students are majoring in chemistry, chemical engineering or biology, and have completed some classes in chemistry, biology or chemical engineering with labs. Prior research experiences are desired.

Project Description: The objective of this research project is to develop new therapeutic agents to treat intoxication of drugs of abuse. The research activities include: 1) Synthesis and characterization of new compounds, 2) Development of new drug formulations, and 3) In vitro testing of new therapeutic agents.
Massachusetts

Investigator: Steven Liang, Ph.D.
Institution: Harvard Medical School / Massachusetts General Hospital Boston, MA
Project Title: Novel PET Tracers for Imaging Monoacylglycerol Lipase in Endocannabinoid Signaling
Research: Other Research
Research Area: Drug Abuse; Endocannabinoid System; Positron Emission Tomography; Radiochemistry; PET Imaging
Earliest Start Date: 07/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: While full training in all aspects of the work will be provided it would be an advantage if the successful candidate has practical knowledge and previous experience of organic chemistry, general biology or imaging background. The work doesn’t involve direct contact with human subjects.

Project Description: Fluorine-18 is a short-lived (t1/2 = 109.7 min) positron emitting isotope which now finds immense importance as a label for radiotracers used with the non-invasive molecular imaging technique of positron-emission tomography (PET) for a broad range of applications including clinical diagnosis in drug abuse and drug discovery towards the treatment. The demand for new PET agents to probe biological processes and targets related to drug addiction in vivo is growing rapidly now as a consequence. The Division of Nuclear Medicine and Molecular Imaging at Massachusetts General Hospital and Harvard Medical School is seeking talented and enthusiastic summer research interns to work in the radiochemistry group of Dr. Steven Liang. The successful candidate will work closely with senior research scientists, post-doctoral scholars, medical fellows and faculty members in assisting our group efforts toward preclinical development and evaluation of novel positron emitting radiotracers for drug abuse research. https://scholar.harvard.edu/stevenliang

Aims
1. Learn basic theory of radiochemistry and molecular imaging technique of positron-emission tomography (PET) and other related imaging modalities.
2. Process data for PET imaging studies
3. Learn basic organic and medicinal chemistry skills
4. Learn research management and create data library from literature of drug abuse
5. Establish database for updating advances in radiochemistry and/or PET imaging in drug addiction research
Massachusetts

**Investigator:** Ateev Mehrotra, MD, Ph.D.
**Institution:** Harvard Medical School - Department of Health Care Policy Boston, MA
**Project Title:** Telemedicine for Treatment of Opioid Use Disorder
**Research:** Basic Research
**Research Area:** Disadvantaged populations; COVID-19; Disparity; Evaluation; Geographic Difference; Geography; Health Services Accessibility; Improve Access; Innovation; Low income; Medicare; Rural; Rural Community; Racial and Ethnic Disparities; Substance Use Disorder; SUD; Telemedicine; Tele-SUD; Uptake.

**Earliest Start Date:** 06/07/2021
**Housing:** Subsidized
**Option for Virtual Internship:** Yes

**Student Qualifications:** Students from various disciplinary backgrounds, (statistics, computer programming, biostatistics, public health, health services, data science, economics, political science/public policy, and social sciences) are encouraged to apply. No prior research experience is required for this internship; however, the intern must have a genuine interest in building research experience, including statistics and statistical programming in SAS and knowledge of insurance claims & health service delivery.

**Project Description:** Access to substance use treatment for addictions to opioids, alcohol, or other substances is difficult for many patients in the U.S., particularly for the poor and those who live in rural communities. The COVID-19 pandemic has made access even more complicated. Telemedicine for substance use disorder ("tele-SUD") may be a potential solution for this access problem. However, despite the widespread interest and growing use of live video-based tele-SUD visits in the U.S., little research has rigorously examined urban/rural disparities in tele-SUD utilization and whether tele-SUD use is growing more rapidly in rural areas. To fill this knowledge gap, this project examines national rates of tele-SUD utilization among urban and rural patients using data through 2019 from Medicare and commercial insurance. The goal of this study is to explore the potential role of tele-SUD in improving access to care for individuals with substance use disorder and understanding how tele-SUD can be utilized effectively during and beyond the global COVID pandemic.

The summer intern will work under an NIH T32 postdoctoral fellow.
Massachusetts

Investigator: Bettina Hoeppner, Ph.D.
Institution: Massachusetts General Hospital
Boston, MA
Project Title: Advancing the Science on Recovery Community Centers to Support Persons Treated with Medications for Opioid Use Disorder
Research: Clinical Research
Research Area: Recovery; Systems of Care; Opioid Use Disorder; Recovery Community Centers
Earliest Start Date: 05/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: We are an ideal mentoring site for undergraduates interesting in pursuing a doctoral degree in psychology or related area. Thus, we prefer interns who have shown some prior interest in psychology and/or public health. Interest in recovery from addiction and recovery-oriented systems of care would be ideal but is by no means required. Training will focus on survey methodology, qualitative data collection and analysis, lit reviews and data management skills.

Project Description: The summer intern will participate in ongoing projects of our R24 project, which seeks to advance the science on recovery community centers (RCC). RCCs are centers located in the heart of communities that are intended to be visible, easily accessible venues that provide recovery support to people recovering from substance use disorder. This support consists of providing services or linkage to services not provided in typical clinical settings. The goal is to increase recovery capital (employment/training, housing, recovery-specific social support) and, thereby, the chances of stable remission and recovery. Our R24 project will engage RCC stakeholders (e.g., patients, RCC leadership, clinicians, advocates, scientists) in research advancing activities. The intern will support these activities (e.g., seminar series, hands-on research support for RCCs) while gaining insight into what RCCs are and how they operate. The intern's project (i.e., topic of presentation at end of internship) will either focus on an active collaboration between our R24 team and a specific RCC or group of RCCs, or will take the form of a summary report in line with the R24 goals (e.g., collated scales for measuring recovery), depending on where things are at during the summer of 2021 (the R24 was just launched).
Massachusetts

Investigator: Jian Kong, MD, Ph.D.
Institution: Massachusetts General Hospital
            Charlestown, MA
Project Title: Treatment of Chronic Low Back Pain with Transcutaneous
              Auricular Vagus Nerve Stimulation
Research: Clinical Research
Research Area: Chronic Pain; Low Back Pain; Vagus Nerve Stimulation;
              Peripheral Neuromodulation; Brain Imaging; FMRI;
              Functional Connectivity
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Motivated, organized, attention to details and good communication
                        skills. Experience with computer science, data analysis / entry is preferred, but not required.

Project Description: This will be an 8-week internship at the Charlestown MGH Navy Yard
                      Campus (Massachusetts). The earliest start date will be June 1st, with a flexible schedule. The
                      student will be involved in a project investigating the treatment effects and brain mechanism
                      of auricular vagus nerve stimulation, a noninvasive neuromodulation tool, in patients with
                      chronic low back pain. In particularly, the intern will participate in aspects such as subject
                      recruitment, behavioral and brain imaging (MRI) data collection, and basic data trimming and
                      analysis. At the end of internship, the student should obtain basic knowledge in clinical trials,
                      the basic skills of clinical assessment, brain imaging data acquisition and data analysis.
Massachusetts

Investigator: Christin Sander, Ph.D.
Institution: Massachusetts General Hospital & Harvard Medical School Charlestown, MA
Project Title: Imaging Dopamine Receptor Adaptations and Signaling Pathways with Combined PET/fMRI
Research: Basic Research
Research Area: Brain Imaging; Dopamine Receptor Signaling; Stimulant Drug Dynamics; Magnetic Resonance Imaging; Positron Emission Tomography
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

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

Investigator: R. Kathryn McHugh, Ph.D.
Institution: McLean Hospital
Belmont, MA
Project Title: Affective and Inflammatory Reactivity to Pain in Opioid Use Disorder
Research: Clinical Research
Research Area: Opioid Use Disorder; Stress; Pain; Inflammation
Earliest Start Date: 5/15/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

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

**Investigator:** Klaus A. Miczek, Ph.D.

**Institution:** Tufts University
Medford, MA

**Project Title:** Neuropeptides, Social Stress and Drugs of Abuse

**Research:** Basic Research

**Research Area:** Neuropeptides; CRF; Ventral Tegmental Area; BNST; Social Stress; Cocaine; In Vivo Microdialysis; Optogenetics; Chemogenetics; Intravenous Self-Administration in Mice and Rats; Neuroanatomical Tract Tracing

**Earliest Start Date:** 06/01/2021

**Housing:** Subsidized

**Option for Virtual Internship:** Yes

**Student Qualifications:** Qualified to work with research animals, enjoy experimental work, statistical summaries, eager to learn.

**Project Description:** The summer intern will learn intravenous catheterization in rats and mice, in vivo microdialysis with probes in the BNST, VTA and Accumbens, tract tracing of CRF projections to raphe, amygdala and prefrontal cortex.
Michigan

Investigator: Jessica Anand, Ph.D.
Institution: University of Michigan
Ann Arbor, MI
Project Title: Development of Long-Lasting Stable Fentanyl Antagonist to Reverse Opioid Overdose
Research: Basic Research
Research Area: Opioid; Addiction; Reversal; Multifunctional Ligand
Earliest Start Date: 5/1/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: No prior experience needed. All work is in vitro.

Project Description: Opioid-related overdoses account for almost half of all drug overdose deaths in the United States and cause more preventable deaths every year than car crashes. Fentanyl, a highly potent mu opioid receptor (MOR) agonist, and its analogues (fentalogs) are increasingly found cut into illicit drug samples. The prevalence of fentalogs in the illicit drug market is thought to be the primary driver in the increase in opioid-related overdose deaths since 2016. The standard opioid overdose rescue therapy, naloxone is often insufficient to reverse opioid overdoses caused by fentalogs. It has been reported that naloxone is either not potent enough or has too short a duration of action to effectively reverse fentanyl overdose and resuscitate patients. The objective of this proposal is to design novel opioid antagonists that are better than naloxone.
**Michigan**

**Investigator:** Jill Becker, Ph.D.

**Institution:** University of Michigan
Ann Arbor, MI

**Project Title:** The role of GPER-1 and Addiction

**Research:** Behavioral Research

**Research Area:** Sex Differences in Addiction; Cocaine; Conditioned Place Preference; Neuroendocrine Factors in Addiction

**Earliest Start Date:** 06/30/2021

**Housing:** Campus

**Option for Virtual Internship:** No

**Student Qualifications:** Willingness to work with and handle laboratory rats is necessary, extensive experience with rats is not necessary. Knowledge of the brain is helpful. Ability to work independently and to ask questions desired.

**Project Description:** Learn conditioned place preference testing to determine the role of estradiol receptors to alleviate or enhance addictive-like behaviors in a rodent model. Test novel hormones to determine possible therapeutic value.
**Michigan**

**Investigator:** Jonathan David Morrow, M.D., Ph.D.  
**Institution:** University of Michigan  
Ann Arbor, MI  
**Project Title:** Individual Differences in Epigenetic Regulation of Emotional Learning  
**Research:** Basic Research  
**Research Area:** Motivation; Learning; Vulnerability; Individual Differences; Comorbidity; Rat; Behavior; Self-Administration  
**Earliest Start Date:** 5/1/2021  
**Housing:** Subsidized  
**Option for Virtual Internship:** No

**Student Qualifications:** This research requires working closely with rats, including handling, recovery surgery, and tissue harvesting. Previous experience with handling rats is preferred. Because the PI is a practicing physician-scientist, candidates with an interest in that career track may gravitate to this lab, however this is a basic science project so anyone with an interest in behavioral neuroscience would be appropriate.

**Project Description:** This project will involve using rats to test a new compound for its ability to reduce behaviors associated with addiction, pathological fear, and impulsivity. These experiments will be a first step providing proof of concept for the development of a new class of treatments for addiction and a number of related psychiatric disorders. The compound will also be tested for its ability to change the behavioral phenotypes of individual animals from a more vulnerable to a more resilient profile, which would indicate potential as a strategy to prevent the onset of mental illness.
Michigan

Investigator: Shane Perrine, Ph.D.
Institution: Wayne State University
Detroit, MI
Project Title: Effects of Cocaine Taking and Seeking on Histone Deacetylase Class Ila Enzyme Activity in the Nucleus Accumbens of Rats
Research: Basic Research
Research Area: Drugs of Abuse; Cocaine; Epigenetics; Behavioral Neuroscience; Behavior; Neuroimaging; Post-Traumatic Stress; PTSD
Earliest Start Date: 5/1/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Ideally trainees (1) will be majoring in neuroscience, psychology, biology, or related field, (2) have laboratory research experience outside of the classroom, and (3) be willing to conduct research in animals. However, no prior research experience is required.

Project Description: Cocaine addiction devastates the lives of millions of Americans, yet current therapies are poor, and development of novel therapeutics is lacking. A translational design that combines state-of-the-art neuroscience techniques with an animal model of cocaine taking and seeking behaviors is being used to study epigenetic mechanisms underlying cocaine addiction. Our studies provide a unique strategy to study the neurobiology that underlies cocaine-motivated behaviors and the knowledge gained will aid in the treatment of this devastating mental health disorder. Other laboratory projects include studies on the effects of traumatic stress exposure (as a model of post-traumatic stress disorder) on drug-taking and related behaviors and reward neurobiology.
Minnesota

Investigator: Alon Herschhorn, Ph.D.
Institution: University of Minnesota
Minneapolis, MN
Project Title: Delineation and Vulnerabilities of HIV-1 Escape from Neutralizing Antibodies
Research: Basic Research
Research Area: HIV-1, Virology; Immunology; Neutralizing Antibodies; Viral Resistance; Envelope Glycoproteins
Earliest Start Date: 05/30/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: A junior or senior who is interested to learn virology, immunology and molecular biology and has some research experience. The study involves work with bacteria and animal cells.

Project Description: Entry of human deficiency virus (HIV) into target cells is mediated by the viral envelope glycoproteins (Env). HIV Env are the sole target of broadly neutralizing antibodies, but HIV-1 can evolve and develop resistance to these antibodies. The summer intern(s) will use basic tools in molecular biology to introduce resistant mutations into HIV-1 Env from strains isolated from people who inject drugs and study how these changes affect HIV-1 Env function and replication fitness.
Student Qualifications: Because most of the tasks will involve working with data collected from wearable devices, this internship would be most appropriate for computer science, biomedical engineering or electrical engineering majors. The student will work primarily with data but may also be exposed to aspects of the research project that involves interacting with human participants.

Project Description: The overall objective of the project that the intern will be assisting with is to collect and analyze physiological data from wearable devices (e.g., heart rate, galvanic skin response, motion) in order to develop a predictive model to detect situations (e.g., stress, situational triggers) in which smokers are likely to smoke. The intern will be exposed to the aspects of the project that are ongoing at the time of their internship with specific activities dependent in part on the intern’s interests and previous experience. For example, during the 8-week summer internship, the intern may help compile and organize an annotated bibliography of the literature and any publicly available datasets relevant to the project. Those with computer science experience may assist with using existing tools and developing new tools using Python programming language to help with data pre-processing tasks such as: visualizing large volumes of raw sensor data in order to identify and correct potential problems; formatting time series data in ways needed for subsequent modeling; or merging time series datasets with discrete data obtained via surveys of participants. The intern will also help study staff and investigators with various operational aspects of the project. Depending on the status of the COVID-19 pandemic at the time of the internship and consequently University of Minnesota guidelines regarding on-campus presence, it is possible that these activities can be performed remotely.
Minnesota

Investigator: Matt McGue, Ph.D.
Institution: University of Minnesota
Minneapolis, MN
Project Title: Impact of Marijuana Legalization: Comparison of Two Longitudinal Twin Cohorts
Research: Behavioral Research
Research Area: Twins; Behavioral Genetics; Substance Use; Marijuana; Legalization; Magnetic Resonance Imaging (MRI); Psychophysiology; Neurocognition; Personality; Longitudinal
Earliest Start Date: 05/15/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: We seek students with an interest in the effects of marijuana and other substance use on functioning in important areas, such as relationships, academics/work, and mental/physical health. A Bachelor’s degree in psychology, neuroscience, or a related discipline is desired. Students will work with human data. Although previous research experience is not required, students should have a demonstrated ability to carry out a project from start to finish and attention to detail is a must.

Project Description: This research project has been studying functioning in important domains in two large sample of twins from Minnesota and Colorado. Twins have been studied since they were adolescents and are now adults. Colorado legalized adult recreational marijuana use in 2014, whereas Minnesota has very strict limits on medical marijuana. By taking advantage of this quasi-experimental design - recreational marijuana legalization - in these large, longitudinal samples, this project can help understand the impact of recreational marijuana legalization and marijuana and other substance use on a wide range of important outcomes.
Missouri

Investigator: Jose Moron-Concepcion, Ph.D.
Institution: Washington University
St. Louis, MO
Project Title: Dissecting Circuits Mediating Pain-Induced Alterations in Motivated Behavior
Research: Basic Research
Research Area: Mechanisms Underlying Opioid Dependence; Opioid Analgesic Tolerance During Chronic Pain and The Interaction between Chronic Pain and Opioid Abuse
Earliest Start Date: 05/31/2021
Housing: Subsidized
Option for Virtual Internship: No

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

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

Investigator: Bryan Copits, Ph.D.
Institution: Washington University in St Louis
St. Louis, MO
Project Title: Trans-Synaptic Optogenetics: Reversible Temporal Control of Activity at Defined Synaptic Projections
Research: Basic Research
Research Area: Optogenetics; Neuroscience Tool Development; Synaptic Transmission; Synaptic Plasticity; Pain Addiction
Earliest Start Date: 05/17/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Of primary importance, the candidate should be highly curious and motivated. Those from any background and range of disciplines will be considered, and the candidate will be in a supportive environment that will provide guidance and training for those without prior neuroscience or biomedical research experience. Previous experience with rodent primary cell culture, molecular biology, and/or imaging is a plus.

Project Description: This summer research project involves the design and validation of new genetically encoded optical tools to manipulate neuronal activity using a combination of advanced live-cell imaging and electrophysiology as readouts. This will also require the production of viral vectors and optogenetic techniques to test how these new tools affect pain and addiction behaviors in mice.
Missouri

Investigator: Meaghan Creed, Ph.D.
Institution: Washington University in St. Louis
St. Louis, MO
Project Title: Dissecting the Role of Ventral Pallidal Projections to Nucleus Accumbens In Reward Processing
Research: Basic Research
Research Area: Nucleus Accumbens; Opioid; Addiction; Hedonic Processing; Behavior; Electrophysiology; Optogenetics; Ventral Pallidum; Synapse
Earliest Start Date: 04/15/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Willing to work with mice, conducting reward-based behavioral assays, although these tasks are homecage-based with minimal animal handling, and so no previous experience is required. The intern must be willing to dive deeply into learning about behavioral pharmacology of the opioid system. Familiarity with introductory level python or matlab is a bonus but not required - we are happy to teach, but a desire to learn basic coding skills is a must.

Project Description: The intern will be responsible for running behavioral experiments aimed at modeling negative affective states emerging in chronic pain and drug withdrawal. The project will be undertaken in collaboration with a senior graduate student or post-doc, and will consist of high-throughput, homecage-based operant behaviors using custom made behavioral devices. Specifically, the intern will collect and analyze data using a closed economy, simplified probabilistic reversal learning task to determine the effect of pharmacological manipulations on reward learning and motivation. By virtue of the behavioral set up, this rotation could be conducted remotely if necessary.
Missouri

Investigator: Patricia A. Cavazos, PhD
Institution: Washington University School of Medicine
St. Louis, MO
Project Title: Mhealth To Help Pregnant and Postpartum Women in Recovery for Opioid Use Disorder
Research: Clinical Research
Research Area: Psychiatry; Mhealth; Substance Abuse; Mental Health; Digital Interventions
Earliest Start Date: 05/31/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Interest in substance use and mental health; Hold/plans for degree in health-related field; Ability to follow oral and written instructions; Verbal and written communication skills in English; Some knowledge of social media platforms; Experience conducting qualitative data analysis; Experience developing and administering surveys; Ability to assist in writing scientific manuscripts; Ability to assist with recruitment (including online and remote). Previous research experience not required.

Project Description: This research focuses on examining the efficacy of an mHealth tool among pregnant and postpartum women (PPW) with opioid use disorder (OUD). The NIDA intern(s) would be involved in cutting-edge research that examines recruitment strategies for this vulnerable group and the impact of a tailored mHealth intervention on opioid misuse behaviors and cravings, comorbid mental health symptoms, and treatment/medication adherence. They may also be involved in the analysis of related substance use content across various social media platforms to better understand the needs of this population and to inform successful outreach methods and efforts to minimize attrition. Through this process, she/he will assist in participant identification, assessment, and engagement within the intervention, as well as investigation of temporal trends and sentiment of related messaging content (both within the app with an e-coach and on social media). Additionally, the intern will have the opportunity to assist with the refinement of the features and the content of the mHealth app to more specifically tailor this tool to the needs of PPW with OUD as identified through implementation and social media investigation.
Investigator: Lian, Min, Ph.D.  
Institution: Washington University School of Medicine  
St. Louis, MO  
Project Title: Multilevel Interplays in the Development of Tobacco Dependence  
Research: Epidemiology Research  
Research Area: Spatial Epidemiology; Geographic Information Systems; Neighborhood; Tobacco Environment; Tobacco Use.  
Earliest Start Date: 6/1/2021  
Housing: Campus  
Option for Virtual Internship: Yes  

Student Qualifications: No specific preference is required for this internship. Good computing, writing and communication skills are the basic expectation for the candidates.  

Project Description: Tobacco use is the leading modifiable and predominantly preventable cause of premature mortality. Adolescence and young adulthood are a vulnerable window for the initiation of tobacco use behaviors towards the development of tobacco use disorders. The primary study aim of the ongoing R01 research project is, in a long-term longitudinal female twin cohort study, to examine the roles of changing neighborhood environment and disentangle complex gene-environment interplays in the development of tobacco use behaviors and dependence, accounting for moving-induced spatial uncertainty, among adolescents and young adults. In the summer internship, the students will have an opportunity to work together with the research team to learn how to develop neighborhood measures in assessing tobacco environment using GIS modeling, and perform epidemiological analysis of neighborhood contextual impacts on the prevalence of tobacco use behaviors.
**Nebraska**

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>Tony W. Wilson, Ph.D.</th>
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<tbody>
<tr>
<td>Institution:</td>
<td>Boys Town National Research Hospital Boys Town, NE</td>
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<tr>
<td>Project Title:</td>
<td>Signatures of Cannabis Abuse in NeuroHIV (SCAN): An Integrated Molecular and Imaging Approach</td>
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<tr>
<td>Research:</td>
<td>Clinical Research</td>
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<tr>
<td>Research Area:</td>
<td>Human Neuroimaging; Cannabis; Neurohiv; HIV; AIDS; MEG; fMRI; MRI; Neurophysiology; Biomarker; Brain</td>
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<tr>
<td>Earliest Start Date:</td>
<td>05/10/2021</td>
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<td>Housing:</td>
<td>Campus</td>
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<tr>
<td>Option for Virtual Internship:</td>
<td>Yes</td>
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**Student Qualifications:** All interns will work with human subjects. Undergraduates majoring in neuroscience, psychology, engineering, biology, and computer science are preferred. Excellent computer skills are a must, as all neuroimaging data collection and processing is computer based. Prior experience in human subjects’ research, cognitive psychology, biological psychology, and related disciplines will be helpful.

**Project Description:** Interns will be participating in collecting and analyzing multiple types of human data from an ongoing study. This will include the use of advanced brain imaging technologies such as magnetoencephalography (MEG), functional MRI, and structural MRI, as well as neuropsychological and cognitive-emotional assessments. Participants in this study include persons living with HIV infection who either regularly use cannabis (marijuana) or have never used cannabis, as well as uninfected demographically matched control groups who do and not regularly use cannabis. Interns will be trained in instrument safety as well as advanced signal processing methods often applied to neuroimaging data.
**Nebraska**

<table>
<thead>
<tr>
<th>Investigator:</th>
<th>Shilpa Buch, Ph.D.</th>
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<tr>
<td>Institution:</td>
<td>University of Nebraska Medical Center Omaha, NE</td>
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<tr>
<td>Project Title:</td>
<td>HIV Tat &amp; Cocaine-Mediated Alterations in Microglial Migration &amp; Activation Involve Epigenetic Regulation of MiRNAs</td>
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<tr>
<td>Research:</td>
<td>Basic Research</td>
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<tr>
<td>Research Area:</td>
<td>HIV; Cocaine; HIV-associated Neurological Disorders (HAND); Endoplasmic Reticulum Stress (ER Stress); HIV-1 Tat; Chronic Neuroinflammation; Glial Fibrillary Acidic Protein (GFAP); Cell Signaling; Astrogliosis; Cytokines</td>
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<tr>
<td>Earliest Start Date:</td>
<td>06/01/2021</td>
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<tr>
<td>Housing:</td>
<td>Subsidized</td>
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<tr>
<td>Option for Virtual Internship:</td>
<td>No</td>
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**Student Qualifications:** The intern should have a demonstrated interest in science and a desire to conduct research. Good communication skills are a must. In this application the intern will not have contact with animals or tissue samples. Prior research experience is preferred but not required.

**Project Description:** In era of antiretroviral therapy, HIV-infected individuals are living longer and the incidence of HIV-associated dementia (HAD) is greatly reduced. However, increased survival rates have led to an increase in the prevalence of HIV-associated neurological disorders (HAND). Drugs of abuse have been shown to accelerate the incidence and prevalence of HAND. Since HIV does not infect neurons, most neuroinflammation and subsequent neuronal damage results from glial cell activation including astrocytes. This project will examine the role of HIV viral protein tat and/or cocaine on the activation of astrocytes and whether activation is mediated via endoplasmic reticulum stress (ER Stress). Astrocyte activation will be measured by increased expression of the structural protein glial fibrillary acidic protein (GFAP) as measured by western blot from cell lysates. The intern will learn to culture both primary mouse astrocytes and the human astrocytic cell line A172. The intern will then learn the entire process of performing western blots from making the gels to analyzing the resulting blots.
Nebraska

**Investigator:** Corey Hopkins, Ph.D.

**Institution:** University of Nebraska Medical Center Omaha, NE

**Project Title:** Optimization of MrgX1 Allosteric Agonists as Potential Therapies for Chronic Pain

**Research:** Basic Research

**Research Area:** Medicinal Chemistry; Drug Discovery

**Earliest Start Date:** 5/10/2021

**Housing:** Subsidized

**Option for Virtual Internship:** No

**Student Qualifications:** Preferred: Chemistry or Biochemistry major. The students will NOT work with animals.

**Project Description:** The student will work in the lab with an experienced graduate student or post-doc synthesizing novel compounds to be tested as MrgX1 allosteric agonists for pain therapy.
Nebraska

Investigator: Guoku Hu, Ph.D.
Institution: University of Nebraska Medical Center
Omaha, NE
Project Title: Intranasal Delivery of Exosomes Loaded with MiRS -223 and -124 as a Therapeutic Strategy for Hand in Cocaine Users
Research: Basic Research
Research Area: The research conducted in Dr. Hu’s laboratory is focused on establishing Extracellular Vesicle (EV)-based methodology of RNA drug delivery for the treatment of CNS complications in HIV infected drug users.

Earliest Start Date: 6/1/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: The intern should have a basic knowledge of molecular and cell biology, genetics and general human physiology with a career interest in the field of substance abuse. The student will use in vitro cell culture models and ex vivo tissue samples in their study.

Project Description: The research conducted in Dr. Hu’s laboratory is focused on exploring the effects of noncoding RNAs, including lncRNA and miRNA and their dysregulation associated with drug use, such as morphine and cocaine. He has also carried out extensive work on lncRNA/miRNA studies related to HIV associated CNS disorders using cell culture models and rodent.
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<td><strong>Project Title:</strong></td>
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<td><strong>Research Area:</strong></td>
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<td><strong>Housing:</strong></td>
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<td><strong>Option for Virtual Internship:</strong></td>
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**Student Qualifications:** My lab has a long-standing record of trainees ranging from high-school students to residents in training. In summary anyone with a penchant towards neuroscience research is welcome and will have an opportunity to work with animals including biofluids such as plasma and brain sections.

**Project Description:** The abuse of the potent psychostimulant methamphetamine (meth) continues to pose a significant threat not just in the US but also globally. A significant attribute associated with chronic meth induced brain dysfunction is inflammation includes activation of glial cells such as astrocytes and microglia that play a crucial role in modulating inflammation including glutamate excitotoxicity at the synapse. Mounting evidence suggests that inflammation and alterations in glutamate neurotransmission are two novel pathways associated with the pathophysiology in mood disorders. Notably, this cross talk between neurons and glial cells is mediated by extracellular vesicles (EVs) which are emerging as key players in regulating brain function. With emerging role for sex differences with drug abuse pattern, the overarching goal of this proposal is to examine the role of EVs in the damaging effects of meth between the sexes using drug-triggered reinstatement (relapse) of extinguished intravenous meth self-administration in rats.
Nebraska

Investigator: Charles Wood, Ph.D.
Institution: University of Nebraska-Lincoln
Lincoln, NE
Project Title: The Impact of Cannabis on Inflammation And HIV-1 Reservoirs in Zambia
Research: Basic Research
Research Area: Cannabis; HIV; Tissue Reservoirs; Pathology; Molecular Biology; Immunohistochemistry
Earliest Start Date: 6/1/2021
Housing: Campus
Option for Virtual Internship: No

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

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

Investigator: Alan J. Budney, Ph.D.
Institution: Dartmouth College
Lebanon, NH
Project Title: Leveraging Social Media to Develop the Cannabis Exposure Index (CEI), A Standardized Measure of Cannabis Use
Research: Behavioral Research
Research Area: Cannabis; Marijuana; Measurement; Risk; Policy; Prevention; Technology; Digital Assessment; Digital Therapeutics
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

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

Project Description: Our intern will assist the existing research staff with all aspects of our digital research on cannabis measurement, assessment of risk, and intervention development and testing. One major project involves the development and validation of a detailed assessment tool that can accurately characterize and quantify cannabis use patterns. This work involves interviewing, remote/digital survey development and implementation, analysis of survey responses, and survey modification. Other ongoing projects involve development and testing of online interventions to motivate reduction in cannabis use. These interventions draw from behavioral and cognitive science discoveries related to decision making processes and choice behavior. These projects use social media platforms to recruit participants and to deliver the intervention. The intern will gain experience in this area of research by assisting the research team in all aspects of conducting these projects.
New Hampshire

Investigator: Alireza Soltani, Ph.D.
Institution: Dartmouth College
Hanover, NH
Project Title: CRCNS Research Proposal: Cortico-Amygdalar Substrates of Adaptive Learning
Research: Basic Research
Research Area: Learning; Reward; Decision Making; Neural Circuit
Earliest Start Date: 6/15/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Training to work with human subjects, some programming skills in Matlab or similar languages.

Project Description: The real world is uncertain and constantly changing. As a result, human and other animals have evolved to adjust to the environment constantly. Specifically, certain characteristics of the real world require that learning and decision-making processes be adjusted constantly. For example, in nature and in ecologically valid settings that approximate the real world, learning from reward feedback is challenging because choices have many features (e.g. color, shape, texture), each of which can take on different values, resulting in a large number of options whose reward values have to be learned. Learning becomes even more challenging when reward information change over time. The adjustments in behavior could be about what should be learned, how much should be learned, and what information should be used for making decisions.
New Jersey

Investigator: Stanley H. Weiss, MD
Institution: RBHS-New Jersey Medical School
Newark, NJ
Project Title: Outcome Assessments of Demographically Diverse Long-term Cohorts of Persons at High HIV Risk Enrolled from Drug Abuse Treatment Programs in the 1980s across the U.S.
Research: Epidemiology Research
Research Area: Epidemiology; Mortality; Opioid Use Disorder; Cannabis; Alcohol; Tobacco; Other Drugs; Polydrug Use; HIV/AIDS; Prospective Cohort; Statistical Analysis; Patterns of Drug Treatment; Infectious Diseases; Liver Disease; Diabetes; Obesity; Health Disparities
Earliest Start Date: 06/07/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

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

Investigator: Elizabeth West, Ph.D.
Institution: Rowan University
Stratford, NJ
Project Title: Neural Circuitry Mediating Behavioral Flexibility
Research: Basic Research
Research Area: Behavioral Neuroscience; Behavioral Flexibility; Decision Making; In Vivo Electrophysiology; Optogenetics; Rat Models; Nucleus Accumbens; Striatum; Medial Prefrontal Cortex

Earliest Start Date: 04/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: This research requires working with animals (rats). Ideal candidates would have an interest in behavioral neuroscience (psychology, neuroscience, biology major).

Project Description: Balancing habitual and flexible goal-directed strategies for navigating the environment is necessary for behavior that is both cognitively efficient and adaptive to change, and perturbations that disrupt this balance can result in behavioral impairments. For example, patients with substance abuse disorders often have difficulty altering their behavior to respond to changing outcomes, potentially affecting decision making. In the rat, a history of cocaine impairs the ability to adjust behavior away from reward-predictive cues following reward devaluation, a canonical measure of flexible behavior (i.e., cocaine leads to inflexible behavior). This project aims to identify how different striatal substrates underlie flexible, goal-directed behaviors (nucleus accumbens, NAc) and inflexible, habitual behaviors (dorsal lateral striatum, DLS) in rats with a history of cocaine (using in vivo electrophysiology). In addition, we aim to investigate how cortical input into these regions is involved in flexible and inflexible strategies (using optogenetics).
New Jersey

Investigator: Travis Baker, Ph.D.
Institution: Rutgers University
Newark, NJ
Project Title: Using Combined EEG And Non-Invasive Brain Stimulation to Examine and Improve Reward Functioning in Opioid Use Disorder
Research: Clinical Research
Research Area: Opioid Use Disorder; Transcranial Magnetic Stimulation; Neuromodulation; EEG; Cognitive Control
Earliest Start Date: 06/14/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: The successful candidate will have a background in biological and/or psychological and/or neural sciences and should have an interest in working with addicted populations. Given that the candidate will be working with human subjects, an interest in human research is recommended.

Project Description: Cognitive control appears to be one of the most consistently and severely affected functions in opioid use disorder (OUD), putting opioid users at higher risk of treatment dropout and drug relapse. The aim of this study is to improve cognitive control functioning by modulating the activity of the anterior cingulate cortex (ACC) with a non-invasive brain stimulation method called robot-assisted transcranial magnetic stimulation (TMS). The ACC is a brain area centrally concerned with cognitive control and implicated in a variety of psychiatric disorders, including substance use disorders. The reward processing function of the ACC can be investigated using an event-related brain potential called the reward positivity, and numerous reward positivity studies have demonstrated that substance abusers, regardless of drug type, exhibit abnormal ACC activity to rewards. Importantly, TMS delivered to the left dorsal lateral prefrontal cortex has been shown to enhance neuronal activity in the ACC. By combining EEG with TMS, this provides an unprecedented opportunity for the systematic examination of the ACC reward function in OUD, and the potential role of TMS in modulating the level of reward value assigned by the ACC to goal-directed behaviors in OUD. Given that the US is in the midst of an OUD epidemic, this study provides the opportunity to assess a potential therapeutic option that could have a significant impact on treatment of OUD.
New Jersey

Investigator: David Barker, Ph.D.
Institution: Rutgers, The State University of New Jersey
Piscataway, NJ
Project Title: Defining the Differential Roles of Glutamatergic and GABAergic Projections from The Lateral Preoptic Area to the Lateral Habenula in Reward, Aversion, and Drug-Seeking Behavior
Research: Behavioral Research
Research Area: Neuroscience; Drug Addiction; Anatomy; Cocaine; Opioids; Pain
Earliest Start Date: 05/26/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

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

Investigator: George R. Uhl, M.D., Ph.D.
Institution: University of New Mexico
Albuquerque, NM
Project Title: PTPRD Phosphatase Inhibitors for Stimulant and Opiate Use Disorders
Research: Drug Development Research
Research Area: Molecular Genetics; Post GWAS studies; Cell adhesion molecules; Receptor Type Protein Tyrosine Phosphatases; Molecular Neurobiology; Molecular Genetics; Pain Research; Addiction Research; Phosphatase Assays; Structure Activity Relationships
Earliest Start Date: 05/30/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Prior research experience with in vitro and in vivo (mouse models) desired. Prior coursework in biochemistry or molecular biology. Evidence of academic excellence and ability to learn/adapt to new environments rapidly. Commitment for whole summer (allowing training to pay off). Ability to undergo VA onboarding process/online training prior to start date.

Project Description: Students will assist in behavioral, toxicologic and biochemical assays of novel compounds that act at a novel brain target (PTPRD) to reduce its activity and reduce reward from stimulants and opiates. Biochemical assays using recombinant human tyrosine phosphatase proteins and toxicologic studies of the tolerability of novel compounds are the most likely ways in which summer students can contribute meaningfully to projects. The goals are to contribute enough to be authors on papers; the expectation is that at least half of students will perform at this level. See Uhl et al PNAS 2018 for underpinnings of the work.
New York

Investigator: Ganjam V. Kalpana, Ph.D.
Institution: Albert Einstein College of Medicine
           New York, NY
Project Title: Effect of Drugs of Abuse on CNS HIV-1 Reservoirs and Neuropathogenesis
Research: Basic Science
Research Area: HIV-1 Latency; Single Molecule RNA-FISH; Single Cell Imaging; SWI/SNF Complex; Effect of Illicit Drugs; Methamphetamine
Earliest Start Date: 05/01/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: A dedicated and highly motivated person who is keenly interested in learning scientific methods is preferred. A student with a basic microscopy, cell culture experience id preferred. If the student has experience in applying computational method, it will be greatly beneficial to the project. If the student is willing to learn novel techniques, even if the student has no prior experience, we will be able to teach that person.

Project Description: We have developed a novel quantitative multiplex technique known as SMRIA (Single Molecule RNA-FISH and Immunofluorescence based assay) to detect the HIV-1 transcripts in various cell lines and tissue sections. This assay allows us to precisely quantitate the level and kinetics of HIV-1 reactivation. Using this assay, we are investigating the effect of illicit drugs such as Methamphetamine on the establishment and reactivation of HIV-1 latent reservoirs.
New York

Investigator: Saleem Nicola, Ph.D.
Institution: Albert Einstein College of Medicine
Bronx, NY
Project Title: Nucleus Accumbens Processing of Reward-Predictive Cues
Research: Basic Research
Research Area: Nucleus Accumbens; Reward; Reinforcement; Reward-Seeking; Cocaine Self-Administration; Behavior; Electrophysiology; Optogenetics

Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: The intern must be comfortable working with rats. No prior research experience is required. Computer programming skills would be useful but not essential. The most important qualifications are curiosity and willingness to put in the effort to learn.

Project Description: When people or animals take cocaine or other stimulants, their interest in other reinforcers (food, social interaction, etc.) diminishes. This project seeks to determine the neurobiological basis for the suppression effect. The intern will use a rat behavioral model to determine how cocaine affects behavior reinforced by two different rewards, sucrose and optogenetic stimulation of dopamine neurons. The results will help us understand where and how cocaine acts in the brain to suppress natural reinforcement.
New York

Investigator: Xiaosi Gu, Ph.D.
Institution: Icahn School of Medicine at Mount Sinai
New York, NY
Project Title: Computational and Neural Modeling of Cue Reactivity in Addiction
Research: Basic Research
Research Area: Computational Psychiatry; Addiction; Brain Imaging; Computational Modeling; Machine learning
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Prior training or coursework in one of two of the following areas is required: math, physics, computer science, psychology, neuroscience, or biomedical sciences. Prior experience in programming is preferred (e.g. MATLAB, R, python, C++). This project will only involve computer-based analysis of existing data, and will NOT involve contact with animals, humans, or biological samples.

Project Description: Substance use disorders (SUD) and obesity are both major public health concerns in the United States, with an estimated 20.8 million Americans struggling with at least one SUD in 2015 and 78.6 million adults and 12.7 million children who are obese. Cue-elicited craving is a central symptom of both drug addiction and binge eating and a strong predictor of relapse. In this project, we will investigate the brain basis of cue-induced craving across multiple SUD groups (tobacco, cannabis, alcohol) and binge eaters, using state-of-the-art computational modeling and machine learning methods.
New York

Investigator: Talia H. Swartz, MD, Ph.D.
Institution: Icahn School of Medicine at Mount Sinai
New York, NY
Project Title: Elucidating the Mechanisms of Cannabinoids on HIV-1 Infection and Inflammasome Activation
Research: Basic Research
Research Area: HIV; Cannabinoids; Inflammasome
Earliest Start Date: 06/21/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Working with human tonsil tissues, flow cytometry, cell culture, understanding of HIV life cycle.

Project Description: People with HIV-1 (PWH) experience chronic inflammation that leads to comorbidities despite virological suppression on anti-retroviral therapy. These individuals have high rates of substance abuse including cannabinoids which have known immunomodulatory effects. Recent evidence has suggested an important role of the NLRP3 inflammasome as a driver of inflammation. Cannabinoids have been shown to reduce inflammasome activity. What remains unknown is the effect that cannabinoids have on HIV-stimulated NLRP3 inflammasome activity. Our goal is to elucidate the role of cannabinoids in modulating HIV-inflammasome signaling in lymphoid tissue. The summer project will aim to identify the cell types impacted by cannabinoid treatment on HIV-stimulated NLRP3 inflammasome signaling.
New York

**Investigator:** Joseph Palamar, Ph.D., MPH  
**Institution:** New York University Langone Medical Center  
New York, NY  
**Project Title:** Drug Use Among Nightclub and Dance Festival Attendees in New York City  
**Research:** Epidemiology Research  
**Research Area:** Club Drugs; Nightclubs; Electronic Dance Music; Dance Festivals; Ecstasy; Molly; New Psychoactive Substances; Bath Salts; Survey; Epidemiology; Hair Testing; Adulterants; Ketamine; Cocaine; Methamphetamine  
**Earliest Start Date:** 05/03/2021  
**Housing:** Subsidized  
**Option for Virtual Internship:** No

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

**Project Description:** This study focuses on drug use among adults in the electronic dance music (EDM) party scene in New York City (NYC). We collect data on self-reported drug use and we also collect hair samples from participants to determine whether they have unknowingly been exposed to novel drugs such as “bath salts” which are commonly present in ecstasy/Molly. The intern with help research assistants survey individuals about to enter nightclubs and dance festivals, typically late at night (from about 11pm to about 1:30am). The majority of randomly selected parties are in Brooklyn and Manhattan. Interns will help research assistants track the number of individuals entering each randomly selected party and approach individuals about to enter parties to determine eligibility and interest in participation. They will also assist research assistants administer the survey on electronic tablets, assist in the collection and tracking of hair samples, and help track recruitment and participant payments. The intern will also attend short periodic team meetings to discuss progress. Emphasis is placed on safety and the interns will always work with a group of research assistants.
New York

Investigator: Aaron Hogue, Ph.D.
Institution: Partnership to End Addiction
New York, NY
Project Title: Fidelity Training and Feedback System for Adolescent Externalizing Problems
Research: Clinical Research
Research Area: Family Therapy and Family-Based Treatment; Dissemination and Implementation Research; Adolescent Substance Use and Behavior Problems
Earliest Start Date: 05/24/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

Project Description: Partnership to End Addiction is seeking a Summer Research Intern to work on several projects in its Family and Adolescent Clinical Technology & Science (FACTS) research division aimed at improving treatment for adolescent substance use and co-occurring behavior problems. The Research Intern will assist with three active projects. The first two projects are companion randomized controlled trials testing online training systems designed to teach cognitive-behavioral and family therapy interventions to community therapists. The third project designed to enhance research in family involvement in treatment and recovery support for youth opioid use disorder. This position is fully remote, and the Research Intern will be expected to participate in team meetings via Zoom.

The Research Intern will be provided with several exciting opportunities to gain hands-on experience conducting clinical research. Responsibilities will include observational coding of recorded therapy sessions with teens and family members, supporting the creation of psychoeducation slides that will accompany a clinical protocol for youth opioid use disorder treatment, and assisting with project administrative tasks including data management. The FACTS team has diverse clinical and educational backgrounds. The Research Intern will have the opportunity to receive mentorship from various team members to help shape career and educational goals.
New York

Investigator: Karin Kasza, Ph.D.
Institution: Roswell Park Comprehensive Cancer Center
Buffalo, NY
Project Title: Do E-cigarette Design Features Impact Cigarette Initiation, Cessation & Relapse?
Research: Behavioral Research
Research Area: Data Analysis; E-Cigarettes; Cigarettes; Tobacco; Population; Public Health
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

Project Description: The summer research intern will conduct analyses of previously collected data using statistical software (e.g., Stata, SPSS) to investigate relationships between use of e-cigarettes (also called electronic nicotine delivery systems or vapes, with JUUL being a popular example) and cigarette smoking behaviors.

Cigarette smoking remains overwhelmingly responsible for the burden of death and disease caused by tobacco use in the US, and while e-cigarette use has risen sharply in recent years, findings are mixed on whether and how e-cigarette design features (e.g., flavors, device types) may impact cigarette smoking initiation, cessation, and relapse behaviors. The research intern will help to investigate these relationships by working with the PI to analyze data from large-scale nationally representative studies of tobacco/nicotine use. Specifically, the intern will learn about national surveys used to collect population-level data, will understand how survey questions align with the data, and will run statistical analyses using the data (including descriptive statistics such as reporting on the frequency of e-cigarette flavors used, and inferential statistics such as running regression analyses to predict the association between e-cigarette flavor use and cigarette initiation). The research intern will write up the results of analyses and will present results to others in the lab/department. This work may also be developed into a paper for publication in a peer-reviewed journal.
New York

Investigator: Alexander Khmaladze, Ph.D.
Institution: State University of New York at Albany
            Albany, NY
Project Title: A Novel Phase and Spectroscopic Imaging Technique to
              Evaluate Mitochondrial Dynamics
Research: Basic Research
Research Area: Optical Microscopy; Digital Holography; Raman
              Spectroscopy
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Basic math skills.

Project Description: The intern can learn the basics of Optical Microscopy, Digital Holography,
                    Raman Spectroscopy, Image acquisition and processing, cell maintenance and software
                    programming,
New York

Investigator: Gregory Homish, Ph.D.
Institution: State University of New York at Buffalo
Buffalo, NY
Project Title: Substance Use in Reservists: Social and Environmental Influences
Research: Epidemiology Research
Research Area: Nonmedical Use of Prescription Drugs; Tobacco; Alcohol; Stress; Trauma; PTSD; Depression; Intimate Partner Violence; Marital Functioning

Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Students should be pursuing an undergraduate degree in a health related/social science field (e.g., public health, pre-medicine, psychology). Students should be interested in research related to mental health (e.g., depression, PTSD, anxiety, trauma) and health behaviors (e.g., substance use, aggression) among adults. Students should have the ability to work well in teams and have excellent attention to detail.

Project Description: This project considers individual-level risk factors and the influence of social (e.g., partner/peer behaviors) and environmental (e.g., life stress) factors on changes in substance use in US Reserve Soldiers. With more than half of the Military currently married, it is important to examine the potential of a Reservist to influence, or be influenced, by a partner. Our previous research provides evidence that partner influences are powerful predictors of positive or negative changes in health. We also have found that peer networks are involved in changes in alcohol use among adults and that substance use shapes the peer network. This study is examining within- and cross-partner influences and peer influences on the association between stress and substance use for Reserve Soldiers and their partners. Reserve Soldiers and their partners (N = 400 couples) will be assessed 3 times over 2 years. This project will examine: 1) changes in substance use (alcohol, tobacco, and nonmedical use of prescription drugs) over time in Reserve Soldiers and their partners on the basis of individual (e.g., depressive symptoms), relationship (e.g., partner and peer substance use), community (e.g., workplace/deployments) and societal factors; 2) the relation between stress/trauma (e.g., combat exposure/life stress) and substance use; 3) how the integration of substance use into the relationship impacts marital aggression. Importantly, each member of the couple will provide independent data.
New York

Investigator: Congwu Du, Ph.D.
Institution: Stony Brook University
Stony Brook, NY
Project Title: Calcium-Related Neurotoxicity of Cocaine
Research: Other Research
Research Area: Optical Neuroimaging; Cerebral Hemodynamic and Cellular Function; Chronic Cocaine; Dopamine Signaling
Earliest Start Date: 06/21/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Undergraduate students who are highly motivated with research background in imaging, or experience with animal models or animal self-administration of drug are preferred (if campus opens by the time).

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

Investigator: Chioma M. Okeoma, Ph.D.
Institution: Stony Brook University
Stony Brook, NY
Project Title: Cannabinoid Modulation of EV Composition and Function in HIV/SIV Infection
Research: Basic Research
Research Area: Extracellular Vesicles; Extracellular Condensates; Exosomes; HIV; Drug Abuse
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Interns who are in their second year of college or above are preferred. Interns are expected to have basic knowledge of biology, chemistry, and/or biochemistry. It is also preferred that interns have prior wet lab research experience. Interns will not work with animal models or human subjects. However, interns will work with de-identified human specimens.

Project Description: The Okeoma laboratory investigates the mechanism(s) by which host factors expressed in host cells and those associated with extracellular vesicles or condensates with regulate host health and disease, using the human immunodeficiency virus type (HIV) as prototype. The laboratory also investigates the interactions HIV with extracellular vesicles or condensates and the role that drugs of abuse play in regulating such interactions. These studies will further our understanding of how drugs of abuse influence the function of extracellular vesicles or condensates in HIV infected subjects and provide a framework for developing formulations to combat HIV.
New York

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

Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

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

Project Description: The summer intern will assist in the conduct of our current R01 – on Mothers in the Early Postpartum with Opioid use disorder (OUD). OUD is fast-growing and devastating epidemic in the US, affecting many mothers who also suffer comorbid mood disorders. Maternal brain-behavior models are under study with magnetic resonance imaging studies. Multimodal neuroimaging methods are used to measure resting-state functional connectivity, neural responses to ethologically salient own-baby cry, and morphometry of key maternal brain circuits - among mothers with OUD as compared to depression Matched Controls at multiple early postpartum time points. Maternal thoughts and behaviors are measured by interview, self-report and videos of behavior. This research will elucidate the neurobiology of parenting in the context of OUD - with translational potential to optimize current approaches to treat mothers with OUD and suggest directions to best manage postpartum mental health issues.
New York

Investigator: Papayotis Thanos, Ph.D.
Institution: University at Buffalo
Buffalo, NY
Project Title: Fatty Acid Binding Protein - Mediated Control of Endocannabinoid Signaling and Drug Addiction
Research: Basic Research
Research Area: Endocannabinoids; Cocaine Abuse; Behavioral Neuropharmacology; Neuroimaging
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Qualifications preferred include: Previous lab experience handling animal or human tissue samples, previous coursework in biological psychology, neurobiology or related field, and experience working in a laboratory, following instructions, record keeping and responsible teamwork.

Project Description: The summer research intern will assist in this project in a variety of ways. These include but not listed to getting training in and performing numerous behavior neuropharmacology methods associated with cocaine and drug addiction. In addition, the intern will be trained in conducting basic science research, data assessment, written and oral presentation and be part of a large interdisciplinary research team in the laboratory of Dr. Thanos. Interns will gain strong research skills and experience essential for a research career.
Investigator: Diane Morse, MD
Institution: University of Rochester School of Medicine
Rochester, NY
Project Title: Transitions Clinic Network: Post Incarceration Addiction Treatment, Healthcare, and Social Support (TCN PATHS) study
Research: Behavioral Research
Research Area: Part of the Justice Community Opioid Innovation Network (JCOIN) family of grants, seeking to improve linkage of justice involved individuals to treatment for opioid use disorders. This particular project utilizes: Peer Community Health Workers, Primary Care, And Medication for Opioid Use Disorders.

Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Writing skills; maturity; organization; comfort with and serious interest in the justice involved population; and computer skills with word, Facebook and other media, and literature searches.

Project Description: The intern could guide the project to their interests, to some extent. Generally, we will be doing literature reviews, setting up our data system, and setting up multi-media recruitment systems in preparation to begin our study.
New York

Investigator: Bruce R. Schackman, Ph.D.
Institution: Weill Cornell Medicine
New York, NY
Project Title: DAT 18-06 Feasibility and Acceptability of HIV, HCV, and Opioid Use Disorder Services in Syringe Service Programs
Research: Epidemiology Research
Research Area: People Who Inject Drugs (PWID); Syringe Service Programs (Ssps); Hepatitis C Virus (HCV); HIV; Opioid Use Disorder (OUD); Medications To Treat OUD; Pre-Exposure Prophylaxis (Prep); Mixed Methods; Models Of Care; Cost Of Care; Qualitative Research; Discrete Choice Experiment (DCE); Usability Testing

Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Ideal candidates will have an interest in the intersection between substance use disorder and health services research including qualitative data analysis, patient decision making, and/or survey development.

Project Description: The project aims are to: 1) describe current models and recent trends of HIV and hepatitis c virus (HCV) care, pre-exposure prophylaxis (PrEP) and opioid use disorder (OUD) medication services in syringe service programs (SSPs) in the United States; 2) assess the feasibility of expanding healthcare care models from program perspectives; and 3) identify drivers of preferences for different healthcare models from client perspectives.
North Carolina

Investigator: Comfort A. Boateng, Ph.D.
Institution: High Point University
High Point, NC

Project Title: Low-Efficacy Dopamine D4 Receptor Partial Agonists for Cocaine Addiction

Research: Drug Development Research
Research Area: Medicinal Chemistry; Drug Design, Synthesis and Pharmacological Evaluation of Dopamine Receptor Ligands

Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Summer intern who has taken general chemistry and biology courses. This opportunity would be most productive for someone with interest in laboratory-based research. The intern will be trained in synthesis and analysis of drug-like compounds. Previous research experience is not required, but the student must have a good organizational skill. Intern should have the ability to work independently and have excellent attention to detail.

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

Investigator: Emilie Rissman, Ph.D.
Institution: North Carolina State University
             Raleigh, NC
Project Title: Genetic and Hormonal Contributions to Sex Differences in Vulnerability to Drug Use.
Research: Basic Research
Research Area: Genetic and Hormonal Basis of Sex Differences in Cocaine Vulnerability; Mice; Self-Administration; CPP; qPCR; RNA-Seq; Antibody Staining

Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Some experience handling mice or rats is a good thing since I have found not all students are comfortable with this. Some neuroscience background is recommended.

Project Description: The intern would work with a senior person in the laboratory on an ongoing study. She would be involved in conditioned place preference studies and brain dissection. After dissection we will train the intern to do qPCR for target genes.
North Carolina

Investigator: Dana Hancock, Ph.D.
Institution: RTI International
           Research Triangle Park, NC
Project Title: Integrating Multiple Omics to Illuminate Gene Networks Underlying Cigarette Smoking and Opioids
Research: Basic Research
Research Area: Genomics; Artificial Intelligence; Machine Learning; Big Data; Systems Biology; Genome-Wide Association Studies; Genetics; Epigenetics; Gene Regulation; Brain; Epidemiology; Addiction; Nicotine Dependence; Cigarette Smoking; Opioids
Earliest Start Date: 05/17/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: A basic biological background and/or quantitative and analytic skills are preferred. The research involves computational analysis of existing human data, and no contact with human research participants.

Project Description: Cigarette smoking and opioid addiction are leading causes of death and disease in the United States and abroad. The overarching goal of this project is to discover neurobiological gene networks underlying cigarette smoking and opioid addiction. To achieve this goal, we are using big data in genomics and gene expression from different brain regions and applying Artificial Intelligence and machine learning techniques to learn about the fundamental neurobiology of addiction. Results of this work could help improve addiction therapy and identify people who may be more prone to addiction.
North Carolina

Investigator: Lisa M. Tarantino, Ph.D.
Institution: University of North Carolina at Chapel Hill
Chapel Hill, NC
Project Title: Rapid Identification of Cocaine Sensitivity Genes Using A Novel Reduced Complexity Cross
Research: Basic Research
Research Area: Cocaine; Addiction; Genetics; Genomics; Behavior; Pharmacokinetics
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Our laboratory conducts basic research using animal models in the areas of neurobiology, behavior and genetics. Any background in animal handling and basic laboratory techniques would be helpful but a particular skillset isn't required. The student will be trained in these areas - therefore, no previous research experience is required - just an enthusiasm for science and a desire to learn and grow! Intern will be required to handle live laboratory mice including administering IP injections.

Project Description: Initial sensitivity to psychostimulants predicts future drug use and abuse in humans. In rodents, psychomotor stimulation in response to a drug is often used as a model for initial sensitivity and has a significant genetic component, however, very few genes or specific polymorphisms that influence locomotor sensitivity to cocaine have been identified. The Tarantino lab is using a new approach called a Reduced Complexity Cross (RCC). RCCs provide a less complex genetic background on which to perform genetic mapping and reduce the number of loci that affect the trait of interest (often only one) to allow for more rapid identification of the causal gene and polymorphism. The lab has performed a RCC between two inbred mouse substrains that are genetically closely related but show phenotypic differences in initial locomotor sensitivity to cocaine. The summer intern will be involved in deeper characterization of these two inbred substrains to assess shifts in the dose response curve and the pharmacokinetics of cocaine and will also conduct quantitative PCR studies to assess expression differences of genes in the mapped interval.
North Carolina

Investigator: Gregory Scherrer, Ph.D.
Institution: University of North Carolina Chapel Hill
Chapel Hill, NC
Project Title: Identification of Cells and Signaling Mechanisms Underlying Opioid Analgesia and Side Effects
Research: Basic Research
Research Area: The Scherrer Lab investigates the mechanisms that underlie pain and its control by opioids. We study both the sensory and emotional dimensions of pain, and how opioids act in neural circuits to produce pain relief and their deleterious side effects such as tolerance and addiction.

Earliest Start Date: 07/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: The Scherrer Lab is welcoming students of all backgrounds. We use the mouse as a model system and our multidisciplinary research combines molecular and cellular biology, neuroanatomy, electrophysiology, opto-/chemo-genetics, in vivo calcium imaging and behavioral experiments.

Project Description: Potential projects utilize approaches such as single cell RNA sequencing to study transcriptional mechanisms and gene expression, cell biology and pharmacology techniques to investigate opioid receptor trafficking and signaling in neurons, DNA engineering to generate novel mutant mouse models, neuroanatomical studies with cell specific markers and transsynaptic tracers to resolve the organization of pain neural circuits, electrophysiology and in vivo calcium imaging to record activity in neural networks, opto-/chemo-genetics combined with behavioral monitoring to determine the contribution of genetically defined neurons to pain perception, and to opioid analgesia or side effects.
North Carolina

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

Earliest Start Date: 05/20/2021
Housing: Campus
Option for Virtual Internship: Yes

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

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

Investigator: Rong Chen, Ph.D.
Institution: Wake Forest School of Medicine
        Winston Salem, NC
Project Title: RGS2 Regulation of D2 Receptor Signaling
Research: Basic Research
Research Area: Dopamine D2 Receptors; RGS Proteins; Cocaine; Amphetamine
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Students who have taken courses of biochemistry, neuroscience/psychology, or biology are encouraged to apply. Tissues from cultured cells or rodents will be used for biochemical assays.

Project Description: This summer project will examine how the function of dopamine D2 receptors and cocaine self-administration are regulated by RGS2 proteins. We have engineered several RGS2 mutant constructs (N-terminus truncation, C-terminus truncation and RGS domain truncation). We are interested in understanding which domain of RGS2 proteins regulates dopamine D2 receptor function and trafficking, and thus impact cocaine self-administration behavior. This project will highlight RGS2 as a critical modulator of cocaine use disorders.
Ohio

Investigator: Alan Levine, Ph.D.
Institution: Case Western Reserve University
Cleveland, OH
Project Title: Identification of Immune Protective Pathways Dysregulated by Opioid Use in HIV Infection, Using A Systems Biology-Based Approach, Toward the Goal of Pharmacological Restoration of Immune Function
Research: Basic Research
Research Area: Intestinal permeability; Opioids; HIV; T Cells; Signal Transduction; Mucosal immunology; Microbiome; Epithelium
Earliest Start Date: 5/24/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: UG education, with a keen interest in scientific research as a career goal. Interns will work with human tissue and cells.

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

Investigator: Erika Trapl, Ph.D.
Institution: Case Western Research University  
Cleveland, OH
Project Title: Impact of Flavor on Youth & Young Adults Use Intention, Abuse Liability and Perceptions of Cigarillos
Research: Behavioral Research
Research Area: Cigarillo; Tobacco Regulatory Science; Flavor; Behavioral Economics; Eye-Tracking
Earliest Start Date: 5/31/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

Project Description: Flavored cigarillos are popular among youth and young adults, and it is not clear whether removal of flavors from cigarillos would result in cessation or substitution of another tobacco product, such as e-cigarettes, and whether that choice would be more influenced by perceptions of appeal or perceptions of risk. To accomplish this, we have proposed three integrated aims to gather data to inform CTP regulation strategies on flavored tobacco, specifically for cigarillo products; throughout the proposed research, data on JUUL will be gathered as a highly popular alternative product with potential substitutability. In summer 2020, survey data from nearly 400 cigarillo-smoking participants will be analyzed to assess risk perceptions, substitutability, and abuse liability based on presence of flavor and tobacco product type. Additionally, the protocol and survey instruments for the eye-tracking experiment will be finalized. The successful intern will contribute to analysis of the survey data and development and piloting of the eye-tracking protocol. Additionally, unique data from a behavioral economics experiment using the experimental tobacco marketplace will be analyzed. The successful intern will contribute to analysis of the project data and development of manuscripts.
Ohio

Investigator: Teresa Reyes, Ph.D.
Institution: University of Cincinnati
Cincinnati, OH
Project Title: Maternal Opioid Exposure and Executive Function Evaluation in The Mouse
Research: Basic Research
Research Area: We are interested in the effect of perinatal opioid exposure on the development of the offspring brain and behavior.
Earliest Start Date: 05/31/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: This internship is best for a student interested in neuroscience. Work with mice is required. Students will learn both behavioral and molecular experimental techniques. Our lab is inclusive and believes that excellence lives in diversity.

Project Description: Opioid use during pregnancy can have negative effects on the developing brain and lead to problems with learning. Experiments using mice can help to understand the cellular and molecular changes that occur in the brain when a mother is exposed to opioids while pregnant.
Ohio

Investigator: Jason Blackard, Ph.D.
Institution: University of Cincinnati College of Medicine
Cincinnati, OH
Project Title: Omics Analysis of HIV During Synthetic Opioid Exposure
Research: Basic Research
Research Area: HIV; Opioid; Fentanyl; Viral Diversity; Transcription Factor;
MicroRNA; Transcriptome
Earliest Start Date: 05/17/2021
Housing: Campus
Option for Virtual Internship: Yes

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

Project Description: The US is in the midst of a major opioid epidemic largely attributed to synthetic opioids. For example, fentanyl is 50-100 times more potent than heroin and is involved in >60% of overdoses nationwide and >90% of overdoses in Ohio. Individuals with opioid use disorder are at significant risk for transmission of HIV, and new cases of HIV are on the rise in the Midwest and at our institution. Opioid receptors are expressed in a variety of cell types that are susceptible to HIV infection. Commonly abused opioids promote HIV replication and virus-mediated pathology. Thus, translational research on virus-opioid interactions is essential for optimized treatment and limiting viral reactivation. Important knowledge regarding how synthetic opioids influence HIV latency and reactivation is absent from the available literature.

To fill this critical gap and institute a major shift forward in our understanding of this epidemic, our lab is conducting a series of complementary in vivo studies to directly evaluate the impact of synthetic opioids on markers of HIV latency/reactivation, viral diversity, transcription factor expression, microRNA expression, and cell signaling pathways.
Oklahoma

Investigator: Matt Vassar, Ph.D.
Institution: Oklahoma State University
Tulsa, OK
Project Title: Data Sharing Practices and Reproducibility of Addiction Clinical Trials
Research: Behavioral Research
Research Area: Rigor; Reproducibility; Addiction; Clinical Trials; Data Sharing
Earliest Start Date: 05/17/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: I welcome any academic major, career interest, and prior research experience. We will not work with animals, humans, or tissue samples.

Project Description: This short-term project would allow students to help investigate whether participants in clinical trials are representative of the population with the disease condition. For example, for clinical trials that evaluate drug treatments for opioid use disorder, do the trial participants accurately mirror people who have opioid use disorder in the population? We will specifically investigate the representation of ethnic minorities, women, and people over the age of 65. I was awarded a T-35 grant from NIAAA to involve medical students in short term research experiences, and so I have an established and effective model for bringing students onto my research teams to perform meaningful roles. These students could also participate on such teams by participating in literature reviews, data extraction, and poster development. My T-35 program is based on a virtual co-mentoring model, so students would also be able to work with other experienced investigators who are well-established within the addiction research community.
Oregon

Investigator: Barbara Sorg, Ph.D.
Institution: Legacy Research Institute
Portland, OR

Project Title: Identifying Prefrontal Cortex Neural Ensembles in Cocaine-associated Memories

Research: Basic Research
Research Area: Cocaine; Prefrontal Cortex; Ensembles
Earliest Start Date: 04/30/2021
Housing: Subsidized

Option for Virtual Internship: No

Student Qualifications: Major in biology or neuroscience; career interests in the biomedical field; work with tissue samples only. Can shadow work of other lab members' studies with rats but would not be able to handle rats themselves. Prior lab experience preferred (working with simple solutions, pipetting, etc.).

Project Description: The project focuses on testing which neurons in the prefrontal cortex are activated by cocaine in rats. The intern would learn how to label and identify neurons that are activated by cocaine self-administration using immunohistochemical techniques in brain slices. They would also learn how to take images on the confocal microscope and analyze the images.
### Oregon

**Investigator:** Christina Lancioni, MD  
**Institution:** Oregon Health & Science University  
**Project Title:** The Impact of Naltrexone Treatment on Opioid-Induced Immune and Viral Dysregulation During HIV-Infection  
**Research:** Basic Research  
**Research Area:** Opioid-Use-Disorder; HIV; Systemic Inflammation; T Cell Biology; Monocyte Biology; Naltrexone  
**Earliest Start Date:** 05/03/2021  
**Housing:** Subsidized  
**Option for Virtual Internship:** Yes

**Student Qualifications:** Students will be working with human blood, including samples from individuals with HIV, Hepatitis C, and Hepatitis B. There is no animal-based component. Students who have an interest in biomedical research, specifically in the fields of immunology, infectious diseases, or the biologic consequences of substance abuse disorders on human health, and who desire a hands-on laboratory-based internship, would benefit the most from this specific program.

**Project Description:** Dr. Lancioni leads a translational immunology laboratory focused on understanding how immune dysregulation impacts health and disease among vulnerable populations, including people living with HIV. Opioid-use disorders are more common among people living with HIV, and there is concern that opioid-use may drive chronic systemic inflammation and immune dysregulation in this population. Earlier work in the Lancioni lab established that adults living with HIV and an opioid-use disorder exhibit dysregulation of a specific type of immune cell called monocytes, that are known to be major contributors to inflammation in the human body. This finding raises concerns that opioid-use disorders, through expansion of certain types of monocytes, drive chronic inflammation that predispose individuals to diseases such as heart disease, stroke, and neurodegenerative disorders. Currently, the Lancioni lab is specifically focused on delineating how opioid-use exposures alter monocyte (and other immune cells, such as CD4+ and CD8+ T cell) function among people living with HIV. Moreover, working with a biorepository of samples collected from adults living with HIV and an opioid-use disorder who participated in a clinical trial, the Lancioni lab is investigating how medications used to treat opioid-use disorders impact immune function.
**Oregon**

**Investigator:** Matt Lattal, Ph.D.  
**Institution:** Oregon Health & Science University  
Portland, OR  
**Project Title:** Mechanisms of Maladaptive Memory Formation and Suppression in A Preclinical Model of the Comorbidity Between PTSD and Addiction  
**Research:** Basic Research  
**Research Area:** Learning and Memory Mechanisms in Addiction; Behavioral Mechanisms Underlying Addiction and Relapse; Circuit Approaches to Addiction; Epigenetic Mechanisms in PTSD and Addiction; Drug Self-Administration; Natural Reward Learning  
**Earliest Start Date:** 06/01/2021  
**Housing:** Subsidized  
**Option for Virtual Internship:** No

**Student Qualifications:** This internship will potentially involve rodent behavior, histology, and immunohistochemistry. Experience with rodent behavior, or at minimum, some level of rodent handling is strongly desired. Preference is for interns who wish to pursue a career in behavioral neuroscience research and for interns majoring in neuroscience or psychology.

**Project Description:** The intern will be involved in conducting experiments in rodents using behavioral approaches to understand the comorbidity between addiction and post-traumatic stress disorder. The general research project involves viral and/or pharmacological manipulations of a specific epigenetic mechanism during different experiences - stress, acquisition, extinction, and reinstatement of drug-seeking. The intern will assist in this ongoing research project and will be involved in lab meetings and directed readings to understand the background literature for the project and to learn about related projects that are ongoing in the lab. The specific focus of the intern’s project will be determined based on the intern’s interests, previous experience, and feasibility for the 8-week program.
Oregon

Investigator: Esther Choo, MD, MPH
Institution: Oregon Health and Science University
Portland, OR
Project Title: Implementation, Outcomes, and Cost of a Novel Medicaid Policy to Reduce Opioids for Back Pain
Research: Epidemiology Research
Research Area: Opioid Use Disorder; Health Services; Drug Policy
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Preferred but NOT required:
- background in epidemiology or public health
- demonstrated interest in health equity
- strong writing skills

Required:
- strong interest in health inequities

There are no interactions with human subjects or animals or tissue samples.

Project Description: Oregon has a new policy that limits opioid prescribing and provides expanded coverage of non-pharmacologic therapies for patients with back pain. We are examining the impact on opioid use and related outcomes. The summer intern will work closely with the PI to examine variable impact of the policy on subgroups of Medicaid recipients, including women and racial minorities.
**Oregon**

**Investigator:** Deena Walker, Ph.D.

**Institution:** Oregon Health and Science University  
Portland, OR

**Project Title:** A Novel Role for the Medial Amygdala in the Modulation of Sex Differences in Cocaine Reward

**Research:** Basic Research  
**Research Area:** Sex Differences; Cocaine; Addiction; Epigenetics; Circuitry; Chemogenetics

**Earliest Start Date:** 06/01/2021  
**Housing:** Subsidized  
**Option for Virtual Internship:** Yes

**Student Qualifications:** No research experience is necessary. Students with a background or interest in various fields including but not limited to neuroscience, neuroendocrinology, cellular/molecular biology are welcome. Students will be expected to work with animals and process tissue.

**Project Description:** My research examines the cellular and molecular mechanisms underlying sex-specific behaviors and how perturbations during adolescent development disrupt the emergence and maintenance of such behaviors. In many species, sex differences in behavior are necessary for the perpetuation of the of the species and disruptions of such behaviors during adolescent development can have profound effects on sex-specific behaviors associated with natural reward and motivation (e.g. copulation, aggression, social interaction). In humans, the adolescent period is associated with the emergence of psychiatric disorders involved in motivation and reward including mood and substance use disorders, both of which display substantial sex differences in their prevalence and presentation. We use a range of cellular and molecular approaches to understand how sex differences in adolescent brain development are shaped by environmental experiences. Our hope is that by understanding how the brain develops during adolescence, how environmental factors influence adolescent development and how these experiences results in long-term alterations in behavior, our research will identify sensitive windows for intervention and develop novel therapeutics for all vulnerable populations.
Oregon

Investigator: John Williams, Ph.D.
Institution: Oregon Health and Science University
Portland, OR
Project Title: Chronic morphine: Regulation of Ion Conductances
Research: Basic Research
Research Area: Electrophysiology; Imaging; Brain Slices; Opioid Receptors
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: Students should have a basic background in biology and an interest in neuroscience at the cellular level. Animal work (rat and mouse) will be required and there is a training session at OHSU that is required prior to any work. Prior research experience is preferred but not specifically required.

Project Description: This project will center on the characterization of opioid receptor distribution at the cellular level in living brain slices.
Oregon

Investigator: Leslie Leve, Ph.D.
Institution: University of Oregon
Eugene, OR
Project Title: Prevention Research Center: Parenting Among Women Who Are Opioid Users
Research: Preventative Research
Research Area: Parenting; Parental Opioid Use; Child Development; Intervention; Neurocognitive Development; mHealth; Video-Based Interventions; Executive Function; Neuroimaging; COVID-19; Latino/A
Earliest Start Date: 06/15/2021
Housing: Campus
Option for Virtual Internship: Yes

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

Project Description: This is a Center grant focused on improving the well-being of individuals, families, and communities affected by the opioid crisis through a focus on behavioral (parental responsivity, warmth) and neurocognitive systems (e.g., executive functioning, reward responsiveness) that are underlying mechanisms common to both addiction issues and parenting challenges. Many opioid users are parents, and their opioid-using behaviors can have significant detrimental effects on their parenting abilities, and downstream effects on child brain development, health, and subsequent risk for drug use. We aim to serve as a national resource focused on increasing scientific understanding, prevention, and providing interventions to mothers who are opioid users. The research projects and pilots all focus on parenting within samples of adults with opioid and other substance use histories. Some projects include neuroimaging components, some projects include intervention components, and some focus on rural populations. We also have a science communication focus. In addition, we have a supplement focused on increasing testing for COVID-19 in Latinx communities in Oregon.
**Pennsylvania**

Investigator: Jacqueline Barker, Ph.D.
Institution: Drexel University College of Medicine
Philadelphia, PA

Project Title: Integrating Preclinical Models to Develop Converging Mechanistic Data in Co-occurring HIV And Substance Use

Research: Behavioral Research
Research Area: Addiction; Compulsivity; Cocaine; Prefrontal Cortex; Striatum; Cell Adhesion Molecules; Dopamine; HIV; NeuroHIV; Mouse Models; Behavioral Neuroscience; Neuroscience; Learning and Memory; Astrocyte; Glutamate

Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

**Student Qualifications:** Prior research experience is not necessary. The intern must be comfortable working with HIV, living mice, and with mouse tissue. Some aspects of the research plan require that the intern is at least 18 years old.

**Project Description:** Drug use frequently co-occurs with HIV infection. This co-occurrence is associated with impaired cognitive function and reduced control over behavior. This project will use dual mouse models to investigate whether progressive HIV infection (1) increases sensitivity to cocaine, (2) dysregulates specific cell types and neural circuits to alter behavior, and (3) whether these changes can be rescued through antiretroviral treatment. Specifically, the intern will work with a team to investigate changes in glutamatergic circuits and astrocytes in the prefrontal cortex and the striatum.
Pennsylvania

**Investigator:** Debra Bangasser, Ph.D.

**Institution:** Temple University

**Philadelphia, PA**

**Project Title:** Sex Differences in Stress Inoculation of Addiction-Like Phenotypes

**Research:** Basic Research

**Research Area:** Opioid Misuse; Stress; Sex Differences; Resilience; Behavioral Neuroscience; Transcriptomics

**Earliest Start Date:** 06/01/2021

**Housing:** Campus

**Option for Virtual Internship:** No

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

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

Investigator: Lisa Briand, Ph.D.
Institution: Temple University
Philadelphia, PA

Project Title: Examining Mechanisms Underlying Drug-Associated Memory Erasure by Zeta-Inhibitory Peptide

Research: Basic Research
Research Area: Glutamate Plasticity; Mouse Models of Addiction; Role of Adolescent Stress in Reward Processing

Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

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

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

Investigator: Stephanie Sullivan, Ph.D.
Institution: Temple University
Philadelphia, PA
Project Title: Circular RNA Signaling in Opioid Seeking Phenotypes
Research: Basic Research
Research Area: Opioids; Noncoding RNA; Drug-Seeking; Rodent; Circular RNA; Self-Administration
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Willingness to work with animals

Project Description: The student will explore a list of circular RNAs that are regulated in the brains of animals that self-administered sucrose. The student will validate candidate circular RNAs with qPCR. The student will learn techniques to overexpress or inhibit circular RNAs in the brains of animals that self-administer sucrose.
Pennsylvania

Investigator: Mathieu Wimmer, Ph.D.
Institution: Temple University
Philadelphia, PA
Project Title: Unraveling Epigenetic Mechanisms of Opioid Addiction Susceptibility Using Multigenerational Animal Models
Research: Basic Research
Research Area: Epigenetics; Addiction; Multi-Generational; Opioid; Self-Administration
Earliest Start Date: 6/1/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: The intern should be willing to work with animals and interested in learning molecular biology techniques. A strong biology background is recommended but not necessary. This research requires working with animals and tissue samples.

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

**Investigator:** Wenzhe Ho, M.D., M.P.H.  
**Institution:** Temple University  
Philadelphia, PA  
**Project Title:** Role of miRNA in Methamphetamine/HIV-Mediated Immune Activation  
**Research:** Other  
**Research Area:** Host Innate Immunity; HIV; Opioids; Methamphetamine; Antiviral Natural Products  
**Earliest Start Date:** 6/1/2021  
**Housing:** Campus  
**Option for Virtual Internship:** Yes

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

**Project Description:** The Ho Laboratory studies the impact of abused drugs on the host innate immunity and viral infections, particularly HIV. [https://medicine.temple.edu/wenzhe-ho](https://medicine.temple.edu/wenzhe-ho)

The Lab uses in vitro, ex vivo models and clinical specimens to address three key questions: A. Are drugs of abuse a negative factor that suppresses the host innate immunity against HIV infection? B. Are non-immune cells at the primary HIV infection sites involved in the host innate immunity against HIV? C. How does HIV infect and stay in the macrophages, a reservoir for the virus? The research project will be focused on the following areas,

1. To study whether the abused drugs (opioids and methamphetamine) impair the host innate immunity and facilitate HIV infection. The lab has documented that drugs such as heroin, morphine, and methamphetamine compromise the host antiviral immunity and enhance HIV infection/replication.
2. To examine the immune and non-immune cells-mediated innate immunity specifically antiviral sensors (TLR3, RIG-I, and DNA sensors). The cells under examination include the immune cells (T cells, monocytes/macrophages, and microglia) and non-immune cells in the CNS (neurons and astrocytes), gastrointestinal and female reproductive tracks (endothelial cells and epithelial cells). The lab was among the firsts to demonstrate that the non-immune cells express functional viral sensor (TLR3), activation of which induces the production of IFNs and the multiple cellular HIV restriction factors.
Pennsylvania

**Investigator:** Mudit Tyagi, Ph.D.
**Institution:** Thomas Jefferson University
**Project Title:** Characterization of Cocaine Induced Signaling Pathways that Enhances HIV Transcription
**Research:** Basic Research
**Research Area:** Drugs of Abuse, Cocaine; HIV Latency; Transcription; Replication; Epigenetics; Signaling Pathways

**Earliest Start Date:** 06/01/2021
**Housing:** Campus
**Option for Virtual Internship:** Yes

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

**Project Description:** Overall goal of the project is to understand the underlying mechanisms through which cocaine use further accelerates the aging process in HIV infected individuals by enhancing immune activation and inflammation. Current anti-HIV therapy is unable to restrict HIV protein production. Certain HIV proteins are toxic, especially to the CNS, as they stimulate pro-inflammatory cytokines and immune activation. Cocaine further enhance HIV protein production. The investigation proposed in this application will establish that cocaine accelerates the aging process by comparing cocaine-using HIV infected subjects with those not using cocaine.

**STUDY POPULATION:**
Group 1) HIV-infected subjects aged between 25-50 years, who regularly use cocaine.
Group 2) HIV-infected subjects aged between 25-50 years, who do not use any illicit drug.
Group 3) Uninfected subjects aged between 25-50 years, as controls
Group 4) Uninfected subjects aged between 25-50 years, who regularly use cocaine.

**METHODOLOGY:**
Aim 1A: Analysis of cell surface markers of immune activation and inflammation, triggered by cocaine among different subject Groups
Aim 1B: Investigate the potential impact of cocaine exposure on cell senescence
Aim 1C: Determine the cocaine effect on cell exhaustion
Aim 2: Define the plasma markers of immune activation and inflammation following cocaine use
Aim 3: Examine the impact of cocaine on telomere length, telomerase transcript, protein and activity.
**Investigator:** Mary Torregrossa, Ph.D.  
**Institution:** University of Pittsburgh  
**Pittsburgh, PA**  
**Project Title:** Center for Adolescent Reward, Rhythms, and Sleep  
**Research:** Basic Research  
**Research Area:** Adolescence; Self-Administration; THC; Nicotine; Impulsivity; Reinstatement; Relapse; Sleep; Circadian Rhythms  
**Earliest Start Date:** 05/15/2021  
**Housing:** Subsidized  
**Option for Virtual Internship:** No  

**Student Qualifications:** Prefer individuals with some work experience (any kind) and preferably a science major with some experience in a lab, either through course work or volunteering. Students will be expected to work with rodents and possibly handle/process tissue samples including rodent brain.

**Project Description:** The intern will investigate the effects of chronic sleep and circadian rhythm disruption in adolescents on measures of cognition and impulsivity and on their propensity to lever press for THC and nicotine. The intern will also have the opportunity to use new technologies in neuroscience to determine how sleep and circadian disruptions alter the release of neurotransmitters and change the activity of neurons in specific brain regions.
Puerto Rico

Investigator: Kyle Melin, PharmD
Institution: University of Puerto Rico
San Juan, PR
Project Title: Pharmacogenetic Determinants of Opioid Addiction
Maintenance Treatment with Buprenorphine in a Caribbean Hispanic Population
Research: Clinical Research
Research Area: Pharmacogenomics; Pharmacogenetics; Opioid Use Disorder; OUD; Buprenorphine
Earliest Start Date: 05/24/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: No prior research experience is necessary, however potential interns must be highly motivated and able to work independently with limited supervision. This internship will require students work with human research participants being treated for OUD as well as processing blood samples in the lab. Because the research is being conducted with a Spanish speaking population in Puerto Rico, Spanish fluency is required.

Project Description: The opioid use disorder (OUD) epidemic resulted in over 60,000 overdose deaths in the United States in 2017. Currently guidelines recommend a combination of pharmacologic maintenance treatment (usually with methadone or buprenorphine) and psychosocial treatment. Recently, the use of buprenorphine for OUD has increased dramatically, partly due to fewer barriers to administration when compared to methadone. Nonetheless, variability in patient response to buprenorphine may lead some patients to fail treatment. In addition to clinical characteristics such as sex and concurrent medications that affect patient variability in response to buprenorphine, genetic variability may be a factor in the complex phenotype of therapeutic response to pharmacotherapy for opioid addiction. This pilot project aims to better understand the pharmacogenetic variables which affect the individual patient’s clinical response to buprenorphine for the treatment of OUD. By measuring buprenorphine plasma levels and clinical indicators of treatment response, we will perform a candidate gene association study to better understand how relevant pharmacogenes affect outcomes in a Caribbean Hispanic population being treated for OUD. The summer intern will be directly involved with the recruitment of research participants at OUD treatment centers, collection of demographic and clinical information, and processing blood samples in the lab for genetic analysis.
Rhode Island

Investigator: Sara Becker, Ph.D.
Institution: Brown University School of Public Health
Providence, RI
Project Title: Implementing Contingency Management in Opioid Treatment Centers Across New England: A Hybrid Type 3 Trial
Research: Behavioral Research
Research Area: Opioid; Implementation; Contingency Management
Earliest Start Date: 6/1/2021
Housing: Subsidized
Option for Virtual Internship: Yes

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

Project Description: The summer intern will be contributing to a large-scale implementation project with 30 opioid treatment programs throughout New England. The project test two different implementation strategies to help opioid treatment programs deliver an evidence-based intervention called contingency management (CM). CM is one of the most effective interventions for the treatment of opioid use disorders, but it is rarely delivered in community opioid treatment programs. The primary outcomes examined in the trial will be the consistency, skill, and duration of CM delivery by front-line treatment providers after training. Secondary outcomes include patient abstinence from opioids and patient attendance at treatment sessions.
Rhode Island

Investigator: Laura Stroud, Ph.D.
Institution: Centers for Behavioral and Preventive Medicine, The Miriam Hospital, Providence, RI
Project Title: Prenatal Marijuana: Impact on Infant Neurobehavior, Stress, & Epigenetic Mechanisms
Research: Clinical Research
Research Area: Prenatal; Pregnancy; Substance Use; Marijuana; Cannabis; Epigenetic Placental Pathways; Infant Behavior; Infant Neurodevelopment; Infant Cortisol Reactivity

Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

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

Project Description: The Maternal and Infant Studies Lab at Brown Medical School is focused on understanding the impact of substance use during pregnancy on fetal and infant biobehavioral development as well as epigenetic mechanisms. Undergraduate research assistants who join the biobehavioral research team are involved in a wide range of tasks, such as screening of pregnant mothers, entering and managing clinical data, coding fetal and infant behavior and temperament, and other study-related tasks. Interns are involved in every aspect of the research including recruitment efforts, biospecimen and data collection, data analyses, and retention strategies. Training and supervision of these tasks are rigorous and tightly maintained in order to ensure that study aims are being carried out according to HIPAA and IRB guidelines.
<table>
<thead>
<tr>
<th>Rhode Island</th>
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</thead>
<tbody>
<tr>
<td><strong>Investigator:</strong></td>
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<td><strong>Institution:</strong></td>
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<tr>
<td><strong>Kingston, RI</strong></td>
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<td><strong>Project Title:</strong></td>
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<td><strong>Research:</strong></td>
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<tr>
<td><strong>Research Area:</strong></td>
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<tr>
<td><strong>Earliest Start Date:</strong></td>
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<tr>
<td><strong>Housing:</strong></td>
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<tr>
<td><strong>Option for Virtual Internship:</strong></td>
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**Student Qualifications:** A background in Causal Inference and/or Network Science is beneficial, but not imperative because these courses are offered at URI and the student will be required to study these topics. Proficiency in R programming and completion of human subjects training is also beneficial, but the intern can also spend the two weeks prior to starting the position completing these tasks. At this time, URI is not able to commit to on-campus housing, but if determined safe, we would be able to provide this.

**Project Description:** The goal of this project is to conduct innovative research to develop causal inference methodology combined in novel ways with network science to solve challenges in network-based studies of HIV treatment and prevention among people who use drugs. We are interested in considering spillover effects and including networks structures in the analysis. Spillover or disseminated effects are when one person's exposure affects another person's health outcome. We are extending our approach to evaluate if the effects of interest differ by network structures.
Student Qualifications: The Intern must have a background in biology or psychology and a strong interest in the neurobiology of drug addiction. The student will have to handle rats and brain tissue samples - prior experience in preclinical rodent research is preferred but not mandatory. The Intern should have the ability to work with a diverse group of people and should be able to multi-task.

Project Description: Cannabis use is widespread and is rapidly becoming legalized or decriminalized across the country. Cannabis could serve as a therapeutic alternative to opioids, however, preclinical studies using non-contingent THC pre-exposure and a recent epidemiological study indicate that cannabis use can increase the risk for future opioid abuse. Using a novel self-administration protocol in rats we will investigate convergent adaptations in cannabinoid and opioid signaling after chronic THC and heroin and furthermore test how these adaptations contribute to a potential cross-sensitization between the two drugs. We will also use cFOS labeling and confocal imaging to quantify differences in withdrawal networks in brains of Heroin and THC/Heroin withdrawn animals.
South Carolina

Investigator: Michael Shtutman, Ph.D.
Institution: University of South Carolina
Columbia, SC
Project Title: Impact of Dead Box RNA Helicase 3 Signaling on HIV-1 Tat- and Cocaine-Induced Neurotoxicity
Research: Basic Research
Research Area: HIV; HAND; HIV-Associated Neurodegenerative Disease; Cocaine; DDX3; Dad Box RNA Helicase; Artificial Intelligence; Machine Learning
Earliest Start Date: 5/11/202
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Minimum skill sets; General molecular biology/biochemistry lab training and/or bioinformatics with knowledge in R.
Preferred skillset: Fluorescent Microscopy; Cell staining; Tissue culture and/or Experience in statistics, Bioinformatics, Image analysis,
Students will not be required to work with animals

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

Investigator: Russell W. Brown, Ph.D.
Institution: East Tennessee State University
Johnson City, TN
Project Title: The Role of Adenosine A(2A) Receptor Activation on The Behavioral and Plasticity Response to Nicotine in a Rodent Model of Schizophrenia
Research: Basic Research
Research Area: Behavioral Pharmacology; Behavioral Neuroscience
Earliest Start Date: 05/10/2021
Housing: Campus
Option for Virtual Internship: No

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

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

Investigator: Brooke Schmeichel, Ph.D.
Institution: East Tennessee State University
Quillen College of Medicine
Johnson City, TN
Project Title: Hypocretin Contributions to Compulsive Methamphetamine Self-Administration in Rats
Research: Behavioral Research
Research Area: Methamphetamine Self-Administration; Stimulants; Sleep Dysfunction; Hypocretin/Orexin; Translational Research; Rodent Model of Dependence; Electroencephalogram
Earliest Start Date: 05/17/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: Previous research experience (including animal handling) and neuroscience/psychology coursework strongly preferred but not required. The use of appropriate personal protective equipment (PPE) and adherence to standard lab safety guidelines is expected.

Project Description: Methamphetamine abuse in humans is characterized by patterns of excessive drug seeking and a loss of control over intake. A framework with which to model the transition from recreational drug use to drug addiction can be found in animal models of prolonged access to intravenous drug self-administration. The neuropeptide hypocretin/orexin (HCRT) has been implicated in reward seeking across many classes of drugs, including stimulants, opioids and nicotine, as well as natural rewards such as food. HCRT also contributes to the transition from sleep to waking and, likely, the modulation of hyper-aroused, stress-like states observed during withdrawal from drugs. Interestingly, a number of clinical studies indicate associations between sleep dysfunction and drug abuse and/or relapse. Despite these observations, few preclinical studies have been conducted investigating the direct or causative role for sleep system disruption in substance abuse, representing a significant lacuna in our understanding. These observations suggest that the HCRT neuropeptide system may be a key player in addiction, particularly within the neurocircuitries that contribute to the arousal-dependent motivational aspects of compulsive methamphetamine taking. The current project aims to characterize sleep dysfunction in methamphetamine-dependent rats and determine the degree to which HCRT neurotransmission contributes to the regulation of sleep/wake state under conditions of methamphetamine-withdrawal.
Tennessee

**Investigator:** Santosh Kumar, Ph.D.

**Institution:** University of Tennessee Health Science Center
Memphis, TN

**Project Title:** Monocytic and Exosomal Cytochrome P450s In Smoking-Mediated HIV-1 Pathogenesis

**Research:** Basic Research

**Research Area:** HIV; Tobacco Smoking; Exosomes; Cytochromes P450

**Earliest Start Date:** 5/14/2021

**Housing:** Subsidized

**Option for Virtual Internship:** Yes

**Student Qualifications:** Skill set: Tissue culture, Western blot (preferred); Education major: Biology/Chemistry, Career interest: PhD of any other health science professional degree; The student will work with cell culture and blood samples from humans. The student will NOT work with animals or humans.

**Project Description:** The summer intern will be isolating extracellular vesicles (EV)/exosomes from the media upon exposure to smoking constituents and/or HIV as well as from the plasma of HIV-infected individuals and/or tobacco smokers. The person will then characterize them using various biophysical (zetasizer, transmission electron microscope) and biophysical (Western blots, enzyme activity, staining) methods. The person will then determine the role of these EVs/exosomes on smoking-induced HIV pathogenesis and/or neuronal damage. We will be using various monocytic, microglial, and/or neuronal cell lines as well as primary cells for these experiments. The intern will then write a 3-4 pages report on their findings that also includes introduction on the subject and discussion of results. The intern will also make a 10-15 min presentation on their project.
Defining the Role of Cortical Circuit Dynamics in Learning and Addiction

Basic Research

Addiction; Imaging; Dopamine; Dynorphin

06/01/2021

Campus

No

Ideally, the summer intern will have experience working with mice. The project will use mice as a model system and the intern should feel comfortable doing in vivo and ex vivo work with them. Undergraduate major is less important than an interest and willingness to learn about the circuits involved in substance use.

Drug use can alter fundamental processes, such as cognition and motivation, to produce pathological behaviors in some individuals. The summer research project will aim to understand how neural circuits orchestrate these fundamental behaviors, identify how drugs act on these circuits, and link changes in neural activity with behavior. The project will take an approach driven by scientific questions, and the techniques that used will be suited to the inquiry at hand. These techniques include developing behavioral procedures to model maladaptive decision making in rodents, and leveraging pharmacology, and optical tools to define the neurobiological basis of these behaviors at the level of receptors, synapses and brain-wide circuits.
Investigator:    Lidong Qin, Ph.D.
Institution:    Houston Methodist Hospital
               Houston, TX
Project Title:    Development of a Point-of-Care Volumetric Bar-Chart Chip 
                  for Drug Quantitation
Research:    Basic Research
Research Area:    Microfluidics; Bioengineering; Lab on a Chip; Cell assay
Earliest Start Date:    05/31/2021
Housing:    Subsidized
Option for Virtual Internship:    No

Student Qualifications: GPA 3.0; Credits in chemistry, physics, biochemistry, and cell biology.

Project Description: We will provide an opportunity of summer intern students to learn state 
of the art drug analysis and platform developments. We will demonstrate how a clinical 
sample is assayed in a laboratory setup. Our unique strength is that we have an institute wide 
undergraduate Summer Intern program with a class size of 50, providing classes, lectures, 
training, communications, and housing.
Texas

Investigator: Kathryn A. Cunningham, Ph.D.
Institution: University of Texas Medical Branch at Galveston
Galveston, TX
Project Title: BRD4 Inhibition for Opioid Pharmacotherapy
Research: Behavioral Research
Research Area: Substance Use Disorder; Opioids
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: No

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

Project Description: The University of Texas Medical Branch at Galveston houses The Center for Addiction Research (CAR), a center focused on uncovering the biological, behavioral and chemical determinants of Substance Use Disorders (SUDs). The CAR research teams use a multi-pronged approach to be at the frontier of SUD research and provide a sustainable training environment for future scientists.

A summer research intern can expect to explore one of the many projects we currently have going. One project is the “hunger hormone” ghrelin and the growth hormone secretagogue receptor 1α (GHS1αR) in preclinical models of opioid use disorder (OUD). In particular, investigating the role of the GHS1αR to regulate opioid intake and opioid-seeking behavior, and we are evaluating the efficacy and abuse liability of a potential therapeutic compound that targets this receptor. We currently have three projects dealing with the opioid crisis. An intern can explore how BRD4 mechanisms in the brain sustains opioid intake, or how the NOP receptor and BTRX-246040 has the potential for opioid use disorder treatment or explore AMPAkinases by validating its efficiency to suppress opioid intake. The summer intern could also explore the brain receptor GPR52 and drug activators to reduce cocaine taking in preclinical studies. Finally, the intern could explore NMUR2 signaling as key interface between hypothalamic and mesolimbic systems and evaluate the action of NMUR2 agonists on feeding behavior. The innovative nature of these projects requires a multidisciplinary research team to which the summer research intern will be experience. The long-term mission is to provide a rich training environment and develop therapeutics to reduce SUDs.

Overall Objective of Summer Internship:
This internship provides scientific and professional development. The Center for Addiction Research specializes in the neuropsychopharmacology of SUDs and the training provided is critical to biomedical science research and provides interns with development for successful research endeavors.
Texas

Investigator: Samikkannu Thangavel, Ph.D.
Institution: Texas A&M University
Kingsville, TX

Project Title: Cocaine and HIV Influence Mitochondrial Epigenetics in Astrocytic Networks

Research: Basic Research
Research Area: NeuroAIDS
Earliest Start Date: 6/14/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Life Sciences and Biology.

Project Description: Human immunodeficiency virus (HIV) infection and drug abuse are major cause of human death and it will affect the central nervous system. Further it induces oxidative stress, redox modification and mitochondrial bio-generation affects epigenetic modification of DNA Methylation. We are investigating mechanistic study to understand the metabolic dysfunction activates mitochondrial biogenesis and epigenetic modification, pattern and other pathogenic mechanisms of HIV infection associated drug abuse model (In vitro and In vivo).
## Texas

<table>
<thead>
<tr>
<th><strong>Investigator:</strong></th>
<th>Mahesh Mohan, DVM, MS, Ph.D.</th>
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<tbody>
<tr>
<td><strong>Institution:</strong></td>
<td>Texas Biomedical Research Institute</td>
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<tr>
<td><strong>Project Title:</strong></td>
<td>Epigenetic Mechanisms Underlying Cannabinoid Modulation of Neuroinflammation in HIV/SIV Infection</td>
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<tr>
<td><strong>Research:</strong></td>
<td>Basic Research</td>
</tr>
<tr>
<td><strong>Research Area:</strong></td>
<td>HIV, SIV, Intestinal and Neuroinflammation, Delta-9-Tetrahydrocannabinol, Rhesus Macaque, Basal Ganglia, Lymph Nodes</td>
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<tr>
<td><strong>Earliest Start Date:</strong></td>
<td>06/01/2021</td>
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<tr>
<td><strong>Housing:</strong></td>
<td>Subsidized</td>
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<tr>
<td><strong>Option for Virtual Internship:</strong></td>
<td>No</td>
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</table>

**Student Qualifications:**  Bachelors or master’s degree in biology, Biochemistry, Chemistry. Ability to pipet accurately, calculate molarity, prepare incubation buffers, make antibody dilutions, attention to detail and strictly follow standard operating protocols, knowledge about basic statistical tests ("t" tests, Mann-Whitney U test, one-way ANOVA)

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

**Institution:** Texas Tech University Health Sciences Center
Lubbock, TX

**Project Title:** Mechanisms of Cannabinoid Tolerance

**Research:** Basic Research

**Research Area:** Delta-9-tetrahydrocannabinol (Δ-9-THC) and cannabis-like compounds have been used by cancer patients for its analgesic/anti-emetic effects. This study will address agonist and sex-specific mechanisms of cannabinoid tolerance to the antinociceptive effects in chronic/chemotherapy-induced pain models.

**Earliest Start Date:** 05/30/2021

**Housing:** Campus

**Option for Virtual Internship:** Yes

**Student Qualifications:** The students should be interested in working with mice and learning about behavioral and molecular pharmacology since this project requires students to work with animals and tissue samples. No past behavioral pharmacology experiences are required since the PI holds a veterinary degree as well as a Ph.D. and has successfully trained several trainees unfamiliar with behavioral pharmacology testing. However, a strong desire to learn about behavioral and molecular pharmacology is highly encouraged.

**Project Description:** The student will be exposed to behavioral pharmacology and molecular biology during the summer internship. Students will learn about chemotherapy-induced pain models (paclitaxel and cisplatin) as previously published and optimized by Dr. Guindon. Behavioral testing using mechanical (digital electro von Frey) and cold (acetone) allostynia (Guindon and Hohmann, 2013) will be used to assess the sensory component of pain by the students. The students will also learn to evaluate the affective component of pain by using elevated-plus maze (EPM) and open-field (OPF) tests. The first part of the project will be to test development of mechanical and cold allostynia as well as EPM and OPF tests from day 0 to day 26. At day 8, we will start the administration of cannabinoids compounds Δ-9-THC (6 mg/kg ip), WIN 55,212-2 (10 mg/kg ip), and CP55,940 (0.3 mg/kg ip) alone or in combination with JNK inhibitors (SU 3327 3 mg/kg ip in males and 10 mg/kg ip in females) in wild-type (WT mice) or in disrupted GRK phosphorylation of CB1 (S426A/S430A mutants) using chemotherapy-induced pain models. NIDA intern from 2019 has published one manuscript and as one on sex-specific differences on the antinociceptive effects of JNK inhibitors in male/female mice coming up. Second part and following chronic treatment with cannabinoid agonists alone or in combination, we will used tissue collections to perform molecular pharmacology techniques such as Elisa, western blot, PCR and quantitative PCR.
Texas

Investigator: Consuelo Walss-Bass, Ph.D.
Institution: University of Texas Health Science Center at Houston
Houston, TX
Project Title: Gene-Environment Interactions in COCCaINE Use Disorder: Collaborative Case-Control Initiative in Cocaine Addiction
Research: Basic Research
Research Area: Molecular Mechanisms of Mental Health Disorders; Epigenetics; DNA Methylation; Postmortem Brain; Human-Derived Neural Cell Lines
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Student should have a strong interest in basic science, with a focus on neuroscience and human subjects research in substance use disorders

Project Description: The research projects involve in-depth genome-wide characterization of the influences of epigenetic modifications on gene expression in an existing cohort of brain samples from subjects with cocaine use disorder. Project will assess DNA methylation utilizing Illumina arrays and gene expression by RNA sequencing in brain tissue from 50 subjects (25 cases and 25 controls) in 2 addiction-related brain regions (nucleus acumbens and amygdala). Integrated methylation and expression analyses will be performed to identify region-specific gene expression and methylation differences in cases compared to controls, and to correlate genomic changes with behavioral measures related to addiction, such as impulsivity and self-regulation (obtained via a detailed psychological autopsy), as well as with exposure to stressful life events.
Texas

Investigator: Donald M. Dougherty, Ph.D.
Institution: University of Texas Health Science Center San Antonio
          San Antonio, TX
Project Title: Development of Impulse Control
Research: Behavioral Research
Research Area: Family History of Substance Use Disorder; Impulsivity;
              Sensation Seeking; Stress; Adolescent; Emerging Adulthood; Substance Initiation
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: No

Student Qualifications: Previous research experience is not required. Background in psychology, sociology, or training in STEM field is preferred. This project is suitable for students with career interests in mental health, youth development, and substance use involvement.

Project Description: A defining feature of healthy development is an increasing ability to control impulsive behavior. What cannot be determined from previous studies is whether poor impulse control contributes to, or is a result of, substance use involvement, and whether these factors interact in adolescence and yield increasingly negative outcomes by early adulthood. We are examining how specific components of impulse control develop and relate to substance use development. Importantly, we also test, refine, and extend the Dual Systems model of adolescent risk taking by addressing whether processes in the model are independent or interdependent, how they develop in non-normative samples to explain problematic patterns of substance use, and whether processes in the model are affected by social/environmental factors related to risk and resiliency.

This study tests bi-annually a cohort of youth with and without family histories of substance use. Parents and their children: (a) completed an initial assessment battery at study entry (self-report, interview, and laboratory-behavioral measures), and (b) have been re-assessed every 6 months to monitor changes in impulse control, substance use involvement, psychiatric status, family and environmental stressors, and physical maturation. Data collection include questionnaire, interview, and laboratory behavioral assessments.
Utah

Investigator: Adam J. Gordon, M.D., M.P.H.
Institution: University of Utah
Salt Lake City, Utah
Project Title: Greater Intermountain Node
Research: Clinical Research
Research Area: Substance Use Disorder; Opioid Use Disorder; Clinical Trials; Addiction Health Research; Implementation Science
Earliest Start Date: 05/30/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: 1. Proficient writing and oral communication skills; 2. A basic understanding of human clinical research studies; 3. A professional, ethical, and non-stigmatizing view of substance use disorders. 4. Versed in Microsoft Suite (Word, PowerPoint, Excel)

Project Description: The Greater Intermountain Node (GIN) seeks to expand the existing National Institute of Drug Abuse Clinical Trial Network infrastructure in an effort to grow the settings for research and bring new research expertise to the Network. The GIN provides expertise in three areas of addiction research: 1) research within non-addiction specialty health care settings, 2) addiction/opioid research within large health systems of care, and 3) implementation science and approaches to bring addiction evidence-based research to practice. Our team is looking for an intern willing to assist on the following projects:

1. Medication Treatment for Opioid Use Disorder in Expectant Mothers: A pragmatic randomized trial comparing two buprenorphine formulations for pregnant individuals.
2. Emergency Department-Initiated Buprenorphine Validation Network: ED-initiated trial of buprenorphine (BUP) for patients presenting with untreated opioid use disorder (OUD).
3. Optimizing Retention, Duration, and Discontinuation Strategies for Opioid Use Disorder Pharmacotherapy: To test strategies to improve OUD pharmacotherapy treatment retention and outcomes.
4. Healthy Living Study: An intervention to reduce opioid use and overdose risk, and prevent progression to OUD, in adult primary care patients.

The GIN is housed within the University of Utah School of Medicine, Division of Epidemiology, and Program for Addiction Research, Clinical Care, Knowledge, and Advocacy (PARCKA) in Salt Lake City, Utah.
Virginia

Investigator: Fatah Kashanchi, Ph.D.
Institution: George Mason University
Manassas, VA
Project Title: Role of Extracellular Vesicles in Methamphetamine and HIV Induced Neurotoxicity
Research: Basic Research
Research Area: Drug Abuse; Exosomes; HIV/AIDS; HIV-1 Transcription; CNS Infection; Apoptosis; Treatment
Earliest Start Date: 6/14/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: GPA = 3.5; Prerequisite courses: Chemistry, Biology, Microbiology, Cell Biology, and Biochemistry.

Project Description: These experiments will address if CBD and its mutants (HIV viral protein) are able to decrease the amount of Extracellular vesicle (EV) release after HIV infection. EVs will be isolated and separated from HIV virions using Dr. Kashanchi’s gradient purification and nanotrap based isolation and separation method as well as differential centrifugation. EVs from different conditions (uninfected immune cells, +/- CBD; HIV infected immune cells, will be examined for particle number, size and shape using Nanoparticle Tracking Analysis (NTA), and Electron Microscopy. We have also very recently been able to isolate small, medium, and large EVs to decipher their function.
Virginia

Investigator: Faye S. Taxman, Ph.D.
Institution: George Mason University
Fairfax, VA
Project Title: JCOIN Coordination and Translational Center
Research: Clinical Research
Research Area: Implementation Science; Jails; Dissemination; Translational Science; Justice-Health
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: The student should be familiar with WORD, EXCEL, PowerPoint and preferably SPSS or STATA. The student will need to work on interviews and analyzing organizational type data.

Project Description: The student will be involved in coding interviews and serving as a recorder for over 60 interviews with professionals that work in jail and in substance use treatment services in the community. The study is an implementation effectiveness randomized trial where 24 communities (jail and substance abuse treatment services) are engaged in different organizational change procedures. The study will examine the efficacy of organizational change practices to facilitate the use of medications for individuals with OUD in jail and then continued in the community. Students will participate in coaching sessions, interviews, research meetings, and preparation of materials for the study sites.
Investigator: Ku-Lung Hsu, Ph.D.
Institution: University of Virginia
Charlottesville, VA
Project Title: Endocannabinoid Biosynthesis in Inflammation and Pain
Research: Drug Development Research
Research Area: Endocannabinoids; Lipids; Chemical Biology; Proteomics;
Lipidomics; Metabolomics; Drug Discovery
Earliest Start Date: 06/01/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Curiosity and enthusiasm for science. General lab experience including pipetting. Desire to learn new skills.

Project Description: Globally, chronic disorders including cardiovascular disease, diabetes, cancer, and chronic respiratory disorders represent one of the largest causes of death in industrialized societies. Besides life-threatening disease, chronic pain currently inflicts millions of American adults and contributes to billions ever year in medical costs. While complex molecular factors underlie these heterogeneous pathologies, a unifying feature of numerous chronic disorders is non-resolved inflammation. Thus, new anti-inflammatory targets are needed to combat the burden of chronic inflammatory disease. Macrophages play a key role in inflammation and switch from pro- to anti-inflammatory phenotypes to minimize tissue damage and aid in resolution and repair. Bioactive lipids including endocannabinoids and oxygenated metabolites of omega-6 and omega-3 fatty acids are important mediators in initiating and resolving inflammation. We previously discovered that diacylglycerol lipase-beta (DAGLB) regulates an endocannabinoid-eicosanoid lipid-signaling network that fine-tunes the proinflammatory response in primary macrophages. Recent preliminary data further support DAGLB-regulated lipid pathways as a safe and effective point of intervention in mouse models of inflammatory and neuropathic pain that lack gastrointestinal and cannabimimetic side effects. Our proposed studies build on strong previous and current preliminary findings that point to DAGLB-regulated pathways in macrophages as a potential mechanism.
**Virginia**

**Investigator:** James Bjork, Ph.D.

**Institution:** Virginia Commonwealth University
Richmond, VA

**Project Title:** 20/21 ABCD-USA Consortium: Research Project Site at VCU

**Research:** Clinical Research

**Research Area:** Adolescents; Brain; Development; Impulsivity; Risk-Factors; Resilience

**Earliest Start Date:** 06/01/2021

**Housing:** Subsidized

**Option for Virtual Internship:** Yes

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

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

**Investigator:** M. Imad Damaj, Ph.D.

**Institution:** Virginia Commonwealth University
Richmond, VA

**Project Title:** Genetics Basis of Nicotine Withdrawal in A Reduced Complexity Cross

**Research:** Basic Research

**Research Area:** Nicotine Addiction Research in Animal Models; Behavioral Genetics; Pain and Neuropathy; Role of Nicotinic Receptors in Behaviors; Adolescent Exposure to Drugs of Abuse; Impact of Flavors on Nicotine Dependence

**Earliest Start Date:** 06/01/2021

**Housing:** Subsidized

**Option for Virtual Internship:** No

**Student Qualifications:** Science background; Motivation and interest in research; Experience with animal behavioral testing is a plus; Experience in a research Lab is a plus.

**Project Description:** The impact of nicotine adolescent exposure on reward and withdrawal later in life in mice.

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

Investigator: Kathryn Polak, M.S.
Institution: Virginia Commonwealth University
Henrico, VA
Project Title: Using Mobile-Based Contingency Management to Promote Daily Self-Monitoring of Pain Severity and Prescription Opioid Use in a Primary Care Sample of Chronic Pain Patients
Research: Clinical Research
Research Area: Chronic Pain; Pain Management; Prescription Drug Misuse; Prescription Drug Overuse; Drug Misuse; Analgesics, Opioid; Narcotics; Opioid-Related Disorders; Contingency Management; Mobile Applications
Earliest Start Date: 5/24/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Required: A curious mind and motivation to learn and work hard on the research project. Must maintain at least a 3.0 GPA. Desired: Some science background (e.g., a high school level course in biology, psychology, and/or chemistry).

Project Description: Responsible opioid prescribing depends on effective identification of prescription (Rx) opioid misuse as well as an understanding of clinically relevant variables (e.g., pain). Remote self-monitoring is a promising, practical, and readily available method for tracking these variables; however, low rates of adherence have impeded the use of remote self-monitoring among chronic pain patients, limiting the potential beneficial effects. The present study is examining the efficacy and feasibility of contingency management (CM; as delivered by an innovative CM app) for improving self-monitoring of clinically-relevant variables among chronic pain patients, which will inform future research on effective pain management, early identification of Opioid Use Disorders, and adherence across a variety of medical conditions.
Investigator: Renee Heffron, Ph.D.
Institution: University of Washington
Seattle, WA
Project Title: Implementation Science Research on PrEP Delivery and Costing Within MAT and NSP Services for PWUD in Uganda
Research: Clinical Research
Research Area: Implementation Science; Uganda; PrEP; Syringe Program; Methadone Treatment Program
Earliest Start Date: 06/21/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: No prior experience is necessary. Enthusiasm for working across cultures and with Africans are recommended.

Project Description: The summer intern will work with the project team to: 1) analyze qualitative data from people who use drugs in Uganda and HIV prevention providers and 2) create materials for an upcoming research program to integrate PrEP into programs for syringe services and methadone treatment for people who inject drugs in Uganda. In the intern will gain experience being part of a multi-national research team, conducting data analysis, and creating dissemination materials.
Virginia

Investigator: Kevin M. King, Ph.D.
Institution: University of Washington
Seattle, WA
Project Title: Ecological Momentary Assessment of Negative Urgency's Effects on Alcohol and Marijuana Misuse
Research: Epidemiology Research
Research Area: Ambulatory Assessment; Self-Regulation; Impulsivity; Young Adults; Emotion Regulation; Alcohol; Marijuana
Earliest Start Date: 06/20/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: Psychology, Sociology or related major preferred, and have completed a class in research methods. Interns will work with human subjects. No prior research experience required. Prefer interns with an interest in a graduate research career.

Project Description: This project will describe individual differences in impulsive responses to negative emotions in the real-world. We will test what situational factors and emotion regulation skills make some people more or less impulsive in the face of negative emotions, and how the interplay between negative emotions and impulsive behaviors could lead to alcohol and marijuana misuse in the real world. This project will be able to elucidate when, how and for whom impulsive responses to emotion leads to alcohol and marijuana misuse. In Summer 2020, the project will be actively recruiting subjects, young adults age 18 - 22 who are regular marijuana or alcohol users. Participants will complete a 2-month period of ecological momentary assessment (EMA), or short cell phone surveys multiple times a day, to report on their emotional experiences, self-regulation behaviors, and substance use.
Student Qualifications: Background in Neuroscience is preferred. The applicant should have some familiarity with programming in either Matlab or Python but need not be an expert. The applicant will be required to work with behaving animals (mice) for this project.

Project Description: This Summer Research Project is geared towards undergraduate researchers. The applicant will learn to conduct behavioral experiments in rodents that are trained in various reward seeking paradigms. This will be combined with in vivo two photon imaging to study neural circuit activity in either the prefrontal cortex, nucleus accumbens, or hypothalamus. The intern will be exposed to state-of-the-art microscopy techniques and in vivo circuit manipulations (optogenetics).
Washington

Investigator: Jashvant Unadkat, Ph.D.
Institution: University of Washington
Seattle, WA
Project Title: Mechanisms of Drug Disposition During Pregnancy
Research: Basic Research
Research Area: Pharmacokinetics of Drugs, Pregnancy; Maternal-Fetal Exposure to Drugs; Mechanisms of Changes in Pharmacokinetics; PBPK Modeling and Simulations; Marijuana; Cannabis

Earliest Start Date: 6/1/2021
Housing: Campus
Option for Virtual Internship: No

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

Project Description: This program project will study the mechanisms of disposition of THC, the main pharmacologically active constituent of marijuana or cannabis. Human, animal and in vitro studies in cells will address the aims stated in each of the three projects. A physiological model will also be created to predict the disposition of these drugs in the human maternal-fetal unit. A student who is interested in working on this project will be involved in research conducted by this grant. These projects are focused on systematic investigation of hepatic/intestinal/lung/placental metabolism & transport of THC to predict maternal-fetal disposition of THC and its metabolite, 11OHTHC.
Washington

Investigator: Mary Hatch-Maillette, Ph.D.
Institution: University of Washington
Settle, WA
Project Title: Clinical Trials Network - Pacific Northwest Node
Research: Clinical Research
Research Area: Addiction Treatment; Clinical Research; Implementation Science; Clinical Trials; Substance Abuse; HIV; Opioid Use Disorder; Emergency Department
Earliest Start Date: 6/20/2021
Housing: Campus
Option for Virtual Internship: Yes

Student Qualifications: This internship is geared toward undergraduates who are interested in seeing how addiction and related issues (opioid use, HIV, sexual risk, etc.) are treated and researched in real world settings. Interns will not be working directly with patients or participants but may shadow those who are. Students who are considering careers in medicine, psychology, social work, or public health will be a good fit.

Project Description: The Pacific Northwest Node of the NIDA Drug Abuse Treatment Clinical Trials Network (CTN), housed at the University of Washington (UW), Alcohol & Drug Abuse Institute (ADAI), welcomes a NIDA Summer Intern to learn about substance use treatment clinical research. This 5-week internship involves working with CTN researchers at ADAI on a variety of studies. Examples include an implementation survey study that assessed Pre-Exposure Prophylaxis (PrEP) and opioid use-related service availability for men who have sex with men (MSM) and people who use opioids (PWUO) in high-HIV-incidence Southeastern cities (CTN0082), a study focusing on improving buprenorphine treatment access for opioid use disorder in the Emergency Department (ED) (CTN0099); and a randomized clinical trial evaluating the impact of treating opioid use disorder in pregnant women (CTN0080). Specific projects might include working with the lead investigative team to review literature and prepare manuscripts for publication, learning about multi-site clinical trial project coordination and management, and shadowing staff at Harborview Medical Center to learn about conducting research in the Emergency Department. The intern will also gain exposure and experience with addiction clinical research via a variety of experiences such as touring community treatment programs, participating on conference calls, and attending webinars.
West Virginia

Investigator: Daniel Morgan, Ph.D.
Institution: Marshall University
Huntington, WV
Project Title: Mechanisms of Cannabinoid Tolerance
Research: Basic Research
Research Area: Cannabinoid; Pain; Marijuana; THC; Addiction; Tolerance
Earliest Start Date: 05/31/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: We are open to student education, major, and research background but would give preference to students with previous experience working with mice. Students with previous coursework in molecular, cellular, and systems neuroscience background would be a good fit with our group. Students in our group will be looking at cannabinoid tolerance in genetically modified mice and transfected HEK-293 cells. Students interested in pursuing further PhD or MD/PhD training would be an ideal fit.

Project Description: Summer interns in the Morgan laboratory will have the choice to pursue several possible projects aimed at understanding the mechanisms of cannabinoid tolerance and the role of sex in mediating cannabinoid response and tolerance. Interns will learn to assess the analgesic effects of delta-9-THC, the main psychoactive ingredient in marijuana, on both sensory and affective components of chronic chemotherapy and nerve-injury-induced neuropathic pain. Students in the Morgan group will also have the option to perform Western blot analysis of c-Jun N-terminal Kinase activation in cells and mice treated with delta-9-THC.
Wisconsin

Investigator: Majid Afshar, MD
Institution: University of Wisconsin
Madison, WI
Project Title: Data Driven Strategies for Substance Misuse Identification in Hospitalized Patients
Research: Clinical Research
Research Area: Machine Learning; Predictive Analytics; Natural Language Processing; Artificial Intelligence; Patient Outcomes, Biostatistics
Earliest Start Date: 05/03/2021
Housing: Campus
Option for Virtual Internship: No

Student Qualifications: The intern should have taken introductory courses in computer science/programming courses with an introductory knowledge of coding languages - especially Python and R. Course in math and statistics are preferred as well. Our research will require work with human data from the electronic health record.

Project Description: We anticipate that the parent research proposed will provide novel and critically important tools in artificial intelligence for the detection of substance misuse from the electronic health record (EHR). Development and validation of the substance misuse classifier would enable a standardized approach to perform screening on all patient encounters on a daily basis in health systems. We will rigorously develop, and test substance misuse classifier retrospectively and then examine its performance prospectively in both a naive and mature screening programs. This will serve as the first step towards a comprehensive universal screener that leverages available data in the EHR. The intern will participate in helping data scientists with data wrangling activities, building databases, performing literature searches, and in various phases of software development. The intern will also learn how to apply our analytic tools to examine meaningful health outcomes by participating in a team science approach with regular lab meetings and interaction across a multi-disciplinary team of clinician-scientists, computer scientists, engineers, biostatisticians, and database managers.
Wisconsin

Investigator: Lauren Papp, Ph.D.
Institution: University of Wisconsin-Madison
Madison, WI
Project Title: Real-Time Predictors of Prescription Drug Misuse by College Students and Assessment of Misuse on Their Developmental Trajectories
Research: Behavioral Research
Research Area: Prescription Drug Abuse; Ecological Momentary Assessment; Interpersonal Relations; College; Stressor; Interpersonal Relations; Emotions; Development
Earliest Start Date: 06/01/2021
Housing: Subsidized
Option for Virtual Internship: Yes

Student Qualifications: The research requires students to work with data collected from human participants. The research is relevant to students with interests or experience in psychology, human development, social work, public health, and counseling. Interns should be comfortable working with research staff and fellow students in a group environment. Dependability and thoroughness are valued traits. Previous research experience is desirable but not required. Completion of a research methods course is preferred.

Project Description: Personal and group characteristics that place some individuals at higher risk of engaging in prescription drug misuse compared to their peers have been established; however, among those who misuse, researchers have not systematically discovered in-the-moment antecedents of misuse behavior in real-world environments. Until we do so, society’s ability to prevent young adults—who display the highest misuse rates and experience increasingly costly health and well-being impacts—from misusing prescription drugs will likely remain beyond reach. Building on the team’s pilot work, 355 college students oversampled for elevated risk of prescription misuse completed ecological momentary assessment (EMA) procedures for 28 days. The design consisted of signal-based (scheduled across the day) and event-based (self-initiated) prompts. EMA collected ratings of theoretically driven contextual triggers and real-time prescription drug misuse in day-to-day environments. EMA and survey data are to be collected during Time 1 (T1). Longitudinal follow-up assessments are ongoing and occur every 6 months for 2 years (T2-T5). Summer interns will work as part of team to collect the remainder of the assessments and conduct analyses to understand factors associated with prescription drug misuse in daily life and longer-term effects of the substance behavior. Campus housing availability will be determined closer to the internship start date.