My long-term research interest is in how the brain encodes learning at the synaptic as well as systems level, particularly maladaptive learning that leads to substance use disorder, using translationally relevant preclinical models. My previous academic and research training, combined with the new skills I will acquire during this fellowship, will enable me to make significant contributions to addiction science during my postdoctoral training and subsequent career stages. My goal after completing my postdoctoral training is to obtain a faculty position at a research-focused institution to continue my research and train the next generation of addiction neuroscientists.

My first neuroscience research experience was in Dr. Jeremy Clark's lab at the University of Washington, where I researched the long-term effects of adolescent alcohol use on decision-making. My work in the lab led to me having an independent project investigating the effects of alcohol on dopamine transmission in female rats. It was during my time in Dr. Clark's lab that I learned about the NIH postbaccalaureate program and applied for a position after I graduated.

I was accepted into the program and joined Dr. Bruce Hope's lab in the National Institute on Drug Abuse intramural program. I was fascinated by the Hope lab's core hypothesis that learned associations are encoded in the brain by sparse groups of strongly activated neurons, which we call neuronal ensembles. Furthermore, the lab tests the hypothesis that aberrant learning processes can help explain substance use disorders, a topic that was relevant to my interests. My primary project in the lab, under the guidance of post-doctoral researcher Dr. Rajtarun Madangopal, was the validation of a new behavioral procedure to study how discriminative stimuli that predict drug availability during drug-taking are encoded in the brain.

In September 2019, I entered the Behavioral Neuroscience Ph.D. program at Oregon Health & Science University where I joined Dr. Marina Wolf's lab. Dr. Wolf is an expert in the role of synaptic plasticity in animal models of substance use disorders and I wanted to expand on my previous systems-focused approach by learning more about cellular-level changes underlying larger network alterations. My project working in Dr. Wolf's lab sought to build upon previous work from the lab, which had established a role for glutamatergic plasticity in the nucleus accumbens core in the incubation of cocaine craving, by testing the role of dopamine transmission. To do this I learned to record dopamine transients in vivo during cocaine-seeking via fiber photometry paired with dopamine biosensors and then tested my observed dopamine transients for functional significance with behavioral pharmacology. I also conducted a second project to establish sensor multiplexing, a fiber photometry technique in which two sensors are recorded simultaneously, in the Wolf lab and validated this approach using a food-seeking task.

For my post-doctoral training, I want to continue to advance my experience with in vivo recording during behavioral tasks with a focus on addiction plasticity to identify cellular changes that lead to relapse after abstinence. With the support of this fellowship, I have joined the lab of Dr. Marco Venniro. Dr. Venniro has worked to develop several behavioral models that expand on the original forced abstinence paradigm used for the incubation of craving studies, taking a reverse translational approach to develop more clinically relevant rodent models. Of particular interest is Dr. Venniro's social volitional abstinence model, in which rodents choose to abstain from drugs of abuse in favor of social interaction. In Dr. Venniro's lab, I will pair my experience in *in vivo* recording with these new models of relapse. This fellowship will also enable me to learn new techniques and skills to investigate how alternative rewards alter drug-seeking and underlying circuits.