

## Alexander C.W. Smith, Ph.D.



Dr. Alexander C.W. Smith began his research career in 2008 as an undergraduate at Washington State University, in the lab of Dr. Brendan Walker. While at WSU, he completed a project examining the role of matrix metalloproteinases (MMPs) in the escalation of ethanol self-administration during acute withdrawal in rats. Dr. Smith then moved to the Medical University of South Carolina, where he completed his PhD research under the supervision of Dr. Peter Kalivas, and studied the role of MMPs in synaptic plasticity underlying cue-induced reinstatement of drug seeking. Dr. Smith's dissertation elucidated a mechanism by which drug-conditioned cues elicit synaptic glutamate spillover at prelimbic afferents in the nucleus accumbens core (NAcore), stimulating mGluR5 receptors on neuronal nitric-oxide synthase-expressing interneurons, increasing nitric oxide efflux, S-Nitrosylation of MMP-9, and stimulating synaptic potentiation on NAcore neurons and driving relapse behavior. Following his graduate training, Dr. Smith completed postdoctoral training in the lab of Dr. Paul Kenny at the Icahn School of Medicine at Mount Sinai, where he is now an Instructor. During his postdoctoral training at Mount Sinai, Dr. Smith has led several diverse projects. He has examined the roles of microRNAs in synaptic plasticity underlying drug relapse, striatal mechanisms of goal-directed learning, and currently his focus is on high-throughput identification of novel brain structures and molecules that contribute to opioid use disorder. In addition to his scientific accomplishments, Dr. Smith has obtained a number of prestigious funding opportunities, including an F32 NRSA, a NARSAD Young Investigator Award, and a K99 Pathway to Independence Award. In December 2021, Dr. Smith will return to the Medical University of South Carolina as a tenure-track faculty member, where he will open his lab and begin an independent research program studying the neurobiology of addiction.