# A miRNA signature for cognitive deficits and alcohol use disorder in persons living with HIV/AIDS

Dorota Wyczechowska[1], Hui-Yi Lin[2], Andrea LaPlante[3], Duane Jeansonne[4], Adam Lassak[5], Christopher Parsons[6], Patricia E Molina[7], Francesca Peruzzi[8] *

[1]Stanley S Scott Cancer Center, Louisiana State University, New Orleans, LA, USA; [2]Biostatistics Program, School of Public Health, Louisiana State University, New Orleans, LA, USA; [3]Department of Psychiatry, University Medical Center, Louisiana State University, New Orleans, LA, USA; [4]Stanley S Scott Cancer Center, Louisiana State University, New Orleans, LA, USA; [5]Stanley S Scott Cancer Center, Louisiana State University, New Orleans, LA, USA ; [6]Stanley S Scott Cancer Center, Department of Medicine, School of Medicine, Louisiana State University, New Orleans, LA, USA; [7]Alcohol and Drug Abuse Center of Excellence, Department of Physiology, School of Medicine, Louisiana State University, New Orleans, LA, USA; [8]Stanley S Scott Cancer Center, Alcohol and Drug Abuse Center of Excellence, Department of Medicine, School of Medicine, Louisiana State University, New Orleans, LA, USA

HIV-associated neurocognitive disorders (HAND) affects more than half of persons living with HIV-1/AIDS (PLWHA). Identification of biomarkers representing the cognitive status of PLWHA is a critical step for implementation of successful cognitive, behavioral and pharmacological strategies to prevent onset and progression of HAND. However, the presence of co-morbidity factors in PLWHA, the most common being substance abuse, can prevent the identification of such biomarkers. We have optimized a protocol to profile plasma miRNAs using quantitative RT-qPCR and found a miRNA signature with very good discriminatory ability to distinguish PLWHA with cognitive impairment from those without cognitive impairment. Here, we have evaluated this miRNA signature in PLWHA with alcohol use disorder (AUD) at LSU Health Sciences Center (LSUHSC). We found miRNAs associated with AUD and that AUD is a potential confounding factor for the miRNAs associated with cognitive impairment in PLWHA. Furthermore, we have investigated the miRNA signature associated with cognitive impairment in an independent cohort of PLWHA using plasma samples from the CNS HIV Antiretroviral Therapy Effects Research (CHARTER) program. Despite differences between the two cohorts in socioeconomic status, AUD, and likely misuse of illicit or prescription drugs, we validated a miRNA signature for cognitive deficits found at LSUHSC in the CHARTER samples.