African American and Hispanic adults have one and a half to three times higher incidence rates compared to non-Hispanic Whites for Alzheimer’s Disease in the United States. By 2050, underrepresented US adult populations will represent the fastest growing population of adults over the age of 65. In addition, these disparities are complicated by many factors which can inherently impact molecular contributions at the protein and lipid level. Our laboratory is working to better understand racial and ethnic disparities in Alzheimer’s disease using comprehensive proteomics and lipidomics tools based on mass spectrometry. We have developed high-throughput platforms that incorporate sample automation and multiplexing using in-house and commercial chemical labeling strategies. Our platforms rely heavily on nanoflow liquid chromatography, high resolution mass spectrometry, and various bioinformatic and biostatistical approaches and are applied to human biospecimens such as postmortem brain tissue and plasma. We have applied these tools to pilot cohorts of Alzheimer’s disease and cognitively unimpaired individuals. Initial results have identified the presence of unique features in proteomes and lipidomes that are associated with Alzheimer’s disease and racial and ethnic background. This presentation will highlight our approaches, study findings, and implications for reducing disparities and towards biomarker discovery in Alzheimer’s disease.