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Detecting Alzheimer's Disease Biomarker Methylglyoxal in Blood Plasma via Two Portable and Fast Small Volume Blood Diagnostics Devices to Compare Solid vs. Liquid Phase Colorimetry RILEY RANE, SRIVATSAN SWAMINATHAN, ABBIE ELISON, SHEFALI PRAKASH, NIKHIL SURESH, THILINA BALASOORIYA, WESLEY PENG, AASHI GURIJALA, MOHAMMED SAHAL, LAUREN PUGLISI, KARISHMA SIVAKUMAR, Arizona State University, Dept. of Physics, ERIC CULBERTSON, Ronald Reagan UCLA Medical Center, ROBERT CULBERTSON, NICOLE HERBOTS, Arizona State University, Dept. of Physics, INNOVASTRIP RESEARCH COLLABORATION — Large scale proteomics research has accelerated the discovery of predictive Biomarkers of Susceptibility (BoS). The present work investigates two new methods to measure the BoS methylglyoxal for Alzheimer's Disease via two new rapid and portable Small Blood Volume Blood Diagnostics devices. One, InnovaStrip^{TM}[1], uses solidified blood plasma after rapid separation, and the other, Alz-BioSs^{TM}[2], uses liquid blood plasma after microfluidic filtration. InnovaStrip^{TM} rapidly separates plasma from blood in microliter-sized blood drops and solidifies both in minutes into uniform Homogeneous Thin Solid Films (HTSF) fit for solid state analysis. Alz-BioSs^{TM} applies blood drops in a blood-plasma separation microdevice. Both use a small portable device to detect biomarkers via colorimetry. Colorimetry measurements are then compared to Solid State Nuclear Magnetic Resonance and X-ray Free Electron Laser analysis. [1] Herbots *et. al* Pat. Pend. (2020) [2] Swaminathan *et. al* Pat. Pend. (2020)

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