ELIZABETH WALTERS, GABRIELLA HUBBARD, PAULA SAEZ-RAEZ, TOM SCHMIETA, & JAMES WALTERS, Dept. of Applied Science and Mathematics, Bluefield State College, Bluefield, WV 24701. Transcriptome Response of genes mitigating Reactive Oxygen Species in Zebrafish (*Danio rerio*) Larvae during dietary lipid absorption.

The Mediterranean diet is associated with higher levels of polyunsaturated fatty acids (PUFAs) as well as lower incidences of cardiac disease and colon cancer. Due the presence of multiple double bonds, PUFAs such as alpha-linoleic acid (ALA), are thought to generate fewer harmful metabolites, specifically the Reactive Oxidative Species (ROS). Conversely, monounsaturated fatty acids (MUFAs) may lead to relatively increased ROS. In this study we compare two high-fat diets: the MUFA diet containing oleic acid (1 mM C18:1 plus 1 mM cholesterol) and the PUFA diet containing ALA (1 mM C18:3 plus 1 mM cholesterol). We compared gene expression from the dissected intestines of six days post-fertilization zebrafish (*Danio rerio*) larvae after feeding the PUFA and MUFA diets for 3 hours. We measured ROS response indirectly via the increased expression of ROS response genes (GSTO1, GSR, and cyp1a). Our preliminary results show upregulation of the ROS response genes GSTO1, GSR, and cyp1a in the presence of MUFA and await further replicates to become significant. These data support the hypothesis that dietary fatty acid saturation plays a role in oxidative stress within enterocytes. In the future we plan to measure ROS responsiveness directly via respirometry. *This work was supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence and NIH Grant P20GM103434 awarded to Bluefield State College and the McNair Scholars Program.*