Use this page to provide an abstract (up to 350 words) outlining the research described in your poster. **This OUTLINE MUST BE APPROVED AND SIGNED BY THE DEPARTMENT HEAD OR MAJOR PROFESSOR.** (Note: *email notification by your advisor to Ms. Debbie Koch can be substituted for the signature)*

C57BL6/J mice fed high-fat diet supplemented with 1% grape polyphenols (HFD-GP) have attenuated symptoms of metabolic syndrome in association with a bloom in Akkermansia muciniphila. We investigated whether these GP-associated effects could be reproduced in the leptin-deficient db/db mouse model of type-2 diabetes. Mice were fed low-fat diet (LFD) or LFD supplemented with 1% GP (LFD-GP) for 4 weeks. GP-supplemented db/db mice showed improved oral glucose tolerance and fasting blood glucose at four weeks compared to LFD mice. Few significant discrepancies in metabolic biomarkers for improved gut barrier integrity, adipogenesis or inflammation were observed; except for a decrease in Muc3 within the Ileum and Jejunum in conjunction with an increase in proglucagon GCG gene within the colon of GP-treated db/db mice. Although the obsesity phenotype between both diet groups is comparable, GP-induced bloom in A. muciniphila occurred as rapidly as day 2 of dietary intervention was coupled by a significant reduction in species diversity and richness in contrast to the control. Furthermore, consumption of GP significantly altered host bile acids (BAs); LFD-GP mice possessed greater concentrations (µg/mL) of primary BAs. GP decreases relative abundance of bacteria that produce bile acid targeting enzymes associated with the production of secondary bile acids. Additionally, microbiota-associated elevation of primary BAs may be complemented by the capability of GP to bind to secondary BAs and mitigate their enterohepatic recirculation which could potentially ameliorate health complications related to their toxicity. The influence that the consumption of GP stimulates systemically by modification of gut microbiota, BAs and by improving glucose homeostasis may be utilized as a natural alternative to mediciation for treatment of T2D.

The above, proposed plan of research is approved and accepted.

DATE SIGNATURE OF DEPARTMENT HEAD OR MAJOR PROFESSOR - PRINT NAME