- **Project's title: Dietary Inulin Fiber Supplementation for Protection Against Obesity, Hypertension and Stroke**

- **Grant information: Award# 953881**

- **Links/information to other repository data**

  The data deposited included the following excel and GraphPad prism files from the animal experiments:

  1) Exp37_SHRSP_Fiber antibiotics_combined data_spb_pcb.xls
  2) Expt 28_Encapsulated VFA and Fiber Comparison_SD-DIO_spe_pcb.pzfx
  3) Exp25_SHRSP_Fiber vs VFA_spb_pca.pzfx
  4) Exp29 FMT blocker_spa_pcb.xls
  5) Expts 22+24_FMT+FMT Blockers_SP_pcf.pzfx
  6) Expts 22+24_FMT Hormones & Metabolites_SP_pca.pzfx
  7) Exp24_FMT_Blocker data.xls

- **The project description (who were the subjects? What did they do? What were the conditions?):**

  Obesity, heart disease and stroke cost billions of dollars a year. These diseases are believed to be due to an increase in the number of bad bacteria in the gut. It is possible to increase the number of good bacteria in the gut by eating diets high in fiber such as inulin. However, we know very little about how fibers improve our overall health.

  In this project, we assessed whether dietary supplementation of prebiotic fibers protects against hypertension and stroke-related complications. We used two rat models of human conditions for our work - spontaneously hypertensive stroke-prone (SHRSP) rats which resemble hypertension and stroke in humans, and diet-induced obese (DIO) Sprague Dawley rats which closely resemble human obesity. A major impact is that our work may lead to the development of new types of foods that are rich in fiber to reduce body weight, blood pressure and stroke. The results of our project may lead to clinical trials on the protective effects of fiber-rich diets to improve health. In the future, we will study whether feeding fiber to mothers will protect against obesity in future generations. Thus, our project will help to improve the health of people suffering from obesity, heart disease, and stroke.

- **How was the project was carried out?:**

  We performed four animal studies on spontaneously hypertensive stroke-prone (SHRSP) rats and diet-induced obese (DIO) Sprague Dawley rats. In the first study, we fed SHRSP rats with increasing doses of inulin fiber. We found that rats fed high amounts of inulin fiber (15%) had lower food intake, body weight, blood pressure, and fat mass. However, high amounts of fiber did not extend their survival. In the second study, we studied the effects of lower amounts of inulin fiber (7.5%). These lower amounts are similar to those consumed by humans. We found that rats fed low amounts of inulin fiber (7.5%) were satiated and had more good bacteria. They had better heart health and lived longer than control rats who died due to stroke-related complications. In the third study, we tested the effects of transferring feces from rats fed inulin to diet-induced obese (DIO) rats fed the control diet. We found that the transfer of feces from rats fed inulin reduced

food intake in recipient DIO rats. These recipient rats had more good bacteria and reduced food intake. In the fourth study, we found that gut hormones are responsible for reducing food intake in DIO rats.

- **How to credit you:**

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- **Any licenses: N/A**