Gastrointestinal Microbiomes: Comparing Female Students in Different Living Environments

Freed, Blair J.[1] and Dr. Vickie Roettger[2]

Scientific advancements the last several decades have revealed thousands of strains of bacteria colonizing the human gastrointestinal (GI) tract and influencing the overall health of individuals. The present study seeks to ascertain whether the difference in microbial population is statistically significant between two populations of female college students living on-campus versus off-campus and what the differences may imply regarding the health of the participants. The research is accomplished via obtaining analyses of each participant's gastrointestinal microbial presence and comparing relative abundancies of bacteria. This research serves to explore and analyze the microscopic bacterial implications on living environments for female college students.

The research was performed by obtaining bacterial sequencing for twenty female participants (ten living on-campus and ten residing off-campus) through the analysis of stool samples via The American Gut Project. Surveys were administered to the participants to evaluate their daily activities in order to compare them to the individual's microbiome results. Once the results have been returned and raw data is supplied for each participant, statistical analysis including ANOVA and multiple regression analysis will be performed to understand the environment's impact on the microbiome for this unique and previously not studied sample of individuals.

Current studies indicate there are two major bacterial groups colonizing the microbiome of the GI tract, bacteroidetes and firmicutes. Depending on which group dominates in the GI tract, the microbiome as a whole can contribute positively to an individual's health with greater nutrient breakdown (bacteroidetes) or can contribute to less nutrient breakdown and the storage of larger lipid droplets (firmicutes). The health of the microbiome has been related to body mass index and disease progression in other experiments and is indicative of the health of the individual.

1. Blair Freed, student, Missouri Southern State University, Department of Biology and Environmental Sciences, Freedb001@mymail.mssu.edu
2. Dr. Vickie Roettger, Interim Department Head, Missouri Southern State University, Department of Biology and Environmental Sciences, Roettger-v@mssu.edu

1. Blair Freed, student, Missouri Southern State University, Department of Biology and Environmental Sciences, Freedb001@mymail.mssu.edu
2. Dr. Vickie Roettger, Interim Department Head, Missouri Southern State University, Department of Biology and Environmental Sciences, Roettger-v@mssu.edu