

Examining the Contribution of the Microbiota to the Healthy Aging AC5KO Phenotype

Erin Jennings, Sara Campbell

King University and Rutgers, The State University of New Jersey

Healthy aging, including protection against diabetes, obesity, cardiovascular stress and enhanced exercise tolerance, have been observed in our adenylyl cyclase type 5 knock out (AC5KO) mouse model. This is a critical observation since the aging population would not enjoy extra years if they were accompanied by chronic conditions. Since the gut microbiota has been shown to be an important determinant of age-associated pathological states such as inflammation, diabetes, obesity and cardiovascular disease, we propose to conduct a head to head comparison of microbial communities (species and strains) between AC5KO and wild type (WT) mice to reveal whether there are differences that promote longevity and healthful aging (protect against disease states). Male and female AC5KO and WT mice were fed a normal diet and randomly assigned to exercise or sedentary groups. DNA extraction, PCR amplification, and data analysis tools were used to compare the microbial communities of different groups. After analysis, our data revealed different strains and compositions of microbiota between the AC5KO and WT mice. In future studies, our data will show that AC5KO mice demonstrate unique microbial species that are associated with healthful aging and that exercised AC5KO mice will have either an increase in their unique microbial species or new species present that are a result of exercise training.

