Probiotics are live microorganisms that are similar to beneficial microorganisms found in the human gut. They are often known as lactic acid bacteria and are normally consumed in the form of yogurt. Most often the bacteria will come from two groups, *Lactobacillus* and *Bifidobacterium*. Vancomycin is a bactericidal antibiotic used in the treatment of antibiotic-associated colitis and endocarditis. In this study we will be examining the effects of vancomycin on the induced growth of lactobacilli in the Lewis male rat. The Lewis male rat was used because in the animal model of rheumatoid arthritis, vancomycin was shown to reduce the disease scores of adjuvant-induced arthritis and one research group also noted an increase in lactobacilli growth in the digestive tract with administration.

As a control for this research project, to ensure induction of lactobacilli was achieved, Bene-Bac Pet powder was used. Bene-Bac Pet powder contains live, naturally occurring microorganisms and is recommended anytime an animal experiences changing nutritional or environmental conditions, one of them being antibiotic treatment. The rats were placed in four groups, two being control and the others
being experimental. According to each group, rats were fed dextrose/maltodextrin substrate, Bene-Bac Pet powder, vancomycin and one group being fed both Bene-Bac powder and vancomycin. Fecal samples were obtained from the rat prior to initial treatment and then once every three days during the experimental period and two days after the conclusion of the experimental procedure (n=5 samples per rat). Samples were diluted and plated and the colony growth was noted. Vancomycin was expected to decrease the growth of lactobacilli in the Lewis rat following the treatments. There were significant changes (p = 0.02) among most groups by day 6 of the study. In contrast, there was an increase in the growth of lactobacilli in experimental groups. Vancomycin increases and maintains the growth of lactobacilli in the Lewis rat.