

INTEGRATING MICROBIOME SCIENCE AND MICROBIAL THERAPIES INTO PRACTICAL ANIMAL CARE AND MANAGEMENT

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Abstract

Microbiomes are integral to animal health. The microbes inhabiting animal gastrointestinal tracts are particularly relevant to animal nutrition while also interacting with virtually every bodily system. Understanding how to monitor and modulate animal microbiomes is becoming an important aspect of animal care. The complexity of these communities and their importance to animal health presents a challenge to animal care professionals and scientists alike. In this talk, I will discuss practical applications of microbiome science, with a focus on microbial therapies that can beneficially modulate animal microbiomes.

I will provide relevant background on the role of microbiomes in animal health, with particular emphasis on how managed care may influence animal microbiomes. I will present recent results and case studies in which we use microbiome science to inform and augment animal management and care strategies. Specifically, I will discuss pre- and probiotics, fecal microbiota transplants, and their respective value to animal care. The presented studies will reflect a breadth of animal species and scenarios that are relevant to zoo and managed populations, ranging from treating GI-symptoms in two-toed sloths and black-footed ferrets to assisting in recovery from antibiotic treatments in lemurs and cheetahs. I will finally touch on limitations and caveats of microbiome research and highlight ways in which future collaborations can strengthen the applied value of microbiome science to animal care.