

SNACK AND FACT:

Gut Microbiota, Diet, and Health: Application to Livestock and Companion Animals



September 26, 2016

H-122 U.S. Capitol Building/ Washington D.C.

Hosted by the American Society of Animal Science

12:00 – 12:10 PM
Introduction and Goals

Dr. Teresa Davis
Baylor College of Medicine
& ASAS Public Policy
Committee Representative

12:10 – 12:30 PM
**The Microbiome:
Applications to Humans
and Pets**

Dr. Kelly Swanson
University of Illinois

12:30 – 12:50 PM
**Importance of the
Microbiome to Livestock
Species**

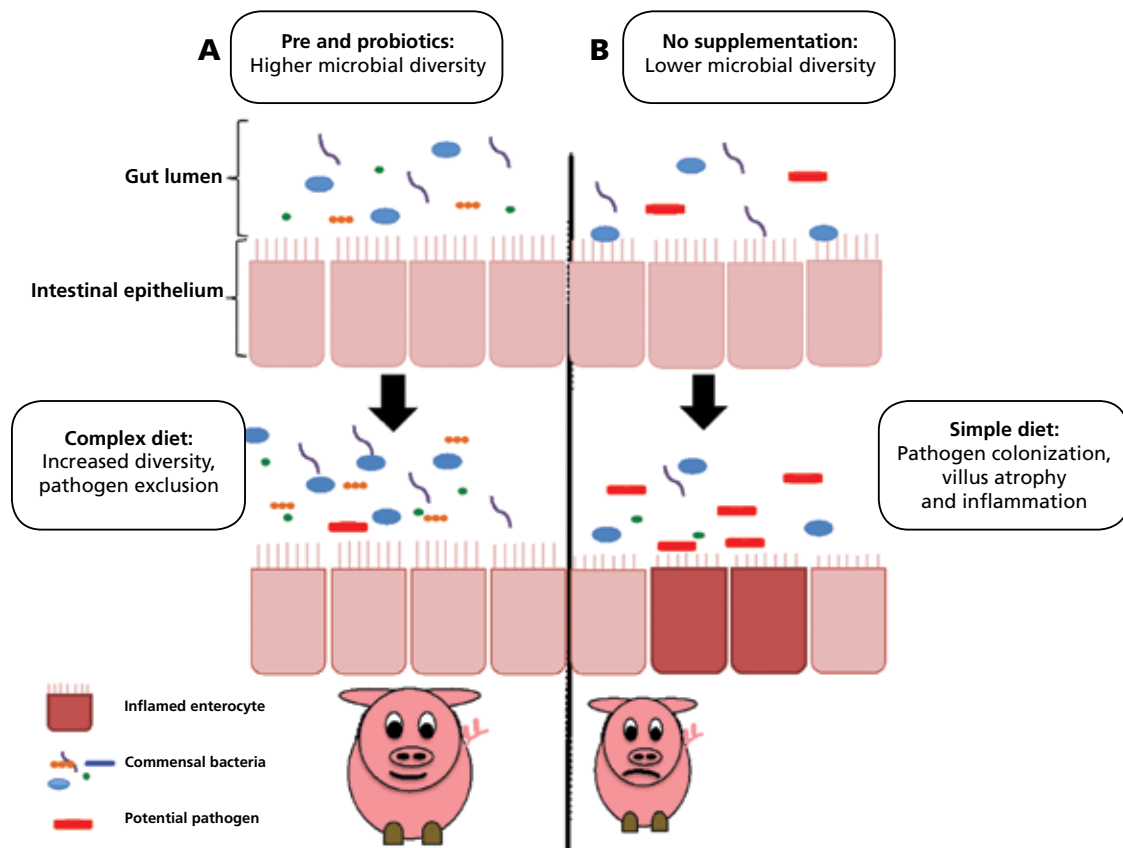
Dr. Juan Loor
University of Illinois

12:50-1:00 PM
Questions

Gastrointestinal (GI) microbes play a fundamental role in human and animal health, participating in processes such as immune system development, metabolism, growth, and GI health.

In recent years, new techniques and developments have allowed scientists to identify and characterize microbes and their genes (microbiome) in and on the body. This has led to an increase in the knowledge and study of the microbiome in both humans and animals. The July 2016 issue of *Animal Frontiers* discusses current research in the microbiome field, and its implications for food-producing animals, companion animals and human health.





(A) Supplementing piglets with prebiotics or probiotics can increase microbial diversity, which can help to exclude pathogenic microbes. At weaning, feeding complex diets containing fermentable carbohydrates may further increase microbial diversity, helping to exclude pathogens from colonizing and causing disease. (B) Failure to supplement diets with prebiotics and probiotics or feeding simple diets at weaning can exacerbate colonization of pathogens, causing villus atrophy (erosion of the intestinal villi), inflammation, diarrhea, and growth reduction. Figure adapted from July 2016 *Animal Frontiers*.

Microbiome research in livestock and companion animal species provides a better understanding of:

- Identification, dynamics, and functions of GI microbial communities
- Relationships between microbial members
- Substances produced and consumed by microbes
- The influence of environmental factors on microbial activity
- Microbe–host interactions
- Differences between healthy and diseased animal populations.

A better understanding of these factors has implications for the health of pets and livestock. However, such research also has relevance to human health.

The buzz surrounding the microbiome field has led to significant research investments by federal agencies, private foundations, and industry. Continued support from these funding sources is necessary to advance the study of the microbiome and its importance to humans and animals.



KELLY S. SWANSON is Professor of Animal and Nutritional Sciences at the University of Illinois at Urbana-Champaign. He also holds an adjunct faculty position in the Department of Veterinary Clinical Medicine at the University of Illinois. Dr. Swanson's lab studies the effects of nutritional intervention on canine and feline health, identifying mechanisms by which nutrients impact gene expression and host physiology, with emphasis on gastrointestinal health and obesity. He has published over 140 peer-reviewed publications and teaches three courses pertaining to companion animal nutrition to veterinary, undergraduate, and graduate students.

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JUAN J. LOOR is Associate Professor of Animal and Nutritional Sciences at the University of Illinois at Urbana-Champaign. Dr. Loor's research program centers on nutritional and physiological genomics during the neonatal period, lactation and growth phases in beef and dairy cattle. A central goal of his research program is to uncover physiologic regulatory mechanisms induced by nutritional management through the integration of rumen microbiome, circulating metabolome, and tissue transcriptome data. Dr. Loor has authored 159 peer-reviewed publications and teaches undergraduate and graduate courses in animal and ruminant nutrition, and an advanced graduate course in regulation of metabolism.

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