



Derek Foster



Assistant Professor of
Ruminant Medicine

Education

DVM—NC State University,
College of Veterinary Medicine
PhD—Gastrointestinal
Physiology—NC State University

Board Certifications

American College of Veterinary
Internal Medicine, Large Animal

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Large animal models of barrier health and disease

Research emphasis:

My research is focused on understanding the mechanisms of drug movement into the gastrointestinal tract to mitigate negative impacts on systemically administered antimicrobials including antibiotic-associated diarrhea and selection of antimicrobial resistant fecal organisms. I have developed both an in vivo model in cattle and an ex vivo model to assess this movement of antimicrobials into the intestine that can be translated to other large animal species. I have also investigated methods of measuring active antibiotic concentrations at the site of infection including the airway and the interstitial fluid to predict antibiotic efficacy.

Application:

- Gastrointestinal physiology
- Infectious disease
- Food safety
- Antimicrobial efficacy

Collaboration potential:

Large animal model of:

- Drug delivery
- Mucosal barrier function
- Antimicrobial resistance
- Zoonotic infections

Selected publications: (limit 4)

Foster DM, Martin LG, Papich MG. Comparison of Active Drug Concentrations in the Pulmonary Epithelial Lining Fluid and Interstitial Fluid of Calves Injected with Enrofloxacin, Florfenicol, Ceftiofur, or Tulathromycin. PLOS One. 2016 Feb. 11(2):e0149100.

Foster DM, Jacob ME, Warren CD, Papich MG. Pharmacokinetics of enrofloxacin and ceftiofur in plasma, interstitial fluid, and gastrointestinal tract of calves after subcutaneous injection, and bactericidal impacts on representative enteric bacteria. J Vet Pharmacol Ther. 2016; 39(1):62-71.

Warren CD, Prange T, Campbell NB, Gerard MP, Martin LG, Jacob ME, Smith GW, Papich MG, Foster DM. Implantation of an ultrafiltration device in the ileum and spiral colon of steers to continuously collect intestinal fluid. Res Vet Sci. 2014; 97(3):611-5.