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Translational and Comparative Models of Infectious Diarrhea

Research emphasis:

I have a strong interest in studying host-pathogen interactions of zoonotic pathogens, particularly those that cause diarrhea. My PhD thesis research (under the direction of Dr. Jody Gookin) is examining the host intestinal epithelial response to the protozoal pathogen, *Cryptosporidium*, with a specific focus on innate immunity and intestinal regeneration/repair. *Cryptosporidium* is the second leading cause of infectious diarrheal death in children under 5 in developing countries, and lethal in immunocompromised individuals worldwide. By studying the host response we hope to identify potential therapeutic targets, as no effective treatments currently exist for *Cryptosporidium*. We are currently using a combination of cell culture, ex-vivo approaches, in addition to a well-established, neonatal piglet model.

Selected publications:

Ferguson SH, Novak J, Hecht S, Craig LE. Hydrocephalus in three juvenile black bears (*Ursus americanus*). *J Zoo Wildl Med*. 2015, In Press.

Michaels J, Thomas W, **Ferguson S**, Hecht S. Clinical Features of Spinal Cord Hemangioblastoma in a Dog. *Front Vet Sci*. 2015; 2: 39.

Ferguson SH, Rech R, Howerth E, Camus M. Pathology in practice: Listeriosis in a goat. *J Am Vet Med Assoc*. 2012; 241(4): 443-445.

Ferguson SH, Howerth E, Rech R. Pathology in practice: *Mannheimia haemolytica* bronchopneumonia in a cow. *J Am Vet Med Assoc*. 2011; 239(1): 1437-9.

Application:

- Naturally-occurring small animal models of infectious diarrhea
- Intestinal epithelial-pathogen interactions in cell culture, ex vivo and in vivo model systems

Collaboration potential:

- Porcine models of gastrointestinal infection
- Gross/Histopathology
- Immunofluorescence
- Fluorescent in situ hybridization