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### Genetic mechanisms of *Salmonella* host colonization

#### Research emphasis:

The work of my laboratory is focused on how the zoonotic pathogen *Salmonella enterica* colonizes the intestine of susceptible hosts, I use genetic approaches to understand the biology of *Salmonella* in the intestine of calf and mouse models of salmonellosis. We defined novel genes needed for *Salmonella* to colonize the host and are now working to determine mechanism of gene function. My long-term goal is to translate our understanding of the biology of *Salmonella* in the host to development of novel antimicrobials to specifically treat *Salmonella* infections in people or vaccines to prevent disease in livestock.

#### Selected publications:

Elfenbein JR, Knodler LA, Nakayasu ES, Ansong C, Brewer HM, Bogomolnaya L, Adams LG, McClelland M, Adkins JN, Andrews-Polymenis HL. Multicopy Single-Stranded DNA Directs Intestinal Colonization of Enteric Pathogens. **PLoS Genetics**. 2015 Sep;11(9):e1005472. PubMed: PMID: 26367458.

Elfenbein JR, Endicott-Yazdani T, Porwollik S, Bogomolnaya LM, Cheng P, Guo J, Zheng Y, Yang H, Talamantes M, Shields C, Maple A, Ragoza Y, DeAtley K, Tatsch T, Cui P, Andrews KD, McClelland M, Lawhon SD, Andrews-Polymenis H. Novel determinants of intestinal colonization of *Salmonella enterica* serotype Typhimurium identified in bovine enteric infection. **Infection and Immunity**. Doi:10.1128/IAI.00874-13. 2013

Yang H-J, Bogomolnaya LM, Elfenbein JR, Endicott-Yazdani T, Reynolds MM, Porwollik S, Cheng P, Xia X-Q, McClelland M, Andrews-Polymenis HL. Novel two-step hierarchical screening of mutant pools reveals mutants under selection in chicks. **Infection and Immunity**. 2016 Mar 24;84(4):1226-38. doi:10.1128/IAI.01525-15.

#### Application:

- Disease modeling in animal hosts
- Bacterial genetic screens
- Gene regulation
- Functional analysis of genes of unknown function

#### Collaboration potential:

- Prokaryotic comparative genetics/genomics
- Animal models of infection
- Drug development
- Host-agent interaction