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The efficacy of oral vaccination with a defined *Francisella* vaccine strain in inducing protective immunity against pneumonic tularemiaJ.-J. Yu¹, Y. Cong¹, M. N. Guentzel¹, K. E. Klose¹, B. P. Arulanandam¹¹University of Texas at San Antonio, South Texas Center for Emerging Infectious Disease, San Antonio, United States

Aims: The oral route of vaccination has been shown to be preferential in inducing mucosal immunity. In this study, we sought to examine the protective immunity induced by oral immunization with a defined *F. tularensis* subsp. *novicida* *iglB* mutant strain (KKF235) in a murine model of pneumonic tularemia.

Methods: Confocal microscopy was used to examine interaction of mCherry-expressing KKF235 with intestinal M-cells following oral delivery. Antigen-specific IFN- γ induction and humoral responses in the systemic and mucosal compartment stimulated by oral vaccination with KKF235 were measured. The protective efficacy of vaccination was examined by pulmonary challenge with *F. tularensis* subsp. *novicida*, LVS or *F. tularensis* subsp. *tularensis* SchuS4.

Results: Confocal microscopy revealed the co-localization of orally delivered KKF235 to M-cells within the Peyer's patches. Mice immunized orally with KKF235 induced robust antigen-specific splenic IFN- γ recall responses, as well as the production of systemic and mucosal antibodies including IgA. Mice vaccinated orally with KKF235 were highly protected against pulmonary *F. tularensis* subsp. *novicida* challenge, and exhibited protection against pulmonary LVS or *F. tularensis* Type A challenge as well.

Conclusions: The oral route of vaccination may be an appropriate and efficacious mode of antigen delivery to induce protective immunity against pulmonary *Francisella* infection.

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