

INTERACTION OF *Francisella noatunensis* subsp. *orientalis* WITH *Oreochromis mossambicus* BULBUS ARTERIOSUS CELL LINE

Esteban Soto^{1*&}, Susan Yu¹, John Hansen²

¹University of California-Davis, Department of Medicine and Epidemiology, School of Veterinary Medicine, Davis, CA95616

²U.S. Geological Survey, Western Fisheries Research Center, Seattle, WA98115

Francisella noatunensis subsp. *orientalis* (*Fno*) (syn. *F. asiatica*) is an emergent warm water fish pathogen and the causative agent of piscine francisellosis. Although *Fno* causes septicemia and can live extracellularly in a tilapia (*Oreochromis* spp.) infection model, the early interaction of *Fno* with vasculature endothelium is unknown. In the present study, we examined the interaction of wild-type *Fno* (WT) and two *Fno* knockout strains, intracellular growth loci C (\DeltaiglC) and pathogenicity determinant protein A (\DeltapdpA), with a previously reported *O. mossambicus* Bulbus arteriosus endothelial-like cell line (TmB) at 25°C and 30°C. Similar amounts of WT, \DeltaiglC , and \DeltapdpA attached and were detected intracellularly after 5 hours post-infection at both temperatures; however there was an effect of temperature on uptake as significantly greater quantities of *Fno* (WT, \DeltaiglC , and \DeltapdpA) were detected intracellularly when cells were incubated at 30°C. Only the WT *Fno* was able to replicate intracellularly, causing cytotoxicity and apoptosis at 24 and 72 h post-infection when incubated at 25°C. WT *Fno* incubated at 30°C as well as \DeltaiglC , and \DeltapdpA incubated at 25°C and 30°C were defective for survival, replication, and the ability to cause cytotoxicity in TmB. The current findings provide insight into the pathophysiology of francisellosis in tilapia.

Keywords: *Francisella*, endothelium, mutant, temperature, tilapia

&Corresponding author. Tel.: +001 5307522440; Fax: +001 530-752-0414.

E-mail address: sotomartinez@ucdavis.edu