RACHELLE PATTERSON, STANLEY CZAHOROSKI, STUART CANTLAY and JOSEPH HORZEMPA. Dept of Biomedical Sciences, West Liberty University, West Liberty, WV, 26074. Characterization of two predicted lipid metabolism genes (FTL_1569 and FTL_1570) in the intracellular pathogen, *Francisella tularensis* LVS.

Many species of bacteria enter a viable but non-culturable (VBNC) state when exposed to stressful conditions. The VBNC state acts as an adaptive strategy that allows for long-term survival of bacteria in unfavorable environments. VBNC bacteria are difficult to detect in the environment due to an inability to grow on nutrient agar. Although the ability to enter the VBNC state may be advantageous for bacteria, it poses a risk to human health. *Francisella tularensis,* transitions rapidly and spontaneously to the VBNC state, giving it the potential to be an excellent model organism for the study of this phenomenon. Microscopic observations reveal that changes in cell morphology are coincident with the VBNC state. To characterize these morphological changes, fluorescence microscopy imaging using membrane lipid staining has been used in the live vaccine strain of *F. tularensis*. Microscopy imaging suggested that lipid metabolism may be important for the transition into the VBNC state, and the change in morphology. To investigate further, genetic deletion mutants have been constructed from two predicted lipid metabolism genes, FTL_1569 (phosphoglycolate phosphatase) and FTL_1570 (phospholipase D family protein). Gentamicin protection assays with immune cells and red blood cells have been conducted to investigate the role of these genes in virulence of *F. tularensis*. Our preliminary results suggest that lipid metabolism may play roles in both persistence and in invasion in *F. tularensis*. (This work was supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence).