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. Since cells in the VBNC state can only be resuscitated under favorable conditions, this acts as an adaptive strategy that allows for long-term survival of bacteria in unfavorable environments. The ability to enter the VBNC state may be advantageous for bacteria, but 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. Although dormant, these cells are still biologically active, and can stimulate cytokine production and interact with host cells. Microscopic observations reveal that changes in cell morphology are coincident with the VBNC state. To characterize these morphological changes, fluorescence microscopy using membrane lipid (acridine orange 10-nonyl bromide) staining has been used and these experiments suggest that lipid metabolism may be important for the transition into the VBNC state. To investigate further, genetic mutants have been constructed of two genes, FTL_1569 (phosphoglycolate phosphatase) and FTL_1570 (Phospholipase D family protein) which are predicted to be involved in lipid metabolism. 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 infection of *F. tularensis*. (This work was supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence).