

PALADINS: PROTECTIVE APPROACHES LEVERAGING AD-APTIVE AND IN-NATE SYSTEMS

Understanding Rodent And Non-human Primate (nhp) Immunity To Inform Human Modeling Of Biological Agents

Jonathan Pinney Gryphon Scientific LLC

Audrey Cerles Gryphon Scientific LLC

Susan Campbell Gryphon Scientific LLC

Jennifer Corbin Gryphon Scientific LLC

Rodent and non-human primate (NHP) models are regularly employed in biological research to better understand the immunological responses associated with a pathogen or disease; however, a deep understanding of the translatability of rodent/NHP responses to human disease outcomes is often lacking. Furthermore, immunological data from animal studies are an important source of information to model human disease resulting from dangerous biological agents with limited clinical data. We performed a systematic analysis of available literature to characterize the pathology and immune response following infection with *Francisella tularensis* (the causative agent of tularemia) in various rodents and NHP, which we compared to available human immunological and clinical data. Additionally, we compared publicly available transcriptomics data sets from mouse and human studies to compare which biological pathways are shared between the two species upon infection with *Francisella tularensis*. Our findings provide insight into the conserved immunological signaling between various animal models and humans upon *Francisella tularensis* infection, which can be leveraged to build tularemia models that are based on animal data but more accurately reflect human responses. Our work also highlights the utility of mining experimental data from animal-based studies to inform the modeling of human responses to biological agents that pose a biosecurity risk and provides a proof of concept for the use of animal data to construct human disease models for biological agents where clinical data are sparse.