COMBATTING FUTURE BIOLOGICAL THREATS – HOST-DIRECTED INTERVENTIONS TO EMERGING THREATS FOR RAPID RESPONSE

Therapeutic Efficacy Of Snv-specific Monoclonal Antibodies In A Novel Stat2 Knockout Syrian Golden Hamster Disease Model For Sin Nombre Virus Infection

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Sin Nombre Virus (SNV) is a New World hantavirus (NWH) that is endemic in North America. It is the etiological agent of hantavirus cardiopulmonary syndrome (HCPS), which has a 40% case-fatality rate. SNV is a threat to public health and national security because of its broad reservoir pool and airborne transmission. There is no FDA-approved therapeutic or vaccine against SNV and rodent models are limited. Our group recently demonstrated that SNV causes symptomatic infection and 40% lethality in STAT2 knockout hamsters. These animals are unable to mount an interferon-mediated antiviral response and when infected with SNV they display viremia, respiratory distress, weight loss, and lung pathology. Recently, our group isolated SNV-specific monoclonal antibodies (mAbs) from a convalescent SNV human cohort. These antibodies potently neutralized SNV and other NWHs in vitro. Consequently, we tested, for the first time, SNV-specific mAbs in vivo using SNV-infected STAT2 KO hamsters and observed 100% protection in animals treated three days post-challenge. The current work highlights the utility and potency of this novel animal model to test SNV-specific therapeutics.