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Nipah Virus Glycoproteins and Complement
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Abstract. By comparison to other innate responses, the role of complement in neutralization of paramyxoviruses is not well understood. In this project, we seek to fill gaps in our understanding of interactions of complement with the glycoproteins of the paramyxoviruses Nipah virus and Hendra virus. Our studies are important for understanding basic mechanisms of neutralization of emerging highly pathogenic paramyxoviruses, but there is also great potential for exploiting the new information for therapeutic applications.

We have found that pseudotypes containing the NiV G and F glycoproteins have a “Factor I-like” activity which is capable of stimulating in vitro cleavage of C3b into the inactive form iC3b. Our results raise the testable hypothesis that NiV glycoproteins recruit Factor I from serum as a mechanism to inactivate C3b. In Aim 1 of this project, we will employ virus-like particles to define the pathways and viral determinants responsible for complement activation by NiV and HeV glycoproteins. In Aim 2, we will define the “Factor I-like activity” associated with particles containing the NiV glycoproteins. At the completion of these pilot studies we will be in an excellent position to extend our work to a more detailed study of mechanisms by which complement can inactivate paramyxoviruses and how emerging viruses with potential for use in bioterrorism can counteract this critical innate immune response.