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# Production and characterization of monoclonal antibodies to Ebola glycoproteins

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## Abstract

Ebolavirus hemorrhagic fever is a severe, often-fatal disease in humans and nonhuman primates, with a case fatality rate of up to 90%. There is currently no vaccine or therapeutic against Ebolavirus approved for use in humans. There are five identified species of Ebolavirus that include Bundibugyo, Ivory Coast, Reston, Sudan and Zaire and limited cross-protection is observed between these 5 Ebolavirus species. One of the key steps in any virus infection occurs when a virus binds to and enters a cell. The Ebolavirus glycoprotein mediates viral attachment and entry into host cells. Based on sequence homology between virus strains, we hypothesize that conserved epitopes are present on the Ebolavirus glycoprotein of all known species, that can be targeted by monoclonal antibodies. We tested this hypothesis by generating monoclonal antibody producing hybridomas from splenocytes of Balb/c mice vaccinated against Zaire Ebolavirus glycoproteins and boosted with Sudan Ebolavirus GP. ELISA was used to identify monoclonal antibodies that reacted with the GP of all known Ebolavirus species. In an effort to map these conserved epitopes, we performed Western Blots to determine whether these antibodies recognized conformational or linear epitopes, and used phage display libraries and sequence analysis to map the epitopes onto the structure of the Ebolavirus GP. The monoclonal antibodies produced in this study can be used to further our understanding of mechanisms of filovirus cross-reactivity and develop broad-reactive diagnostics for Ebolaviruses.

## Biography

Humberto Hernandez completed the B.S. in Biology at Lamar University. He is currently part of the Post-Baccalaureate Research Education Program (PREP) at the University of Texas Medical Branch (UTMB). Humberto Hernandez has won several awards including Burroughs Welcome Fund Travel Award for the ASM National Meeting, travel scholarship, best poster, and presentation award at *SACNAS* National Conference, and travel award winner for predoctoral poster presentation at the Institute for Human Infections and Immunity (IHII)/ James W. McLaughlin Colloquium at UTMB. He will start his Ph.D. at University of North Texas Health Science Center in Fort Worth, TX in August.