OMB No. 0925-0001/0002 (Rev. 08/12 Approved Through 8/31/2015)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.  
  
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

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| NAME: Hernandez, Humberto |
| eRA COMMONS USER NAME (agency login): |
| POSITION TITLE: Graduate Student, Ph.D. |

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

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| INSTITUTION AND LOCATION | DEGREE (if applicable) | Completion Date  MM/YYYY | FIELD OF STUDY |
| Lamar University, Beaumont, Texas | AA | 08/2011 | Spanish |
| Lamar University, Beaumont, Texas | BS | 08/2012 | Biology |
| Lamar University, Beaumont, Texas | Other training | 08/2011 | McNair Scholars Program |
| The University of Texas Medical Branch (UTMB), Galveston, Texas | NIH training grant | 08/2013 | The Post-Baccalaureate Research Education Program (PREP) |
| University of North Texas Health Science Center (UNTHSC), Fort Worth, Texas | Graduate Student | present | Biomedical Sciences |

### A. Personal Statement

Passion for scientific discovery has motivated me to pursue a career in biomedical research. My academic training and extensive research experience has provided me with background in cell biology, molecular biology, microbiology and immunology. With the guidance of my mentors at UNTHSC, I have been able to combine several of these research disciplines into my research project. As a predoctoral student in Dr. Clark’s and Dr. McDowell’s lab, my current work is focused on the crosstalk between TGF-β2 and TLR4 in the trabecular meshwork, a novel mechanism contributing to ocular hypertension. To shed light into the molecular mechanisms involved in the fibrotic events in glaucoma, we use *in vitro* and *in vivo* models. Our long-term goal is to determine the molecular mechanisms responsible for fibrosis in glaucoma and to develop therapeutics and inhibitors to the specific targets.

1. Hernandez H, Marceau C, Halliday H, Callison J, Borisevich V, Escaffre O, Creech J, Feldmann H, Rockx B. Development and Characterization of Broadly Cross-reactive Monoclonal Antibodies Against All Known Ebolavirus Species. J Infect Dis. 2015 Oct 1;212 Suppl 2:S410-3. PubMed PMID: [25999057](http://www.ncbi.nlm.nih.gov/pubmed/25999057/); PubMed Central PMCID: [PMC4564547](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4564547/).
2. McDowell CM, Hernandez H, Mao W, Clark AF. Gremlin Induces Ocular Hypertension in Mice Through Smad3-Dependent Signaling. Invest Ophthalmol Vis Sci. 2015 Aug;56(9):5485-92. PubMed PMID: [26284554](http://www.ncbi.nlm.nih.gov/pubmed/26284554/); PubMed Central PMCID: [PMC4544199](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4544199/).
3. Marceau CD, Negs SS, Hernandez H, Callision J, Marzi A, Borisevich V, Braun W, Berry J, Feldmann H, Rockx B. Novel neutralizing monoclonal antibodies protect rodents against lethal filovirus challenges. Trials in vaccinology. 2014 April 16; 3:89-94.

### B. Positions and Honors

Positions and Employment

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| --- | --- |
| 2010 - 2012 | Research Assistant, Lamar University, Beaumont, TX |
| 2012 - 2013 | Research Assistant I, The University of Texas Medical Branch (UTMB), Galveston, TX |
| 2013 - | Graduate Student, Ph.D., University of North Texas Health Science Center (UNTHSC), Fort Worth, TX |

Other Experience and Professional Memberships

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| --- | --- |
| 2010 - | Member, Advancing Hispanics/Chicanos & Native Americans in Science (SACNAS) |
| 2010 - | National Member, American Society for Microbiology (ASM) |
| 2010 - | Member, Texas Academy of Science (TAS) |
| 2010 - | Member, American Society for Microbiology Texas Branch |
| 2011 - | Member, American Association for the Advancement of Science (AAAS) |
| 2011 - 2012 | Undergraduate Representative for Faculty Search in Cell, Molecular, and Microbiology, Lamar University |
| 2012 - | Laboratory Biosafety Level 2 (BSL-2) Training Program Certification, The University of Texas Medical Branch (UTMB) |
| 2012 - | Elected Member, Sigma Xi "The Scientific Research Society" |
| 2012 - | Animal Laboratory Biosafety Level 2 (ABSL-2) Training Program Certification, The University of Texas Medical Branch (UTMB) |
| 2013 - 2014 | Elected: Graduate School of Biomedical Sciences Core Representative For Graduate School Association (GSA), University of North Texas Health Science Center (UNTHSC) |
| 2013 - 2014 | Government Student Association Web Design Committee Member, University of North Texas Health Science Center (UNTHSC) |

Honors

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| 2009 | Phi Eta Sigma Honor Society, Lamar University |
| 2009 | Dean’s recognition award for academic achievement , Lamar University |
| 2009 | Alpha Lambda Delta Honor Society, Lamar University |
| 2011 | Microbiology Division – Best Poster and Presentation Award, Advancing Hispanics/Chicanos & Native Americans in Science National Conference (SACNAS) |
| 2011 | Sigma Delta Pi "Spanish" Honor Society, Lamar University |
| 2011 | Beta Beta Beta "Biological" Honor Society, Lamar University |
| 2011 | Travel Scholarship Recipient, Advancing Hispanics/Chicanos & Native Americans in Science National Conference (SACNAS) |
| 2011 | Division AA – Burroughs Welcome Fund Travel Award, American Society for Microbiology National Meeting (ASM) |
| 2011 | Dr. Jed J. Ramsey Endowed Scholarship Recipient, Lamar University |
| 2013 | Microbiology Division – Best Poster and Presentation Award, Advancing Hispanics/Chicanos & Native Americans in Science National Conference (SACNAS) |
| 2013 | Institute for Human Infections and Immunity (IHII) / James W. McLaughlin Colloquium Travel Award Winner. Pre-doctoral Section: Best Poster Presentation, The University of Texas Medical Branch (UTMB) |

### C. Contribution to Science

1. Recently, we developed cross-reactive and neutralizing antibodies to lethal hemorrhagic fever Filoviruses. My contribution to science was the development and characterization of 2 novel neutralizing monoclonal antibodies against the Ebola and Marburg virus. We were able to show that both monoclonal antibodies protect against lethal Ebola and Marburg virus, when challenge in mice and/or guinea pigs, providing both a prophylactic and therapeutic protection (Marceau et al, 2014). Most importantly, these monoclonal antibodies can be considered candidates for inclusion in monoclonal antibody cocktails to provide broad protection against multiple EBOV species and MARV strains. Further, we were able to develop and characterized broadly cross-reactive monoclonal antibodies against all known Ebolavirus species (Hernandez et al., 2015). This contribution to the field is very important as these monoclonal antibodies will be crucial for the development of novel point-of-care diagnostic assays that can detect viral antigen during outbreaks of all known Ebolavirus species.
   1. Marceau CD, Negs SS, Hernandez H, Callision J, Marzi A, Borisevich V, Braun W, Berry J, Feldmann H, Rockx B. Novel neutralizing monoclonal antibodies protect rodents against lethal filovirus challenges. Trials in vaccinology. 2014 April 16; 3:89-94.
   2. Hernandez H, Marceau C, Halliday H, Callison J, Borisevich V, Escaffre O, Creech J, Feldmann H, Rockx B. Development and Characterization of Broadly Cross-reactive Monoclonal Antibodies Against All Known Ebolavirus Species. J Infect Dis. 2015 Oct 1;212 Suppl 2:S410-3. PubMed PMID: [25999057](http://www.ncbi.nlm.nih.gov/pubmed/25999057/); PubMed Central PMCID: [PMC4564547](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4564547/).
2. Recently, we have been able to show that intravitreal injections of either Ad5.Gremlin or Ad5.TGFβ2 elevate IOP and upregulate the extracellular matrix (ECM) protein fibronectin in the trabecular meshwork (TM) of mice (McDowell at al, 2015). These data are very important as it showed that gremlin signals through the Smad3-dependent pathway in the TM to elevate IOP. We also determined for the first time gremlin's role in inducing ocular hypertension in an in vivo model system.
   1. McDowell CM, Hernandez H, Mao W, Clark AF. Gremlin Induces Ocular Hypertension in Mice Through Smad3-Dependent Signaling. Invest Ophthalmol Vis Sci. 2015 Aug;56(9):5485-92. PubMed PMID: [26284554](http://www.ncbi.nlm.nih.gov/pubmed/26284554/); PubMed Central PMCID: [PMC4544199](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4544199/).