BIOGRAPHICAL SKETCH

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NAME: Idalí Martínez

eRA COMMONS USER NAME (credential, e.g., agency login): idmartinez

POSITION TITLE: Professor

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Puerto Rico-Mayaguez	BS	1990	Industrial Microbiology
Rutgers University	MS	1993	Microbiology and Molecular Genetics
Rutgers University	PhD	1995	Microbiology and Molecular Genetics
University of Puerto Rico-Medical Sciences Campus	Postdoc	1999	Virology

Please refer to the Biographical Sketch sample in order to complete sections A, B, C, and D of the Biographical Sketch.

A. PERSONAL STATEMENT:

The main goal of this pilot study is to identify factors released from macrophages of Chikungunya (CHIKV) infected individuals that may play a role in the establishment of the chronic arthralgia/arthritis. To attain this goal, we will conduct a cross-sectional study in 50 adults with and without chronic arthralgia/arthritis after CHIKV infection. Monocyte-dereived macrophages will be cultured *in vitro* and supernatants will be used to measure cytokine/chemokine levels and for proteomics studies. This study is relevant to health disparities as Puerto Ricans may be predisposed to developing chronic CHIKV disease due to the high prevalence of diabetes, a predominant condition of our population and a risk factor of chronic arthralgia. Therefore, our long-term goal is to better understand CHIKV pathogenesis and the mechanisms leading to chronic arthralgia/arthritis in order to develop effective therapies against this condition.

My research expertise is mainly in Virology and Molecular Biology. Since my doctoral studies I have worked with different viruses such as Spleen necrosis virus (SNV), Simian immunodeficiency virus (SIV), Dengue virus (DENV), West nile virus (WNV) and Rotavirus. As independent investigator, I worked on the development of DNA vaccines against DENV and their respective evaluation in mice (1 published article and two under revision for resubmission, MBRS-SCORE funding). I also obtained an R21 (NIH-NIAID) to evaluate one vaccine candidate in monkeys, although negative results in terms of protection were obtained. Through these studies, I acquired the necessary equipment and experience to work with viruses *in vitro* and *in vivo*, under BL-2 conditions. I also have experience working with WNV and WNV-infected mice under BL3 conditions, which was acquired as receipient of a RCMI pilot project. Results from this study were submitted for publication and the revised version will be soon resubmitted. Another WNV study was developed in collaboration with the local CDC Dengue Branch to evaluate the pathogenesis of two WNV isolates from Puerto Rico in a mice model. Through these studies I have acquired the required BL-2 and BL-3 expertise to develop this pilot project. I recognize that my publication record does not reflect my potential to carry out the proposed experiments, but one of my developmental objectives for this pilot study is to improve my publication record. I expect to submit

two manuscripts from the results of this study. In addition, this study will allow me to establish new collaborations with clinical investigators, Drs. Luis M. Vilá and Karina Vilá, which is necessary for my transition into translational research in areas of clinical immunology and viral pathogenesis. These collaborations will facilitate the development of a future longitudinal CHIK study. Finally, the results from this pilot study will be used as preliminary data for submitting an R21 proposal or an RO1 to the recently released RFA for High Priority Immunology Grants (PAS-15-055)

B. POSITIONS AND HONORS:

Sept. 1990 - June 1995. Graduate Student: Microbiology Department, Rutgers University.
Aug. 1995 - Dec. 1996. Assistant Professor: Biology Department, UPR-Rio Piedras Campus.
Jan. 1996 - June 1999. Postdoctoral fellow and Assistant Investigator: Microbiology Department, UPR-Medical Sciences Campus.
July 1999 - June 2003. Assistant Professor: Microbiology Department, UPR-Medical Sciences Campus.
July 2003 - June 2014. Associate Professor: Microbiology Department, UPR-Medical Sciences Campus.
July 2014 - present. Professor: Microbiology Department, UPR-Medical Sciences Campus.

HONORS:

Presidential Fellowship, University of Puerto Rico, 1990-1992
MAP Fellowship, Rutgers University, 1992-1994
Minority Predoctoral Fellowship (F31) NIGMS-NIH, 1994-1995
The New Jersey Cancer Research Award for Scientific Excellence, March 1995
Arturo L. Carrión Memoral Lecture Award, December 2008

C. CONTRIBUTIONS TO SCIENCE:

1. Contribution to the field of gene therapy: During my doctoral thesis project, I worked in the development of improved retroviral vectors derived from SNV for gene therapy and mapped the receptor binding domain in the envelope protein of SNV, allowing further modifications of this protein for the construction of targeting vectors. These studies resulted in seven published articles in peer-reviewed journals that have been cited more than 100 times in other publications.

a. T-H.T. Chu, I.Martínez, W.Sheay, and R. Dornburg. Cell-targeting with retroviral vector particles containing antibody-envelope fusion proteins. Gene Therapy, 1:292-305, 1994. (42 citations)
b. I.Martínez and R.Dornburg. Improved retroviral packaging lines derived from spleen necrosis virus. Virology, 208:234-241, 1995. (28 citations)
c. I.Martínez and R.Dornburg. Mapping of receptor binding domain in the envelope protein of spleen necrosis virus. Journal of Virology, 69(7):4339-4346, 1995. (8 citations)
d. I.Martínez and R.Dornburg. Partial reconstitution of a replication competent retrovirus in helper cells with partial overlaps between vector and helper cell genomes. Human Gene Therapy, 7:705-712, 1996. (17 citations)
e. I.Martínez and R.Dornburg. Mutational analysis of the envelope protein of spleen necrosis virus. Journal of Virology, 70(9):6036-6043, 1996. (8 citations)

2. Contribution to the field of SIV/HIV vaccine development: During my post-doctoral training, I constructed a SIV DNA vaccine that produces VLPs. This construct was tested in monkeys but only provided partial protection against SIV challenge, a monkey model for HIV. However, the VLPs continue to be using for SIV/HIV studies to elicit local immune responses at the vaginal mucosa (personal communication with Dr. E. Kraiselburd). Three publications that have been cited 37 times resulted from this research work.

a. E.Kraiselburd, A.Salamán, M.Beltrán, M.Rivera, J.Oliver, M.Kessler, M.Knezevich, A.Rodriguez, M.Bilska, D.Montefiori and I.Martínez. Vaccine evaluation studies of replication-defective $SIV_{sm}B7$. Cell. and Mol. Biology, 43(7):915-924, 1997. (5 citations)
b. I.Martínez, L.Giavedoni, and E.Kraiselburd. Clone B7 Cells have a Single Copy of SIVsmB7 Integrated in Chromosome 20. Archives of Virology 146:1-7, 2002. (2 citations)
c. E.O'Neill, I.Martinez, F.Villinger, M.Rivera, S.Gascot, C.Colon, T.Arana, M.Sidhu, R.Stout, D.C.Montefiori, M.Martinez, A.A. Ansari, Z.R.Israel, E. Kraiselburd. Protection by SIV VLP DNA

prime/protein boost following mucosal SIV challenge is markedly enhanced by IL-12/GM-CSF co-administration. J Med Primatol, 31: 217-227, 2002. (30 citations)

3. Contribution to the field of DENV vaccine development: As independent investigator, I continued working in the construction of DNA vaccines against another virus, Dengue. Since an effective DENV vaccine has to be tetravalent, four DNA vaccines containing the pre-membrane and envelope proteins of each serotype were constructed and their immunogenicity was tested in mice. One DENV-2 vaccine candidate was also tested in monkeys but did not provided protection. Results of these studies were presented at multiple national meetings and three manuscripts were submitted for publications, although only one was accepted. Four graduate students were trained in these projects, two obtaining PhD and two MS degrees.

a. M.E. Pérez-Vélez, T.García-Nieves, C.Colón-Sánchez,and I.Martínez. Induction of neutralization antibodies in mice by Dengue-2 envelope DNA vaccines. PRHSJ 28:239-250. Sept. 2009. (1 citation)
b. M.Rodriguez-Gonzalez, M.Beltran, JL.Muñoz-Jordán and I.Martínez. Polyethyleneimine Enhances the immunogenicity of a Dengue-4 prM/Env DNA Vaccine Candidate. Under revision resubmission.
c. M.Rodriguez-Gonzalez, T.García-Nieves, JL.Muñoz-Jordán and I.Martínez. NS1-Based DNA Vaccines against Dengue-2 and Dengue-4 Viruses. Under revision for resubmission.

4**. Contribution to the field of WNV pathogenesis:** Based on the observations of a lack of symptomatic cases of WNV disease in Puerto Rico, we initiated a cross-protection study between DENV and WNV in mice to determine if previous immunity to DENV protect against a subsequent WNV infection. We found a partial cross-protection that was not mediated by neutralizing antibodies. An R21 and a SC1 grant proposals were submitted to continue this research study in monkeys and mice, respectively, but neither grant was approved. Additionally, in 2007 two WNV strains were isolated in PR and we characterized their pathogenesis in mice. We found that one strain was pathogenic while the other exhibited an attenuated phenotype. Results from both studies were presented at national meetings and submitted for publication, one manuscript was rejected but will be resubmitted and the other is currently under revision.

a. X.Mercado; E.Hunsperger and I.Martinez. Dengue-2 virus induces partial cross-protection against West Nile virus challenge in mice. Under revision for resubmission.
b. E.V.Caraballo, E.Hunsperger and I.Martinez. The pathogenesis of Puerto Rican West Nile virus isolates in mice. Submitted to Virology Journal. December 2014.

5. Contribution to other fields: I have collaborated with other colleagues from my department in clinical bacterial studies, resulting in two publications. I also trained a Clinical Laboratory Master student in molecular diagnostic procedures for rotavirus detection, resulting one publication from this effort. Besides my involvement in research, I have been working as activity coordinator for the MSC MBRS RISE Program since 2001. One of my duties in the program is to design developmental activities for the MSC biomedical doctoral students. Thus, I have contributed to the improvement of skills and competitiveness of more than 70 doctoral students that have participated in the program.

a. M.Carrer, G.J.Vázquez, R.I.Lebrón, X.Mercado, I.Martínez, C.O.Vázquez, M.Santé, and I.E.Robledo. The Microbial Etiologies of Diarrhea in Hospitalized Patients from the PR Medical Center Hospitals. PR Health Sci. J 24:41-44. 2005.
b. E.Román and I.Martínez. Detection of Rotavirus in stool samples of gastroenteritis patients PR Health Sci. 24:179-184, Sept 2005.
c. T.Martinez, G.J.Vazquez, E.E.Aquino, I.Martínez, and I.E.Robledo. ISEcp1-mediated transposition of bla-KPC into the chromosome of a clinical isolate of Acinetobacter baumannii from Puerto Rico. J. Med. Microbiol., 63:1644-8. 2014.
d. I.Martínez. Individual Developmental Plan: a career planning tool. Buhiti 18(3):40-44: August 2014 (local publication from the UPR-MSC School of Medicine).

D. RESEARCH SUPPORT:

ACTIVE

5 G12 RR03051 (PI: Fernández-Repollet E) 09/15/11 – 07/31/16 0.6 calendar
NIH NCRR RCMI
Martínez, I – Key Activity Leader

Infectious and Global Diseases Program (IGDP)
This grant provides the infrastructure (equipment and lab space) to foster and strengthen collaborative research efforts and enable high quality biomedical research infectious and global diseases at the University of Puerto Rico, Medical Sciences Campus.

R25-GM61838 (PI: Cadilla, C.) 09/01/12-08/31/17 2 calendar
MBRS-RISE at the UPR-Medical Sciences Campus
Martinez, I – Activity Coordinator
The major goal of this program is to enhance the participation of minority students in biomedical research activities

COMPLETED

G12RR03051
RCMI pilot project 08/01/06-07/31/08 PI
Characterization of the immune response and outcome of sequential flavivirus infections in the mouse model.
The major goal of this study is to test if prior immunity to Dengue virus can protect Balb/c mice against morbidity and mortality induced by West Nile virus infection.

R21-NIAID-NIH (5R21AI055814-02)
Biodefense and Emerging Infectious Diseases Research Opportunities PI
Evaluation Studies of a Dengue-2 DNA Vaccine in Monkeys 08/01/03 -07/31/06
The major goal of this project is to evaluate a Dengue-2 DNA vaccine for its immunogenicity in monkeys using different vaccination regimens.

S06-GM08224
MBRS-SCORE 09/01/00-07/31/04 PI
Evaluation Studies of a Dengue-2 Envelope DNA Vaccine
The major goals of this project were to construct and evaluate a Dengue-2 DNA vaccine for its immunogenicity in mice.