OMB No. 0925-0001 and 0925-0002 (Rev. 03/2020 Approved Through 02/28/2023)

**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.**

NAME: Maldonado, Rosa A.

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

POSITION TITLE: Professor of Biology

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.)*

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| --- | --- | --- | --- |
| INSTITUTION AND LOCATION | DEGREE  *(if applicable)* | Completion Date MM/YYYY | FIELD OF STUDY |
| Central University of Venezuela - UCV, Caracas | B.Sc. Biology | 07/89 | Biology |
| Federal University of Rio de Janeiro-UFRJ, Brazil, and Northwestern U. Medical School, Chicago, USA | D.Sc. | 08/96 | Molecular Biology |
| University of Dundee, Dundee, UK | Wellcome Trust International Fellow | 05/99 | Molecular Parasitology |
| University of Sao Paulo – USP, Sao Paulo, Brazil | Post-Doctoral Fellow | 12/03 | Molecular Parasitology |

1. **Personal Statement**

*Research Interests*

The focus of my research program is developing novel immune- and chemotherapy tools to treat Chagas disease (ChD) and cutaneous leishmaniasis (CL). In this regard, I embraced molecular and biochemical approaches to characterize and validate potential drug targets, as well as the development of high-throughput systems for drug screening in both *in vitro* and *in vivo* models. Moreover, in the last several years, I have been working in the development of a potential vaccines against ChD and CL. This effort have led to the discovery of two potential vaccines, MASPpep-KLH vaccine candidate for ChD and NGP5B for CL. We were recently awarded a patent for the MASPpep-KLH vaccine (USPTO 9,566,320) and the patent for the carbohydrate-based vaccine for CL was filed. Additionally, I have more than 28 years of experience in parasite chemotherapy and molecular parasitology.

*Community Outreach*

In the last four years, I have begun to develop educational materials about ChD for adults and children. I have organized and my research group has participated in several public and private events at El Paso Zoo, Lions Club of El Paso, and the Texas Master Naturalist Pecos Chapter. Currently, I am expanding efforts in social medial (Facebook and Twitter) to help educate our region about ChD. In these activities, my ungraduate and graduate students have been very active and enjoying the opportunity to educate the El Paso community about ChD. Moreover, I have conceptualized and published a children’s bilingual activities book, entitled “The Kissing Bug” (English and Spanish versions). In the last three years, this activities book has been distributed in medical offices, schools, and science fairs in El Paso, and provided to the Texas Human Health Department for distribution in the State of Texas. The book has also been adapted to Bolivian Spanish as well as to Quechua (Andes native language) for distribution to patients and their children during the phase-II TESEO Clinical Trial (NCT03981523, NIH U01AI129783; 2018-2023) in Bolivia. I am one of the Co-Investigators of that grant.

*Mentoring*

During the last 16 years at UTEP, I have mentored in my laboratory 117 undergraduate students, of whom 25% have attended graduate programs at top-tier universities and 25% enrolled in various professional schools (many of them already attained their M.S., Ph.D., M.D. and other degrees); 39% joined the biomedical research workfoce after attaining their degree. Others became science teachers or went on to work in the biomedical sciences industry. About 11% of my undergraduate mentees are juniors and seniors currently under my mentorship. Most of my mentored undergraduate students were funded to do research in my laboratory through UTEP’s RISE, MARC-USTAR, BUILDing SCHOLARS, Bridges, and NSF REU programs. Additionally, I have graduated four Master’s and four Ph.D. students. Currently, I am supervising two Ph.D. students. In my laboratory, they learn to keep record of their experiments electronic and paper notebooks, getting everything safe in the cloud. They receive training in (a) drug screening *in vitro* and in vivo, in animal models of ChD and CL; (b) culture of mammalian cells and human pathogenic parasites, and (c) molecular biology and biochemistry. Moreover, they are trained in Responsible Conduct of Research initially by CITI/RCR online training, and in-person training privided by UTEP Enviromental Helalh and Safety Department, and finally by my strict monitoring on the practice of those principles. Furthermore, during their training in my labotatory, the students learn to design rigorous and unbiased experimental design, diverse methodologies, as well as to analyze, interpreted and reporting their results. From 2004 to 2010, I was Co-PI of the Howard Hughes Medical Institute (HHMI) Undergraduate Research Program at UTEP which developed and introduced the component of basic research in the teaching laboratories of the courses of Molecular Cell and Prokaryotic Molecular Genetics, now institutionalized. Additionally, I have served as the Director of the BBRC Student Development Program from 2014 to present. Furthermore, since the summer of 2011, I have served as the PI/PD of the long-running Bridges to Baccalaureate Program at EPCC and UTEP. The program currently provides an eight-week summer research training experience to El Paso Community College (EPCC) students and helps them to transfer to UTEP. The program currently funds 4 to 5 students for a research experience in the fall and spring semesters at UTEP and also supports four student tutors at EPCC. In sum, I have wide experience in training undergraduate and graduate students. I would like to state that “*I have a deep interest to inspire and help students to achieve their professional goals.*”

*Publications relevant to the proposed research:*

* + 1. **USPTO** 9,566,320. **Title:** Mucin-Associated Surface Protein as a Novel Vaccine Candidate Against Chagas Disease. **Patent No.:** US 9,566,320.  **Date of Patent:** Feb 14, 2017. Inventors: **Maldonado, Rosa** **A.**, Serna, Carylinda, and Almeida, Igor C. Assignee: The Board of Regents of The University Of Texas System, Austin, TX (USA)

Link: <https://patentimages.storage.googleapis.com/f6/b8/09/c657e311030501/US9566320.pdf>

* + 1. Iniguez E., Schocker N.S., Subramaniam K., Portillo S., Montoya A. L., Al-Salem W.S., Torres C.L., Rodriguez F., Moreira O.C., Acosta-Serrano A., Michael K., Almeida I.C., and **Maldonado, R.A.** (2017) An α-Gal-containing neoglycoprotein-based vaccine partially protects against murine cutaneous leishmaniasis caused by *Leishmania major.* ***PLOS Neglected Tropical Diseases****,* 11(10):e0006039. PMC5673233. DOI: 10.1128/AAC.01422-19
    2. Portillo S, Zepeda BG, Iniguez E, Olivas JJ, Karimi NH, Moreira OC, Marques AF, Michael K, **Maldonado RA**, Almeida IC (2019) A prophylactic alpha-Gal-based glycovaccine effectively protects against murine acute Chagas disease. ***NPJ Vaccines*** 4: 13. PMC6430786. DOI: 10.1038/s41541-019-0107-7.
    3. Rodriguez F, John SF, Iniguez E, Montalvo S, Michael K, White L, Liang D, Olaleye OA, Maldonado RA (2020) In Vitro and In Vivo Characterization of Potent Antileishmanial Methionine Aminopeptidase 1 Inhibitors. ***Antimicrob Agents Chemother*** 64(6): e01422-19. PMC7269496. DOI: 10.1128/AAC.01422-19.

1. **Positions and Honors**

**Positions and Employment**

1989-1991 Research Assistant, Institute of Tropical Zoology, Faculty of Sciences, Central University of Venezuela, Caracas, Venezuela

1992-1996 Doctoral Fellow, Institute of Biophysics Carlos Chagas Filho, Federal University of Rio de Janeiro (UFRJ) and Northwestern University Medical School, Chicago, U.S.A.

1997 Research Assistant, University of Dundee, Department de Biochemistry, Dundee, UK

1997-1999 Wellcome Trust International Fellow, Division of Molecular Parasitology and Biological Chemistry, Department of Biochemistry, University of Dundee, UK

1999- 2003 Post-Doctoral Fellow, Department of Parasitology, Institute of Biomedical Sciences, University of São Paulo (USP), São Paulo, SP, Brazil

2004 Visiting Assistant Professor, Integrated Center for Gene Therapy (CINTERGEN), Federal University of São Paulo (UNIFESP), São Paulo, SP, Brazil, Feb-Sep 2004

2004- 2010 Assistant Professor, Dept. of Biological Sciences, University of Texas at El Paso (UTEP), El Paso, TX

Sept 2010- Associate Professor, Dept. of Biological Sciences, University of Texas at El Paso (UTEP)

Aug. 2017- Director of the Microbiology major (SACS), Department of Biological Sciences, UTEP

2014-2019 Director of Student Career Development of Border Biomedical Research Center, UTEP

2021- Professor, Dept. of Biological Sciences, University of Texas at El Paso (UTEP)

**Other Experience and Professional Memberships**

1982-1989 Undergraduate Scholarship, Central University of Venezuela

1992-1996 Ph.D. Fellowship, Venezuelan Council for Scientific and Technological Research Research (CONICIT), Venezuela.

1997-1999 Post-Doctorate, International Research Fellow, The Wellcome Trust, United Kingdom

1999-2003 Post-Doctorate, São Paulo State Research Support Foundation (FAPESP), Brazil

1998- Member of Brazilian Society of Protozoology (SBPz)

2004- Member of American Society of Microbiology (ASM)

2005- Member of Society for Advancement of Chicanos and Native Americans in Sciences (SACNAS)

2005- Member of SIGMA Xi, The Scientific Research Society

2005- Member of American Society of Parasitology

2005-2007 Member of Infectious diseases and Immunology graduate committee, UTEP

2006-2008 Member of Admissions & Academic Standards Committee, UTEP

2006 Reviewer, NIH NIGMS-MBRS

2006- Member of Union and Bookstore Committee, UTEP

2007-2010 Alternate Senator at UTEP

2007 Honorary member of the Golden Key International Honour Society, UTEP Chapter

2008-2012 SIGMA Xi Membership Committee

2008- Faculty advisor of the ASM Student Chapter at The University of Texas at El Paso

2010-2012 Host mentor for the ASM Microbiology Undergraduate Research Fellowship program

2011-2013 President of the American Society for Microbiology Rio Grande Branch.

2012- Principal Investigator and Program Director UTEP Bridges to Baccalaureate-NIH

2012- Member of Undergraduate Curriculum Committee, UTEP

2012-2014 Vice-President of the Bridges PD&CO Association

2014-2015 Interim President of the Bridges PD&CO Association

2014-2019 Director of the Border Biomedical Research Center Student Development Program

2020-2022 Faculty Senator at UTEP

2020 Graduate Coincil Committee Member

1. **Contributions to Science**
2. **Drug discovery and vaccine development for trypanosomatid infections**

My laboratory has discovered at least five major lead compounds for ChD and CL, and two vaccine candidates for ChD. In this regard, we have published several publications and four patents (two US non-provisional: one awarded and one in active prosecution and two provisional patents). The major ones are indicated below.

1. **USPTO** 9,566,320. **Title:** Mucin-Associated Surface Protein as a Novel Vaccine Candidate Against Chagas Disease. **Patent No.:** US 9,566,320.  **Date of Patent:** Feb 14, 2017. Inventors: **Maldonado, Rosa** **A.**, Serna, Carylinda, and Almeida, Igor C. Assignee: The Board of Regents of The University Of Texas System, Austin, TX (USA)

Link: <https://patentimages.storage.googleapis.com/f6/b8/09/c657e311030501/US9566320.pdf>

1. Iniguez E., Schocker N.S., Subramaniam K., Portillo S., Montoya A. L., Al-Salem W.S., Torres C.L., Rodriguez F., Moreira O.C., Acosta-Serrano A., Michael K., Almeida I.C., and **Maldonado, R.A.** (2017) An α-Gal-containing neoglycoprotein-based vaccine partially protects against murine cutaneous leishmaniasis caused by *Leishmania major.* ***PLOS Neglected Tropical Diseases****,* 11(10):e0006039. PMC5673233. DOI: 10.1128/AAC.01422-19
2. Portillo S, Zepeda BG, Iniguez E, Olivas JJ, Karimi NH, Moreira OC, Marques AF, Michael K, **Maldonado RA**, Almeida IC (2019) A prophylactic alpha-Gal-based glycovaccine effectively protects against murine acute Chagas disease. ***NPJ Vaccines*** 4: 13. PMC6430786. DOI: 10.1038/s41541-019-0107-7.
3. Rodriguez F, John SF, Iniguez E, Montalvo S, Michael K, White L, Liang D, Olaleye OA, Maldonado RA (2020) In Vitro and In Vivo Characterization of Potent Antileishmanial Methionine Aminopeptidase 1 Inhibitors. ***Antimicrob Agents Chemother*** 64(6): e01422-19. PMC7269496. DOI: 10.1128/AAC.01422-19.
4. **Lipid metabolism and protein post-translational modifications in parasites**
5. Maldonado RA, Kuniyoshi RK, Linss JG, Almeida IC. (2006) *Trypanosoma cruzi* oleate desaturase: molecular characterization and comparative analysis in other trypanosomatids. *J Parasitol.* Oct;92(5):1064-74. doi: 10.1645/GE-845R.1. PubMed PMID: 17152952.
6. Hernandez, Y., Shpak, M., Duarte, T, Mendez, T.L., **Maldonado**, **R.A.,** Roychowdhury, S.,Rodriges, M. and Das, S. (2008) Novel Role of Sphingolipid Synthesis Genes in Regulating Giardial Encystation. *Infect Immun*. 76(7): 2939-49. PMCID: PMC2446683.
7. Tavis L. Mendez, Atasi De Chatterjee, Trevor T. Duarte, Felipe Gazos-Lopes, Leobarda Robles-Martinez, Debarshi Roy, Jianjun Sun, **Rosa A. Maldonado,** Sukla Roychowdhury, Igor C. Almeida, and Siddhartha Das (2013) Glucosylceramide Transferase Activity is Critical for Encystation and Viable Cyst Production by an Intestinal Protozoan, *Giardia lamblia*. *J Biol Chem. 288(23):16747-60.* PMCID: PMC3675608
8. Herrera LJ, Brand S, Santos A, Nohara LL, Harrison J, Norcross NR, Thompson S, Smith V, Lema C, Varela-Ramirez A *et al* (2016) Validation of N-myristoyltransferase as Potential Chemotherapeutic Target in Mammal-Dwelling Stages of Trypanosoma cruzi. *PLoS Negl Trop Dis* 10: e0004540
9. **Ecology and epidemiology of infectious diseases**
10. Mendes Nascimento,E.M., Gehrke, F.S., **Maldonado, R*.* A***.,* Colombo, S., Da Silva, L.J. and Schumaker, T. Tizu Sato (2005) Identification of Brazilian spotted fever infection by polymerase chain reaction in a patient from São Paulo state. *Mem. Inst. Oswaldo Cruz* 100: 277-279.
11. Buhaya, M., Galvan, S., **Maldonado, R.A.** (2015). Incidence of *Trypanosoma cruzi* Infection in Triatomine Bugs Collected at Indio Mountains Research Station. *Acta Tropica* 150:97-99.
12. Rodriguez, F., Luna, B.S., Calderon, O., Manriquez-Roman, C., Amezcua-Winter, K., Cedillo, J., Garcia-Vazquez, R., Tejeda, Itzel A., Romero, A., Waldrup, K., Watts, D.M., Khatchikian, C., Maldonado, R.A. (2021) Surveillance of Trypanosoma cruzi Infection in Triatomine Vectors, Feral Dogs and Cats, and Wild Animals in and around El Paso County, Texas, and New Mexico. ***PLOS Negl Trop Dis***, 15(2): e0009147..
13. **Molecular and biochemical characterization of antimicrobial peptides**
14. Barbosa, F.M., Daffre, S., **Maldonado, R. A.,** Miranda, A., Nimrichter, L. and Rodrigues, M. L. (2007) Gomesin, a peptide produced by the spider *Acanthoscurria gomesiana*, is a potent anti-cryptococcal agent that also acts in synergism with fluconazole. *FEMS Microbiol Lett*, 274(2):279 86.
15. Esteves E, Fogaça AC, **Maldonado R,** Silva FD, Manso PP, Pelajo-Machado M, Valle D, Daffre S. (2009) Antimicrobial activity in the tick *Rhipicephalus (Boophilus) microplus* eggs: Cellular localization and temporal expression of microplusin during oogenesis and embryogenesis. *Dev. Comp. Immunol*. 33(8):913-9.

**\* All my publications are available at:** https://[www.ncbi.nlm.nih.gov/sites/myncbi/rosa.maldonado.1/bibliography/40214914/public/?sort=date&directio](http://www.ncbi.nlm.nih.gov/sites/myncbi/rosa.maldonado.1/bibliography/40214914/public/?sort=date&amp;directio) n=ascending

1. **Research Support**

**Ongoing Support**

1SC1GM139714-01 Maldonado, Rosa A (PI). 02/10/2021 – 12/31/2024

NIGMS-SCORE SC1, Federal, $1,486,540.00

Development of Novel Combinational Immunochemotherapy for Chronic Chagas Disease

T34GM137855-01Maldonado, Rosa A (PI/PD) 08/01/2020 – 07/31/2025

EPCC-UTEP Bridges to the Baccalaureate Program ($ 1,587,735.00 )

Overall goal: Promote the successful transition of minority (primarily Mexican-American) students with biomedical interests from the community college to the university and to improve their completion of a baccalaureate degree.

5U01AI129783-02 (NIH/NAID) Maldonado, Rosa A (Co-I) 08/17/2018 – 07/16/2023

New chemotherapy regimens and biomarkers for Chagas disease ($6,126,123.00)

Overall goal: Test new regimens of the two current drugs for Chagas disease to improve their safety and efficacy, and develop and test novel diagnostic tools (biomarkers) that will provide a more efficient measure of disease state and treatment outcomes.

German Federal Ministry of Education and Research Maldonado (Co-I) 01/2019 – 12/2022

Development of active ingredients based on natural substances to combat Infectious diseases

Overall goal: To identify Macrophage Infectivity Potentiator (Mip) inhibitors with antiparasitic activity against *T. cruzi.*

**Pending support**

R25 (NIH/NIGMS) Maldonado (MPI)

Border Research training in infectious Diseases (BRTID)

Overall goal: The overall goal of the BRTID Program at the University of Texas at El Paso (UTEP) is to increase the participation of undergraduate minority students in infectious disease research training and education. The BRTID trainees will learn about infections, infectious agents, surveillance, and biosafety measures. The BRTID program will prepare trainees for careers in biomedical research (basic, translational, and clinical).

R21(NIH/NCI) Maldonado (Co-I)

A novel gene-based immunotherapy inducing melanoma destruction.

Overall goal: The proposed work is a proof-of-concept study in vivo for the development of a novel gene therapy for melanoma. Functionalized lipid nanoparticles can transfect melanoma cells selectively in mice and deliver a gene that causes melanoma cells to express a-Gal, which is antigenic. This makes the melanoma cells susceptible to destruction by anti-a-Gal Ab-mediated mechanisms.

**Completed Research Support**

R25 (NIH/NIGMS) Maldonado (PI) 06/01/2015 - 05/31/2020

Bridges to the Baccalaureate Program (Renewal)

Overall goal: Promote the successful transition of minority (primarily Mexican-American) students with biomedical interests from the community college to the university and to improve their completion of a baccalaureate degree.

R25 (NIH/NIGMS) Maldonado (PI) 09/2016 – 08/2017

RL5GM118969.- Build Program – Pilot Research

Overall goal: Generate preliminary on oral pre-formulation studies of novel anti-leishmanial the compounds.

2R25GM049011-10 (NIH/NIGMS) Maldonado (PI) 09/2011 – 05/2015

Bridges to the Baccalaureate Program

Overall goal: To promote the successful transition of minority (primarily Mexican-American) students with biomedical interests from the community college to the university and to improve their completion of a baccalaureate degree

UTEP-IDR Maldonado (PI) 09/2013 – 08/2014

Novel Tools for Parasite Targeting and Delivery of a Chemotherapeutic Drug

Overall goal: Improve drug delivery system

Grant # U54RR022762 (NIH/NCRR/ARRA) Maldonado (PI) 10/2010 – 06/2012

HTS for discovery of novel anti-trypanosomal agents

Overall goal: Identify potential MetAP inhibitors with antiparasitic activity against *L. major, T. cruzi* and *T. brucei*

Pilot Grant (t2G12MD007592-21) Maldonado (PI) 10/2011 – 06/2012

(NIH/NIMHD)

Evaluation of the Antiparasitic Activity of Metal-Based Azoles

Overall goal: Evaluate the anti-*T. cruzi activity of* a novel serie of Ruthenium-azole complexes seeking for new treatment for Chagas disease.

2S06GM00812-37 (NIH/MBRS/SCORE) Maldonado (PI) 06/2007 – 05/2011

Oleate desaturase: Novel drug target for Chagas disease

Overall goal: Characterization and validation of potential chemotherapeutic targets, and development of new drugs to treat Chagas’ disease.

Grant ID #52005908 (HHMI). Maldonado (Co-PI) 09/2006 – 08/2010

2006 Undergraduate Science Education Program

Overall goal: Involve the student in a meaningful research opportunity through the development of an undergraduate research center and curriculum, which will give research experience to all students majoring in Microbiology or Biology-Biomedicine at UTEP.