

## A. Personal Information:

### Work:

Puerto Rico Science, Technology and Research Trust  
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Calle Nogal 99  
Las Piedras, PR 00771  
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### Education:

NIH/NCI Post-Doctoral Research Fellowship – January 2010  
Molecular Biophysics and Cancer Biology  
Free Radical Research Center, Department of Biophysics  
Medical College of Wisconsin, Milwaukee, WI, USA.

Ph.D. in Biochemistry – December 2005  
The University of Akron – Akron, OH USA

B.S. in Chemistry (*Cum Laude*) – December 1999  
University of Puerto Rico – Humacao, PR USA

### Citizenship:

USA

## B. Professional Experience:

12/94 – 05/00	Minority Biomedical Research Support, National Institutes of Health, Department of Chemistry, University of Puerto Rico, Humacao, Puerto Rico, USA. Advisor: <i>Antonio E. Alegría, Ph.D.</i>
08/00 – 12/05	Graduate Research Fellow, Graduate Assistance in Areas of National Need (GAANN), Department of Chemistry, The University of Akron, Akron, Ohio, USA. Advisor: <i>Daniel J. Smith, Ph.D.</i>
01/06 – 01/10	NIH/NCI Post-Doctoral Research Fellowship, Free Radical Research Center, Department of Biophysics, Medical College of Wisconsin, Milwaukee, WI, USA. Advisor: <i>Balaraman Kalyanaraman, Ph.D.</i>

02/07 – 05/09	Adjunct Assistant Professor of Physics, Chemistry and Biomolecular Engineering, Milwaukee School of Engineering, Milwaukee, Wisconsin, USA
01/10 – 07/18	Director of Biotechnology and Investigator, Biotechnology Laboratories, Fundación Cardiovascular de Colombia, Floridablanca, Colombia.
02/10 - 07/18	Director. Translational Biomedical Research Group, Biotechnology Laboratories, Fundación Cardiovascular de Colombia, Floridablanca, Colombia. Ranked A1 by Colciencias.
05/11 - 07/18	Director of the Histocompatibility and Immunogenetics Laboratory, Fundación Cardiovascular de Colombia, Floridablanca, Colombia.
08/13 - 07/18	Director of the Stem Cell Processing Laboratory, Fundación Cardiovascular de Colombia, Floridablanca, Colombia.
08/13 - 07/18	<i>Ad Honorem</i> Professor of Biomedical Sciences, Graduate School of Biomedical Sciences, Faculty of Health, Universidad del Valle, Cali, Colombia
08/14 - 07/18	Director of the Cell Metabolism and Bioenergetics Core Facility, Biotechnology Laboratories, Fundación Cardiovascular de Colombia, Floridablanca, Colombia.
08/15- 07/18	Professor of the Graduate Program in Infectious Diseases, Faculty of Health, Universidad de Santander, Bucaramanga, Colombia
01/19- Present	Assistant Professor of Chemistry, Department of Chemistry, University of Puerto Rico at Humacao, Humacao, Puerto Rico
04/20 - Present	Research Manager, Puerto Rico Public Health Trust, Puerto Rico Science, Technology and Research Trust, Rio Piedras, Puerto Rico
08/21 - Present	Director of the Research Institute, Puerto Rico Public Health Trust, Puerto Rico Science, Technology and Research Trust, Rio Piedras, Puerto Rico
08/21 - Present	Director of Puerto Rico COVID-19 Variant Surveillance Initiative Laboratory, Puerto Rico Public Health Trust, Puerto Rico Science, Technology and Research Trust, Rio Piedras, Puerto Rico

#### **National & International Committees and Review Boards:**

2007 – Present	<i>Ad hoc</i> , Meeting Abstract Reviewer, Society for Redox Biology and Medicine
2010 – Present	Reviewer, Administrative Department of Science, Technology and Innovation of Colombia, COLCIENCIAS, Health and Basic Science Competitive Grants Programs, Bogotá, Colombia
2013 – Present	Reviewer, Jornadas de Investigación en Cáncer, Instituto Nacional de Cancerología, Bogotá, Colombia
2013 - Present	Council Member, Committee on Rare Diseases (COASER), Colombian Federation of Rare Diseases, Bogotá, Colombia

2014	Reviewer, University of Puerto Rico, Medical School, Seed Grants Program, Rio Piedras, Puerto Rico, USA
2014 – Present	Reviewer, Puerto Rico Science and Technology Trust, Seed Grants and Innovation Grants Programs, Rio Piedras, PR, USA
2017	<i>Ad Hoc</i> , Grant Reviewer, Faculty Research Grant Program, Universidad Nacional de Colombia, Bogotá, Colombia
2017	<i>Ad Hoc</i> , Grant Reviewer, Health Research Board Grant Programme, Ireland
2017 – Present	Expert Reviewer in Histocompatibility and Immunogenetics, Colombian Kidney Transplant Consensus, National Institutes of Health of Colombia, National Transplant Network, Bogotá, Colombia
2017 – Present	Expert Reviewer of Graduate Programs in Biomedical Sciences for the National Ministry of Education of Colombia, Bogotá, Colombia
2020- Present	Member, Puerto Rico Diagnostics Tests Evaluation Committee, PRoDTEC, Puerto Rico Department of Health, San Juan, Puerto Rico
2020 – Present	President, Institutional Biosafety Committee (IBC), University of Puerto Rico, Molecular Science Research Center, San Juan, Puerto Rico
2020 – Present	Member, Scientific Coalition of Puerto Rico, Government of Puerto Rico, San Juan, Puerto Rico
2022 – Present	Member, Advisory Board, Research Grants Program, Puerto Rico Science, Technology and Research Trust, San Juan, Puerto Rico

### Editorial Boards:

2011 – Present	Frontiers in Physiology, Oxidant Physiology, Academic Editor
2011 – Present	Free Radicals in Biology and Medicine, <i>Ad hoc</i> Reviewer
2015 - Present	Oxidative Medicine and Cellular Longevity, <i>Ad hoc</i> Reviewer
2015 – Present	Pharmaceutical Biology, <i>Ad hoc</i> Reviewer
2015 – Present	Revista Biomédica, <i>Ad hoc</i> Reviewer
2017 – Present	Frontiers in Pharmacology, <i>Ad hoc</i> Reviewer
2018 – Present	BioMed Research International, <i>Ad hoc</i> Reviewer
2018 – Present	Advances in Medical Sciences, <i>Ad hoc</i> Reviewer
2020 – Present	Frontiers in Oncology, <i>Ad hoc</i> Reviewer
2021 – Present	Frontiers in Physiology, Metabolic Physiology, Academic Editor
2021 – Present	Frontiers in Medicine, <i>Ad hoc</i> Reviewer
2022 – Present	European Journal of Pharmacology, <i>Ad hoc</i> Reviewer

### C. Honors & Awards:

#### Scholarships & Fellowships:

1993	Recipient of the Dr. Aguedo Mojica Scholarship, Humacao, Puerto Rico, USA
1994	Recipient of the University of Puerto Rico Full Scholarship, Humacao, Puerto Rico, USA

- 1994 Recipient of the Colorcon Puerto Rico Scholarship, Humacao, Puerto Rico, USA
- 2000 - 2005 Recipient of the US Department of Education - Graduate Assistance in Areas of National Need (GAANN) Fellowship, University of Akron, Akron, OH, USA
- 2004 - 2005 Recipient of the Johnson and Johnson Research Fellowship, University of Akron Research Foundation, University of Akron, Akron, OH, USA
- 2008 – 2010 NCI-NIH Postdoctoral Research Fellowship Free Radical Research Center, Department of Biophysics Medical College of Wisconsin Milwaukee, WI, USA
- 2016 Fellows in Innovation Fellowship Award, Royal Academy of Engineering, London, United Kingdom

#### **Awards & Special Recognitions:**

- 1993 Recipient of the Honorable Mention American Chemical Society, International Science and Engineering Fair, Birmingham, Alabama
- 1993 Puerto Rico Representative, Junior Science & Humanities Symposia, Raleigh-Durham, North Carolina
- 1993 Recipient of the Asociación Interamericana de Ingeniería Sanitaria y Ambiental Award (AIDIS-PR), PR State Fair, San Germán, Puerto Rico
- 1994 - 1999 Appointed to the University of Puerto Rico – Humacao Natural Sciences Honors Program, Humacao, Puerto Rico, USA
- 1994 - 1998 Recipient of the UPR – Humacao Scholastic Achievement Award, University of Puerto Rico, Humacao, Puerto Rico, USA
- 1994 - 2000 Appointed to the NIH Minority Biomedical Research Support (MBRS), Department of Chemistry, University of Puerto Rico, Humacao, USA
- 1995 – 2000 Appointed to the University of Puerto Rico Academic Honors Program, University of Puerto Rico, Humacao, USA
- 2013 Recipient of the Commendable Citizen Award Great Cross of the Order of the Government of Santander, Colombia. Outstanding Service in Health-Related Research.
- 2013 Best Clinical Basic Sciences Research Award, National Academy of Medicine of Colombia, Bogotá, Colombia
- 2017 Best Clinical Basic Sciences Research Award, National Academy of Medicine of Colombia, Bogotá, Colombia
- 2021 Recipient of special merit given by the Puerto Rico College of Physicians to all the members of the Scientific Coalition of Puerto Rico, San Juan, PR

#### **Honors:**

- 2010 Session Chair, Spin Traps and Nitroxides in Translational Research, EPR 2010: A Joint Conference of the 14th In Vivo EPR Spectroscopy & Imaging and the 11th International EPR Spin Trapping/Spin Labeling, May 2-6, 2010, San Juan, Puerto Rico
- 2010 Chair, 1st International Stem Cell and Bone Marrow Transplant Symposium, October 22nd, 2010, Cardiovascular Foundation of Colombia, Floridablanca, Colombia
- 2011 Chair, 2nd International Stem Cell and Bone Marrow Transplant Symposium, October 21st, 2011, Cardiovascular Foundation of Colombia, Floridablanca, Colombia
- 2012 Member of the Organizing Committee, 1st CienciaPR.org Symposium, “I Want to be a Scientist and Now What?”, September 24th, 2012, University of Puerto Rico, Medical Science Campus, Rio Piedras, Puerto Rico, USA

- 2012 Chair, 1st Rare Diseases Day Symposium, February 2012, Cardiovascular Foundation of Colombia, Floridablanca, Colombia
- 2012 Chair, 3rd International Stem Cell, and Bone Marrow Transplant Symposium, September 21st, 2012, Cardiovascular Foundation of Colombia, Floridablanca, Colombia
- 2013 Member of the Organizing Committee, 2nd CienciaPR.org Symposium, "Roadmap to Success: Skills and Strategies for Graduate Students in STEM", October 19th, 2013, University of Puerto Rico, Medical Science Campus, Rio Piedras, Puerto Rico, USA
- 2020 Member, Puerto Rico Diagnostics Tests Evaluation Committee, PRoDTEC, Puerto Rico Department of Health, San Juan, Puerto Rico

#### **Travel Awards:**

- 2014 Roche Innovation Workshop, Participant from Colombia, Berlin, Germany

#### **Awards to Mentees and Students:**

- 2015 SFRBM Travel Award to the Society for Redox Biology and Medicine Annual Meeting, 2015, to Sandra Milena Sanabria Barrera
- 2015 Seahorse Biosciences Travel Award to the Society for Redox Biology and Medicine Annual Meeting, 2015, to Sandra Milena Sanabria Barrera
- 2015 Seahorse Biosciences Travel Award to the Society for Redox Biology and Medicine Annual Meeting, 2015, to Lissette Sanchez Aranguren
- 2016 International Young Investigator Award, International Society for the Study of Hypertension in Pregnancy, Sao Paulo, Brazil, to Lissette Sanchez Aranguren
- 2015 SFRBM Travel Award to the Society for Redox Biology and Medicine Annual Meeting, 2017, to Sandra Milena Sanabria Barrera

#### **Memberships in Professional and Honorary Societies:**

- 1994 - present American Chemical Society (ACS)
- 1994 - present American Association for the Advancement of Science (AAAS)
- 2004 - present Society for Redox Biology and Medicine (SFRBM)
- 2005 - present International EPR Society
- 2005 - present American Association for Clinical Chemistry (AACC)
- 2006 - present CienciaPR.org
- 2010 - present American Society for Histocompatibility and Immunogenetics (ASHI)
- 2010 - present International Society for Cellular Therapy (ISCT)
- 2010 - present Federación Colombiana de Enfermedades Raras (FECOER)
- 2012 - present Asociación Colombiana de Inmunología (founding member)
- 2022- present National Grants Management Association (NGMA)

#### **D. Peer Reviewed Publications:**

##### **In Press:**

1. Diana Marcela Hernández, Sandra Valderrama, Sandra Gualtero, Catalina Hernández, **Marcos Lopez**, María Victoria Herrera, Julio Solano, Susana Fiorentino and Sandra Quijano. HIV infection and clinical

evolution towards AIDS is related to increased B-cell clonality. Submitted to **American Journal of Hematology**, Under Review, (2022).

2. Sandra Milena Sanabria-Barrera, Micael Hardy, Olivier Ouari, **Marcos Lopez**, Effects Beyond Mitochondria in Triple Negative Breast Cancer of Mitochondria-targeted SG1 Nitroxide, Submitted to **Cancer Research**. Under review, (2022).

**Published: Total citations > +4970 h-index=28 i10-index=38 MyBibliography (<https://bit.ly/3qYldHA>)**

1. Diana Marcela Hernández, Sandra Valderrama, Sandra Gualtero, Catalina Hernández, **Marcos Lopez**, María Victoria Herrera, Julio Solano, Susana Fiorentino and Sandra Quijano. Loss of T-Cell Multifunctionality and TCR- Vb Repertoire Against Epstein-Barr Virus Associates with Worse Prognosis-Clinical Parameters In HIV+ Patients. **Frontiers in Immunology**. 2018 Oct 4;9:2291. doi://. 10.3389/fimmu.2018.02291 (2018).
2. L.C. Sanchez-Aranguren, C.T. Espinosa-Gonzalez, L.M. Gonzalez-Ortiz, S.M. Sanabria-Barrera, C.E. Riano-Medina, A.F. Nunez, A. Ahmed, J. Vasquez-Vivar, **M. Lopez**, Soluble Fms-Like Tyrosine Kinase-1 Alters Cellular Metabolism and Mitochondrial Bioenergetics in Preeclampsia, **Front Physiol** 9 (2018) 83. doi://. 10.3389/fphys.2018.00083.
3. **M. Lopez**, H.B. Tanowitz, N.J. Garg, Pathogenesis of Chronic Chagas Disease: Macrophages, Mitochondria, and Oxidative Stress, **Current Clinical Microbiology Reports** 5(1) (2018) 45-54. doi://. 10.1007/s40588-018-0081-2.
4. B. Kalyanaraman, G. Cheng, M. Hardy, O. Ouari, **M. Lopez**, J. Joseph, J. Zielonka, M.B. Dwinell, Corrigendum to 'A review of the basics of mitochondrial bioenergetics, metabolism, and related signaling pathways in cancer cells: Therapeutic targeting of tumor mitochondria with lipophilic cationic compounds' [REDOX 14C (2017) 316-327], **Redox Biol** (2018). doi://. 10.1016/j.redox.2018.03.001.
5. B. Kalyanaraman, G. Cheng, M. Hardy, O. Ouari, **M. Lopez**, J. Joseph, J. Zielonka, M.B. Dwinell, A review of the basics of mitochondrial bioenergetics, metabolism, and related signaling pathways in cancer cells: Therapeutic targeting of tumor mitochondria with lipophilic cationic compounds, **Redox Biol**. 14:316-327.(doi) (2018) 10.1016/j.redox.2017.09.020. Epub 2017 Sep 29.
6. J. Zielonka, J. Joseph, A. Sikora, M. Hardy, O. Ouari, J. Vasquez-Vivar, G. Cheng, **M. Lopez**, B. Kalyanaraman, Mitochondria-Targeted Triphenylphosphonium-Based Compounds: Syntheses, Mechanisms of Action, and Therapeutic and Diagnostic Applications, **Chem Rev**. 117(15) (2017) 10043-10120. doi: 10.1021/acs.chemrev.7b00042. Epub 2017 Jun 27.
7. S. Serrano-Gomez, G. Burgos-Angulo, D.C. Nino-Vargas, M.E. Nino, M.E. Cardenas, E. Chacon-Valenzuela, D.M. McCosham, J.S. Peinado-Acevedo, M., **M. Lopez**, F. Cunha, A. Pazin-Filho, R. Ilaraza, R. Schulz, D. Torres-Duenas, Predictive Value of Matrix Metalloproteinases and Their Inhibitors for Mortality in Septic Patients: A Cohort Study, **J Intensive Care Med** 1(885066617732284) (2017) 0885066617732284.
8. M.E. Nino, S.E. Serrano, D.C. Nino, D.M. McCosham, M.E. Cardenas, V.P. Villareal, **M. Lopez**, A. Pazin-Filho, F.A. Jaimes, F. Cunha, R. Schulz, D. Torres-Duenas, TIMP1 and MMP9 are predictors of mortality in septic patients in the emergency department and intensive care unit unlike MMP9/TIMP1 ratio: Multivariate model, **PLoS One**. 12(2) (2017) e0171191. doi: 10.1371/journal.pone.0171191. eCollection 2017.
9. M. Hardy, J. Zielonka, H. Karoui, A. Sikora, R. Michalski, R. Podsiadly, **M. Lopez**, J. Vasquez-Vivar, B. Kalyanaraman, O. Ouari, Detection and Characterization of Reactive Oxygen and Nitrogen Species in Biological Systems by Monitoring Species-Specific Products, **Antioxid Redox Signal** 17(10) (2017).



10. M.Y. Rincon, C.E. Prada, **M. Lopez**, V. Castillo, L.E. Echeverria, N. Serrano, Determination of Anti-Adeno-Associated Viral Vector Neutralizing Antibodies in Patients With Heart Failure in the Cardiovascular Foundation of Colombia (ANVIAS): Study Protocol, **JMIR Res Protoc.** 5(2) (2016) e102. doi: 10.2196/resprot.5535.
11. G. Cheng, J. Zielonka, O. Ouari, **M. Lopez**, D. McAllister, K. Boyle, C.S. Barrios, J.J. Weber, B.D. Johnson, M. Hardy, M.B. Dwinell, B. Kalyanaraman, Mitochondria-Targeted Analogues of Metformin Exhibit Enhanced Antiproliferative and Radiosensitizing Effects in Pancreatic Cancer Cells, **Cancer Res.** 76(13) (2016) 3904-15. doi: 10.1158/0008-5472.CAN-15-2534. Epub 2016 May 23.
12. W. Gonzalez-Espada, G. Diaz-Munoz, M. Feliu-Mojer, J. Flores-Otero, Y. Fortis-Santiago, G. Guerrero-Medina, **M. Lopez**, D.A. Colon-Ramos, E. Fernandez-Repollet, Assessing a Science Graduate School Recruitment Symposium, **Cuad Investig Educ.** 30 (2015) 55-70.
13. D. Cardenas, G. Velez, A. Orfao, M.V. Herrera, J. Solano, M. Olaya, A.M. Uribe, C. Saavedra, M. Duarte, M. Rodriguez, **M. Lopez**, S. Fiorentino, S. Quijano, Epstein-Barr virus-specific CD8(+) T lymphocytes from diffuse large B cell lymphoma patients are functionally impaired, **Clin Exp Immunol.** 182(2) (2015) 173-83. doi: 10.1111/cei.12682. Epub 2015 Sep 11.
14. L.C. Sanchez-Aranguren, C.E. Prada, C.E. Riano-Medina, **M. Lopez**, Endothelial dysfunction and preeclampsia: role of oxidative stress, **Front Physiol.** 5:372.(doi) (2014) 10.3389/fphys.2014.00372. eCollection 2014.
15. M. Hardy, F. Poulhes, E. Rizzato, A. Rockenbauer, K. Banaszak, H. Karoui, **M. Lopez**, J. Zielonka, J. Vasquez-Vivar, S. Sethumadhavan, B. Kalyanaraman, P. Tordo, O. Ouari, Mitochondria-targeted spin traps: synthesis, superoxide spin trapping, and mitochondrial uptake, **Chem Res Toxicol.** 27(7) (2014) 1155-65. doi: 10.1021/tx500032e. Epub 2014 Jun 13.
16. G. Guerrero-Medina, M. Feliu-Mojer, W. Gonzalez-Espada, G. Diaz-Munoz, **M. Lopez**, S.L. Diaz-Munoz, Y. Fortis-Santiago, J. Flores-Otero, D. Craig, D.A. Colon-Ramos, Supporting diversity in science through social networking, **PLoS Biol.** 11(12) (2013) e1001740. doi: 10.1371/journal.pbio.1001740. Epub 2013 Dec 31.
17. L.M. Duque Sanchez, L. Rodriguez, **M. Lopez**, Electrospinning: La Era de las Nanofibras, (2013).
18. A. Sikora, J. Zielonka, **M. Lopez**, A. Dybala-Defratyka, J. Joseph, A. Marcinek, B. Kalyanaraman, Reaction between peroxynitrite and boronates: EPR spin-trapping, HPLC Analyses, and quantum mechanical study of the free radical pathway, **Chem Res Toxicol.** 24(5) (2011) 687-97. doi: 10.1021/tx100439a. Epub 2011 Mar 24.
19. E. Rivera-Tirado, **M. Lopez**, C. Wesdemiotis, Characterization of diazeniumdiolate nitric oxide donors (NONOates) by electrospray ionization mass spectrometry, **Rapid Commun Mass Spectrom.** 25(23) (2011) 3581-6. doi: 10.1002/rcm.5273.
20. G. Cheng, **M. Lopez**, J. Zielonka, A.D. Hauser, J. Joseph, D. McAllister, J.J. Rowe, S.L. Sugg, C.L. Williams, B. Kalyanaraman, Mitochondria-targeted nitroxides exacerbate fluvastatin-mediated cytostatic and cytotoxic effects in breast cancer cells, **Cancer Biol Ther.** 12(8) (2011) 707-17. doi: 10.4161/cbt.12.8.16441. Epub 2011 Oct 15.
21. F. Weinberg, R. Hamanaka, W.W. Wheaton, S. Weinberg, J. Joseph, **M. Lopez**, B. Kalyanaraman, G.M. Mutlu, G.R. Budinger, N.S. Chandel, Mitochondrial metabolism and ROS generation are essential for Kras-mediated tumorigenicity, **Proc Natl Acad Sci USA.** 107(19) (2010) 8788-93. doi: 10.1073/pnas.1003428107. Epub 2010 Apr 26.

22. P. Lopez-Jaramillo, M.Y. Rincon, R.G. Garcia, S.Y. Silva, E. Smith, P. Kampeerappun, C. Garcia, D.J. Smith, **M. Lopez**, I.D. Velez, A controlled, randomized-blinded clinical trial to assess the efficacy of a nitric oxide releasing patch in the treatment of cutaneous leishmaniasis by *Leishmania (V.) panamensis*, **Am J Trop Med Hyg.** 83(1) (2010) 97-101. doi: 10.4269/ajtmh.2010.09-0287.
23. S. Bartesaghi, J. Wenzel, M. Trujillo, **M. Lopez**, J. Joseph, B. Kalyanaraman, R. Radi, Lipid peroxyl radicals mediate tyrosine dimerization and nitration in membranes, **Chem Res Toxicol.** 23(4) (2010) 821-35. doi: 10.1021/tx900446r.
24. A. Sikora, J. Zielonka, **M. Lopez**, J. Joseph, B. Kalyanaraman, Direct oxidation of boronates by peroxynitrite: mechanism and implications in fluorescence imaging of peroxynitrite, **Free Radic Biol Med.** 47(10) (2009) 1401-7. doi: 10.1016/j.freeradbiomed.2009.08.006. Epub 2009 Aug 14.
25. Z. Li, M. **Lopez**, M. Hardy, D.M. McAllister, B. Kalyanaraman, M. Zhao, A (99<sup>m</sup>)Tc-labeled triphenylphosphonium derivative for the early detection of breast tumors, **Cancer Biother Radiopharm.** 24(5) (2009) 579-87. doi: 10.1089/cbr.2008.0606.
26. D. Galati, S. Srinivasan, H. Raza, S.K. Prabu, M. Hardy, K. Chandran, **M. Lopez**, B. Kalyanaraman, N.G. Avadhani, Role of nuclear-encoded subunit Vb in the assembly and stability of cytochrome c oxidase complex: implications in mitochondrial dysfunction and ROS production, **Biochem J.** 420(3) (2009) 439-49. doi: 10.1042/BJ20090214.
27. J. Zielonka, S. Srinivasan, M. Hardy, O. Ouari, **M. Lopez**, J. Vasquez-Vivar, N.G. Avadhani, B. Kalyanaraman, Cytochrome c-mediated oxidation of hydroethidine and mito-hydroethidine in mitochondria: identification of homo- and heterodimers, **Free Radic Biol Med.** 44(5) (2008) 835-46. doi: 10.1016/j.freeradbiomed.2007.11.013. Epub 2007 Dec 4.
28. P. Lopez-Jaramillo, W.D. Arenas, R.G. Garcia, M.Y. Rincon, **M. Lopez**, The role of the L-arginine-nitric oxide pathway in preeclampsia, **Ther Adv Cardiovasc Dis.** 2(4) (2008) 261-75. doi: 10.1177/1753944708092277.
29. S.Y. Silva, L.C. Rueda, G.A. Marquez, **M. Lopez**, D.J. Smith, C.A. Calderon, J.C. Castillo, J. Matute, C.F. Rueda-Clausen, A. Orduz, F.A. Silva, P. Kampeerappun, M. Bhide, P. Lopez-Jaramillo, Double blind, randomized, placebo controlled clinical trial for the treatment of diabetic foot ulcers, using a nitric oxide releasing patch: PATHON, **Trials.** 8:26.(doi) (2007) 10.1186/1745-6215-8-26.
30. M. Hardy, A. Rockenbauer, J. Vasquez-Vivar, C. Felix, **M. Lopez**, S. Srinivasan, N. Avadhani, P. Tordo, B. Kalyanaraman, Detection, characterization, and decay kinetics of ROS and thiyl adducts of mito-DEPMPO spin trap, **Chem Res Toxicol.** 20(7) (2007) 1053-60. doi: 10.1021/tx700101d. Epub 2007 Jun 9.
31. S.Y. Silva, L.C. Rueda, **M. Lopez**, I.D. Velez, C.F. Rueda-Clausen, D.J. Smith, G. Munoz, H. Mosquera, F.A. Silva, A. Buitrago, H. Diaz, P. Lopez-Jaramillo, Double blind, randomized controlled trial, to evaluate the effectiveness of a controlled nitric oxide releasing patch versus meglumine antimoniate in the treatment of cutaneous leishmaniasis [NCT00317629], **Trials.** 7:14.(doi) (2006) 10.1186/1745-6215-7-14.
32. P. Lopez-Jaramillo, R.G. Garcia, **M. Lopez**, Preventing pregnancy-induced hypertension: are there regional differences for this global problem?, **J Hypertens.** 23(6) (2005) 1121-9.
33. A.E. Alegria, G. Santiago, **M. Lopez**, B.I. Rosario, E. Cordones, Role of membrane charge and semiquinone structure on naphthosemiquinone derivatives and 1,4-benzosemiquinone disproportionation and membrane-buffer distribution coefficients, **Free Radic Res.** 35(5) (2001) 529-41.



34. A.E. Alegria, **M. Lopez**, N. Guevara, Thermodynamics of semiquinone disproportionation in aqueous buffer, *Journal of the Chemical Society, Faraday Transactions* 92(24) (1996) 4965-4968. doi://10.1039/FT9969204965.

#### **Book Chapters:**

1. López-Jaramillo, Patricio and **Lopez, Marcos**. Translational Research into the Clinic of Electrospun Solutions (2012) in *Electrospinning for Advanced Biomedical Applications and Therapies*, pp. 231-244. Smither Rapra Publishing, Akron, OH, USA. ISBN: 9781847356000

#### **E. Patents & Patent Applications**

1. **Lopez, Marcos**, Immunometabolic Crossmatch. (2019) Submitted to WIPO.
2. **Lopez, Marcos**, Zielonka Jacek, Hardy Micael, Ouari Olivier, Kalyanaraman B. Modified Mito-Metformin Compounds and Methods of Synthesis and Use Thereof. PCT Int. Appl. (2016), WO/2016/025725.
3. **Lopez Marcos**; Micael Hardy; Zhao Ming and Balaraman Kalyanaraman; 99mTc- Labeled Triphenylphosphonium Derivative Contrasting Agents and Molecular Probes for Early Detection and Imaging of Breast Tumors. US 8,388,931 B2 (2013) Publication Date: March 5th, 2013.
4. **Lopez Marcos**; Micael Hardy; Prah D.E.; Joseph, J.; Schmainda K.M. and Balaraman Kalyanaraman; In Vivo Mitochondrial Labeling Using Positively- Charged Nitroxide Enhanced and Gadolinium Chelate Enhanced Magnetic Resonance Imaging. US 8,388,936 B2 (2013) Publication Date: March 5th, 2013.
5. Hardy, Micael; **Lopez, Marcos**; Hogg, Neil; Ouari, Olivier; Tordo, Paul; and Balaraman Kalyanaraman; Bifunctional and Trifunctional Nitrene Spin Trapping Compounds and Uses Thereof. US 8,143,420 B2 (2012) Publication Date: March 27th, 2012.
6. Smith, Daniel J.; **Lopez, Marcos**. Ethambutol based nitric oxide donors. US 8,119,840 B2 (2012) Publication Date: February 21st, 2012.
7. **Lopez Marcos**; Joseph, J. and Balaraman Kalyanaraman.: Methods and Compositions for the Treatment of Cancer and Other Neoplasms. Medical College of Wisconsin Research Foundation. (2009) MCW 1610
8. **Lopez Marcos**; Joseph, J. and Balaraman Kalyanaraman. Polyhydroxy & polyamine-based nitroxides & combinations thereof as blood brain barrier permeable contrast agents and methods of use. Medical College of Wisconsin Research Foundation. (2009) MCW 1627
9. **Lopez Marcos**; Chaudury Shubatra; and Balaraman Kalyanaraman; Tumor Labeling and Imaging with Tamoxifen Nitroxide Analogs (2008) Medical College of Wisconsin Research Foundation. Provisional application submitted.
10. **Lopez, Marcos**, Hardy, Micael; Darley-Usmar, Victor; and Balaraman Kalyanaraman; Novel Mitochondria Targeted Bionucleophiles, submitted provisional patent application (2007) Medical College of Wisconsin Research Foundation and University of Alabama Research Foundation. Provisional application submitted.
11. **Lopez, Marcos**, Lopez-Jaramillo, Patricio and Daniel J Smith; Topical nitric oxide donor devices and methods for their therapeutic use. PCT Int. Appl. (2006), WO 2006058318.

#### **F. Invited Speaker for Seminars, Symposiums, and Meetings**

1. (2019) Translational Applications of Electrospun Solutions. March 15<sup>th</sup>, 2018, Partnership for Research and Education in Materials, the University of Puerto Rico at Humacao, Humacao, PR. Host: Rolando Oyola, PhD.
2. (2018) Preliminary Assessment of Antibody-Mediated Rejection Reactions in Transplant Immunology. September 26<sup>th</sup>, 2018, Medical College of Wisconsin, Cancer Center, Milwaukee, WI. Host: Marcelo Bonini, PhD.
3. (2018) Estrés oxidativo y preeclampsia. I Simposio Colombiano de Placenta e Interacción Materno-Fetal. May 11<sup>th</sup>, 2018. Pontificia Universidad Javeriana. Edificio Fernando Barón, S.J. Primer Piso - Auditorio Marino Troncoso, Bogotá, Colombia. Host: Reggie García Robles, MD, PhD. Invited Speaker.
4. (2018) Early Metabolic Perturbations in Disease Progression, March 5<sup>th</sup>, 2018, Department of Pathology, The University of Chicago Medical Center. Invited speaker.
5. (2017) Pathophysiology of congenital Chagas' disease. I Simposio Regional en Enfermedades Infecciosas y Buenas Prácticas Clínicas, November 10<sup>th</sup>, 2017, Universidad de Santander, Bucaramanga, Colombia. Host: Liliana Torcoroma García, PhD. Invited speaker.
6. (2017) Immunometabolic considerations of congenital Chagas' infection. Sala de análisis de situación sobre enfermedades infecciosas, October 26<sup>th</sup>, 2017, Universidad Autónoma de Bucaramanga, Escuela de Medicina, Floridablanca, Colombia. Chair: Claudia Hormiga, PhD. Invited speaker
7. (2017) Targeting triple-negative breast cancer metabolism and bioenergetics by mitochondria-targeted SG-1 nitroxide (Mito-SG1): Effects beyond mitochondria. Second Adriatic Symposium on Biophysical Approaches in Biomedical Studies, September 26<sup>th</sup>, 2017, Split, Croatia. Chair: Murali Krishna Cherukuri
8. (2017) Early metabolic perturbations in disease progression. University of Texas Medical Branch, Department of Microbiology and Immunology, Galveston, TX, USA. March 30<sup>th</sup>, 2017. Host: Nisha J. Garg, PhD.
9. (2017) Role of clinical microbiology in antimicrobials resistance. Cuarto Simposio Internacional de Actualización en Bacteriología, April 27<sup>th</sup>, 2017. Host: Ana Doris Gómez Granados, MS. Invited speaker.
10. (2016) Early metabolic perturbations in biology and disease. Segundo Congreso Colombiano de Bioquímica y Biología Molecular, EAFIT University, Medellín, Colombia, November 5<sup>th</sup>, 2016. Host: Luis Alejandro Gomez Ramirez, Ph.D. Invited speaker.
11. (2016) Soluble Fms-like tyrosine kinase-1 modulates mitochondrial bioenergetics and metabolism in preeclampsia. Redox Biology Program Seminar, Department of Biophysics, Medical College of Wisconsin, Milwaukee, WI, July 21<sup>st</sup>, 2016. Host: Jeannette Vasquez Vivar, Ph.D.
12. (2016) Impact of FilmArray® in the clinical microbiology laboratory. Biomerieux BioFire Latin American Distributors Meeting, Windsor Marapendi Hotel, Rio de Janeiro, Brazil. April 19<sup>th</sup>, 2016. Chair: Martha Benavides. Invited speaker.
13. (2016) Targeting triple-negative breast cancer metabolism. Second Latin American Chapter Conference of Cell Stress Society International, Bogotá, Colombia. April 6<sup>th</sup>, 2016. Chair: Daniel Ciocca, PhD. Invited speaker.

14. (2016) Metabolic stress induced by angiogenic factors in preeclampsia. Second Latin American Chapter Conference of Cell Stress Society International, Bogotá, Colombia. April 7th, 2016. Chair: Luz Stella Rodriguez, PhD. Invited speaker.
15. (2015) Detection of free radicals in biological systems. University of Texas Medical Branch, Department of Microbiology and Immunology, Galveston, TX, USA. June 15th, 2015. Host: Nisha J. Garg, PhD.
16. (2014) Role of free radicals in biology and medicine. EAFIT University, Department of Basic Sciences, September 24th, 2014. Host: Luis Alejandro Ramirez, PhD.
17. (2014) Role of free radicals in biology and medicine. EAFIT University, Department of Basic Sciences, September 24th, 2014. Host: Luis Alejandro Ramirez, PhD.
18. (2013) Application of mass spectrometry to the clinical microbiology. 13er Congreso Internacional del Colegio Nacional de Bacteriología, Hotel Tequendama, Bogotá, Colombia. November 2nd, 2013. Invited Speaker.
19. (2013) Key skills to excel in graduate studies. 2nd CienciaPR.org Symposium, "Roadmap to Success: Skills and Strategies for Graduate Students in STEM", University of Puerto Rico, Medical Science Campus, Rio Piedras, Puerto Rico, USA. October 19th, 2013. Invited Speaker.
20. (2013) Application of mass spectrometry to the clinical laboratory. Día del Bacteriólogo UDES, Programa de Bacteriología y Laboratorio Clínico, Universidad de Santander, Bucaramanga, Colombia. April 26th, 2013. Invited Speaker
21. (2012) From a simple cord blood to HemaCord. 3er Simposio Internacional de Trasplante de Células Madre y Médula Ósea, Fundación Cardiovascular de Colombia, Floridablanca, Colombia. October 21st, 2012. Chair and Speaker.
22. (2012) Epigenetics and cardiovascular disease. I Jornada Académica Cardiovascular de Eje Cafetero, Instituto del Corazón de Manizales, Fundación Cardiovascular de Colombia, Manizales, Colombia. October 19th, 2012. Invited talk.
23. (2012) From a simple cord blood to HemaCord®. 3er Simposio Internacional de Trasplante de Células Madre y Médula Ósea, Fundación Cardiovascular de Colombia, Floridablanca, Colombia. September 21st, 2012. Chair and Speaker.
24. (2012) The role of L-arginine and eNOS in cardiovascular disease. The 23rd International Conference on Arginine and Pyrimidines, Universidad de los Andes, Bogotá, Colombia. July 13th, 2012. Invited Speaker.
25. (2011) Beyond leukemia: Cord blood transplant. 2do Simposio Internacional de Trasplante de Células Madre y Médula Ósea, Fundación Cardiovascular de Colombia, Floridablanca, Colombia. October 21st, 2011. Chair and Speaker.
26. (2011) Stem cells and cardiovascular disease. I Jornada Académica Cardiovascular de Eje Cafetero, Instituto del Corazón de Manizales, Fundación Cardiovascular de Colombia, Manizales, Colombia. July 15th, 2011. Invited talk.

27. (2010) Advances in stem cell and bone marrow transplants. Simposio Internacional de Trasplante de Células Madre y Médula Ósea, Fundación Cardiovascular de Colombia, Floridablanca, Colombia. October 22nd, 2010. Chair and Speaker.
28. (2010) Mitochondria-targeted nitroxide Mito-CP induces breast cancer cell death and synergizes with doxorubicin and fluvastatin. EPR 2010: A Joint Conference of the 14th In Vivo EPR Spectroscopy & Imaging and the 11th International EPR Spin Trapping/Spin Labeling, San Juan, Puerto Rico. May 2-6, 2010. Session chair and speaker.
29. (2009) From research to innovation. 4th University of Puerto Rico at Humacao – McNair Research Symposium, Sheraton Old San Juan, San Juan, Puerto Rico. May 19th, 2009. Plenary speaker. Host: Maritza Reyes Laborde, Ph.D., Ed.D.
30. (2009) Mitochondria-targeted nitroxides as MRI contrast agents & chemotherapeutics. Biophysics Graduate Seminar Series. Department of Biophysics, Medical College of Wisconsin. September 18th, 2009. Host: Balaraman Kalyanaraman, Ph.D.

## **G. Teaching Activities**

### **Undergraduate and Graduate Courses:**

#### **At the Chemistry Program of the University of Akron, Akron, OH USA**

- 2000 Intro to General, Organic and Biochemistry (Chemistry 3150:111)
- 2001 Intro to General, Organic and Biochemistry (Chemistry 3150:111)
- 2001 Intro to General, Organic and Biochemistry (Chemistry 3150:111) (Summer)
- 2001 Intro to General, Organic and Biochemistry (Chemistry 3150:112)
- 2002 Intro to Principles of Chemistry (Chemistry 3150:152)
- 2002 Intro to Principles of Chemistry (Chemistry 3150:153)
- 2003 Intro to Organic Chemistry (Chemistry 3150:265)
- 2003 Intro to Organic Chemistry (Chemistry 3150:265) (Summer)
- 2004 Biochemistry (Chemistry 3150:401)
- 2004 Intro to Organic Chemistry (Chemistry 3150:265) (Summer)
- 2004 Biochemistry (Chemistry 3150:401)
- 2005 Biochemistry (Chemistry 3150:401)

#### **At the Undergraduate Chemistry Program of Carrol University, Waukesha, WI USA**

- 2006 General, Organic and Biochemistry (CHEM 101)

#### **At the Undergraduate Biomolecular Engineering Program of the Milwaukee School of Engineering, Milwaukee, WI**

- 2007 Principles of Chemistry (CH 201)
- 2007 Principles of Chemistry (CH 201)
- 2007 Principles of Chemistry (CH 201)
- 2008 Applied Chemistry (CH 311)
- 2008 Principles of Chemistry (CH 201)

- 2009 Applied Chemistry (CH 311)

**At the Doctoral Program in Biomedical Sciences of the Universidad del Valle, Cali, Colombia**

- 2010 Research Methods (601183)
- 2010 Special Topics in Molecular Biology (601185)
- 2011 Research Methods (601183)
- 2011 Journal Club in Molecular Biology (601681)
- 2012 Research Methods (601183)
- 2012 Journal Club in Molecular Biology (601681)
- 2012 Advanced Biochemistry (605399)
- 2013 Research Methods (601183)
- 2013 Journal Club in Molecular Biology (601681)
- 2013 Advanced Biochemistry (605399)
- 2014 Research Methods (601183)
- 2014 Journal Club in Molecular Biology (601681)
- 2014 Special Topics in Molecular Biology (601185)
- 2015 Research Methods (601183)
- 2015 Journal Club in Molecular Biology (601681)
- 2015 Special Advanced Metabolism (605285)
- 2015 Special Topics in Molecular Biology (601185)
- 2015 Research Methods (601183)
- 2016 Special Topics in Molecular Biology (601185)
- 2016 Research Methods (601183)
- 2016 Special Topics in Molecular Biology (601185)
- 2016 Research Methods (601183)
- 2017 Special Topics in Molecular Biology (601185)
- 2017 Research Methods (601183)
- 2017 Special Topics in Molecular Biology (601185)
- 2017 Research Methods (601183)
- 2018 Special Topics in Molecular Biology (601185)
- 2018 Research Methods (601183)

**At the graduate Master's Program in Infectious Diseases of the Universidad de Santander, Bucaramanga, Colombia**

- 2015 Advanced Immunology
- 2016 Advanced Immunology
- 2017 Advanced Immunology
- 2018 Advanced Immunology

**At the undergraduate chemistry program of the University of Puerto Rico at Humacao**

- 2019 Organic Chemistry II Laboratory (QUIM-3034)
- 2019 Physical Chemistry I (QUIM 4041)
- 2019 Organic Chemistry I Laboratory (QUIM 3123)

- 2019 General Chemistry I Laboratory (QUIM 3003)
- 2019 General Chemistry II Laboratory (QUIM 3004)
- 2020 General Chemistry I (QUIM 3003)
- 2020 General Chemistry II Laboratory (QUIM 3004)
- 2020 Organic Chemistry II Laboratory (QUIM-3034)
- 2020 General Chemistry I Laboratory (QUIM 3003)
- 2020 General Chemistry II Laboratory (QUIM 3004)

#### **H. Other academic activities**

##### **Mentoring (concluded)**

##### **High school and undergraduate:**

- Jose Gil Rivera, PhD, Undergraduate summer student. (2002). Present: Associate Principal Scientist at Merck, Puerto Rico Operations
- Bianca N. Calderon, MD, MS, High school summer student. (2003). Present: Pediatrics. Currently Instructor at the Montefiore Medical Center, Comprehensive Health Care Center, Albert Einstein College of Medicine, Bronx, NY
- Molly Finneran, Pharm.D, Undergraduate summer student. (2004). Present: Pharmacist at Summa Healthcare, Akron, OH
- Mariana Vega Cespedes, M.S., Undergraduate research semester program, Universidad de Santander. (2010). Present: Ph.D. student at the Universidad de Salamanca, Salamanca, Spain, with Dr. Alberto Orfao.
- Lina M. Duque, Undergraduate Young Investigator Program COLCIENCIAS awardee, Universidad del Valle, Materials Engineering. (2011). Present: Ph.D. student at La Trobe University, Melbourne Victoria 3086, Australia, with Dr. Narelle Brack.
- Mike Alexander Celis Rodríguez, M.S., Undergraduate research semester program, Universidad de Santander. (2012). Present: PhD student at the Universidad del Valle – Fundación Cardiovascular de Colombia, Floridablanca, Colombia, with Dr. Wendy Nieto Pérez.
- Greys Carolina Avila Rojas, Undergraduate research semester program, Universidad de Santander. (2012). Present: Director of the Tissue Bank of the Fundación Cardiovascular de Colombia.
- Ana Maria Carreño Escobar, Undergraduate research semester program, Universidad de Santander. (2012). Present: Medical technologist in Valledupar, Colombia.
- Yudy Moreno González, Undergraduate research semester program, Universidad de Santander. (2013). Present: Cytotechnologist at the Cardiovascular Foundation of Columbia, Floridablanca, Colombia.
- Liseth Vanessa Reyes, Undergraduate research semester program, Universidad de Santander. (2013). Present: Medical Technologist at Higuera Escalante Clinical Laboratory, Floridablanca, Colombia.



- John Jairo Murillo Olejua, Undergraduate research semester program, Universidad de Santander. (2014). Present: Medical Technologist at Higuera Escalante Clinical Laboratory, Floridablanca, Colombia.
- Jennifer Remolina Villamizar, Undergraduate research semester program, Universidad de Santander. (2014). Present: Medical Technologist at Higuera Escalante Clinical Laboratory, Floridablanca, Colombia.
- Karen Sandoval Almeida, Undergraduate research semester program, Universidad de Santander. (2014). Present: Medical Technologist at Higuera Escalante Clinical Laboratory, Floridablanca, Colombia.
- Cindy Tatiana Espinosa Gonzalez, Undergraduate Young Investigator Program COLCIENCIAS awardee, Universidad Industrial de Santander, Microbiology. (2015). Present: Secretary of Health of the Municipality of Rio Negro, Santander, Colombia.
- Dreisy Tatiana Rodríguez, Undergraduate research semester program, Universidad de Santander. (2015). Present: Whereabouts unknown.
- Lizzeth Tatiana Rueda Jimenez, Undergraduate research semester program, Universidad de Santander. (2016). Present: Medical Technologist at Clinica Chicamocha Laboratory, Bucaramanga, Colombia.

#### **Graduate and medical school students:**

- Phillip Fairbourn, MD, (Summer 2008), Medical College of Wisconsin, MCW Medical Student Summer Research Program. Present: Radiologist, Summit Physician Specialists, Salt Lake City, Utah, USA.
- Lissette Carolina Sánchez Aranguren, Ph.D. (2013-2017) Universidad del Valle, Topic "Restoration of the endothelial function and metabolic phenotype induced by VEGF/sFlt-1 and VEGF/TNF- $\alpha$  signaling in preeclampsia". Graduated: May, 2017 (Meritorious Dissertation). Present: Prize Post-Doctoral Fellow at Aston University, Aston, UK.
- Sandra Milena Sanabria Barrera, Ph.D. (2011-2017) Universidad del Valle, Topic "Targeting Triple Negative Breast Cancer Mitochondria and Bioenergetics". Graduated: October 2017 (Meritorious Dissertation). Present: Manager Business Lab and Investigator at the Fundación Cardiovascular de Colombia.
- Yudy Rodríguez, M.S. (2015-2017) Universidad de Santander, Topic: "Cardioprotection in Cardiomyocytes Infected with *T. cruzi* by Mitochondria-Targeted Antioxidants" Graduated: (December 2017). Present: Instructor of clinical laboratory sciences at the Universidad de Santander, Bucaramanga, Colombia.

#### **Mentoring (ongoing)**

##### **Graduate students:**

- Laura María González, (2014-present), PhD student in biomedical sciences, Universidad del Valle. Topic: "*Pathophysiology of the Mother-to-Child Transmission in Chagas Disease*". Expected graduation date: December, 2021.

- Tatiana Sánchez Alvarez, M.S. (2017-present), PhD student in biomedical sciences, Universidad del Valle. Topic: "*Sulfatide Metabolism, Glycolysis and Mitochondrial Function in Metachromatic Leukodystrophy*". Expected graduation date: December, 2021.
- Paola Yamile Hernández Galvis, M.S. (2017-present), PhD student in biomedical sciences, Universidad del Valle. Topic: "*Mitoprotection by Mitochondria-targeted Antioxidants in Cardiomyocytes and Neurons Infected with T. cruzi*". Expected graduation date: December, 2021.
- Claudia Ximena Montes, M.S. (2018-present), PhD student in biomedical sciences, Universidad del Valle. Topic: "*Description of the Rejection Reactions Mediated by Donor Specific Antibodies in Transplants*". Expected graduation date: December, 2021.

#### Postdoctoral fellows:

- Juana Patricia Sánchez Villamil, Ph.D. Universidad de Buenos Aires, Buenos Aires, Argentina, Topic "*Immunometabolism of congenital Chagas' disease*". COLCIENCIAS Fellowship 2018-2019.

#### Co-mentoring (graduate students):

- Giovanni Lineros, M.S. (2017 – present). Doctorate (Ph.D.) Primary Advisor: Sandra Milena Sanabria
- Mike Celis Rodríguez, M.S. (2017 – present). Doctorate (Ph.D.) Primary Advisor: Wendy G. Nieto
- Karen Lizeth Pachón Meza, B.S. (2019- present). Masters (M.S.) Primary Advisor: Nataly Cruz

#### I. Research grants and other research funding

##### Active extramural funding:

PRDOH- 2022-DS-0299                      **Lopez M**    09/10/2021-03/10/2024  
Americal Rescue Plan Act of 1021- Puerto Rico Department of Health  
*Puerto Rico COVID-19 Variant Surveillance Initiative*  
This is an initiative in collaboration with the Puerto Rico Department of Health to build laboratory capacity on the island for establishing a COVID-19 genomic surveillance program.

**Role: PI**

U01 CA260541                                      **Lopez M, Sariol C, & Weiskopf D**    09/30/2020-08/31/2022  
National Cancer Institute – NIH  
*SARS-CoV-2 Correlates of Protection in a Latino-Origin Population*  
This is an initiative in support of the SARS-CoV-2 Serological Sciences, Sero Network. We will implement this SeroNet project in a Latino-African background population to determine the real seroprevalence to SARS-CoV-2. Also, we aim to study the interaction of several factors like the humoral, cellular immune response, HLA background, and how they correlate with protection or severity in this population, including vulnerable social groups. **Role: PI**

UG1 DA050072                                      Wang, E(PI)    09/30/2020-08/31/2022  
National Institute on Minority Health and Health Disparities - NIH  
*COVID-19 Testing and Prevention in Correctional Settings*  
The proposed work is relevant to public health and to the mission of "Rapid Acceleration of Diagnostics for Underserved Populations (RADxUP)" given the disproportionately high rates of COVID-19 infection and mortality in correctional facilities. We will identify ethical and feasible solutions to administer upwards of 40,000 tests in carceral settings in Florida, Rhode Island, Minnesota, and Yakima County, Washington, to characterize COVID-19 incidence, disease progression, and outcomes of staff and incarcerated. By building strategic partnerships with individuals with a history of incarceration and community and correctional policymakers, we will identify strategies to scale repeat testing in correctional facilities and lay the foundation for future vaccine delivery.

**Role: Co-Investigator**

U54 MD010711                      Nuñez-Smith, M(PI)                      09/22/2020-08/31/2022

National Institute on Minority Health and Health Disparities - NIH

*Community-Engaged Research on COVID-19 Testing in the US Territories*

By engaging community stakeholders to enhance COVID-19 testing and provide quarantine and isolation support in the USVI and Puerto Rico, we will address persistent COVID-19 risk, incidence, and mortality disparities among underserved populations. Through the coordinated efforts of the ECHORN infrastructure and in concert with the RADx-UP consortium, we will engage stakeholders to understand factors that have led to the disproportionate burden of COVID-19 and deploy interventions that improve the reach, access, uptake, and effectiveness of COVID-19 testing technologies and strategies across federally qualified health centers, local community-based organizations, and clinical laboratories in the USVI and PR. We use quasi-experimental designs to evaluate the proposed testing intervention projects.

**Role: Co-Investigator****Completed support: (Selected from +10)**

COLCIENCIAS 58446                      Figueredo A (PI)                      12/01/2018-12/01/2021

*Immunometabolic description of rejection reactions mediated by donor specific antibodies in solid organ transplants.*

Antibody-mediated rejection occurs when preformed donor-specific antibodies (DSA) are directed against organ donor antigen. The mechanism of antibody-mediated injury involves the activation of the classical complement pathway by the antigen-antibody complex, leading to the formation of the membrane attack complex resulting in organ injury. In this project, we aim to elucidate for the first time the early metabolic perturbations and immunometabolism of DSA in lymphocytes and endothelial cells.

**Role: Co-investigator**

COLCIENCIAS 58411                      Granados U (PI)                      12/01/2017-12/01/2021

*In-vivo imaging of Enterobacteriaceae infections with positron emission tomography (PET) and <sup>18</sup>F-fluorodeoxysorbiol.*

This project aims to study the efficacy of <sup>18</sup>F-fluorodeoxysorbiol and PET-CT in the detection and description of infections with Enterobacteriaceae. **Role: Co-investigator**

COLCIENCIAS 57032                      Lopez M (PI)                      01/10/2017-01/10-2020

*Mitoprotection by mitochondria-targeted antioxidants in cardiomyocytes and neurons infected with T. cruzi.*

Chagas' cardiomyopathy is one of the leading causes of heart transplants in Latin America. Although before transplant infection is virtually undetected, immunosuppression triggers infection after transplant, and in some cases, for the first time, it attacks the brain and nervous system. This project aims to elucidate for the first time the early metabolic perturbations exerted by T. cruzi infection in human cardiomyocytes and neurons in the presence of immunosuppressants.

COLCIENCIAS 55040                      Sanabria S (PI)                      01/10/2017-01/10-2020

*Selective treatment of gastric cancer by targeting mitochondrial bioenergetics and metabolism.*

Gastric cancer is one of the leading causes of death worldwide. This project aims to determine the mechanisms of selective toxicity exerted by mitochondria-targeted nitroxides and metformin in gastric cancer as a novel possible therapeutic alternative for the disease.

**Role: Co-investigator**

COLCIENCIAS 55058                      Nieto W (PI)                      01/10/2017-01/10-2020

*B-cell monoclonal lymphocytosis in adults and relatives of patients with chronic lymphoproliferative syndrome.*  
This flow cytometry project aims to establish the relationship between B-cell Monoclonal Lymphocytosis in adults and relatives of patients with Chronic Lymphoproliferative Syndrome.

Role: Co-investigator

COLCIENCIAS 49044 Lopez M/Prada C (PIs) 11/22/2016-11/22-2019

*Sulfatide metabolism, glycolysis, and mitochondrial function in metachromatic leukodystrophy.*

Metachromatic leukodystrophy (MLD) is a lysosomal storage disease characterized by non-functional of lysosomal enzyme arylsulfatase A that converts sulfatide into galactosylceramide. This project is based on the discovery of metabolic crosstalk between sulfatide synthesis and glycolysis in myelinating neuronal cells. It will test the hypothesis that in MLD, sulfatide accumulation causes decreased glycolytic activity contributing to neuronal damage and impaired myelination. Maintenance of glycolytic activity should prevent sulfatide overproduction and progression of the disease.

COLCIENCIAS 40824 Lopez M (PI) 12/20/2014-12/20/2018

*Pathobiology of the maternal fetal interface in congenital Chagas' disease.*

This project aims to describe the early metabolic perturbations exerted by *T. cruzi* in placental cells. This study will also test the effects of *T. cruzi* infected expecting women after the second trimester of gestation and controls in placental cells.

COLCIENCIAS 41071 Quijano S (PI) 12/20/2014-12/20/2017

*Evaluation of B-cell clonality in HIV-positive patients at different clinical stages and its association with Epstein Barr virus co-infection.*

This project aims to verify the B-cell clonality status in HIV-positive patients and its possible association with EB virus co-infection. Role: Co-principal investigator

COLCIENCIAS 33365 Lopez M (PI) 02/20/2013-01/30/2016

*Role of GTPCH-1, fatty acid synthase and tetrahydrobiopterin in preeclampsia*

In this project, we described for the first time the early metabolic perturbations exerted by angiogenic factors in preeclampsia. We found that supplementation with sepiapterin protects endothelium and trophoblasts against the damaging effects of increased angiogenic factors in preeclampsia.

## **J. Community Service Activities**

1996	Judge, Humacao District Scientific Fair, Humacao, Puerto Rico
1996	Judge, Humacao Regional Scientific Fair, Fajardo, Puerto Rico
1997	Judge, Humacao District Scientific Fair, Humacao, Puerto Rico
1997	Judge, Humacao Regional Scientific Fair, Fajardo, Puerto Rico
1998	Judge, Humacao District Scientific Fair, Humacao, Puerto Rico
1998	Judge, Humacao Regional Scientific Fair, Fajardo, Puerto Rico
2003	Judge, INTEL International Science and Engineering Fair (Biochemistry), Cleveland, OH
2006 - present	CienciaPR.org, Ciencia y PR. Spotlight editor
2008	Milwaukee Regional Scientific Fair (Biochemistry), Milwaukee, WI
2008 - 2009	Badger State Scientific Fair (Chair of Chemistry & Biochemistry), Milwaukee, WI
2012 – present	Technical Scientific Committee (COASER), Federación Colombiana de Enfermedades Raras, FECOER.