**e-mail: hlaravilleg@tamusa.edu**

**BIOGRAPHICAL SKETCH**

**NAME POSITION TITLE**

Lara Villegas, Humberto H. Instructional Assistant Professor

**eRA COMMONS** **ORCID iD**

HLVILLEGAS 0000-0003-4854-9839

**EDUCATION**

2005-2010 Autonomous University of Nuevo León (UANL). Monterrey

Ph.D., in science, specialty in Microbiology. Mexico

*“Summa Cum Laude”* (graduated with highest honors)

2001 Ministry of Education of the State of Israel Israel

Master’s degree in Life Sciences

1986-1988 Mexican Council of Clinical Pathology (CoMPaC) Guadalajara

Medical specialty in Clinical Pathology

1978-1984 Autonomous University of Guadalajara (UAG) Guadalajara

Bachelor of Medicine (MD) Mexico

**WORK EXPERIENCE**

08/2021 to date Instructional Assistant Professor Texas

*Texas A&M San Antonio*

05/2019 to date Adjunct Faculty Texas

*St. Philip’s College.* U.S.A

08/2014 to 2021 Research Science Associate IV Texas

*The University of Texas at San Antonio (UTSA).* U.S.A

07/2012-07/2014 Associate Professor Monterrey

Medicine School Department of Microbiology

*Universidad de Monterrey (UDEM)*  México

01/2011-06/2011 Research Associate N. Carolina

*Winston Salem State University.* U.S.A

03/2003-01/2011 Head of a BSL-3, Assistant Professor Monterrey

Department of Microbiology

*Universidad Autónoma de Nuevo León (UANL)* México

2000-2003 Head of the BSL-3, Researcher, Fellowship Rehovot

*Ruth Ben Ari AIDS Center, Kaplan Medical Center*  Israel

HIV Research (antivirals, topical vaginal microbicides)

1998-1999 Researcher Safed

*Rebecca Sieff Hospital* Israel

1990-1998 Medical director of a Clinical Laboratory Veracruz

*Laboratorio de Patologia Clinica* México

1986-1988 Residency of Clinical Pathology/Laboratory Medicine Guadalajara

*Unidad de Patología Clínica (UPC)*  México

**Awards and Honors**

02/2010 “*Summa Cum Laude”*, graduated with highest Monterrey

honors as Ph.D., student Mexico

2006-2020 Member of S.N.I -1 (National System of Researchers) from 2006 to date, granted by the National Council of Sciences and Technologies of Mexico (CoNaCyt)

2008 Award from the Scientific board granted by the University (UANL)

2007 PROMEP recognition for good quality work as Teacher bestowed by the Secretary of Education in Mexico (SEP)

2005-2010 CoNaCyT Scholarship to Study Ph.D. Program. Scholarship was granted by the Mexican Federal Government’s Department of Science and Technology

1994 President of the XXIV Congress of Clinical Pathology Veracruz

**Memberships in Professional & Scientific Societies**

2011 American NANO Society

2008 International AIDS Society

2006 to date Member of the SNI (Membership for Mexican Outstanding Researchers)

2013 Board member of MEXBIO (Biosafety Specialists Association)

**Member of Editorial Boards**

* Journal of AIDS and HIV Research (JAHR)
* Journal of Human Virology & Retrovirology
* SM Dentistry Journal (SMD)
* Hindawi Publishing Corporation
* Current Updates in Nanotechnology

**Research**

08/2014 to date Research Associate (UTSA)

* Biomedical applications in Nanotechnology

06/2012 – to 06/2014 Faculty, Universidad de Monterrey (UDEM)

01/2011-06/2011 Research Associate. Microbiology department, Winston-Salem State University, North Carolina, USA

* Enhancing the Neutralizing antibodies (NABs) against HIV-1 infection *in vitro* by Nanotechnology.

01/2003-01/2011 Universidad Autonoma de Nuevo Leon (UANL), Mexico.

Head of a BSL-3 Laboratory and Principal investigator.

* Biomedical applications of Nanotechnology against HIV-1 virus.

1999-2003 BSL-3 Kaplan Hospital, Rehovot Israel, Ruth Ben-Ari AIDS center

Head of the Biosecurity Laboratory BSL-3

Director: Professor. Zvi Bentwich, Research Advisor: Dr. Gadi Borkow

* Testing new drugs and compounds against HIV-1.

**Major Teaching Responsibilities**

8/2021 to date Instructional Assistant Professor at TAMUSA, teaching Anatomy and Physiology I and II.

8/2018 to date Adjunct faculty, teaching Anatomy and Physiology I and II (lecture and Laboratory).

07/2012 to 07/2014 Full time Faculty. University of Monterrey -medical microbiology to medical students.

8/2003-01/2011 Full time Faculty. UANL -Undergraduate studies; Immunology and Molecular Biology

Graduate studies: Clinical Immunology, Virology and Biosafety

Undergraduate thesis advised and supervised:

**Grant Support**

2012 Research Grant from Universidad de Monterrey (UDEM) $120,000 MXP

2006-2008 Federal Grant (Conacyt)- Antiviral properties of Marine algae in Mexico. Principal investigator $16,000 USD

2008 Federal Grant (Conacyt).- Design a Biosecurity National Laboratory (BSL-3 plus), $5 million USD. PI of the project

2006-2007 University grant support (UANL Paycit). Antiviral properties of silver nanoparticles. Principal investigator $ 6,000 USD

2007-2008 University grant support (UANL Paycit). A phenotypic assay to detect HIV resistance in AIDS patients $ 6,000 USD

**Abstracts in Conferences**

2019 David Michael Black, Humberto Herman Lara, Marcos Miguel Alvarez, Robert Loyd Whetten, Christine Moon Super Atom, Complexes with Antiviral and Bactericidal Activity. AAAFM-UCLA

2017 J. Alvarez-Cirerol, H. H. Lara-Villegas, M. J. Yacamán, Silver Nanoparticles Synthesized with Rumex hymenosepalus: A Strategy to Combat Early Mortality Syndrome (EMS) in a Cultivated White Shrimp, XXVI International Materials Research Congress (IMRC 2017) in Cancún, México, August 20-25, 2017.

2017 M.A. Fuentes-Valencia, H.H.Lara, N.Bogdanchikovag, Silver nanoparticles are lethal to the ciliate model Tetrahymena and safe to the pike silverside Chirostoma estor. LAQUA 2017 Mazatlan, Mexico.

2015 Romero-Urbina, Dulce; Velazquez-Salazar, J. Jesus; Lara, Humberto H.; Jose-Yacaman, Miguel, Bactericidal Effects of Charged Silver Nanoparticles in Methicillin-resistant Staphylococcus aureus, APS March Meeting 2015. San Antonio Tx, US

2015 Humberto H. Lara; Jose L. Lopez-Ribot, Miguel José Yacamán

Anti-Candida albicans Biofilm Activity by Silver Nanoparticles: An Ultrastructural Study UTSA COS Research conference.

**Lectures in Conferences**

2019 AAAFM-UCLA Functional materials for industrial revolution L.A California

2017 International Symposium of Applied Microbiology. Reynosa, Mexico

2013 University of Queretaro -Biosecurity in Laboratories Queretaro, Mexico

2008 Nanomedicine. IV Congress of Naval Medicine Veracruz, Mexico

2008 Biosecurity risks in medicine. VI pediatric forums Veracruz, Mexico

2007 Advances in Nanobiotechnology. I Congress in Genomics and Biotechnology, Mexico

2006 Microbicides development against AIDS. III Forum of AIDS. Monterrey, Mexico

**Publications (*Articles in Refereed Journals)***

1. Kelly Nash, Gregory Guisbiers, Humberto Herman Lara Villegas. Antimicrobial coating comprising chalcogenide nano-particles capped by chitosan. Publication date 2023/11/28

Patent number 11825847 Application number 17391732.

1. Selene María Abad-Rosales, Rodolfo Lozano-Olvera, Bitia Berenice Vallin-Enríquez, María Cristina Chávez-Sánchez, Leobardo Montoya-Rodriguez, Humberto Herman Lara, Miguel Ángel Franco-Nava, Victor Joaquin Álvarez-López, Martín Gabriel Frías-Espericueta. Interaction of Silver Nanoparticles with White spot Syndrome Virus and Their Histopathological Effects on Penaeus vannamei After Intramuscular Application. Thalassas: An International Journal of Marine Sciences 10/2023. 39 2 687-696
2. Lara, H.H.; Lopez-Ribot, J.L. Inhibition of Mixed Biofilms of Candida albicans and Methicillin-Resistant Staphylococcus aureus by Positively Charged Silver Nanoparticles and Functionalized Silicone Elastomers. Pathogens 2020, 9, 784.
3. P Jagadesan, Z Yu, I Barboza-Ramos, HH Lara, R Vazquez-Munoz, Light-Activated Antifungal Properties of Imidazolium-Functionalized Cationic Conjugated Polymers Chemistry of Materials 32 (14), 6186-6196 2020.
4. A Campuzano, H Zhang, GR Ostroff, L dos Santos Dias, M Wüthrich, CARD9-Associated Dectin-1 and Dectin-2 Are Required for Protective Immunity of a Multivalent Vaccine against Coccidioides posadasii Infection The Journal of Immunology 204 (12), 3296-3306 1 2020.
5. MA Fuentes-Valencia, EJ Fajer-Ávila, MC Chávez-Sánchez Silver nanoparticles are lethal to the ciliate model Tetrahymena and safe to the pike silverside Chirostoma estor, Experimental Parasitology 209, 107825,1, 2020.
6. HH Lara, L Ixtepan-Turrent, M Jose Yacaman, J Lopez-Ribot Inhibition of Candida auris Biofilm Formation on Medical and Environmental Surfaces by Silver Nanoparticles, ACS Applied Materials & Interfaces 12 (19), 21183-21191 5 2020.
7. CA Pimentel-Acosta, J Ramírez-Salcedo, FN Morales-Serna, Molecular Effects of Silver Nanoparticles on Monogenean Parasites: Lessons from Caenorhabditis elegans International Journal of Molecular Sciences 21 (16), 5889 2020.
8. HH Lara, DM Black, C Moon, E Orr, P Lopez, MM Alvarez, Activating a Silver Lipoate Nanocluster with a Penicillin Backbone Induces a Synergistic Effect against S. aureus Biofilm ACS omega 4 (26), 21914-21920 2019.
9. CA Pimentel-Acosta, FN Morales-Serna, MC Chávez-Sánchez, HH Lara, Efficacy of silver nanoparticles against the adults and eggs of monogenean parasites of fish Parasitology research 118 (6), 1741-1749 4 2019.
10. FJ Alvarez-Cirerol, MA López-Torres, E Rodríguez-León, Silver Nanoparticles Synthesized with Rumex hymenosepalus: A Strategy to Combat Early Mortality Syndrome (EMS) in a Cultivated White Shrimp Journal of Nanomaterials 2019
11. Lopez P, Lara HH, M. Mullins S, et al. Tetrahedral (T) Closed-Shell Cluster of 29 Silver Atoms &amp; 12 Lipoate Ligands, [Ag29(R-α-LA)12](3−): Antibacterial and Antifungal Activity. *ACS Appl Nano Mater*. April 2018:acsanm.8b00069. doi:10.1021/acsanm.8b00069
12. H. H. Lara, G. Guisbiers, J. Mendoza, L.C. Mimun, B. K. Vincent, J. Lopez-Ribot and K. L. Nash, Synergistic Antifungal Activity of Chitosan-Stabilized Selenium Nanoparticles, nature publishing group Biofilms and Microbiomes. (in review) 2016
13. Grégory Guisbiers, Lara HH, Ruben Mendoza-Cruz, Guillermo Naranjo, Brandy A. Vincent, Xomalin G. Peralta, Ph.D., Kelly L. Nash. Inhibition of Candida albicans biofilm by pure selenium nanoparticles synthesized by pulsed laser ablation in liquids. Nanomedicine. 2016 Oct 25
14. Lara HH, Dulce G. Romero-Urbina, Christopher Pierce, Jose L. Lopez-Ribot, M. Josefina Arellano-Jiménez and Miguel Jose-Yacaman, Effect of silver nanoparticles on *Candida albicans* biofilms: an ultrastructural study, Journal of Nanobiotechnology 2015 13:91 DOI: 10.1186/s12951-015-0147-8
15. Dulce G. Romero-Urbina, Lara HH, J. Jesús Velázquez-Salazar, M. Josefina Arellano-Jiménez, Eduardo Larios, Anand Srinivasan, Jose L. Lopez-Ribot and Miguel José Yacamán, Ultrastructural changes in methicillin-resistant *Staphylococcus aureus* induced by positively charged silver nanoparticles, Beilstein J. Nanotechnol. 2015, 6, 2396–2405.
16. Lara HH, Alanís-Garza EJ, Estrada Puente MF, Mureyko LL, Ixtepan-Turrent L. [Nutritional approaches to modulate oxidative stress that induce Alzheimer's disease]. [Gac Med Mex.](http://www.ncbi.nlm.nih.gov/pubmed/25946535) 2015 Mar-Apr;151(2):245-51
17. Lara HH, Ixtepan-Turrent L, Rivera-Silva G, González-Salazar F, Moreno-Treviño G. Antivirograma, sensible, rápido y fácil de interpretar por un método de bioluminiscencia para el VIH-1. Rev Latinoamer Patol Clin, 2013 60,2 79-9
18. Dinesh K. Singh and Lara HH. Inhibition of cell-associated HIV-1 by silver nanoparticles. Retrovirology 2012, 9(Suppl 1):O1
19. Lara HH, Elsa N. Garza Treviño, Liliana Ixtepan Turrent, Dinesh K. Singh. Silver nanoparticles are broad-spectrum bactericidal and virucidal compounds. Journal of Nanobiotechnology 2011 (review), 2011 Aug 3;9:30.
20. Lara HH, Liliana Ixtepan-Turrent, Elsa N. Garza-Treviño, Dinesh K. Singh. Use of silver nanoparticles increased inhibition of cell-associated HIV-1 infection by neutralizing antibodies developed against HIV-1 envelope proteins. J Nanobiotechnology. 2011 Sep 18;9:38.
21. Lara HH, Liliana Ixtepan-Turrent1, Elsa N. Garza-Treviño1, Samantha M. Flores-Teviño1, J. Isaías-Badillo1 and Cristina Rodriguez-Padilla1. Antiviral mode of action of Bovine Dialyzable Leukocyte Extract against Human Immunodeficiency Virus Type 1 Infection. BMC Research Notes 2011, 4:474
22. Lara HH 1§, Liliana Ixtepan-Turrent1§, Elsa N. Garza-Treviño1, Samantha M Flores-Teviño, Borkow G, and Cristina Rodriguez-Padilla1. Antiviral properties of 5,5'-dithiobis-2-nitrobenzoic acid and bacitracin against T-tropic human immunodeficiency virus type 1. Virol J. 2011 Mar 24;8:137.
23. Lara HH, Ixtepan-Turrent L, Garza-Treviño EN, Tamez-Guerra R, Rodriguez-Padilla C. Clinical and immunological assessment in breast cancer patients receiving anti-cancer therapy and bovine dialyzable leukocyte extract (bDLE) as an adjuvant. Experimental and Therapeutic Medicine 1: 425-431, 2010
24. Lara HH\*†, Liliana Ixtepan-Turrent†, Elsa N Garza-Treviño, and Cristina Rodriguez-Padilla. PVP-coated silver nanoparticles block the transmission of cell-free and cell-associated HIV-1 in human cervical culture. Journal of Nanobiotechnology 2010, 8:15
25. Lara HH, Ayala-Nuñez NV, Ixtepan-Turrent L, Rodriguez-Padilla C: Mode of antiviral action of silver nanoparticles against HIV-1. J Nanobiotechnology 2010; 8: 1.
26. Ayala-Nuñez NV, Lara HH, Ixtepan-Turrent L, Rodriguez-Padilla C: Silver Nanoparticles Toxicity and Bactericidal Effect Against Methicillin-Resistant Staphylococcus aureus: Nanoscale Does Matter. J Nanobiotechnology Volume 5, Numbers 1-4 / December 2009
27. Lara HH, Ayala-Nuñez NV, Ixtepan-Turrent L, Rodriguez-Padilla C: Bactericidal effect of silver nanoparticles against multidrug-resistant bacteria. World Journal of Microbiology and Biotechnology. Volume 26, Number 4 / April 2010
28. Elechiguerra JL, Burt JL, Morones JR, Camacho-Bragado A, Gao X, Lara HH, Yacaman MJ: Interaction of silver nanoparticles with HIV-1. J Nanobiotechnology. 2005 Jun 29;3:6.
29. Borkow G, Lara HH, Covington CY, Nyamathi A, Gabbay J: Deactivation of human immunodeficiency virus type 1 in medium by copper oxide-containing filters. Antimicrob Agents Chemother Feb;52(2):518-25. Epub 2007 Dec 10.
30. Gadi Borkow\*, Robert W. Sidwell, Donald F. Smee, Dale L. Barnard, John D. Morrey, Lara HH, Yonat Shemer-Avni, and Jeffrey Gabbay. Neutralizing viruses in suspensions by copper oxide based filters. Antimicrob. Agents Chemother 2007 Jul;51(7):2605-7. Epub 2007 Apr 30.
31. Borkow G, Lara HH, Lapidot A: Mutations in gp41 and gp120 of HIV-1 isolates resistant to hexa-arginine neomycin B conjugate. Biochem Biophys Res Commun 2003;312:1047-1052.
32. Borkow G, Lara HH, Ayash-Rashkovsky M, Tavor E, Lapidot A, Bentwich Z, Honigman A: Adenovirus expressing a bioluminescence reporter gene and cMAGI cell assay for the detection of HIV-1. Virus Genes 2004;29:257-265.
33. Borkow G, Vijay badabaskar V, Lara HH, Kalinkovich A, Lapidot A: Structure-activity relationship of neomycin, paromomycin, and neamine-arginine conjugates, targeting HIV-1 gp120-CXCR4 binding step. Antiviral Res 2003;60:181-192.
34. Zussman A, Lara L, Lara HH, Bentwich Z, Borkow G: Blocking of cell-free and cell-associated HIV-1 transmission through human cervix organ culture with UC781. AIDS 2003;17:653-661.

As of 01/2021, the articles listed above have been cited nearly more than 6400 times according to Google Scholar with i10-index is 31.

**Patents**

1. Antimicrobial coating comprising chalcogenide nano-particles capped by chitosan
   1. KL Nash, G Guisbiers, HH Lara US Patent App. 16/499,137
2. Yacaman, Miguel, Jose; Elechiguerra, Jose, Luis; Lara, HH; Burt, Justin, Lockheart; Protein-Noble Metal Nanoparticles, Pub. No. WO/2006/053225.International Application No.: PCT/US2005/040943
3. Inhibition of Candida auris Biofilm Formation on Medical and Environmental

Surfaces by Silver Nanoparticles Lara HH and Jose Lopez-Ribot 6338-009.PROV 01/08/2021