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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). Ph.D., in Science, specialty in Microbiology. *"Summa Cum Laude"* (graduated with highest honors)	Monterrey Mexico
2001	Ministry of Education of the State of Israel Master's degree in Life Sciences	Israel
1986-1988	Mexican Council of Clinical Pathology (CoMPaC) Medical specialty in Clinical Pathology	Guadalajara
1978-1984	Autonomous University of Guadalajara (UAG) Bachelor of Medicine (MD)	Guadalajara Mexico

WORK EXPERIENCE

08/2021 to date	Instructional Assistant Professor	San Antonio
05/2018 to date	Adjunct Faculty St. Philip's College.	Texas U.S.A
08/2014 to date	Research Science Associate IV The University of Texas at San Antonio (UTSA).	Texas U.S.A
07/2012-07/2014	Associate Professor Medicine School Department of Microbiology Universidad de Monterrey (UDEM)	Monterrey México
01/2011-06/2011	Research Associate Winston Salem State University. HIV research	N. Carolina U.S.A
03/2003-01/2011	Head of a BSL-3, Assistant Professor Department of Microbiology Universidad Autónoma de Nuevo León (UANL)	Monterrey México
2000-2003	Head of the BSL-3, Researcher, Fellowship Ruth Ben Ari AIDS Center, Kaplan Medical Center HIV Research (antivirals, topical vaginal microbicides)	Rehovot Israel
1998-1999	Researcher Rebecca Sieff Hospital	Safed Israel
1990-1998	Director of a Clinical Laboratory Laboratorio de Patologia Clinica	Veracruz México

1986-1988	Residency of Clinical Pathology/Laboratory Medicine Unidad de Patología Clínica (UPC)	Guadalajara México

Awards and Honors

02/2010	"*Summa Cum Laude"*, graduated with highest honors as Ph.D., student	Monterrey 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

2021	Member of the Health Professions Advisory Committee at Texas A&M University San Antonio
2011	American NANO Society
2008	International AIDS Society
2006 to date	Member of the SNI (Membership for Mexican Outstanding Researchers)
2013	Titular 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 Academic and Teaching Responsabilities

8/2021 Anatomy and Physiology I & II

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

8/2003-01/2011 Undergraduate studies; Immunology and Molecular Biology
Graduate studies: Clinical Immunology, Virology and Biosafety
Undergraduate thesis advised and supervised:

2006-2007 "Bioluminescent Assay to detect virus resistance in AIDS patients", Student: Samantha Flores.
Thesis advised and supervised for master's degree:

2005-2007 "Silver nanoparticle`s bactericidal action against MRSA".
Student: Monica Jerez

2007-2009 "Mechanism of action of PDI against HIV-1".
Student: Samantha Flores

2008-2010 "Immunopotent as an adjuvant in Cancer therapy". Student: Elsa Treviño
Thesis advised and supervised of Ph. D Degree (Postgraduate student)

2005 – 2010 "Mechanism of action of silver nanoparticles as bactericidal and virucidal".
Student: Dr. Vanesa Ayala Nuñez *(Magna Cum Laude)*

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

2005-2006 University grant support (UANL Paycit). Transfer factor antiviral properties against HIV-1. Principal investigator. $ 6,000 USD

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 Black, David Michael (1); Lopez, Priscilla (1); Orr, Elizabeth (2); Lara, Humberto Herman (3); Alvarez, Marcos Miguel (2); Baghdesarian, Glen (2); Lopez Ribot, Jose Luis (3); Whetten, Robert Loyd (3) Super Atom Complexes with Antiviral and Bactericidal Activity. AAAFM UCLA Los Angeles California 2019.

2015 Romero-Urbina, Dulce; Velazquez-Salazar, J. Jesus; Lara, Humberto H.; Arellano-Jimenez, Josefina; Larios, Eduardo; Yuan, Tony T.; Hwang, Yoon; Desilva, Mauris N.; 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; Dulce G. Romero-Urbina, M. Josefina Arellano-Jiménez, Christopher Pierce, Jose L. Lopez-Ribot, Miguel José Yacamán Anti-Candida albicans Biofilm Activity by Silver Nanoparticles: An Ultrastructural Study UTSA COS Research conference.

2012 Lara HH*, Ixtepan-Turrent L, Rivera-Silva G, Gonzalez-Salazar F, Moreno-Treviño G. A sensitive and easy to interpret method for detecting HIV-1 in infected cells. Latin American Congress of Clinical pathology Nov 2012. Cancun Mexico

2008 Lara HH, Ayala-Nuñez NV, Ixtepan-Turrent L, Rodriguez-Padilla C. Efecto bactericida de las Nanoparticulas de Plata sobre el *Staphylococcus aureus* resistente a Neticilina (MRSA) Congreso de Microbiologia. Mexico

2007 Lara HH, Flores-Treviño S, Ixtepan-Turrent L, Rodriguez Padilla C, Protein-Disulfide Isomerase Inhibitors act as Fusion Inhibitors of HIV-1 XVII International AIDS Conference. Mexico City

2006 Lara HH, Ixtepan-Turrent L, Ayala-Nuñez V, Rodriguez Padilla C. Infectivity inhibition of HIV by silver nanoparticles *in vitro*. XVI International AIDS Conference, CDB0442. Toronto, Canada

2003 Lapidot A, Vijay Badagascar, Kalinkovich S, Lara HH, Borkow, Structure relationship of the new aminoglycoside-arginine conjugate (AAC) as Inhibitor of HIV-1 entry step. The 16th International Conference on Antiviral Research. Georgia, USA

2002 Sussman A, Ixtepan- Turrent, Lara HH, Borkow G. Blocking of HIV-1 transmission throughout human cervix organ culture by Uc781, Microbicides 2002. Sweden.

Lectures in Conferences

2017 International Symposium of Applied Microbiology. Reynosa, 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. KL Nash, G Guisbiers, HHL Villegas. Antimicrobial coating comprising chalcogenide nano-particles capped by chitosan. US Patent 11,076,599.
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 & 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. 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 08/2021, the articles listed above have been cited nearly more than 5,300 times according to Google Scholar with i10-index of 24.

Patents

1. Antimicrobial coating comprising chalcogenide nano-particles capped by chitosan
   KL Nash, G Guisbiers, HH Lara US Patent App. 16/499,137

1. 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