BIOGRAPHICAL SKETCH

NAME: Cordon-Rosales, Celia

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

POSITION TITLE: Director and Senior Biologist, Center for Health Studies, Universidad del Valle de Guatemala

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Colegio Monte María, Guatemala	Teacher	1973-1978	School Education in Urban Areas
Universidad del Valle de Guatemala	Licenciatura	1979-1986	Biology
FIOCRUZ, Rio de Janeiro, Brazil	---------	1994	Molecular Biology of Anophelines
Colorado State University at Fort Collins	---------	1996	Biology of Disease Vectors
Instituto Nacional de Salud, Colombia	---------	1998	Current techniques in malaria research

A. Personal Statement

I will contribute to ensure accomplishment of the proposed work plan and coherence and alignment with projects and units within the Center for Health Studies. The UVG is recognized by its leadership in science and research for more than 50 years (#1 private university in the region based on its publication index – QS Latin America University Ranking in 2022). Given my affiliation to UVG since 1985, and my ample experience in conducting research in Guatemala, I have an advantageous position to recommend the implementation of sustainable and scalable approaches that will benefit this proposal.

I have more than 30-years' experience conducting scientific studies on emerging and outbreak-prone infectious diseases, and am currently the PI on a CDC U01 5-year award (grant no. U01GH002243-04) focusing on surveillance and epidemiological characterization of emerging and epidemic-prone pathogens in Guatemala. Currently, in the 5th year of implementation of this Cooperative Agreement, a total amount of $2,814,475 has been approved and an extension with no cost. I'm also the local leader for a subcontract with Washington State University (PI, Douglas Call, U01GH002241, 5-year research cooperative agreement) under another CDC supported cooperative agreement to better define the burden of antibiotic resistance. I was recognized with the *National Medal for Science and Technology Award* by the Guatemalan National Congress (2006) for my research on vector-borne diseases and the *Dr. Ricardo Bressani Medal* for academic career excellence and contributions to the welfare of society by the Universidad del Valle de Guatemala (2015), and recently named as Distinguished Researcher at UVG (October 2021). During the last decade of my career, I have held positions with the main responsibility of providing scientific strategic direction and promoting collaboration. I plan to attain a stronger scientific participation in the current proposal based on my lifelong experience.

As Director of the Center for Health Studies (CHS), Universidad del Valle de Guatemala (UVG), I have led the establishment of this academic research center that has gained national and international recognition for its work on infectious diseases of public health importance. I have built a research and training infrastructure to develop infectious disease science in Guatemala in the absence of a consolidated National Science System, developing a cohort of promising young scientists many of whom now lead their own research projects. Under my direction and in collaboration with US CDC and the University of North Carolina, UVG established a master's degree in field epidemiology at UVG, currently training the eighth cohort of students. I manage approximately 70 researchers and 100 technicians, funded with the support of national and international grants. Over the past two-decades, I have fostered very strong national and international collaborations with regional human and animal health ministries, academic institutions, and the US CDC. During the last 5 years, CHS has published >80 peer-reviewed papers in scientific journals, an important contribution given limited national and regional research infrastructure.

Active Research Grants

Subaward 141289-WSU001042 Cordón-Rosales, Celia (PI) 2023-2026
Funded by US CDC through Washington State University
"Surveillance for emerging antimicrobial resistance in Guatemala"
Role: local PI
Goal: To estimate the prevalence of extended-spectrum cephalosporin-resistant Enterobacterales (ESCrE) and carbapenem-resistant Enterobacterales (CRE) Antimicrobial Resistance in human colonizing entoerobacteriaceae and determine risk factors both at the hospital and community (U01GH002241).

Award 1D71TW012294 Cordón-Rosales, Celia (PI) 2022-2024
Funded by FOGARTY International Center
"Training Program Plan to Improve Intervention Research for Prevention of Childhood Pneumonia in Guatemala"
Role: PI
Goal: To strengthen the capacity for the development of a training program and to prepare and submit a proposal for the envisioned training

Grant 5U01GH002243 Cordón-Rosales, Celia (PI) 2018-2024
Funded by US CDC
"Surveillance and Research for the Innovation and Sustainability of Public Health Actions"
Role: PI
Goal: Develop an infectious disease surveillance network under a one-health approach that produces comparable data representing the geographic, ethnic and socioeconomic diversity of Guatemala to improve the control and prevention of priority infectious diseases and strengthen local epidemiological capacity

Subaward Grant 6 U01GH002241 Call, Douglas (PI) 2018-2023
Funded by US CDC
"An Integrated Surveillance Platform for Infectious Diseases and Their Burden on Antibiotic Resistance"
Role: Co-PI, local PI
Goal: To use baseline data on antimicrobial resistance to design and evaluate interventions for controlling the spread of infectious diseases and multi-drug resistance organisms in the study communities.

Completed Grants

Grant No. HHSN272201400008C Perez, Daniel (PI) 2014-2021
Funded by NIH/NIAD
"Center of Excellence for Influenza Research and Surveillance: Avian and swine influenza virus surveillance activities in Central and South America"
Role: Investigator
Goal: Establish a better understanding of the ecology and evolution of avian and swine influenza viruses in Central and South America (Guatemala and Argentina)

Project 47/2016 Palmer GH, Ramay B, Cordón-Rosales C (Multi-PIs) 2017-2018
Funded by Paul Allen School of Global Animal Health, Washington State University
"Community-Based Assessment of Antimicrobial-Resistant Escherichia Coli in Quetzaltenango, Guatemala"
Role: Co-PI
Goal: To investigate the multifactorial nature of antimicrobial resistance emergence and spread in Guatemala by conducting an initial assessment of AMR prevalence in commensal bacteria from residents in two communities in Guatemala, and their behavioral, demographic (antibiotic use, hospital and health clinic visitation, travel, social networks, food choice), and environmental (water, household location and environment and physical gradients factors.

Project IZ07Z0_160919/1 Cordón-Rosales (PI) 2016-2019
Funded by the Swiss National Science Foundation Research for Development Programs through the Swiss Tropical and Public Health Institute

"Surveillance and response to zoonotic diseases in Maya communities of Guatemala: A case for One Health"
Role: Co-PI
Goal: To promote a transdisciplinary One Health approach for developing a novel and culturally appropriate surveillance and response program for zoonotic diseases in Guatemala.

Grant No. 1U51GH000970 Cordón-Rosales (PI) 2013-2018
Funded by US CDC
Cooperative Agreement "Evidence and Innovations for Public Health Actions in Guatemala and Central America"
Role*:* PI/Director of the Cooperative Agreement and Team Leader of component "Support in monitoring Chagas disease vector control" within sub-project "Sustained surveillance and control of neglected tropical diseases under poverty conditions of Central America".
Goal: Strengthen public health capacities to prevent and control priority infectious diseases and to detect and contain the spread of epidemic prone diseases in Guatemala and the Central American region

Grant No. 1U01GH001003-01 Cordón-Rosales (PI) 2013-2018
Funded by US CDC
Cooperative Agreement on "Strengthening Disease Prevention Research Capacity for Public Health Action".
Role*:* PI/Director of the Cooperative Agreement and Team Leader of sub-project "Animal/human interface of influenza transmission in tropical ecosystems".
Goal: To strengthen public health research capacity and conduct research studies that will contribute to the prevention, detection, response and containment of infectious diseases, and to reduce their burden and disabilities.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2009 to date	Director, Center for Health Studies, Universidad del Valle de Guatemala and Senior Research Biologist
2008 to 2010	Coordinator of the Advisory Committee for the Research Institute, Universidad del Valle de Guatemala
2007 to 2013	Director Master Program in Filed Epidemiology, Center for Health Studies and School of Science and Humanities, Universidad del Valle de Guatemala
1998 to 2009	Co-Director and Senior Research Biologist at Center for Health Studies, Universidad del Valle de Guatemala
1989-1998	Research biologist and lecturer US CDC Medical Entomology Research and Training Unit and Center and Center for Health Studies at Universidad del Valle de Guatemala.
1987-1989	Research assistant at the Medical Entomology Research and Training Unit, Guatemala (MERTUG), US Centers for Disease Control and Prevention and Center for Health Studies (CHS), Universidad del Valle de Guatemala.

Honors

2021	Named as Distinguished Researcher at Universidad del Valle de Guatemala
2015	Medal "Doctor Ricardo Bressani" awarded by Universidad del Valle de Guatemala to academic members of the University who have excelled in their career and have contributed to the development and welfare of the society.
2007	Prisma "Sister Patricia Roe" Recognition awarded by the Colegio Monte Maria Alumni Association for members that excel in society by their contribution to development
2006	National Medal for Science and Technology awarded by the Guatemalan National Congress and National Council for Science and Technology
1994	Gorgas Memorial Institute Fellowship, American Society of Tropical Medicine and Hygiene
1991	The Third World Academy of Science Award for Young Scientists

C. Contributions to Science

My scientific areas of work include the biology, ecology and epidemiology of vector-borne and zoonotic diseases, focusing on research to advance science relevant to the region and to inform national and regional infectious disease prevention and control programs. I have combined field and laboratory-based approaches, and increasingly transdisciplinary approaches, to characterize a range of neglected and emergent pathogens including West Nile, Influenza A and Zika viruses, and others that present as undifferentiated febrile illnesses,

as well as the SARS-CoV2 recently. With the experienced gained, I´m in the position to foster the translation of research efforts into national programs that seek to prevent and control diseases and other emergent health threats.

1. Surveillance of syndromic infectious diseases and antimicrobial resistance

In an effort to provide estimates on the burden of infectious diseases that could be used to inform public health prevention and control programs, I have also participated in studies centered on the surveillance of infectious diseases in human and animal populations. Starting in 2017, in collaboration with Washington State University and US CDC studies are ongoing on antimicrobial resistance given the global recognition of its' implications on the prevalence on infectious diseases. We are working to estimate the prevalence of antibiotic resistant of enteric colonizing *Escherichi coli*, and better understand how it relates to sanitary conditions and antibiotic use practices as well as other factors, and the risk for subsequent antibiotic resistant infections, in both the human communities and the health care services, mainly hospitals. This effort is part of a network that includes Bangladesh, Chile, Guatemala, Kenya, and India.

a. Hicks VJ, Sánchez C, López MR, Gottschlich A, Grajeda LM, Balish A, Gómez A, Nuñez N, Juárez J, López B, Freitas-Ning M, Cordón-Rosales C, Sagastume M, McCracken JP, Espinosa-Bode A, Cadena L and Lo TQ. Seroprevalence of high incidence congenital infections among pregnant women in Coatepeque, Guatemala and surrounding areas, 2017-2018. PLoS Negl Trop Dis 2023, 17(4).
b. Moreno P, Cerón A, Sosa K, Morales M, Grajeda LM, Lopez MR, McCracken JP, **Cordón-Rosales C**, Palmer GH, Call DR, Ramay BM. Availability of over-the-counter antibiotics in Guatemalan corner stores. PLoS One. 2020 Sep 25;15(9):e0239873. doi: 10.1371/journal.pone.0239873. PMID: 32976542; PMCID: PMC7518585.
c. Ramay, B. M., Caudell, M. A., **Cordón-Rosales, C.**, Archila, L. D., Palmer, G. H., Jarquin, C., Moreno, P., McCracken, J. P., Rosenkrantz, L., Amram, O., Omulo, S., & Call, D. R. (2020). Antibiotic use and hygiene interact to influence the distribution of antimicrobial-resistant bacteria in low-income communities in Guatemala. Scientific reports, 10(1), 13767. https://doi.org/10.1038/s41598-020-70741-4
d. Hasso-Agopsowicz M, Ladva CN, Lopman B, Sanderson C, Cohen AL, Tate JE, Riveros X, Henao-Restrepo AM, Clark A; Global Rotavirus Surveillance Network and Rotavirus Age Study Collaborators. Global Review of the Age Distribution of Rotavirus Disease in Children Aged <5 Years Before the Introduction of Rotavirus Vaccination. Clin Infect Dis. 2019 Aug 30;69(6):1071-1078. doi: 10.1093/cid/ciz060. PMID: 30689799; PMCID: PMC6736387.Olson D, Lamb M, Lopez MR, Colborn K, Paniagua-Avila A, Zacarias A, Zambrano-Perilla R, Rodríguez-Castro SR, **Cordon-Rosales C**, Asturias EJ. Performance of a Mobile Phone App-Based Participatory Syndromic Surveillance System for Acute Febrile Illness and Acute Gastroenteritis in Rural Guatemala. J Med Internet Res. 2017 Nov 9;19(11).

2. Transmission and epidemiology of Avian influenza and other zoonotic diseases

I have led several studies aiming to better understand the transmission of main zoonotic diseases in the region, and my initial efforts were centered on Chagas Disease. In 2014, with the support of the NIH initiative on Centers of Excellence in Influenza Research and Surveillance, I have led the surveillance of Influenza A in migratory waterfowl and swine, and effort that dates back to 2009. This work has contributed to the understanding of Influenza A diversity and pathogen spread in migratory birds. More recently, starting in 2016, I have been leading multi-disciplinary human, animal and vectors research teams to better understand the causes, epidemiology and transmission of zoonotic pathogens presenting as acute febrile syndromes in Maya communities living in extreme poverty. This study is at final analysis phase, and publication of final results are in preparation.

a. Ortiz L, Geiger G, Ferreri L, Moran D, Mendez D, Gonzalez-Reiche A.S., Álvarez D, Motta M, Escobar F, Rajao D, **Cordon-Rosales C**, Nelson M. I. and Perez D.R. Blue-winged teals in Guatemala and their potential role in the ecology of H14 subtype influenza A viruses. *Viruses*. 2023, 15, 483.
b. Gonzalez-Reiche AS, Nelson MI, Angel M, Müller ML, Ortiz L, Dutta J, van Bakel H, **Cordon-Rosales C**, Perez DR. Evidence of Intercontinental Spread and Uncommon Variants of Low-Pathogenicity Avian Influenza Viruses in Ducks Overwintering in Guatemala. mSphere. 2017 Apr 5;2(2).
c. Cerón A, Ortiz MR, Álvarez D, Palmer GH, **Cordón-Rosales C.** Local disease concepts relevant to the design of a community-based surveillance program for influenza in rural Guatemala. Int J Equity Health. 2016 Apr 23;15:69. doi: 10.1186/s12939-016-0359-z. PMID: 27108224; PMCID: PMC4841975.
d. Pennington PM, Messenger LA, Reina J, Juárez JG, Lawrence GG, Dotson EM, Llewellyn MS, **Cordón-Rosales C**. The Chagas disease domestic transmission cycle in Guatemala: Parasite-vector switches and lack of mitochondrial co-diversification between Triatoma dimidiata and Trypanosoma cruzi

subpopulations suggest non-vectorial parasite dispersal across the Motagua valley. Acta Trop. 2015 Jul; 151:80-87; https://doi.org/10.1016/j.actatropica.2015.07.014.

3. Emerging vector-borne disease

Since 2004, I have worked to better define the epidemiology of emergent arboviral disease starting with the study of West Nile Virus in Central America. This work focused on identifying bird reservoirs and mosquito vectors involved in the transmission of WNV, transmission risk and early warning surveillance strategies to inform public health authorities. At the same time, this initial study also established the core capacities at CHS to conduct studies on zoonotic viral diseases that have been applicable to additional studies. Additionally, with the surge of Zika Virus in Guatemala, in 2017 I started a collaboration with a number of local and international partners to develop and follow a cohort study of pregnant women and neonates in Coatepeque to better quantify health outcomes of Zika virus infections in pregnancy. We are still working on the final manuscripts for publication of major findings.

a. Madewell ZJ, Sosa S, Brouwer KC, Juárez JG, Romero C, Lenhart A, **Cordón-Rosales C.** Associations between household environmental factors and immature mosquito abundance in Quetzaltenango, Guatemala. BMC Public Health. 2019 Dec 23;19(1):1729. doi: 10.1186/s12889-019-8102-5. PMID: 31870343; PMCID: PMC6929347.
b. Lopez M, Espinoza-Bode A., Grajeda L , Nuñez N, Lopez B, Balish A, Lo T, Bryan J , Juarez J, Gomez A, Perez A, **Cordon-Rosales C,** Henao O, McCracken J . Seroprevalence of Selected Congenital Infections among Pregnant Women in Coatepeque, Guatemala. International Conference on Emerging Infectious Diseases 2018 poster presentation abstracts. Emerg Infect Dis. 2018 Sept.
c. Morales-Betoulle ME, Komar N, Panella NA, Alvarez D, López MR, Betoulle JL, Sosa SM, Müller ML, Kilpatrick AM, Lanciotti RS, Johnson BW, Powers AM, **Cordón-Rosales C;** Arbovirus Ecology Work Group. West Nile virus ecology in a tropical ecosystem in Guatemala. Am J Trop Med Hyg. 2013 Jan;88(1):116-26.
d. Morales-Betoulle ME, Morales H, Blitvich BJ, Powers AM, Davis EA, Klein R, **Cordón-Rosales C**. West Nile virus in horses, Guatemala. Emerg Infect Dis. 2006 Jun;12(6):1038-9. PubMed PMID: 16752479; PubMed Central PMCID: PMC3373039.

4. Vector surveillance and control

In 1989 I started working on the identification on insecticide resistance through biochemical assays in the main malaria vector in the Central American region, and it was pioneer work in the country. I conducted studies to measure the impact of insecticide resistance in the vector control of malaria and participated in first pilot testing of impregnated bednets for malaria control in Guatemala. These studies have contributed to reduce the malaria prevalence in Guatemala in more than 80% since the last two decades. Additionally, I led the pilot testing of insecticide-based control of triatomines for Chagas Disease Control that allowed the launching of the National Vector Control program back in 1995, and since then have conducted research to support the elimination of the disease and participated in the national control initiatives. Our participation has contributed to vector control success of the National Chagas control program that has interrupted transmission *Rhodnius prolixus* and continues to improve the control of *Triatoma dimidiata* as well as prevent congenital transmission more recently. At the same time, I worked on studies for the development of transgenic approaches for the control of triatomines.

a. Juarez JG, Pennington PM, Bryan JP, Klein RE, Beard CB, Berganza E, Rizzo N, **Cordon-Rosales C**. A decade of vector control activities: Progress and limitations of Chagas disease prevention in a region of Guatemala with persistent Triatoma dimidiata infestation. PLoS Negl Trop Dis. 2018 Nov 6; 12(11).
b. Hashimoto K, Alvarez H, Nakagawa J, Juarez J, Monroy C, Cordón-Rosales C, Gil E. Vector control intervention towards interruption of transmission of Chagas disease by Rhodnius prolixus, main vector in Guatemala. Mem Inst Oswaldo Cruz. 2012 Nov;107(7):877-87. doi: 10.1590/s0074-02762012000700007. PMID: 23147143.
c. Beard, C.B., Cordón-Rosales, C., and Durvasula, R.V. Bacterial symbionts of the triatominae and their potential use in the control of Chagas Disease transmission. Annual Review of Entomology 2002; 47:123-41.
d. Richards FO Jr, Flores RZ, Sexton JD, Beach RF, Mount DL, **Cordón-Rosales C**, Gatica M, Klein RE. Effects of permethrin-impregnated bed nets on malaria vectors of northern Guatemala. Bull Pan Am Health Organ. 1994 Jun;28(2):112-21.

D. Complete list of Published Work

https://scholar.google.es/citations?view_op=new_articles&hl=es&imq=Celia+Cordon-Rosales&pli=1#
https://pubmed.ncbi.nlm.nih.gov/?term=cordon-rosales