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## Table of Content

<b>Mission Statement</b>	<b>2</b>
<b>Timeline</b>	<b>2</b>
<b>Credentials</b>	<b>2</b>
Education and Training	2
Academic Appointments	3
<b>Leadership &amp; Management</b>	<b>3</b>
Leadership and Administrative Experience in Academia	3
Professional and Entrepreneurial Experience in Industry	3
Executive and Leadership Training	4
<b>Research</b>	<b>4</b>
Research Interests	4
Sponsored Projects	5
Publications	6
Math & Science	6
Humanities	10
Fiction	11
Research Presentations	12
Programmatic Meetings & Convenings	16
Meetings and Workshops Organized	16
Workshops Attended	17
Information Technology & Hardware	17
<b>Teaching</b>	<b>18</b>
Graduate Students	18
Courses	19
<b>Service</b>	<b>20</b>
Outreach	20
Editorial	20
Prizes and Awards	21
Media Coverage	21

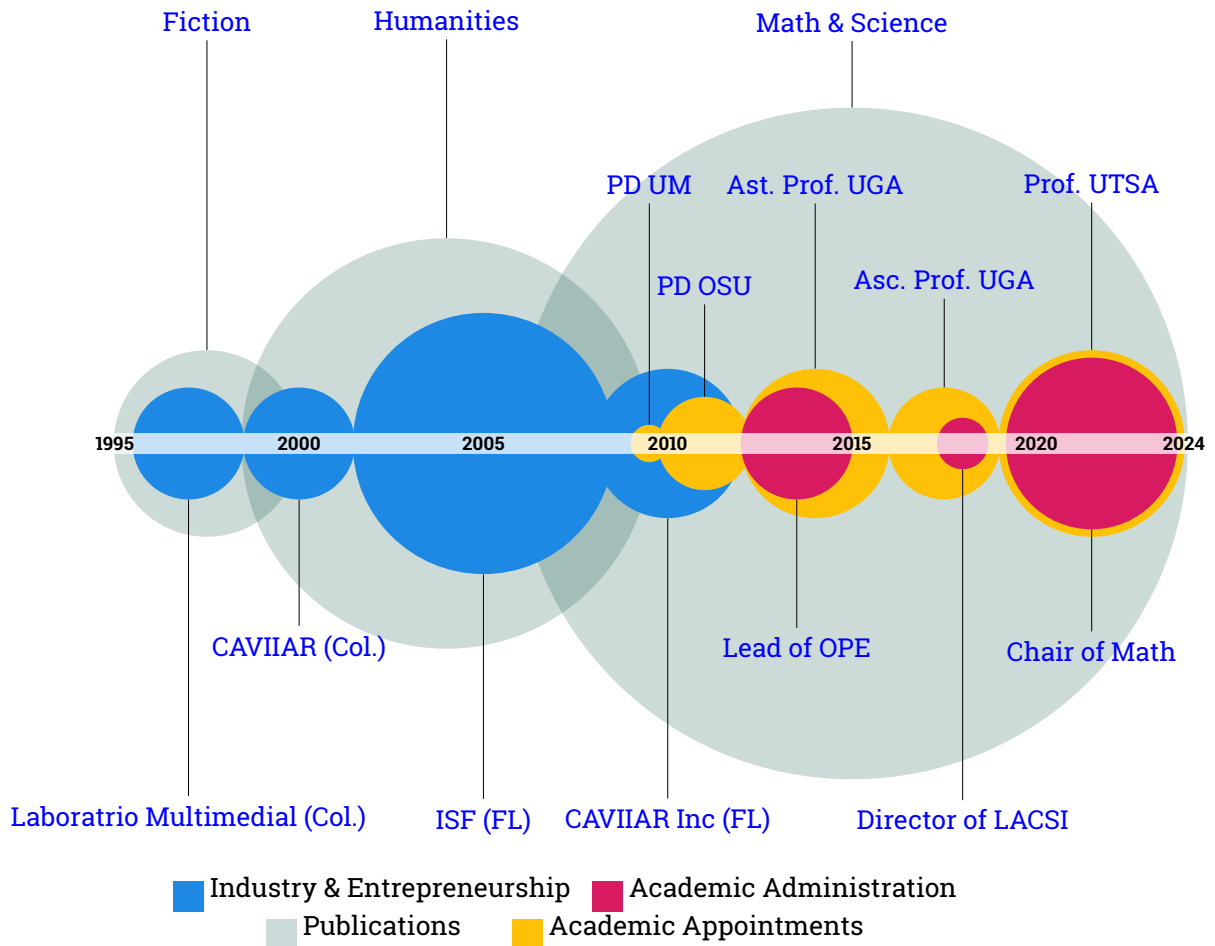
## Mission Statement

*To have the face of success match the face of society*

## Timeline

[\[ Back to TOC \]](#)

The hyperlinks on the top half of the timeline summarize academic activity. The hyperlinks on the bottom half summarize professional, executive, and leadership experience in industry and academia.



## Credentials

### Education and Training

[\[ Back to Timeline – Back to TOC \]](#)

- **9/2010 - 7/2012.** Postdoctoral Fellow, [Mathematical Biosciences Institute](#), Ohio State University, Columbus, OH.
- **9/2009 - 8/2010.** Postdoctoral Associate, [Institute for Theoretical and Mathematical Ecology](#), University of Miami, Coral Gables, FL.
- **12/2009.** Ph.D. in Mathematics. [Department of Mathematics](#), Florida State University, Tallahassee, Florida.

- **05/2005.** M.Sc. in Mathematics. [Department of Mathematics](#), Florida State University, Tallahassee, Florida.
- **05/1996.** Civil Engineer, [Department of Civil Engineering](#), Universidad Nacional de Colombia. Meritorious Thesis. National Prize of Excellence in Civil Engineering Thesis.

## Academic Appointments

[ [Back to Timeline](#) – [Back to TOC](#) ]

- Chair of the [Department of Mathematics](#), University of Texas at San Antonio, August 2019 to present.
- Professor of Mathematics, University of Texas at San Antonio, August 2019.
- Adjunct Associate Professor of Mathematics, [Department of Mathematics](#), University of Georgia, Athens, Georgia. August 2019 to July 2024.
- Interim director of the [Latin American and Caribbean Studies Institute](#), University of Georgia, Athens, Georgia. Dec 2017-Jun, 2018.
- Associate Professor of [Mathematics](#) and [Bioinformatics](#), University of Georgia, Athens, Georgia. August 2016 to July 2019.
- Adjunct Associate Professor of [Computer Science](#), University of Georgia, Athens, Georgia. August 2017 to July 2019.
- Assistant Professor of [Mathematics](#) and [Bioinformatics](#), University of Georgia, Athens, Georgia. August 2012 to July 2016.

## Leadership & Management

### Leadership and Administrative Experience in Academia

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2019-Now Chair of Mathematics at UTSA, managing a \$5.6M budget, 27 T/TT faculty, 39 instructional faculty, 15 teaching assistants, 3 postdoctoral associates, 4 staff, 5 student workers, and serving 12,000 seats per year.
- 2017-2018 Interim Director of the [Latin American and Caribbean Studies Institute](#) (LACSI) at UGA between December 2017 and June, 2018. Under my leadership, LACSI submitted and was awarded a \$2.2M Title VI FLAS grant (Foreign Language Area Studies) from the Department of Education.
- 2012-2015 I led the effort to establish the [Office of Proposal Enhancement at UGA](#). I reported directly to the VP for research. This office is credited for the advances in national research ranking of UGA. See the article "[UGA advances in national research ranking](#)", December 15, 2017, UGA Today.

### Professional and Entrepreneurial Experience in Industry

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2012-2022 I have created 4 businesses in the US: Accolotech LLC (FL, 2007-2010), CAVIAR Inc ([link to D&B](#)) (FL, 2007-2013), GUVU Group (GA, 2015-2017), and [GUVU Solutions](#) (TX, 2021-present). The first two, Accolotech and CAVIAR were created while I was a doctoral student; in fact, I was able to finish my doctoral degree thanks to a subaward of a research grant by the Spanish Ministry of Industry to CAVIAR Inc ([link to website](#)), and a research grant with the Division of Aquaculture of the Florida Department of Agriculture. Duties at CAVIAR Inc: Manage a non-profit scientific corporation. Build mathematical models and their computational implementation (dynamical systems, partial differential equations, pattern classification, operations research).

- 2001-2008 As a Senior Programmer/Architect at [Information Systems of Florida](#), I designed the architecture of enterprise-grade information systems, and managed multinational teams of programmers to satisfy information technology contracts with the State of Florida.
- 1999-2001 Owner of CAVIAR (Centro Avanzado de Investigación en Inteligencia Artificial), Colombia, an engineering business that developed software and hardware for oil exploration.
- 1996-1998 Owner of Laboratorio Multimedial, a media business that attracted multiple contracts from Colcultura (now Ministerio Colombiano de Cultura) and the Instituto Distrital de Cultura y Turismo de Bogotá. The technological product developed by this business is the AI engine known as Literatronica, which was the foundation for [NSF award #1645325](#) (2016-2019) "ALICE (Adaptive Learning for Interdisciplinary Learning Environments)", of which I was the PI, and [NIH award 1R25GM151182](#) (2023-2028) "Training Biomedical Research Teams for Rigor and Reproducibility in Data Science," of which I am the joint PI.
- Design Engineer. Inprotekto Ltda. Geographic Information Systems (GIS) and transportation models. 1996.
  - Engineering Assistant. Inprotekto Ltda and PCA Ltda. Several activities involving GIS data acquisition, structural design, aqueducts. 1992 - 1995

## Executive and Leadership Training

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2023 Academia de Liderazgo. Executive training by the Hispanic Association of Colleges and Universities (HACU).
- 2020-2021 Leadership Institute, UTSA.
- 2018 Leadership Institute, University of Georgia.
- 2014 Advanced Leadership Institute. Leadership training by the Society for the Advance of Chicanos and Native Americans in Science (SACNAS).
- 2011 Summer Leadership Institute. Leadership training by SACNAS.

## Research

### Research Interests

[ [Back to Timeline](#) – [Back to TOC](#) ]

In general, I am currently interested in **the mathematical foundations of data science and artificial intelligence**. In my lab we produce mathematical, computational, and statistical models ranging from molecular interactions to spatial distribution and interaction of populations. My current research efforts in **quantitative biology** focus on **multi-scale analysis of infectious disease** taking into consideration the effect of socioeconomic factors and social dynamics.

My current efforts in **education** focus on **adaptive learning**. We have created in my lab an Adaptive Learning System for Interdisciplinary Collaborative Environments (ALICE). This system offers competency-centered adaptivity (a syllabus is created for each student based on what they do not know), and interest-based adaptivity (examples respond to students' interests). ALICE deploys intelligent agents to provide real-time instructional support and assessment. The multilingual web-based pilot has shown improvements in student performance with strong statistical significance.

## Sponsored Projects (11)

[ [Back to Timeline](#) – [Back to TOC](#) ]

1. (Joint PI Gutiérrez) [Training Biomedical Research Teams for Rigor and Reproducibility in Data Science](#) (2023-2028, \$450K UTSA out of \$2.5M multi-institutional award). The project team will develop a training program to teach skills and tools for rigor and reproducibility in biomedical data science, through a bootcamp with a flexible syllabus and collaborative projects, follow-on mentoring, and an online bilingual study guide that is interactive and self-paced. The trainees will be teams of faculty and technical personnel who will collaborate in the learning process and complement each other's skills and perspectives. The program will strengthen trainees' research and enable them to teach rigor and reproducibility at their institutions, which could be especially important for researchers from underrepresented groups and institutions with limited resources.
2. (PI Gutiérrez) [ALICE](#) (Adaptive Learning for Interdisciplinary Learning Environments, 2016-2019, \$299,000), [NSF award #1645325](#): ALICE is a Web-based information system that generates individualized development plans, according to previous experiences and current challenges. Furthermore, ALICE is designed to connect lexias from multiple subject matters, thus bypassing disciplinary barriers that in many cases are artificial. The principles behind ALICE are generalizable, and hence it has the potential to be used in K-16, graduate, and continuing education. ALICE is based upon the Literatronica engine I designed and implemented between 1996 and 2005.
3. (Co-PI Gutiérrez, PI Galinski) [Technologies for Host Resilience](#) (2016-2019, \$1,573,674 UGA out of \$6.5M) - Host Acute Models of Malaria to study Experimental Resilience (THoR's HAMMER), [DARPA contract #W911NF-16-C-0008](#), 2016-2019. This project explores the molecular mechanisms of resilience, susceptibility and resistance of non-human primate hosts when challenged with a malaria infection. I direct the computational biology team in charge of building mathematical models of resilience.
4. (Co-PI Gutiérrez, PI Barbour) [Collaborative Research: NSF INCLUDES: An Integrated Approach to Retain Underrepresented Minority Students in STEM Disciplines](#) (2016-2019, \$117K). NSF award 1649226. The University of Georgia, Florida International University, Savannah State University, Clark Atlanta University and Fort Valley State University will lead this Design and Development Launch Pilot to address enhancing recruitment, retention, productivity and satisfaction of historically underrepresented minority (URM) undergraduate students who enroll in STEM graduate programs at primarily white (PWI) and research intensive (RI) universities.
5. (Co-I Gutiérrez, PI Galinski) [Malaria Host-Pathogen Interaction Center](#) (MaHPIC - 2012-2017, \$19.5M) NIH's NIAID contract HHSN272201200031C. PI Mary Galinski. MaHPIC involves the multidisciplinary study of malaria infections, immunity and pathogenesis of Plasmodium falciparum, P. vivax and P. knowlesi in the context of host-pathogen interactions, in humans and nonhuman primates, using a systems biology approach. Three nonhuman primate malaria species will be studied: P. coatneyi to model P. falciparum, P. cynomolgi to model P. vivax, and P. knowlesi, a monkey malaria species that has been causing illness and cases of death in humans in Southeast Asia. My role in MaHPIC: mathematical modeling based on 'omics data (functional genomics, lipidomics, proteomics, metabolomics).
6. (PI Herrera, PI of sub-award Gutiérrez) [International Centers for Excellence in Malaria Research - Center for non-Amazonian regions of Latin America](#) (2012-2017, \$159K for UGA out of \$5.5M) - CLAIM, NIAID cooperative agreement U19AI089702-01, 2010-2017. PI Socrates Herrera. CLAIM was divided into three projects: [Project 1](#) evaluating the diversity of the ecology and parasite populations related to the epidemiology and clinical findings to establish a scientific framework to support the development of new intervention strategies for malaria elimination in non-Amazonian areas of Latin America. [Project 2](#) addressing major gaps in understanding of the ecology, behavior, vector potential, and control of Anopheles malaria vectors to guide the development and implementation of more effective integrated vector management (IVM) strategies of National Malaria Control Programs (NMCPs). [Project 3](#) determining the clinical outcomes and their association with parasite and host features of malaria-infected individuals living in non-Amazon regions of

LA with different intensities of malaria transmission. My role in CLAIM: Data manager and mathematical modeler for all projects.

7. (PI Gutiérrez) Modeling dispersal of invasive snail species in Florida. Florida Department of Agriculture, Division of Aquaculture. 2008, \$2,500. This project created a reaction-diffusion model to predict the dispersal of apple snails (*Pomacea canaliculata*) across the state of Florida.
8. (PI Borràs, PI of subaward Gutiérrez) DISCOVER-LIT. Sub-award from contract TSI-070300-2008-67, funded by the Spanish Ministry of Industry. This project intended to create an information system based on the Literatronica engine to allow visitors in the City of Barcelona to get lost in the discovery of the city. 2008-2009, \$100K sub-award out of a \$300K research contract.
9. (PI Gutiérrez) Contravía (Counterway). Award # IDCT-410/1998 by the Instituto Distrital de Cultura y Turismo (Institute of Culture and Tourism of the City of Bogota) to develop the Literatronica system. 1998-1999, \$12K.
10. (PI Gutiérrez) Condiciones Extremas (Extreme Conditions). Award # IDCT-514/1997 by the Instituto Distrital de Cultura y Turismo (Institute of Culture and Tourism of the City of Bogota) to write the experimental electronic novel *Condiciones Extremas*. 1997-1998, \$30K.
11. (PI Gutiérrez) El Primer Vuelo de los Hermanos Wright (The First Flight of the Wright Brothers). Award # COLCULTURA-SECAB 014/1996 by the Instituto Colombiano de Cultura - Colcultura, now the Ministry of Culture (Colombian Institute of Culture, now the Ministry of Culture) to write the experimental electronic novel *El Primer Vuelo de los Hermanos Wright*. 1996-1998, \$8K.

## Publications (62)

Below is a list of peer-reviewed manuscripts and preprints in math & science, peer-reviewed articles in electronic literature, and several works of fiction.

### Math & Science Peer-Reviewed Publications (36)

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2024 “SWAG: A Novel Neural Network Architecture Leveraging Polynomial Activation Functions for Enhanced Deep Learning Efficiency.” *IEEE Access*, vol. 12, pp. 73363-73375, 2024. Saeid Safaei, Zerotti Woods, Khaled Rasheed, Thiab Taha, Wahid Safaei, Juan B. Gutiérrez, Hamid R. Arabnia. DOI: [10.1109/ACCESS.2024.3403457](https://doi.org/10.1109/ACCESS.2024.3403457). Preprint published in arXiv in 2017: [arXiv:1811.11813](https://arxiv.org/abs/1811.11813) [stat.ML].
- 2022 “MaHPIC malaria systems biology data from *Plasmodium cynomolgi* sporozoite longitudinal infections in macaques.” *Nature Scientific Data*. 9, 722 (2022). Jeremy DeBarry, Mustafa Nural, Suman Pakala, Vishal Nayak, Susanne Warrenfeltz, Jay Humphrey, Stacey Lapp, Monica Cabrera-Mora, Cristiana Ferreira Alves de Brito, Jianlin Jiang, Celia Saney, Allison Hankus, Hannah Stealey, Megan DeBarry, Nicolas Lackman, Noah Legall, Kevin Lee, Yan Tang, Anuj Gupta, Elizabeth Trippe, Robert Bridger, Daniel Weatherly, Mariko Peterson, Xuntian Jiang, Vilinh Tran, Karan Uppal, Luis Fonseca, Chester Joyner, Ebru Karpuzoglu, Regina Joice Cordy, Esmeralda Meyer, Lance Wells, Daniel Ory, Frances Lee, Rabindra Tirouvanziam, Juan B. Gutiérrez, Chris Ibegbu, Tracey Lamb, Jan Pohl, Sarah Pruett, Dean Jones, Mark Styczynski, Eberhard Voit, Alberto Moreno, Mary Galinski, and Jessica Kissinger. DOI: [10.1038/s41597-022-01755-y](https://doi.org/10.1038/s41597-022-01755-y)
- 2022 “*Plasmodium knowlesi* cytoadhesion involves SICA variant proteins.” *Frontiers in Cellular and Infection Microbiology* (2022): 617. Mariko S Peterson, Chester J Joyner, Stacey A Lapp, Jessica A Brady, Jennifer S Wood, Monica Cabrera-Mora, Celia L Saney, Luis L Fonseca, Wayne T Cheng, Jianlin Jiang, Stephanie R Soderberg, Mustafa V Nural, Allison Hankus, Deepa Machiah, Ebru Karpuzoglu, Jeremy D DeBarry, Rabindra Tirouvanziam, Jessica C Kissinger, Alberto Moreno, Sanjeev Gumber, Eberhard O Voit, Juan B. Gutiérrez, Regina Joice Cordy, Mary Rose Galinski. DOI: [10.3389/fcimb.2022.888496](https://doi.org/10.3389/fcimb.2022.888496)

- 2021 "Clinical recovery of *Macaca fascicularis* infected with *Plasmodium knowlesi*". *Malaria Journal*, 20(1), pp.1-20. Mariko S. Peterson, Chester J. Joyner, Jessica A. Brady, Jennifer S. Wood, Monica Cabrera-Mora, Celia L. Saney, Luis L. Fonseca, Wayne T. Cheng, Jianlin Jiang, Stacey A. Lapp, Stephanie R. Soderberg, Mustafa V. Nural, Jay C. Humphrey, Allison Hankus, Deepa Machiah, Ebru Karpuzoglu, Jeremy D. DeBarry, MaHPIC-Consortium, Rabindra Tirouvanziam, Jessica C. Kissinger, Alberto Moreno, Sanjeev Gumber, Eberhard O. Voit, Juan B. Gutiérrez, Regina Joice Cordy and Mary R. Galinski, 2021.  
DOI: [10.1186/s12936-021-03925-6](https://doi.org/10.1186/s12936-021-03925-6). Preprint published in bioRxiv. DOI: [10.1101/2021.06.28.448877](https://doi.org/10.1101/2021.06.28.448877)
- 2020 "An Epidemiological Model of Malaria Accounting for Asymptomatic Carriers." *Bulletin of Mathematical Biology* 82, 42 (2020). Jacob B. Aguilar, Juan B. Gutiérrez.  
DOI: [10.1007/s11538-020-00717-y](https://doi.org/10.1007/s11538-020-00717-y) Preprint published in arXiv in 2017: [arXiv:1611.04668](https://arxiv.org/abs/1611.04668) [q-bio.PE].
- 2020 "Practical Recommendations for Supporting a Systems Biology Cyberinfrastructure." *Data Science Journal*, 19(1), 24. Jeremy D. DeBarry, Jessica C. Kissinger, Mustafa V. Nural, Suman B. Pakala, Jay C. Humphrey, Esmeralda V. S. Meyer, Regina Joice Cordy, Monica Cabrera-Mora, Elizabeth D. Trippe, Jacob B. Aguilar, Ebru Karpuzoglu, Yi H. Yan, Jessica A. Brady, Allison N. Hankus, Nicolas Lackman, Alan R. Gingle, Vishal Nayak, Alberto Moreno, Chester J. Joyner, Juan B. Gutiérrez, Mary R. Galinski, the MaHPIC Consortium.  
DOI: [10.5334/dsj-2020-024](https://doi.org/10.5334/dsj-2020-024)
- 2020 "In silico identification of potential inhibitors against human 2'-5'- oligoadenylate synthetase (OAS) proteins." *Computational Biology and Chemistry*, Volume 85, April 2020, 107211. Gonzalez KJ, Moncada-Giraldo DM, Juan B. Gutiérrez.  
DOI: [10.1016/j.compbiolchem.2020.107211](https://doi.org/10.1016/j.compbiolchem.2020.107211). Preprint published in BioRxiv DOI: [10.1101/804716](https://doi.org/10.1101/804716)
- 2019 "Multi-scale dynamics of infectious diseases." *Interface Focus* 10: 20190118, Royal Society. Garabed RB, Jolles A, Garira W, Lanzas C, Juan B. Gutiérrez, and Rempala G.  
DOI: [10.1098/rsfs.2019.0118](https://doi.org/10.1098/rsfs.2019.0118).
- 2019 "The FRiND Model: A Mathematical Model for Representing Macrophage Plasticity in Muscular Dystrophy Pathogenesis." *Bulletin of Mathematical Biology*. Volume 81, pages 3976–3997. Houston MT, Juan B. Gutiérrez.  
DOI: [10.1007/s11538-019-00635-8doi](https://doi.org/10.1007/s11538-019-00635-8doi)
- 2018 "A Review of Mathematical Models for Muscular Dystrophy: A Systems Biology Approach." *PLOS Currents Muscular Dystrophy*. 2018 Feb 16 . Houston MT, Cameron AN, Juan B. Gutiérrez.  
DOI: [10.1371/currents.md.6af74d0cec0834554dac78f0045cfded](https://doi.org/10.1371/currents.md.6af74d0cec0834554dac78f0045cfded).
- 2017 PROCEEDINGS. "A comprehensive investigation and comparison of Machine Learning Techniques in the domain of heart disease." In *Computers and Communications (ISCC), 2017 IEEE Symposium on*, pp. 204-207. IEEE, 2017. Pouriye, Seyedamin, Sara Vahid, Giovanna Sannino, Giuseppe De Pietro, Hamid Arabnia, and Juan B. Gutiérrez.  
DOI: [10.1109/ISCC.2017.8024530](https://doi.org/10.1109/ISCC.2017.8024530)
- 2017 "Malaria epidemiology in low-endemicity areas of the northern coast of Ecuador: high prevalence of asymptomatic infections." *Malaria journal* 16, no. 1 (2017):300. Sáenz, Fabián E., Andrea Arévalo-Cortés, Gabriela Valenzuela, Andrés F. Vallejo, Angélica Castellanos, Andrea C. Poveda-Loayza, Juan B. Gutiérrez, et al.  
DOI: [10.1186/s12936-017-1947-0](https://doi.org/10.1186/s12936-017-1947-0)
- 2017 PROCEEDINGS. "Reviving Computer Science Education through Adaptive, Interest-Based Learning." In *2017 International Conference on Computational Science and Computational Intelligence (CSCI)*, pp. 1161-1166. IEEE, 2017. Aguilar, Karen, Saeid Safaei, Hamid R. Arabnia, Juan B. Gutiérrez, Walter D. Potter, and Thiab R. Taha.  
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- 2017 PROCEEDINGS. "Towards Interest-based Adaptive Learning and Community Knowledge Sharing." International Conference Frontiers in Education: CS and CE. FECS'17. CSREA Press, 2017, pp 58-61. Aguar, K., Arabnia, H. R., Juan B. Gutiérrez, Potter, W. D., and Taha, T. R.  
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- 2017 CHAPTER. "Establishment of the Vertebrate Germ Layers." In: Pelegri F., Danilchik M., Sutherland A. (eds) Vertebrate Development, pp. 307-381. Springer International Publishing, 2017. Tseng, Wei-Chia, Mumingjiang Munisha, Juan B. Gutiérrez, and Scott T. Dougan.  
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- 2017 PROCEEDINGS. "Text Summarization Techniques: A Brief Survey." (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 8, No. 10, 2017. Mehdi Allahyari, Seyedamin Pouriyeh, Mehdi Assefi, Saeid Safaei, Elizabeth D. Trippe, Juan B. Gutiérrez, Krys Kochut.  
<http://...Volume8No10-Paper-52.pdf>. Preprint published in arXiv in 2017: [arXiv:1707.02268](https://arxiv.org/abs/1707.02268) [cs.CL]
- 2016 PROCEEDINGS. "Making CS inclusive: An overview of efforts to expand and diversify cs education." In Computational Science and Computational Intelligence (CSCI), 2016 International Conference on, pp. 321-326. IEEE, 2016. Aguar, Karen, Hamid R. Arabnia, Juan B. Gutiérrez, Walter D. Potter, and Thiab R. Taha.  
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- 2015 "Clinical profile of Plasmodium falciparum and Plasmodium vivax infections in low and unstable malaria transmission settings of Colombia." Malaria Journal 2015, 14:154. Myriam Arevalo-Herrera, Mary Lopez-Perez, Luz Medina, Alberto Moreno, Juan B. Gutiérrez, Socrates Herrera.  
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- 2015 "Bivariate Spline Solution of Time Dependent Nonlinear PDE for a Population Density over Irregular Domains." Mathematical Biosciences. Volume 270, Part B, December 2015, Pages 263–277. Juan B. Gutiérrez, Ming-Jun Lai, George Slavov.  
DOI: [10.1016/j.mbs.2015.08.013](https://doi.org/10.1016/j.mbs.2015.08.013)
- 2015 "From Within Host Dynamics to the Epidemiology of Infectious Disease: Scientific Overview and Challenges." Mathematical Biosciences. Volume 270, Part B, December 2015, Pages 143–155. Juan B. Gutiérrez, Mary R. Galinski, Stephen Cantrell, Eberhard O. Voit.  
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- 2010 "On the Well Posedness of the Trojan Y Chromosome Model." *Boundary Value Problems*, vol. 2010, Article ID 405816, Nov. 2010. DOI: [10.1155/2010/405816](https://doi.org/10.1155/2010/405816). RD Parshad, [Juan B. Gutiérrez](#).
- 2010 "On the Global Attractor of the Trojan Y Chromosome Model." *Communications in Pure and Applied Analysis*, 10(10):339-359, January 2010.  
DOI: [10.3934/cpaa.2011.10.339](https://doi.org/10.3934/cpaa.2011.10.339). RD Parshad, [Juan B. Gutiérrez](#).
- 2008 "Shape analysis for automated sulcal classification and parcellation of MRI data." *Journal of Combinatorial Optimization*, 15(3):257-275, 2008. DOI: [10.1007/s10878-007-9096-y](https://doi.org/10.1007/s10878-007-9096-y). MK Hurdal, [Juan B. Gutiérrez](#), C Laing, and DA Smith.
- 2008 PROCEEDINGS. "Geometric invariants for classification of cortical sulci." In *IEEE International Conference on Image Processing*. IEEE, pages 1156-1159, San Diego, CA, October 2008. DOI: [10.1109/ICIP.2008.4711965](https://doi.org/10.1109/ICIP.2008.4711965). Monica K. Hurdal, [Juan B. Gutiérrez](#), Christian Laing, Aaron D. Kline, and Deborah A. Smith.
- 2008 PROCEEDINGS. "Literatronica. Adaptive Digital Narrative." In *ACM's Hypertext'08. Creating '08: Proceedings of the hypertext 2008 workshop on Creating out of the machine: hypertext, hypermedia, and web artists explore the craft*, pages 5-8, New York, NY, USA. DOI: [10.1145/1379153.1379156](https://doi.org/10.1145/1379153.1379156). [Juan B. Gutiérrez](#), and Mark C Marino.
- 2006 "A model describing the effect of sex-reversed YY fish in an established wild population: the use of a Trojan Y chromosome to cause extinction of an introduced exotic species." *Journal of Theoretical Biology*, 241(22):333-341, July 2006.  
DOI: [10.1016/j.jtbi.2005.11.032](https://doi.org/10.1016/j.jtbi.2005.11.032). [Juan B. Gutiérrez](#), and JL Teem.

**Scientific Preprints Not Yet Peer-Reviewed (9)**[\[ Back to Timeline – Back to TOC \]](#)

- 2024 **medRxiv**. YA Abdulhameed, S Roberts, JB Aguilar, J Kercheville, [Juan B. Gutiérrez](#). Data rectification to account for delays in reporting disease incidence with an application to forecasting COVID-19 cases. DOI: [10.1101/2024.04.08.24305398](#)
- 2020 **medRxiv**. Aguilar JB, Faust JS, Westafer LM, [Juan B. Gutiérrez](#). A Model Describing COVID-19 Community Transmission Taking into Account Asymptomatic Carriers and Risk Mitigation. DOI: [10.1101/2020.03.18.20037994](#)
- 2017 **arXiv**. Karen Aguar, Charles C. Sanchez, Diego Boada Beltran, Saeid Safaei, Mehdi Asefi, Jonathan Arnold, Pedro Portes, Hamid R. Arabnia, [Juan B. Gutiérrez](#). Considerations on Interdisciplinary Instruction and Design Influenced by Adaptive Learning. A Case Study Involving Biology, Computer Science, Mathematics, and Statistics. [arXiv:1703.06010](#) [physics.ed-ph]
- 2017 **arXiv**. Mehdi Allahyari, Seyedamin Pouriyeh, Mehdi Assefi, Saied Safaei, Elizabeth D. Trippe, [Juan B. Gutiérrez](#), Krys Kochut. A Brief Survey of Text Mining: Classification, Clustering and Extraction Techniques. [arXiv:1707.02919](#) [cs.CL]
- 2017 **arXiv**. Elizabeth D. Trippe, Jacob B. Aguilar, Yi H. Yan, Mustafa V. Nural, Jessica A. Brady, Mehdi Assefi, Saeid Safaei, Mehdi Allahyari, Seyedamin Pouriyeh, Mary R. Galinski, Jessica C. Kissinger, [Juan B. Gutiérrez](#). A Vision for Health Informatics: Introducing the SKED Framework. An Extensible Architecture for Scientific Knowledge Extraction from Data. [arXiv:1706.07992](#) [q-bio.QM].
- 2017 **arXiv**. Yi H. Yan, Diego M. Moncada, Elizabeth D. Trippe, [Juan B. Gutiérrez](#). Correlates of severity of disease in Macaca mulatta infected with Plasmodium cynomolgi. [arXiv:1706.08836](#) [q-bio.TO].
- 2017 **arXiv**. Derek Onken, Eric Marty, Roberto Palomares, Rui Xie, Leyao Zhang, Jonathan Arnold, [Juan B. Gutiérrez](#). The lunar cycle's influence on sex determination at conception in humans. [arXiv:1706.08151](#) [q-bio.OT].
- 2017 **arXiv**. Yi H. Yan, Jacob B. Aguilar, Elizabeth D. Trippe, [Juan B. Gutiérrez](#). Quantification of Healthy Red Blood Cell Removal and Preferential Invasion of Reticulocytes in Macaca mulatta during Plasmodium cynomolgi Infection. [arXiv:1706.08139](#) [q-bio.CB].
- 2016 **arXiv**. Yi H. Yan, Elizabeth D. Trippe, [Juan B. Gutiérrez](#). A Method for Massively Parallel Analysis of Time Series. [arXiv:1612.08759](#) [q-bio.QM].

**Peer-Reviewed Publications in Electronic Literature (9)**[\[ Back to Timeline – Back to TOC \]](#)

- 2010 Chapter: L Borràs, JB Gutiérrez. The Global Poetic System (GPS): A System of Poetic Positioning. Chapter 15, pp. 345-364. Beyond the Screen: Transformations of Literary Structures, Interfaces and Genre. Peter Gendolla, Jörgen Schäfer, Eds. Transcript Verlag, 2010. Bielefeld, Germany. DOI: [10.14361/9783839412589-015](#)
- 2009 Journal: JB Gutiérrez, Mark C. Marino, Pablo Gervás, Laura Borràs Castanyer Electronic Literature as an Information System. In Hyperrhiz: New Media Cultures. [Issue 6, Summer 2009](#).
- 2008 Proceedings: JB Gutiérrez and MC Marino. Literatronica. Adaptive Digital Narrative. In Creating '08: Proceedings of the hypertext 2008 workshop on Creating out of the machine: hypertext, hypermedia, and web artists explore the craft, pages 5-8, New York, NY, USA. DOI: [10.1145/1379153.1379156](#)
- 2007 Chapter: JB Gutiérrez. The Limits of Digital Narrative: A Functional Analysis. Chapter 5, pp. 85-103. [Literatures in the Digital Era: Theory and Praxis](#). Amelia Sanz, Dolores Romero, Eds. Cambridge Scholars Press, 2007. UK/Spain.

- 2006 Proceedings: JB Gutiérrez. [Literatronic: The use of Hamiltonian cycles to produce adaptivity in literary hypertext](#). In The Bridges Conference 2006: Mathematical Connections in Art, Music, and Science, pages 215-224, London, UK, August 2006.
- 2006 Journal: JB Gutiérrez, MC Marino. Entretenimientos de N-Capas: Literatura Electrónica Como un Sistema de Información (N-Tier Entertainments: Electronic Literature as an Information System). Cuadernos de Literatura, ISSN 0122-8102, ISSN-e 2346-1691, Vol. 12, N°. 23, 2007, págs. 129-141.
- 2004 Journal: JB Gutiérrez. [Hipertexto Literario: Replanteamiento de las premisas](#). (Literary Hypertext: Rethinking the premises.) Hojas Universitarias. Journal of the School of Humanities of the Universidad Central, (56):128-132. Bogota, Colombia, October 2004.
- 2000 Journal: JB Gutiérrez. [Hipertexto en Contexto III](#). (Hypertext in context III.) In Signo y Pensamiento. Journal of the School of Communication of the Pontificia Universidad Javeriana, XIX(36):111-118. Bogota, Colombia, 2000.
- 1999 Journal: JB Gutiérrez. Hipertexto en Contexto (Hypertext in Context.) In Revista de Literatura Hispanoamericana. (Journal of Latin-American Literature). Journal of the School of Literature of Universidad del Zulia (38):83-90, Jan-Jun 1999. Maracaibo, Venezuela, 1999. ISSN: 0252-9017.

### Fiction (8)

[ [Back to Timeline](#) – [Back to TOC](#) ]

To date, there are seven dissertations, three masters thesis, and six peer-reviewed manuscripts written about my literary work. See <https://biomathematicus.me/publications/#FictHum>

- 1998 NOVEL. Condiciones Extremas (Extreme Conditions). Version I: Multimedia novel (book and CD-ROM). Written with support from the Repository of Artistic Projects of the Institute of Culture of Bogota. Grants 514/1997 and 410/1998, Bogota, Colombia. Published by Laboratorio Multimedial, Repository of Artistic Proposals 1997, Institute of Culture of Bogota, Colombia.
- 1996 NOVEL. El primer Vuelo de los Hermanos Wright (The first Flight of the Wright Brothers). Written with support from the National Grants of The Ministry of Culture of Colombia (COLCULTURA), 1996. Grant COLCULTURA-SECAB 014/1996. Bogota, Colombia.
- 1996 SHORT STORY COLLECTION. Siete Curiosas Formas de Morir. (Seven Curious Ways to Die). Unidad de Publicaciones, Universidad Nacional de Colombia (Publishing Unit, National University of Colombia.) 1996.
- 2000 SHORT STORY. Las Fricciones de San Sebastián. (The Frictions of St. Sebastian). Revista Avianca. Magazine of Avianca Airlines. Number 254. Bogota. Colombia. Mar, 2000. Pag. 66-69. Bogota, Colombia. 2000
- 2000 SHORT STORY. La Sagrada Geometría (The Sacred Geometry.) In Antología Colombiana de Ciencia Ficción (Companion of Colombian Science Fiction). Pag. 93-96. Rene Rebetez (ed.) Espasa, 2000. Bogota, Colombia. ISBN: 958-614-804-1. Also in In (CREA: An Expedition through Colombian Culture). Ministry of Culture of Colombia (formerly Colcultura), 1995.
- 1999 SHORT STORY. Las Exquisitas Disquisiciones de Fray Leonardo Baz. (The exquisite reasoning of Father Leonardo Baz.) Gaceta. Magazine of the Ministry of Culture of Colombia. Pag. 150-145. Num. 44-45. Bogota, Colombia. 1999. ISSN: 0121-7194
- 1996 SHORT STORY. González, Archivos y Documentos. (Gonzalez, Files and Documents.) In Sunday Readings of El Tiempo (Sunday Readings from The Times), newspaper. 475,000 copies (ISSN: 0121-9790). Also in Carta Universitaria, Journal of the National University, December 1996. Bogota, Colombia. ISSN: 0122-2929. Winner of the International Story Award 'Carlos Castro Saavedra', 1996, Medellin, Colombia.

1995 SHORT STORY. *Atyseikuiwandiú, o los Avatares de la Cruel Sangre* (Atyseikuiwandiú, or the Fortune of the Cruel Blood). In *Lecturas Dominicales de El Tiempo* (Sunday Readings from The Times), newspaper. 01/15/1995. Bogota, Colombia. 475,000 copies (ISSN: 0121-9790). Also in *Ko'eyú, Journal of Cultural and Political Analysis*. Number 64, April-June 1994. Caracas, Venezuela.

## Research Presentations (69)

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2024 INVITED. [‘The Flaws of Others.’ Using Large Language Models in Mathematical Biology](#). 2024 Fall Central Sectional Meeting of the American Mathematical Society. September 14, 2024. The University of Texas at San Antonio. San Antonio, TX.
- 2024 ORGANIZED. [Mathematics: The Gateway to Social Justice](#). 2024 Fall Central Sectional Meeting of the American Mathematical Society. September 14, 2024. The University of Texas at San Antonio. San Antonio, TX.
- 2024 ORGANIZED. [AI in Biomedical Research: Large Language Models to Aid Multi-Omic Analysis](#). Workshop: Data and AI Intensive Research with Rigor and Reproducibility (DAIR<sup>3</sup>) 2024 Cohort. Workshop. July 28- August 2, 2024. Jackson State University, Jackson, MS.
- 2024 INVITED. [Using AI for Multi-omic analysis of resilience in malaria](#). July 15-19, 2024. Computational Genomics Summer Institute (CGSI). University of California at Los Angeles, Los Angeles, CA.
- 2024 ORGANIZED. [Science and Social Justice: Forging Critical Methods](#). Workshop, July 8-12, 2024. Lorentz Center, Universiteit Leiden, Leiden, Netherlands.
- 2024 ORGANIZED. [AI in Biomedical Research: Large Language Models to Aid Multi-Omic Analysis](#). Workshop: Data and AI Intensive Research with Rigor and Reproducibility (DAIR<sup>3</sup>) 2024 Cohort. Workshop. June 17-22, 2024. University of Michigan, Ann Arbor, MI.
- 2024 INVITED. International Collaborations: Navigating Challenges in Higher Education. 5th Cohort of the Academia de Liderazgo. Hispanic Association of Colleges and Universities. Salamanca, Spain, June 2, 2024.
- 2024 INVITED. [Modeling Malaria Across Scales](#). SIAM Conference on the Life Sciences (LS24), June 9-12, Portland, Oregon.
- 2023 INVITED. Multi-scale Models of Malaria. Brin Mathematics Research Center Workshop: [Mathematics of Malaria Transmission Dynamics](#). November 13-17, 2023, College Park, Maryland.
- 2023 INVITED. Collective Human behavior. Joint seminar Texas A&M Corpus Christi and UT Rio Grande Valley. October 27, 2023. Hosted by Prof. Mallikarjunaiah Muddamallappa.
- 2023 CONTRIBUTED. Algebra II. The Gateway to Social Mobility. [Annual meeting of the Academic Data Science Alliance](#). October 24-27, 2023, San Antonio. TX.
- 2023 INVITED. SciFoo. Collective Human behavior. Google headquarters, Mountain View, CA.
- 2023 INVITED. Multiscale models of Malaria. Applied Mathematics Seminar, Department of Mathematics, Tarleton State University, March 15, 2023. Hosted by Prof. Christopher Mitchell.
- 2023 INVITED. The struggle to find a balance between mathematics and biology in multi-scale modeling. Mathematical Biology Seminar, Department of Mathematics, Virginia Tech, March 15, 2023. Hosted by Prof. Omar Saucedo.
- 2023 INVITED. [The social dynamics that shape who has a voice.](#), panel AMS Special Session on Diversity in Mathematical Biology. 2023 AMS Spring Southeastern Sectional Meeting, March 18-19, 2023. Atlanta, GA.

- 2023 INVITED. [The social dynamics that shape who has a voice.](#), panel AMS Special Session on Diversity in Mathematical Biology. 2023 AMS Spring Southeastern Sectional Meeting, March 18-19, 2023. Atlanta, GA.
- 2023 INVITED. [How traditional narratives limit access to mathematics and social mobility.](#), panel SIAM Minisymposium on Quantitative Justice (NAM-SIAM Minisymposia/ Special Session), II. Joint Mathematics Meeting, January 7.
- 2023 INVITED. [Multiscale Analysis of Mosquito-borne Disease: The Case of Malaria](#), panel AMS Special Session on Advances in Modeling Mosquito-borne Disease Dynamics and Control Methods II. Joint Mathematics Meeting, January 6.
- 2023 INVITED. [Student Success in Mathematics at UTSA](#), panel TPSE Panel on Developing Innovative Upper Division Pathways in Mathematics: Strategies for Enrollment and Inclusion. Joint Mathematics Meeting, January 4.
- 2022 INVITED. [Overcoming Data Deficiencies for Pandemic Modeling: Where Modeling and Data Intersect](#), panel MS26 Integrating Data in Infectious Disease Modeling. SIAM Conference on the Mathematics of Data Science, September 26.
- 2022 INVITED. [Correlates of Student Success and Adaptive Learning: An Evidence-Based Approach to Exercise Optimal Control in Critical Student Pathways](#), panel Inclusive Teaching in Applied Mathematics. SIAM Annual Meeting, July 14.
- 2021 INVITED. Maximizing the Accuracy of COVID-19 Forecasting via Data Rectification. SIAM TX-LA Regional Meeting. Saturday, November 6. 2021.
- 2021 INVITED. [Maximizing insight with minimal \(and erroneous\) information: The case of COVID-19.](#) GA Tech Mathematical Biology Seminar. Wednesday, September 15, 2021.
- 2021 CONTRIBUTED. Data, Reality, and Cognitive Dissonance On modeling what we don't see with data we don't have. Annual Meeting of the Society for Mathematical Biology. June 17, 2021.
- 2020 CONTRIBUTED. Modeling COVID-19 With Asymptomatic Carriers Under Lockdown Conditions. 3rd Annual Meeting of the SIAM Texas-Louisiana Section. October 17, 2020.
- 2020 CONTRIBUTED. Modeling COVID 19 With Asymptomatic Carriers Under Lockdown Conditions. Annual Meeting of the Society for Mathematical Biology. August 20, 2020.
- 2020 INVITED. [Automated Knowledge Discovery: A Case Study.](#) Pacific Northwest National Lab. Mathematics for Artificial Reasoning in Science. May 27, 2020.
- 2020 INVITED. [COVID-19 Projections.](#) Mathematical Biosciences Institute at Ohio State University. Workshop on Mathematical and Computational Methods in Biology. May 7, 2020.
- 2020 INVITED. City of San Antonio Leadership Meeting for COVID-19. City Mayor, CEOs of hospitals, STRAC, SAMHD. March 31, 2020.
- 2019 INVITED. Machine Learning in Biomedical Sciences. Trinity University, Mathematics Colloquium. October 15, 2019.
- 2019 INVITED. [Machine Learning in Biomedical Sciences: A Case Study in Malaria.](#) Texas Tech University. TTU Workshop: Scientific Computing meets Machine Learning and Life Sciences.
- 2019 INVITED. Machine Learning in Biomedical Research. National Academies of Science, Engineering, and Medicine: Math Frontiers Webinar Series. [Video and Presentation.](#)
- 2018 INVITED. From Molecular Dynamics to Epidemiological Processes of Malaria. International Congress of Mathematics, Satellite Meeting for Mathematical Biology. University of Miami, July 26-29, Coral Gables, FL.

- 2018 INVITED. Talk & Showcase of literary work: De arcilla y bytes (Of clay and bytes). Lorem Bitsum, Festival de Literatura Electrónica. Casa del Lector, Junio 9, Madrid, Spain.
- 2018 INVITED. Multiscale Systems Biology: A Case Study Linking Molecular Dynamics to Epidemiological Processes of Malaria. Emphasis Workshop: Multiscale Dynamics of Infection. Mathematical Biosciences Institute, Ohio State University, April 23-27, 2018, Columbus, OH.
- 2017 INVITED. Talk & Poster: Challenges and Future Directions in Big Data Analytics and its Application in Health Informatics. 23rd ACM SIGKDD Conference of Knowledge, Discovery, and Data Mining. August 13-17, 2017, Halifax, Nova Scotia, Canada.  
[http://videlectures.net/kdd2017\\_panel\\_big\\_data\\_analytics/](http://videlectures.net/kdd2017_panel_big_data_analytics/)
- 2017 INVITED. Multi-scale analysis of malaria: How molecular patterns of disease emerge at continental scales. Center for Infectious Disease Dynamics, Pennsylvania State University. September 4, 2017, University Park, PA.
- 2017 INVITED. Multi-scale analysis of malaria: How molecular patterns of disease emerge at continental scales. Systems Biology and Bioinformatics Seminar, Emory University. August 2, 2017, Atlanta, GA.
- 2017 CONTRIBUTED. Talk: Modeling Across Scales: From Data Sparsity to Data Overload. 2017 Annual Meeting of the Society for Mathematical Biology. July 20, 2017, Salt Lake City, UT.
- 2017 CONTRIBUTED. Talk: Modeling Across Scales: From Data Sparsity to Data Overload. 2017 Annual Meeting of the Society for Mathematical Biology. July 20, 2017, Salt Lake City, UT.
- 2017 INVITED. Malaria Systems Biology: From Genes to Environment. Georgia Scientific Computing Symposium 2017. February 25, 2017, Athens, GA.
- 2016 CONTRIBUTED. Poster: Within-Host Mathematical Models of Malaria Built from Multi-omic Datasets. 65th Annual Meeting of the American Society of Tropical Medicine and Hygiene. November 13-17, 2016, Atlanta, GA.
- 2016 INVITED. Multiscale Systems Biology: From Genes to Environment. Emphasis Workshop: Population Models in the 21st Century. Mathematical Biosciences Institute, Ohio State University, June 13-22, 2016, Columbus, OH. <https://mbi.osu.edu/video/player/?id=4181>.
- 2016 INVITED. A most urgent contribution: Systems Biology of Malaria. Math Honors Day, Mercer University. March 24, 2016, Macon, GA.
- 2016 INVITED. Vector-Borne Diseases. US-Canadian Institutes Epidemiology Summer School: Mathematical Modeling of Infectious Disease Spread. Mathematical Biosciences Institute, Ohio State University, June 13-22, 2016, Columbus, OH. <https://mbi.osu.edu/video/player/?id=4023>
- 2015 CONTRIBUTED. Talk: Multiscale analysis of malaria. The Fourth International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems: Mathematical Modeling of Complex Dynamics from Cells to Ecosystems. October 4-6, Lubbock, TX.
- 2015 INVITED. The case for science engineering: Systems Biology of Malaria. Georgia Scientific Computing Symposium 2015. June 4, 2017, Georgia Institute of Technology, Atlanta, GA.
- 2015 CONTRIBUTED. Talk: Hemodynamic model of malaria infection with detailed immune response. The Ninth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory. April 1-4, 2015, Athens GA.
- 2014 INVITED. Systems Biology of Malaria: From Genes to Environment. The Secret Life of Malaria... A Global Journey to Cure and Prevention. One Health at UGA. March 19, 2014, University of Georgia, Athens, GA. <https://www.youtube.com/watch?v=PQ12Z5qPbIk>

- 2014 INVITED. From Within-Host to Between-Host Dynamics. Systems Biology of Epidemiology. Mini-symposium "Mathematical Models in Biology and Epidemiology" of SIAM-Life Sciences 14. August 5-6, Charlotte, NC.
- 2013 INVITED. Systems Biology of Malaria: From Genes to Environment. Seminar of the Department of Mathematics, Georgia State University, October 14, 2013, Atlanta, GA.
- 2013 CONTRIBUTED. Talk: Systems Biology of Epidemiology. The Mathematical Congress of the Americas. August 6, 2013, Guanajuato, Mexico.
- 2013 CONTRIBUTED. Poster: Species Propagation Fronts in Dendritic Domains. The Mathematical Congress of the Americas. August 7, 2013, St. John's College, Santa Fe, New Mexico.
- 2013 CONTRIBUTED. Systems Biology of Epidemiology: From Genes to Environment. Systems Biology of Infection Symposium. June 24-27, 2013. Monte Verità, Ascona, Switzerland.
- 2013 INVITED. Information System-Based Research: A scientific foundation to optimize use of resources and guide public health policies. II Simposio Perspectivas de Eliminación de la Malaria en América Latina. July 27-29, Bogota, Colombia.
- 2012 CONTRIBUTED. Poster: Mathematical Analysis of Asymptomatic Malaria as a Species Competition Problem. Multiscale Modelling in Medicine and Biology. September 3-4, 2012, University of Nottingham, Nottingham, UK.
- 2012 CONTRIBUTED. Poster: Mathematical Analysis of Asymptomatic Malaria as a Species Competition Problem. 61st Annual Meeting of the American Society of Tropical Medicine and Hygiene. November 13-17, 2012, Atlanta, GA.
- 2012 CONTRIBUTED. Talk: Asymptotic Estimates of Asymptomatic Malaria Persistence in Low Endemicity Areas of Latin America. Annual meeting of the Bio Medical Engineering Society (BMES). October 24-27, 2012, Atlanta, GA.
- 2010 CONTRIBUTED. Talk: An Application of Global Attractors in Spatial Ecology: How to Predict the Success of Intervention against Invasive Species. 7th International Conference on Differential Equations and Dynamical Systems, University of South Florida. December 15-18, 2010, Tampa, FL.
- 2010 INVITED. Genetic Control of Invasive Species: Population Dynamics of the Predator Within. Florida Atlantic University. February 11, 2010, Boca Raton, FL.
- 2009 CONTRIBUTED. Talk & Poster: A Trojan Y Chromosome Model for Eradication of Exotic Species in a Riverine System. Second SIAM Gators Student Conference. University of Florida. March 3-5, 2009, Gainesville, FL.
- 2008 CONTRIBUTED. Workshop Presentation: Creating out of the Machine. Hypertext 2008. ACM Conference on Hypertext and Hypermedia. June 19-21, 2008 - Pittsburgh, Pennsylvania.
- 2007 CONTRIBUTED. Poster: Summer 2007 Program on on the Geometry and Statistics of Shape Spaces. Statistical and Applied Mathematical Sciences Institute (SAMSI). Presented a poster about brain pattern classification and the Bio-Structural Classification Database. July 7-13, Research Triangle Park, NC.
- 2007 CONTRIBUTED. Showcase: Literatronica. Presented at the Exhibit of Mathematical Art of the National Meeting of the American Mathematical Society. Jan 5-8, New Orleans, LA.
- 2007 CONTRIBUTED. Talk: Generalized Trojan Gene Hypothesis. Presented at the National Meeting of the American Mathematical Society. Jan 5-8, New Orleans, LA.

- 2006 CONTRIBUTED. Paper & Talk: Literatronic: Use of Hamiltonian Cycles to Produce Adaptivity in Literary Hypertext. Presented at The Bridges Conference 2006: Mathematical Connections in Art, Music, and Science. Aug 4-9, London, UK.
- 2006 CONTRIBUTED. Talk: A Cost-Based Approach to Adaptivity in Literary Hypertext. Presented at the National Meeting of the American Mathematical Society. Jan 12-15, San Antonio, TX.
- 2005 CONTRIBUTED. Talk: Trojan Genes. A Guide to Get Rid of Invasive Species. Presented at Mathematical Association of America 26th Big Bend Region Annual Meeting. Oct 28, Tallahassee, FL.
- 2005 CONTRIBUTED. Talk: A Graph-Based Algorithm for Adaptive Literary Hypertext. Presented at Disjunctions 2005: Theory Reloaded, University of California, Riverside's Twelfth Annual Humanities Conference. Apr 8-9, Riverside, CA.

### Programmatic Meetings & Convenings (13)

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2024 Invited to "Eliminating Barriers / Project X." Mathematical Association of America. February 15-17, 2024. Washington, DC.
- 2024 Invited to "Future Directions for Mathematics Education." April 10-12, 2024. National Science Foundation, Arlington, VA.
- 2017 Principal investigators meeting of the Technologies for Host Resilience program, DARPA. October 20, 2017, Arlington, VA.
- 2017 Programmatic meeting of the systems biology groups of the National Institute of Allergies and Infectious Diseases (NIH's NIAID). May 7-10, 2017, Chicago, IL.
- 2016 Systems Biology Data & Modeling Working Groups of the NIH's NIAID. December 1, 2016, New York, NY.
- 2016 Programmatic meeting of the systems biology groups of the NIH's NIAID. April 11-13, 2017, New York, NY.
- 2016 Systems Biology Data & Modeling Working Groups of the NIH's NIAID. Jan 21-23, 2016, Seattle, WA.
- 2016 Programmatic meeting of the International Centers for Excellence in Malaria Research (ICEMR), NIH's NIAID. August 15-20, 2016. Kampala, Uganda.
- 2015 Programmatic meeting of the ICEMRs, NIH's NIAID. August 17-21, 2015. Cali, Colombia.
- 2014 Programmatic meeting of the ICEMRs, NIH's NIAID. August 26-28, 2014. Lima, Peru.
- 2013 Programmatic meeting of the ICEMRs, NIH's NIAID. August 19-24, 2013, Guilin, China.
- 2012 Programmatic meeting of the ICEMRs, NIH's NIAID. August 22-25, 2012. Goa, India.
- 2011 Programmatic meeting of the ICEMRs, NIH's NIAID. August 15-19, 2012. Lusaka, Zambia.

### Meetings and Workshops Organized

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2024 Organizer of the workshop "[Science and Social Justice: Forging Critical Methods](#)." July 8-12, 2024. Lorentz Center, Universiteit Leiden, Leiden, Netherlands.
- 2021 Organizer of the session "[Reproducibility, reliability, and robustness: confronting models from across mathematical biology with data](#)". 4th Annual Meeting of the SIAM Texas-Louisiana Section, November 5-7, 2021.



- 2018 Organizer of the Emphasis Workshop: “Multiscale Dynamics of Infection”. Mathematical Biosciences Institute, April 23-27, 2018. As a result of this workshop, a special issue was organized in Royal Society’s Interface Focus, Volume 10, Issue 1 (February, 2020). DOI: [10.1098/rsfs.2019.0118](https://doi.org/10.1098/rsfs.2019.0118)
- 2014 Organizer of the Current Topic Workshop: “From Within Host Dynamics to the Epidemiology of Infectious Disease”. Mathematical Biosciences Institute, April 7-11, 2014. As a result of this workshop, a special issue was organized in the journal Mathematical Biosciences. [Volume 270, Part B, Pages 143-278](#) (December, 2015).

## Workshops Attended

[\[ Back to Timeline – Back to TOC \]](#)

- 2016 Quantitative Biology Workshop at Spelman College, Friday, March 11, 2016, Atlanta, GA.
- 2011 BIRS Workshop 11w5106, Emerging Challenges at the Interface of Mathematics, Environmental Science and Spatial Ecology. July 3-8, 2011. Banff International Research Station, Alberta, Canada.
- 2011 AIM Workshop: Careers in academia. June 20-24, 2011. American Institute of Mathematics, Palo Alto, CA.
- 2010 Using Glenn, the IBM Opteron 1350 at the Ohio Supercomputer Center. OSC. October 19-20, 2010, Columbus, OH.
- 2010 Mathematical Modeling of Plant Development. Mathematical Biosciences Institute, OSU. September 27-October 1, 2010, Columbus, OH.
- 2010 Bootcamp in Cancer Modeling. Mathematical Biosciences Institute, OSU. September 7-10, 2010, Columbus, OH.
- 2010 Workshop for Young Researchers in Mathematical Biology. Mathematical Biosciences Institute, OSU. August 30 - September 1, 2010, Columbus, OH.
- 2010 Mathematical Neuroendocrinology. Mathematical Biosciences Institute, OSU. August 9-13, 2010, Columbus, OH.
- 2007 Image Processing for Random Shapes, Applications to Brain Mapping, Geophysics and Astrophysics. Institute for Pure and Applied Mathematics, UCLA. May 21-25, 2007, Los Angeles, CA.
- 2007 Program on the Geometry and Statistics of Shape Spaces. Statistical and Applied Mathematical Sciences Institute (SAMSI). July 2007, Research Triangle Park, NC.
- 2006 SC06 - The International Conference for High Performance Computing Networking and Storage. Nov 11-17, 2006, Tampa, FL.

## Information Technology & Hardware

[\[ Back to Timeline – Back to TOC \]](#)

I have know-how and experience in designing and implementing complex multi-tier information systems that integrate numerical algorithms (microcontrollers to supercomputers), relational databases, data mining, remote sensing & GIS, telecommunication, and user interfaces.

- Operating Systems: UNIX, Linux, MacOS, Windows, DOS.
- Computer Languages: MATLAB, Python, R, Maple, Scilab, C++, C, Fortran, VB.NET, C#, ASP.NET, Java, JSP, JavaScript, SQL (ANSI and vendor variants such as T-SQL and PL-SQL).
- Database Management Systems: SQL Server, Oracle, MySQL, PostgreSQL, MongoDB.
- Geographic Information Systems: Map Windows, ArcGIS, MATLAB Mapping Toolbox.

- Development Tools and Technologies: Visual Studio, Eclipse, productivity tools (LaTeX, MS Project, Office), data standards (HTML, XML/XSL, ArcXML), AutoCAD.
- Hardware Design: Arduino, G-Code for CNC (drill mill, lathe), 3D printing, Raspberry Pi.
- Certifications: MCSD.NET - Microsoft Certified Solution Developer for .NET.

## Teaching

### Graduate Students (4 M.Sc., 9 Ph.D.)

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2024 UGA. Saeid Safaei, Ph.D. in Computer Science. [Introducing SWAG: A Novel Neural Network Variation for Enhanced Performance and Efficiency in Deep Learning](#). Committee Chairs: [Juan B. Gutiérrez](#), Hamid R. Arabnia. Committee Members: Thiab R. Taha, Khaled Rasheed, Budak Arpinar. NOTE: At the time of graduation of Dr. Safaei, I was no longer affiliated to UGA, therefore I could not be listed as a main advisor. Dr. Safaei was fully funded by my lab and wrote his dissertation under my supervision. I am the corresponding author of [the main article published from the dissertation](#).
- 2024 UTSA. Khanh Ho. Masters of Science in Mathematics Education.
- 2022 UTSA. Samuel Roberts. Masters of Science in Mathematics.
- 2019 UGA. Jessica A. Brady. Ph.D. in Engineering. [Mathematical modeling in health and disease](#). Committee Chair: [Juan B. Gutiérrez](#), Karen Hallow. Committee Members: Xianqiao Wang, Caner Kazanci, Jonathan Arnold.
- 2019 UGA. Zerotti Woods. Ph.D. in Mathematics. [A new regularization term for deep neural networks with applications to biological data](#). Committee Chair: [Juan B. Gutiérrez](#). Committee Members: Qing Zhang, Daniel Krashen, Caner Kazanci.
- 2019 UGA. Tao Sheng. Ph.D. in Bioinformatics. [Integration of transcriptomic and high frequency telemetry data via machine learning methods](#). Committee Chair: [Juan B. Gutiérrez](#). Committee Members: Liang Liu, Jessica Kissinger, Jonathan Arnold.
- 2019 UGA. Diego M. Moncada-Giraldo. Masters of Science in Bioinformatics.
- 2018 UGA. Valerie N. Flint. Ph.D. in Bioinformatics. [Shield: SNV heuristic identification, exploration, and location detector](#). Committee Chair: [Juan B. Gutiérrez](#). Committee Members: Shaying Zhao, Liang Liu, Jonathan Arnold.
- 2018 UGA. Matthew T. Houston. Ph.D. in Mathematics. [The FRiND model: a mathematical model for representing immunological interactions in muscular dystrophy pathogenesis](#). Committee Chair: [Juan B. Gutiérrez](#). Committee Members: Qing Zhang, Caner Kazanci, Jonathan Arnold.
- 2018 UGA. Elizabeth D. Trippe. Ph.D. in Bioinformatics. [Data Integration for Systems Biology](#). Committee Chair: [Juan B. Gutiérrez](#). Committee Members: Jonathan Arnold, Jessica Kissinger, David Peterson.
- 2018 UGA. Bolanle O. Salaam. Masters of Science in Applied Mathematical Sciences.
- 2017 UGA. Karen E. Aguar, Ph.D. in Computer Science. [SAIL: A system for adaptive interest-based learning in STEM education](#). Committee Chairs: [Juan B. Gutiérrez](#), Hamid R. Arabnia. Committee Members: Hamid R. Arabnia, Thiab R. Taha, Walter D. Potter.
- 2017 UGA. Yi H. Yan, Ph.D. in Bioinformatics. [Multi-Omic and multi-scale data integration for the characterization of malaria infection in non-human primates](#). Committee chair: [Juan B. Gutiérrez](#). Committee Members: Ying Xu, Julie Moore, Jonathan Arnold.

## Courses

[ [Back to Timeline](#) – [Back to TOC](#) ]

I have taught in multiple fields across arts and sciences. Below is a list of 36 undergraduate and graduate courses in mathematics, bioinformatics, literature, Latin American history, and history of science.

### At the University of Texas at San Antonio:

- 2024 DAIR<sup>3</sup>, Summer. [Data and AI Intensive Research with Rigor and Reproducibility \(DAIR<sup>3</sup>\)](#). This NIH-supported trainign program supports weeklong bootcamps for faculty, postdoctoral trainees, staff scientists, and advanced graduate students. Topics include ethical issues in biomedical data science; data management, representation, and sharing; rigorous analytical design; the design and reporting of AI models; generative AI; reproducible workflow; and assessing findings across studies. I deliver the [large language models module](#).
- 2024 MAT5983 (3h), Spring, Topics: Mathematical Foundations of Data Analytics.
- 2023 MAT5983 (3h), Fall, Topics: Mathematical Statistics I.
- 2023 MAT5983 (3h), Summer, Topics: Data Analytics Through the Study of Injustice.
- 2022 MAT5983 (3h), Summer, Topics: Data Analytics Through the Study of Racism.
- 2021 MAT1193 (3h), Fall, Calculus for the Biosciences.
- 2021 MAT5983 (3h), Fall, Topics: Data Analytics I.
- 2021 MAT4953 (3h), Fall, Special Studies In Mathematics: Data Analytics I.
- 2021 MAT5983 (3h), Spring, Topics: Data Analytics I.
- 2020 MAT1214 (4h), Fall, Calculus I.
- 2020 MAT5983 (3h), Fall, Topics: Modeling COVID-19.
- 2020 MAT6953 (3h), Summer, Independent Study.
- 2020 MAT4913 (3h), Spring, Independent Study.
- 2020 MAT1073 (3h), Spring, Algebra for Scientists and Engineers.

### At other institutions:

- 2017 MATH4780/6780 (3h). Spring - Mathematical Biology. University of Georgia (UGA).
- 2018 BINF8950 (3h). Spring - Systems Biology. UGA.
- 2018 BINF8950 (3h). Spring - Systems Biology. UGA.
- 2018 LACS1000 (3h). Spring - Introduction to Latin American and Caribbean Studies. UGA.
- 2017 MATH4500/6500 (3h). Fall - Numerical Analysis. UGA.
- 2017 FYOS1001 (1h). Fall - Modes of Knowledge. UGA.
- 2017 STAT4510/6510'(3h). Summer - Mathematical Statistics. UGA.
- 2017 MATH4780/6780 (3h). Spring - Mathematical Biology. UGA.
- 2016 FYOS1001 (1h). Fall - History of Science. UGA.
- 2016 GRSC8015 (1h). Fall - Data Management. UGA.
- 2016 BINF8950 (3h). Spring - Mathematical Biology. UGA.

- 2015 GRSC8015 (1h). Fall - Data Management. UGA.
- 2015 MATH2700 (3h). Fall - Differential Equations. UGA.
- 2015 BINF4005/6005 (3h). Spring - Computational Skills for Biology. UGA.
- 2014 MATH4780/6780 (3h). Fall - Mathematical Biology. UGA.
- 2014 MATH4750/6750 (3h). Spring - Transforms. UGA.
- 2013 MATH4780/6780 (3h). Fall - Computational Skills for Biology. UGA.
- 2013 MATH4780/6780 (3h). Spring - Mathematical Biology. UGA.
- 2012 BINF4005/6005 (3h). Fall - Computational Skills for Biology. UGA.
- 2011 Instructor of MAT152. Spring - Calculus I, Ohio State University, Columbus, Ohio.
- 2010 Instructor of MTH300/BIL385. Spring - Mathematical Models in Biology and Medicine, University of Miami, Coral Gables, Florida.
- 2009 Instructor of MAC-1140.23 Spring - Pre-calculus, Florida State University, Tallahassee, Florida.
- 2008 Instructor of MAP-2480.02,04 Fall - Biocalculus Computer Laboratory, Florida State University, Tallahassee, Florida.
- 2008 Online instructor of the Máster de estudios literarios en la era digital (M.A. Literary Studies in the Digital Age, Universitat Oberta de Catalunya (UOC), Barcelona, Spain.

## Service

### Outreach

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2023 Rowdy Datathon. University of Texas at San Antonio, October 28-29, 2022, San Antonio, TX.
- 2022 Rowdy Datathon. University of Texas at San Antonio, October 8-9, 2022, San Antonio, TX.
- 2018 Workshop for middle and high-school students in the Athens/Clarke/Oconee tri-county area: Monster Epidemiology. University of Georgia, July 9-13, 2018, Athens, GA.
- 2017 Invited Talk: True, Right, Correct, or Proven? A guide to modes of thinking. Acropolis - Athens Innovation Festival. April 24, 2017, Athens, GA.
- 2016 Workshop for middle and high-school students in the Athens/Clarke/Oconee tri-county area: Monster Epidemiology. University of Georgia, July 18-22, 2016, Athens, GA.
- 2015 Workshop for middle and high-school students in the Athens/Clarke/Oconee tri-county area: Monster Epidemiology. Athens Academy, February 4, 2015, Athens, GA.

### Editorial Service & Professional Societies

[ [Back to Timeline](#) – [Back to TOC](#) ]

- Editorial Board of Mathematical Biosciences (Elsevier), 2012-2023.
- Editorial Board of Mathematics (MDPI), 2020-Present.
- Member of the American mathematical Society (AMS).
- Member of the Society for Mathematical Biology (SMB).
- Member of the Society for Industrial and Applied Mathematics (SIAM).

## Prizes and Awards

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2023 Best Visualization. Academic Data Science Alliance Annual Meeting, San Antonio, TX.
- 2021 Diversity, Equity and Inclusion Award. Sponsored by Oak Ridge National Lab. Awarded on July 29, 2021 by the Society for Mathematical Biology.
- 1998 Civic Medal of the City of Bogota. Decree 504, August 4, 1999. Office of the Mayor of Bogota, Enrique Peñalosa Londoño. Awarded for public engagement with the community as a novelist.
- 1996 First Prize. Excellence in Engineering Thesis, November 28, 1996. Awarded by the Society of Civil Engineers, AICUN. Bogota, Colombia.
- 1996 First Prize. International Literary Contest Carlos Casto Saavedra, Medellin, Colombia.
- 1995 Winner of the International Story Award 'Ko'eyú Latinoamericano', 1995, Caracas, Venezuela.

## Media Coverage

[ [Back to Timeline](#) – [Back to TOC](#) ]

- 2020-22 Over sixty media articles (radio, newspapers, magazines, television) regarding forecasting work on COVID-19. See <https://mathresearch.utsa.edu/wp/?p=182>
- 2019 Hispanic Outlook on Education Magazine. Latin American And Latino STEM Education. Technology Program Helps Latinos (And All) Learn STEM. Michelle Adam (USA). Jan, 2019. <https://www.hispanicoutlook.com/articles/latin-american-and-latino-stem-education> [Online; accessed 5-Feb-2019]
- 2009 Conservation Magazine. Operation Sex Change. Cynthia Mills (WA, USA). Conservation Magazine, a publication of the Society for Conservation Biology, Sep 2009. <http://conservationmagazine.org/2009/07/operation-sex-change/> [Online; accessed 25-Feb-2015]
- 2008 ScienceLine. Supermales to the rescue. Rachel Mahan. Jan, 2008. New York, NY. <http://scienceline.org/2008/01/11/env-mahan-invasives/> [Online; accessed 25-Feb-2015].
- 2007 Nature News. Sex change wipes out invasive species. Louis Buckley. July, 2007. London, UK. <http://dx.doi.org/10.1038/news070723-9> [Online; accessed 25-Feb-2015].
- 2007 Trends in Ecology & Evolution. Control of introduced species using Trojan sex chromosomes. Samuel Cotton and Claus Wedekind (Switzerland). Trends in Ecology & Evolution 22(9), pp. 441-3, 09-2007. DOI: [10.1016/j.tree.2007.06.010](https://doi.org/10.1016/j.tree.2007.06.010).
- 2007 NCR Handelsblad. Vrouwjes verdrijven (Females away). Sander Voormolen. 2007. Rotterdam, Netherlands. <https://www.nrc.nl/nieuws/2007/08/16/vrouwjes-verdrijven-11375285-a1260938> [Online; accessed 5-Feb-2019].