Frances Marie Aponte Caraballo

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Education

Master of Sciences in Epidemiology
(08/01/2021-06/30/2023)
GPA: 4.00
University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health,
Department of Biostatistics and Epidemiology, San Juan, Puerto Rico.

> *Master's dissertation:* Epidemiology of Amyotrophic Lateral Sclerosis in Puerto Rico:
> Spatial distribution of cases.

> *Advisors*: Rosa V. Rosario Rosado, DrPH; Istoni da Luz Sant'Ana, PhD; Brenda Deliz
> Roldán, MD.

Physiological Psychology, Non-Degree
(06/01/2021-06/30/2021)
GPA:4.00
Inter American University of Puerto Rico, Metropolitan Campus

Bachelor's in Biology & Minor in Mathematics
(08/01/2016-07/31/2021)
GPA: 3.22
University of Puerto Rico, Cayey Campus, Department of Biology, Cayey, Puerto Rico.

High School
(08/01/2010-05/31/2016)
GPA: 3.73
Specialized School in Science, Math, and Technology, CIMATEC, Caguas, Puerto Rico.

Professional Experience

Research Assistant (06/01/2023-07/31/2023)
Research Project: Implementation and evaluation of multiple recruitment research strategies for persons living with HIV in Campo clinical trials in the Puerto Rico site, NCI grant #3U54CA242646-04S2, University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico.

Statistics Coordinator (01/01/2023-06/30/2023)
Division of Statistics, Puerto Rico ALS Foundation, Dorado, Puerto Rico. Developed the infrastructure for information gathering, input and data processing.

Tutor (08/2020-05/2021)
Collaborative Learning Program, Title V, University of Puerto Rico Cayey Campus. Tutored students from high school in Geometry and Advanced Precalculus.

Continuing Education Workshop Assistant for Teachers (2019-2021)
Assisted, delivered, and provided materials during the workshops, as needed. These workshops were prepared for teachers by Braxton PR.

Assisting Students with Disabilities (06/2018-06/2020)
Took notes for a student with disabilities and assisted them during the exams and projects, when needed. *Oficina de Servicios a Estudiantes con Impedimento* (OSEI), University of Puerto Rico, Cayey Campus.

F.I.E.S.T.A. VIII Program (08/2017- 06/2020)
Performed publicity work in awareness and prevention activities. Conducted campaigns on the use and abuse of alcohol while driving. *Centro Interdisciplinario de Desarrollo Estudiantil* (CE.D.E.), University of Puerto Rico, Cayey Campus.

Honors, Awards and Fellowships

Awardee, *Public Health in Megacities and Fast-Growing Cities Course*. Icahn School of Medicine, Mount Sinai and Instituto Regional de Estudios en Sustancias Tóxicas de la Universidad Nacional (IRET-UNA). (June 1 – July 25, 2023).

Scholarship, *Spatial Statistics 2023: Climate and the Environment Conference.* University of Colorado, Boulder, United States of America. From the <u>Biostatistics and Epidemiology Department</u>, <u>Dean of Student Affairs</u> of the Graduate School of Public Health and the <u>Chancellor's Office</u> from the University of Puerto Rico, Medical Sciences Campus. (July 18-21, 2023).

Academic Excellence and Leadership in Research Award, Annual Ceremony for Outstanding Students, Graduate School of Public Health, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico. (May 25, 2023).

Fellowship Awardee: *Artificial intelligence and machine learning, AIM-AHEAD Data Science Training Core (DSTC) Training Practicum Program (PRIME)*. PI: Dr. Legand L. Burge (Funded by the NIH Agreement No.: 1OT2OD032581-01). (August 2022 to May 2023).

Trainee, Cancer Prevention and Control (CAPAC) Research Training Program (NCI grant #5R25CA240120-04), University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico. (May to August 2022).

Scholarship, 38th SIDIM, *Seminario Interuniversitario de Investigación en Ciencias Matemátics*. Mayagüez, Puerto Rico. From Cancer Prevention and Control (CAPAC) Research Training Program. (February 24-25, 2023).

Awardee, *Introduction to Occupational Health Course*. Mount Sinai School of Medicine, Universidad Nacional de Costa Rica and IRET (Instituto Regional de Estudios de Sustancias Tóxicas). (July 1 to September 2, 2022)**.**

Awardee, Tuition Waiver and Stipend for having 3.00 GPA or more**.** Graduate Chair and Research Assistance Program. (August 2021 to May 2023).

Awardee, Outstanding Presentation for my project on COVID-19 Epidemic Data Analysis in the Puerto Rican Metropolitan Area. Online R Coding Bootcamp for COVID-19 Analysis. The University of Tennessee Chattanooga. (December 19-23, 2020). Funded by National Science Foundation, Award number 1852042.

Research Funding Awardee, Puerto Rico Louis Stokes Alliance for Minority Participation (PRLSAMP). Funded by the National Science Foundation Award number HRD 2008186. (August 2020 to May 2021).

Research Funding Awardee, Research initiative for Scientific Enhancement (RISE program). Funded by the National Institute of Health Grant: 5R25GM059429-21. (2019).

Participant, NIH Project: Maintaining, Engaging and Tracking Alumni in Science Health Research (METAS +). PI: José Caraballo Cueto, PhD. Innovative Programs to Enhance Research Training (UPR-IPERT), University of Puerto Rico Cayey and Humacao Campuses. (March 2021 to May 2022).

Participant, Resilience Coaching Workshops. Innovative Programs to Enhance Research Training (UPR-IPERT), University of Puerto Rico Cayey and Humacao Campuses. (August 2019 to May 2021).

Member, Syrux Chapter, National Honor Society of Puerto Rico and Junior National Honor Society of Puerto Rico. (2011 – 2016).

Publications

Journal Articles

David-Hance, E, Tristani-Rodríguez, M. & Aponte-Caraballo, F.. **Impact of mitigation strategies: The case of the COVID-19 timeline in Puerto Rico**. 2021. *Revista Ingenio*s, 7 (2), 1-12. https://www.ingeniosupr.com/vol-72/2021/5/9/impact-of-mitigation-strategies-the-case-of-the-covid-19-timeline-in-puerto-rico Epub 2021 May 9.

Aponte-Caraballo, F., & Mercado-Cabrera, A. **Association between mitigation strategies on the COVID-19 pandemic in Puerto Rico using an epidemiological mathematical model**, 2021. *Revista Ingenio*s, 7 (2), 1-12. https://www.ingeniosupr.com/vol-72/2021/5/17/association-between-mitigation-strategies-on-the-covid-19-pandemic-in-puerto-rico-using-an-epidemiological-mathematical-model Epub 2021 May 9.

Acknowledgments in Publications

Guinovart-Sanjuán, D., Guinovart-Díaz, R., Vajravelu, K., Morales-Lezca, W., & Abelló-Ugalde, I. (October, 2021). **Multi-population analysis of the Cuban SARS-CoV-2 epidemic transmission before and during the vaccination process**. *Physics of Fluids*, *33*(10), 107107. https://doi.org/10.1063/5.0066912

Research Experiences

Graduate Research Experiences

Thesis project, Frances M. Aponte Caraballo**,** Rosa Rosario Rosado, Istoni da Luz Sant'Ana and Brenda Deliz Roldán. *Epidemiology of Amyotrophic Lateral Sclerosis in Puerto Rico: Spatial distribution of cases.* Graduate School of Public Health, University of Puerto Rico Medical Sciences Campus.

- Amyotrophic Lateral Sclerosis (ALS) is a fatal and progressive chronic neurodegenerative disease affecting nerve cells in the spinal cord and the brain. It is characterized by progressive mobility loss, dysphagia, and dysarthria complications until death from respiratory failure. In Puerto Rico, the epidemiology of the disease is unknown, so this study aims to characterize the epidemiology of the disease in Puerto Rico, evaluating the geographic distribution of cases.

Summer Internship, *Cancer Prevention and Control CAPAC Research Training Program*. PI: Ana Patricia Ortiz, Comprehensive Cancer Center. May 31, 2022 – August 5, 2022. Funded internship NCI Award Num. R25CA240120.

- Execution of different tasks on data pre-processing and assimilation, epidemiology, and health disparities in the 10 weeks program. Development of a project about colorectal cancer race disparities using artificial intelligence and machine learning methods.
- **Research Project,** Frances M. Aponte Caraballo, Abiel Roche Lima, PhD, and Frances Heredia Negrón, PhD. *Machine Learning approaches to study death incidence by race in colorectal cancer patients after treatments.* Funded by Cancer Prevention and Control (CAPAC) Research Training Program NCI Award number R25CA240120 and RCMI Grant U54 MD007600 (National Institute on Minority Health and Health Disparities) from the National Institutes of Health.
  - Studied through machine learning methods (ML) specific variables affecting the high incidence of colorectal mortality by race after receiving treatments and created models to predict death. My responsibilities were to develop the ML algorithms, data cleanup, model building, training, and testing.

Selected participant, Technical Introduction to Data Science and Health Disparities workshop series. PI: Dr. Muhammed Idris, RCMI Coordinating Center. September 6 to November 8, 2022.

- Technical workshops on health disparities and data science in a 10-week program. Workshops on building datasets using All of Us Research Workbench. Improve R coding skills and techniques. Introduction to data science, model evaluation (classification, probability estimation, logistic regression, generalization, fitting, and overfitting, and ranking and classifying).

<u>Undergraduate Research Experiences</u>

Research Project, Frances M. Aponte Caraballo, Andrea Mercado Cabrera, Andrián Márquez Hernández, Deyaneira Laboy Baiz, Elba David Hance, Génesis Rivera Bachier, Kiany Serrano Lugo, Mariola Tristani Rodríguez, Sofía Santiago Soler, Yaziel Rivera Rodríguez, Adriana F. Gonzalez Colón, Cristian R. Santiago Solivan and Mayteé Cruz Aponte. *Assessments of Mitigation Strategies for Sars-Cov-2 Using a Mathematical Epidemiological Model.* University of Puerto Rico Cayey Campus. (August 2020 – May 2021). <u>Research Funding Awardee-PRSLAMP Program.</u>
- Studying the progress of the COVID-19 epidemic in Puerto Rico, different mitigation strategies, and the impact on the epidemic using a mathematical epidemiological model based on the disease biology and the population behavior. My responsibilities are coordinating the biology team, data collection and data entry in excel program, analyzing data behavior using R studio statistical packages, and offer educational activities to prevent COVID-19. The educational activities consisted of educational talks on the spread of COVID-19 and preventions methods, in addition to activities for children on how diseases spread.

Research Project, Frances M. Aponte Caraballo, Aixamar Cosme Román and Mayteé Cruz Aponte. *Interventions on Chlamydia and Trichomoniasis Epidemiological Models Based on a Donovanosis Eradication Plan.* (August 2019 – May 2020). <u>Research Funding Awardee – RISE Program.</u>
- Studied the Chlamydia and Trichomoniasis epidemics' behavior after incorporating the eradication plan (isolation, guarding, surgical scrape, full completion of the treatment, sexual abstinence) to the epidemiological models used to eradicate Donovanosis in Australia. My responsibilities were to study public health policies and interventions used to manage epidemics. Additionally, to solve the equations and calculate the basic reproductive number with and without the eradication plan intervention.

Research Project, Frances M. Aponte Caraballo, Génesis Rivera Bachier, Imaris López Colón, Keisy N. Rodríguez Torres and Mayteé Cruz Aponte. *Epidemiological Models for Chlamydia trachomatis in Puerto Rico.* University of Puerto Rico Cayey Campus. (August 2018 – May 2019).
- Determined if Chlamydia trachomatis is an epidemic in the sexually active heterosexual Puerto Rican population between 15 and 35 years of age, As well as, determined which interventions helped to control or manage the epidemic. My responsibilities were to develop the mathematical model, estimate parameters, run simulations to assess parameter

sensibility, and calculate the basic reproductive number of Chlamydia. Learned to solve differential equations and code in Scilab and Latex. 2018

Research Project, Frances M. Aponte Caraballo, Alondra E. Machuca Alejandro, Melvin Arroyo Flores, Israel Hernández Rivera, Paola M. Miranda Castrodad, Yeninan Ortiz Gómez and Ruth Pietri Meléndez. *H_2S function in superoxide dismutase and its implication in fibrils formation.* University of Puerto Rico Cayey Campus. (August 2020 to May 2021).
- The aggregation of the SOD fibrils is known for causing Amyotrophic Lateral Sclerosis (ALS), a neurodegenerative disease. To study these structural changes of the protein, various infrared spectroscopy techniques are essential to determine the secondary structure. The aim of this study is to characterize SOD fibrils in the presence and absence of H_2S using IR techniques.

Summer Internship, *AIM/MCRN Summer School on Dynamics, Data, and the COVID 19 Pandemic.* American Institute of Mathematics (AIM), San José, California. (June 22 – July 31, 2020). Organized by Christopher Jones, Richard McGehee, Mary Silber, and Mary Lou Zeeman.
- Execution of different tasks on data assimilation, epidemiology, and system dynamics in the first three weeks. Development of a project on special topics about the COVID-19 pandemic. Successful, design of a two-population model for COVID-19: the case of Puerto Rico and Cuba. Funded by the National Science Foundation (NSF) and Fry Foundation.

Research Project, Frances M. Aponte Caraballo, David Guinovart Sanjuan, María I. Sánchez Muñiz and Nancy Rodríguez. *A two-population model for COVID-19: The case of Puerto Rico and Cuba.* American Institute of Mathematics (AIM). (June to July 2020).
- Modeled the interaction between populations based on parameter estimation from data reports. My responsibilities were to model the interaction between populations, identify parameter sensibility, and design multi-population epidemiological models using Matlab statistical packages.

Internship, *Online R Coding Bootcamp for COVID-19 Analysis. The University of Tennessee Chattanooga.* Organized by Hong Qin. (December 19-23, 2020). Funded by National Science Foundation.
- Trained in COVID-19 mathematical modeling, basics coding of R and the use of Google Colab. Learned to analyze big data sets. Developed a project on COVID-19 Epidemic Data Analysis in the Puerto Rican Metropolitan Area. <u>Awarded, Outstanding Presentation.</u>

Research Assistant, Frances M. Aponte Caraballo, Nilda Santos Loyo and Belinda Román. *The effect of social networks and communications of the graduates of the university of Puerto Rico at Cayey.* University of Puerto Rico, Cayey Campus. (January to May 2020).
- The research study aimed at creating a resource database using google forms, of ex-alumni to follow-up on their post-grad progress. Primary task: Coordinated and interviewed the ex-alumni.

Research Assistant, Frances M. Aponte Caraballo, and Aurinés Torres Sánchez. *When the neighbors become neighbors' health promoters: Participatory design of a health-based leadership training model.* University of Puerto Rico, Cayey Campus. (August to December 2019).

- It intended to develop a participatory action research model for communities to integrate and strengthen equity and social justice in the context of health welfare. Primary task: Literature review on social determinants of health.

Reports

First Author. Aponte-Caraballo, F., Lugo-Robles, R. & Pons-Calvo, A. *Informe de Proyecciones de Casos de COVID-19.* Weekly updates from August 2021 to January 2022. Coalición de Salud Comunitaria de Puerto Rico (COSACO PR) and Una Sola Respuesta. https://www.researchgate.net/profile/Frances_Aponte-Caraballo/research

Lecturer

Speaker, *Conference: A glimpse into Amyotrophic Lateral Sclerosis in Puerto Rico* at the *Second Symposium for Amyotrophic Lateral Sclerosis Patients and their Families.* University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico. May 20, 2023.

Speaker, *Workshop: Public Health Merit Badge.* Troop 20 Boys and Girls, Cidra, Puerto Rico. August to December 2022.

Speaker, *Webinar: Mathematical Models Serving Public Health* for the Clinical Laboratory Professionals, Chapter Micro Alpha (TMED) student organization. University of Puerto Rico, Cayey Campus. Online. March 2022.

Speaker, *Webinar: Epidemiological Research* for the Círculo de Matemáticas (CIMAT) student organization. University of Puerto Rico, Cayey Campus. Online. March 2022.

News, Articles & Interviews

Esclerosis Lateral Amiotrófica en Puerto Rico Incidencia y Alternativas de Tratamiento. Revista de Medicina y Salud Pública. May 26, 2023.
https://www.youtube.com/watch?v=uIFWUbEpWZc

Preparing Students in Puerto Rico for Biomedical Careers. Biomedical Beat Blog, National Institute of General Medical Sciences. December 9, 2020.
https://biobeat.nigms.nih.gov/2020/12/preparing-students-in-puerto-rico-for-biomedical-careers/

Mentor of High School and Undergraduate Students

Summer Virtual Program 2023 for talented high school and undergraduate students. Fundación García Rinaldi. (June – July 2023).

Mentorship on epidemiologic mathematical modeling for undergraduate research assistants. Biomathematics Lab. (2021).

Oral/Poster Presentations

Frances M. Aponte Caraballo, Rosa Rosario Rosado, Istoni da Luz Sant'Ana, Brenda Deliz Roldán. *Epidemiology of Amyotrophic Lateral Sclerosis in Puerto Rico: Spatial distribution of cases.*
- Poster presentation at the Spatial Statistics 2023: Climate and the Environment Conference. July 18-21, 2023. University of Colorado, Boulder, United States of America.
- Oral presentation at the Second Symposium for Amyotrophic Lateral Sclerosis Patients and their Families. May 20, 2023. University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

Frances M. Aponte Caraballo, Frances Heredia Negrón, Abiel Roche Lima. *Machine Learning approaches to study death incidence by race in colorectal cancer patients after treatments.*
- Poster presentation at the 1rst UPRCCC Annual Scientific Congress: Advances in Cancer Care, Research & Health Policy. May 5-6, 2023. San Juan, Puerto Rico.
- Poster presentation at the 38th SIDIM, *Seminario Interuniversitario de Investigación en Ciencias Matemátics*. February 24-25, 2023. Mayagüez, Puerto Rico.
- Poster presentation at the Forward Research Symposium 2022. November 3, 2022. San Juan, Puerto Rico.
- Poster presentation at the CAPAC poster presentation day. August 5, 2022. Comprehensive Cancer Center Hospital, San Juan, Puerto Rico.

Frances M. Aponte Caraballo, Andrea Mercado Cabrera, Andrián Márquez Hernández, Deyaneira Laboy Baiz, Elba David Hance, Génesis Rivera Bachier, Kiany Serrano Lugo, Mariola Tristani Rodríguez, Sofía Santiago Soler, Yaziel Rivera Rodríguez, Adriana F. Gonzalez Colón, Cristian R. Santiago Solivan and Mayteé Cruz Aponte. *Assessments of Mitigation Strategies for Sars-Cov-2 Using a Mathematical Epidemiological Model.*
- Oral presentation at the 54th ACS Junior Technical Meeting & 39th Puerto Rico Interdisciplinary Scientific Meeting (PRISM). April 2021. Virtual Conference.
- Oral presentation at the District Convention of the Biology Honor Society Beta Beta Beta. March, 2021, Virtual Conference.
- Oral presentation at the 36th SIDIM, *Seminario Interuniversitario de Investigación en Ciencias Matemáticas*. February, 2021. Virtual Conference.
- Oral presentation at the Nebraska Conference for Undergraduate Women in Mathematics. January 2021. Virtual Conference.
- Oral presentation at the Puerto Rico Louis Stokes Alliance for Minority Participation (PRLSAMP) Fall Research Symposium. December 2020. Virtual Conference.

Frances M. Aponte Caraballo, Aixamar Cosme Román, Mayteé Cruz Aponte. *Interventions on Chlamydia and Trichomoniasis Epidemiological Models Based on a Donovanosis Eradication Plan.*
- Oral presentation at the International Symposium on Biomathematics and Ecology Education and Research, BEER 2020. November 2020. Virtual Conference.
- Poster presentation at the Society for Advancement of Chicanos/Hispanics & Native Americans in Science, SACNAS 2020. October 2020. Virtual Conference.
- Oral presentation at the TRIBETA Caribbean Regional Convention 2020. Abstract accepted. March 2020. Event cancelled because of COVID-19.
- Poster presentation at the 35th SIDIM 2020 *Seminario Interuniversitario de Investigación en Ciencias Matemáticas*. March 2020. UPR-Cayey Campus.

Frances M. Aponte Caraballo, Génesis Rivera Bachier, Imaris López Colón, Keisy N. Rodríguez Tirres, Mayteé Cruz Aponte. *Epidemiological Models for Chlamydia trachomatis in Puerto Rico.*
- Oral presentation at the 6th student meeting of scientific research, Institutional Center of Scientific Research. October 2019. Albizu University. Awarded as Outstanding Oral Presentation.
- Oral presentation at the 6th Student meeting of research creation and community service. May 2019. Institute of Interdisciplinary Research, UPR-Cayey Campus.

Frances M. Aponte Caraballo. *Does Jesus Christ's lizard have preternatural powers?*
- Poster presentation at the Metropolitan Science Fair. January 2016. San Juan, Puerto Rico. Awarded first place national level in the mathematics category.

Volunteer Work

Fundación de ALS de Puerto Rico. Coordinating the statistics office. Generating quarterly statistical reports about the ALS patients who attend the institution. Monitoring and administrating the social network pages of the foundation. (August 2021 – December 2022).

Troop 20 B&G. Scout Master. Teaching scouts in environmental sciences, conservation, and survival. (January 2020 – Present Day).

Puerto Rico Community Health Coalition (COSACO) Mathematics and Epidemiology Coordinator. In charge of generating the COVID-19 projection reports weekly. (2021– 2022).

Ecological Center of Natural History Museum. Took care of two Texas tortoises, fed the animals of the center, reorganized, and classified the library into diverse sections. Taught elementary, middle, and high school students about evolution and feeding the animals (turtles, fish, cats, snakes), UPR Cayey Campus. **(**2017- 2021).

Teaching Assistant, Dr. Nilda Santos Loyo, **director**. Moderator in the Ethic Processes in Research course at UPR Cayey Campus. (January – June 2020)

Job Fair. Organized and directed the fair at UPR-Cayey Campus. (2018-2019).

Clinical Laboratory Professionals, Chapter Micro Alpha (TMED). Helped the homeless, animals and students with disabilities. Srta. Romina González Pons, Srta. Maribel Irizarry Baeda, Biology Department, UPR-Cayey Campus. (2018-2019).

La Fondita de Jesús. Helping people without homes. Helped the homeless people during Christmas Season. Edwin E. Otero Cuevas y Socorro Rivera Rosa, directors. (2013 – 2014)

Tutor. CIMATEC Math, Science, and Technology Center. Tutored students in the areas of math and science. **(**2013 – 2014).

Professional Training (Non-Degree)

Conference: *Spatial Statistics 2023: Climate and the Environment*. University of Colorado, Boulder, United States of America. (July 18-21, 2023).

Online Course: *Building Power for Health Equity in Our Communities*. Speaker: Dr. Jonathan Heller from the University of Wisconsin and the Division of Social Epidemiology of the Puerto Rico Sciences, Technology and Research Trust. (June 21-22 & 28-30, 2023). Selected participant.

Virtual Conference: "*Conferencia REDCap Con Hispano".* 8 contact hours. Training in the use of REDCap. (June 8,15, 22 & 29, 2023).

Seminar:*"Hogares, Empleos y Mentes Saludables".* 3 contact hours. Division of Social Epidemiology, Puerto Rico Public Health & Science Trust. Certified by Mariela Alvarado Ortiz, DrPH, MPH. (June 14, 2023).

Online Course: *Salud Pública en Megaciudades y Ciudades y de Rápido Crecimiento*. International training Program in Environmental health over the Lifespan from Icahn School of Medicine, Mount Sinai and Programa Infantes y Salud Ambiental (ISA) from Instituto Regional de Estudios en Sustancias Tóxicas de la Universidad Nacional (IRET_UNA). Organized by Luz Claudio, PhD, and Berna van Wendel de Joode, PhD. Funded by the National Institute of Health (NIH) grant number D43TW011403. (June 1 – July 25, 2023). Scholarship Awarded.

Webinar: *Methodology for a study if mitigation strategies of SARS-CoV-2 using an epidemiological model.* 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (May 23, 2023).

Online Course: *Data Science, Artificial Intelligence and Machine Learning.* Artificial Intelligence and Machine Learning Consortium to Advance Health Equity and Research Diversity (AIM-AHEAD). Course Director: Omar Aljawfi. (April 26, 2023).

Webinar: *Grant Writing online webinar series*. 3 contact hours. The Alliance, Hispanic Alliance for Clinical & Translational Research. (March 31 and April 21, 2023). Speaker: María González Pons, PhD.

Online Course: *Artificial Intelligence and Machine Learning in Health Equity and Disparities.* Artificial Intelligence and Machine Learning Consortium to Advance Health Equity and Research Diversity (AIM-AHEAD). Course Director: Omar Aljawfi. (February 18, 2023).

Webinar: *Quarto*. 1.5 contact hours of training in the use of Quarto in R. Analítica Fundación, University of Puerto Rico. (February 9, 2023). Speaker: Denny S. Fernández del Viso, PhD.

Online Course: *Machine Learning in Health Care.* Artificial Intelligence and Machine Learning Consortium to Advance Health Equity and Research Diversity (AIM-AHEAD). Course Director: Omar Aljawfi. (January 14, 2023).

Online Course: *R for Data Science*. 32 contact hours of training in the use of R, R studio and R markdown. R Data Science School. Offered by Daniel Incappueño. (November 3-29, 2022).

Online Course: *Introduction to python*. Dataquest. [ID 7H3O5BRSYD0SSS77UXBL]. (November 2, 2022).

Course: *Training in the use of ArcGis*. 12 contact hours of training in the use of ArcGis. Creating maps and incorporating data to maps. The Alliance Hispanic Alliance for Clinical & Translational Research. Offered by Dr. José Seguinot Barbosa, PhD, JD. (September 27 and 29, 2022).

Certification: *Clinical Research Coordinator*. 80 contact hours. A unique course oriented to educate professionals in the highest standards of clinical research implementation, including but not limited to, good clinical practices (GCP), and other applicable regulations. Puerto Rico Consortium for Clinical Investigation (PRCCI) from the Puerto Rico Science, Technology & Research Trust. Puerto Rico Public Health Trust. (September 7 – November 233, 2022).

Online Course: *Introduction to Occupational Health*. 12 contact hours. Focused on developing the necessary competencies to protect the life and health of the workers through identification and analysis of ergonomic risk, implementing preventive programs, and a safe return to work. Program from Mount Sinai School of Medicine, Universidad Nacional de Costa Rica and IRET (Instituto Regional de Estudios de Sustancias Tóxicas). Directed by Luz Claudio, PhD. and Berna van Wendel de Joode, PhD. (July 1- September 2, 2022)**.** Scholarship Awarded.

Online course: *FAIR Data and Artificial Intelligence (AI) / Machine Learning (ML) Applied to Cancer Prevention and Control.* Focused on making Hispanic datasets FAIR (Findable, Accessible, Interoperable, and Reusable) and AI/ML ready, and create AI/ML based predictive models for cancer diagnosis and treatments. CAPAC Program from the Comprehensive Cancer Center of Puerto Rico. Funded by Cancer Prevention and Control (CAPAC) Research Training Program NCI Award number R25CA240120-03S1. (May 31- August 5, 2022). Scholarship Awarded.

Online Summer School: *Artificial Intelligence and Smart Health*. Multi-Scale Integrative Approach to Digital Health: Collaborative Research and Education in Smart health in West Virginia and Arkansas, WVAR-CRESH. Lane Department of Computer Science and Electrical

Engineering (LCSEE), West Virginia University. (Funded by the National Science Foundation) PI: Dr. Donald Adjeroh. (July 25-27, 2022).

Webinar: *Viral Hepatitis: Concerted Actions Towards Elimination.* 2 credits hours. Offered by Northeast/Caribbean AIDS Education and Training Center. Certified by División Central de Educación Continua y Estudios Profesionales (DECEP) [ORCPS 00051/022-FE25-JLDM]. University of Puerto Rico, Medical Sciences Campus. (July 13, 2022).
Webinar: *Artificial Intelligence applied to health disparities research.* University of Puerto Rico, Medical Sciences Campus. (October 26, 2022). Speaker: Abiel Roche Lima, PhD, Integrated Informatics Services Facility Director.

Certification: *Conflicts of Interest.* MedStar Health Research Institute. Collaborative Institutional Training Initiative (CITI). Completion Date: November 16,2022. (Exp. November 16, 2025).

Certification: *COVID-19: Public Training Series Remote Contact Tracing.* MedStar Health Research Institute. Collaborative Institutional Training Initiative (CITI). Completion Date: December 12, 2022. (Exp. December 12, 2023).

Certification: *COVID-19: Public Training Series What You Need to Know About COVID-19 Vaccine.* MedStar Health Research Institute. Collaborative Institutional Training Initiative (CITI). Completion Date: December 12, 2022. (No Exp. Date).

Certification: *COVID-19: Public Training Series, Back to Campus.* University of Puerto Rico, Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: August 20, 2021. (No Exp. Date).

Certification: *COVID-19: Public Training Series, Insights for Higher Ed Leaders.* University of Puerto Rico, Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: August 20, 2021. (No Exp. Date).

Certification: *COVID-19: Public Training Series, Mental Health for Higher Ed, and Healthcare.* University of Puerto Rico, Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: August 20, 2021. (No Exp. Date).

Certification: *COVID-19: Public Training Series, Participating in Vaccine Research.* University of Puerto Rico, Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: August 20, 2021. (No Exp. Date).

Certification: *COVID-19: Public Training Series, Remote Contact Tracing.* University of Puerto Rico, Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: December 12, 2022. (Exp. December 12, 2023).

Certification: *Biomedical Responsible Conduct of Research.* MedStar Health Research Institute. Collaborative Institutional Training Initiative (CITI). Completion Date: March 24, 2020. (Exp. March 24, 2023).

Certification: *Biomedical Responsible Conduct of Research.* University of Puerto Rico Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: March 24, 2020. (Exp. March 24, 2023).

Certification: *Biomedical Responsible Conduct of Research, Fundamentals of Responsible Conduct in Research Course.* University of Puerto Rico at Cayey. Collaborative Institutional Training Initiative (CITI). Completion Date: February 9, 2020. (Exp. March 24, 2023).

Certification: *Biomedical Responsible Conduct of Research, RCR for IRB.* University of Puerto Rico at Cayey. Collaborative Institutional Training Initiative (CITI). Completion Date: March 24, 2020. (Exp. March 23, 2024).

Certification: *Biomedical Responsible Conduct of Research, RCR for Research Administrators and PI's.* University of Puerto Rico at Cayey. Collaborative Institutional Training Initiative (CITI). Completion Date: March 24, 2020. (Exp. March 23, 2024).

Certification: *Biosafety Complete Training Series.* University of Puerto Rico, Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: May 5, 2022. (Exp. May 4, 2025).

Certification: *Good Clinical Practice.* University of Puerto Rico Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: April 18, 2022. (Exp. Apr 17, 2025).

Certification: *Health Information Privacy and Security (HIPS) for Clinical Investigators.* Collaborative Institutional Training Initiative (CITI). (No Exp. Date).

Certification: *Health Information Privacy and Security (HIPS) for Students and Instructors.* Collaborative Institutional Training Initiative (CITI). (No Exp. Date).

Certification: *Human Research Social Behavioral Research Course.* University of Puerto Rico, Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: August 20, 2021. (Exp. August 19, 2026).

Certification: *Human Research Biomedical Research.* University of Puerto Rico, Medical Sciences Campus. Collaborative Institutional Training Initiative (CITI). Completion Date: April 18, 2022. (Exp. April 17, 2027).

Certification: *Human Subject Research with Human Subjects.* University of Puerto Rico at Cayey. Collaborative Institutional Training Initiative (CITI). Completion Date: January 28, 2020. (Exp. January 27, 2024).

Certification: *Social and Behavioral Responsible Conduct of Research.* University of Puerto Rico at Cayey. Collaborative Institutional Training Initiative (CITI). Completion Date: March 24, 2020. (No Exp. Date).

Certification: *Humanities Responsible Conduct of Research.* University of Puerto Rico at Cayey. Collaborative Institutional Training Initiative (CITI). Completion Date: March 24, 2020. (No Exp. Date).

Webinar: *Tools and strategies for critical reading of scientific articles on SARS-CoV-2 mitigation measures using an epidemiological model.* 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (February 11, 2021).

Online Course: *Getting to know HIPAA: Privacy and Security*. Medical Sciences Campus Online Division. Certified by Carlos A. Ortiz, PhD(c), MBA, BS. (2021).

Online Course: *Writing a scientific abstract*. Medical Sciences Campus Online Division. Certified by Carlos A. Ortiz, PhD(c), MBA, BS. (2021).

Webinar: *Excel Pivot Tables part 1 and 2.* 4 contact hours. *Los Fiebrús de Excel.* MOS Excel Expert Instructors: Ed Burgos, Eddie Rivera, Pedro González. (August 19 and 31, 2021).

Webinar: *Excel Dashboards part 1 and 2.* 4 contact hours. *Los Fiebrús de Excel.* MOS Excel Expert Instructors: Ed Burgos, Eddie Rivera, Pedro González. (September 7 and November 24, 2021).

Webinar: *Excel Effective Data Visualization.* 2 contact hours. *Los Fiebrús de Excel.* MOS Excel Expert Instructors: Ed Burgos, Eddie Rivera, Pedro González. (November 17, 2021).

Online Training: *Identification, diagnosis, and treatment of Alzheimer's dementia: what every health professional should know.* 6 credit hours. Gerontology Training Institute, Gerontology Program, Graduate School of Public Health, University of Puerto Rico Medical Sciences Campus. Certified by the Puerto Rico Geriatrics Workface Enhancement Program (PEWEP) and the Family Department of Puerto Rico [Certification Number, 009-2021]. (May 7, 15, 2020).

Webinar: *Tools and strategies for critical reading of scientific articles on mathematical modeling for infectious diseases.* 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (August 8, 2020).

Webinar: *Natural disasters: A topic for bioethics.* 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (August 9, 2020).

Webinar: *Data analysis in the epidemiology of sexual transmitted infections in Puerto Rico.* 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (August 9, 2020).

Webinar: *Methods in data collection in the epidemiology of sexual transmitted infections in Puerto Rico.* 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (August 9, 2020).

Certification: *Research techniques about epidemiology of sexually transmitted infections in Puerto Rico*. 6 contact hours. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (August 9, 2020).

Certification: *Social dimensions of health*. 4 contact hours. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (August 9, 2020).

Webinar: *Excel Introduction*. 1.5 contact hours. *Los Fiebrús de Excel*. MOS Excel Expert Instructors: Ed Burgos, Eddie Rivera, Pedro González. (July 7, 2020).

Webinar: *Excel Fundamentals*. 1.5 contact hours. *Los Fiebrús de Excel*. MOS Excel Expert Instructors: Ed Burgos, Eddie Rivera, Pedro González. (July 14, 2020).

Webinar: *Excel Formulas and Functions*. 1.5 contact hours. *Los Fiebrús de Excel*. MOS Excel Expert Instructors: Ed Burgos, Eddie Rivera, Pedro González. (July 21, 2020).

Webinar: *Excel VLOOKUP applications part 1 and 2*. 4 contact hours. *Los Fiebrús de Excel*. MOS Excel Expert Instructors: Ed Burgos, Eddie Rivera, Pedro González. (October 27 and 29, 2020).

Webinar: *Research ethics: case studies in clinical and social research*. 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (September 28, 2019).

Webinar: *The dissemination of scientific findings and community outreach with non-academic communities*. 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (September 28, 2019).

Webinar: *Attention to Social Determinants of Health to reduce inequities in health*. 1 contact hour. Innovative Programs to Enhance Research Training (UPR-IPERT) & CIENCIA PR. Certified by Dr. Isar Godreu & Dr. Giovanna Guerrero. (September 28, 2019).

Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) held in Anaheim, California, United States. (November 13-18, 2019).

6th Student Meeting on Scientific Research. Institutional Center for Scientific Research (CIIC), Albizu University, San Juan Puerto Rico. (October 11, 2019). Outstanding student.

Workshop: *Water contamination*. TMED Micro Alpha. Offered by Maribel Irizarry Baeda, Lab technician. University of Puerto Rico Cayey Campus. (2018).

Workshop: *Pipetting*. TMED Micro Alpha. Offered by Maribel Irizarry Baeda, Lab technician. University of Puerto Rico Cayey Campus. (2018).

Workshop: *Electrophoresis Techniques*. TMED Micro Alpha. Offered by Maribel Irizarry Baeda, Lab technician. University of Puerto Rico Cayey Campus. (2018).

Affiliations

Professional Affiliations

- Member (ID #11097243), American Public Health Association (APHA). Member since May 2023.
- Associate Member (ID #1241065), American Association for Cancer Research (AACR). Member since August 2022.
- SACNAS Member, Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS). Member since August 2020.
- Scout Master, Boys Scouts of America (BSA). Member since January 2020.
- American Society of Microbiology. Member from 2019 to 2021.
- Puerto Rican Microbiologists Society (SMPR). Member from 2019 to 2021.

Student Affiliations

- Mathematics Circle (CIMAT). Member from 2018 to 2021.
- Clinical laboratory professionals (TMED) Micro Alpha. Member from 2018 to 2021.
- *Comunidad Dando Apoyo al Sordo* (CUDAS). Member from 2018 to 2021.
- *Esfuerzo, Superación, Perseverancia, Aptitud, Dedicación, Audacia (E.S.P.A.D.A.)*. Member from 2018 to 2021.
- *Neuro-Boricuas*. Member from 2018 to 2021.
- National Alliance on Mental Illness (NAMI). Member from 2018 to 2021.
- *Facilitadores Instructores en la Seguridad del Tránsito y el Alcohol (F.I.E.S.T.A. VIII)*. Member from 2017 to 2021.

Skills and Languages

Statistical Programs
- R studio, Excel, STATA, SPSS

Coding languages:
- Latex, R Markdown, R Studio, Phython, Quarto, SciLab

Open-Source Web Applications:
- Jupyter Notebook, Google Colab

Operating Systems:
- IOS (Apple) and Office (Windows) Pages, Numbers, Keynote; Word, Excel, Power Point, Publisher, One Note, and Word Pad.

Video-image editing:
- Movie Maker, Canva

Maps:
- R, ArcGis, Google Earth, QGIS,

Data Repositories:
- All of Us Research Workbench

Languages:
- Spanish (Native language)
- English
- American Sign Language-Puerto Rico (Intermediate)
- Portuguese (Basic)

References

Available upon request.