

Francheska López Rivera

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EDUCATION

Harvard University

PhD in Biological and Biomedical Sciences

Advisor: Dr. Fred Winston

Cambridge, MA

Nov. 2021

University of Puerto Rico-Río Piedras

Bachelor of Environmental Design (Architecture)

Second Concentration in Integrative Biology

magna cum laude

San Juan, PR

June 2013

RESEARCH EXPERIENCE

HHMI Postdoctoral Research Associate - Harvard Medical School - DePace Lab

- Manages and performs projects to study the role of enhancers in fly neural development. Assays include plasmid cloning for CRISPR/Cas9 editing, fly mating and embryo collection, *in situ* hybridization, and image processing and analysis.
- Writes and reviews abstracts, grants, and manuscripts.
- Mentors lab technicians.

Boston, MA

2023-present

Part-time Graphic Designer - Harvard Medical School

- Collaborated with a PhD program evaluator to create visuals for research papers using computer software.

Boston, MA

2022-2023

Postdoctoral Research Associate - University of Utah - Animation Lab

- Collaborated with scientists to create visuals in molecular biology and earth origins using computer software.
- Drafted and successfully submitted an NSF PRFB and a University of Utah Diversity research grants.

Remote

2021-2023

Postdoctoral Research Fellow - Harvard Medical School - Winston Lab

- Performed experiments remaining for the publication of dissertation research.

Boston, MA

Aug.-Oct. 2021

Graduate Researcher - Harvard Medical School - Winston Lab

- Identified yeast mutations that bypass loss of the essential and cancer-associated Spn1/Iws1 transcription factor using genetics and genomics. Investigated the mechanism by which some of the mutations targeting chromatin and transcription-associated genes compensate for loss of Spn1.
- Designed, conducted assays, and analyzed data from genetic screens, gene replacements, viability tests, q-PCR and deacetylase inhibitor experiments.
- Built whole-genome and chromatin-immunoprecipitation sequencing libraries.
- Drafted and published manuscripts.
- Drafted and successfully submitted a Pre-Doctoral Ford Foundation research grant and yearly reports.
- Prepared detailed northern and western blot protocols that were used by other members of the lab.
- Mentored two high school students who spent multiple summers in the lab.

Boston, MA

2015-2021

Post-Baccalaureate Researcher - Harvard Medical School - DePace Lab

Boston, MA
2013-2015

- Tested the effects that mutations in enhancer constructs have in the development of fly embryos using genetics and microscopy.
- Found that the deleterious effect of a mutation in a developmental enhancer can be buffered by additional sequences surrounding the enhancer.
- Designed and built enhancer constructs, set up fly crosses, collected and prepared embryos using *in situ* hybridization and fluorescence microscopy, and analyzed data.
- Drafted and published manuscripts.
- Drafted and published a protocol to conduct yearly planning meetings.
- Drafted and published a protocol for non-scientists describing the research methods used to visualize gene expression.
- Prepared a detailed *in situ* hybridization protocol that was used by other members of the lab.

Summer Researcher - Massachusetts Institute of Technology - Gilbert Lab

Cambridge, MA
Summer 2012

- Studied the potential autoregulation of a ribosomal protein in yeast using genetics, q-PCR, and RNA stability assays.

Undergraduate Researcher - University of Puerto Rico-Río Piedras - González Lab and Restrepo Lab

San Juan, PR

- Assisted a graduate student studying post-translational regulation of gene expression in yeast.
- Developed a protocol to prepare increment core samples from tropical tree species.
- Drafted and successfully submitted a PR-LSAMP research grant.

2011-2012

Summer Student - University of Puerto Rico-Mayagüez

Mayagüez, PR
Summer 2005

- High School Summer Student in the Biotechnology Summer Camp

PUBLICATIONS

López-Rivera F, Spatt D, Chuang J, Gopalakrishnan R, Winston F (2022) Suppressors that make the essential transcription factor Spn1/lws1 dispensable. *Genetics*. 222 (2), <https://doi.org/10.1093/genetics/iyac125>

Viktorovskaya O, Chuang J, Jain D, Reim NI, **López-Rivera F**, Murawska M, Spatt D, Churchman LS, Park PJ, Winston F (2021) Essential histone chaperones collaborate to regulate transcription and chromatin integrity. *Genes & Development*, 35: 698-712, <http://www.genesdev.org/cgi/doi/10.1101/gad.348431.121>

López-Rivera F, Foster Rhoades OK, Vincent BJ, Pym ECG, Bragdon MDJ, Estrada J, DePace AH, Wunderlich Z (2020) A Mutation in the *Drosophila melanogaster* eve Stripe 2 Enhancer is Buffered by Flanking Sequences. *G3: Genes, Genomes, Genetics*, 10(12): 4473-4482. <https://doi.org/10.1534/g3.120.401777>

Vincent BJ, Staller MV, **Lopez-Rivera F**, Bragdon MDJ, Pym ECG, Biette KM, Wunderlich Z, Harden TT, Estrada J, DePace AH (2018) Hunchback is counter-repressed to regulate *even-skipped* stripe 2 expression in *Drosophila* embryos. *PLOS Genetics*, 14(9): e1007644. <https://doi.org/10.1371/journal.pgen.1007644>

Vincent BJ, Scholes C, Staller MV, Wunderlich Z, Estrada J, Park J, Bragdon MD, **Lopez Rivera F**, Biette KM, DePace AH. (2015). Yearly planning meetings: individualized development plans aren't just more paperwork. *Mol Cell*, 58(5): 718-721.

Vincent BJ, **Lopez-Rivera F**, Park J, Staller M, Bragdon M, Wunderlich Z. (2015). Protocol: Visualizing Gene Expression. *Method Quarterly*, <http://www.methodquarterly.com/2015/02/protocol-visualizing-gene-expression/>

PRESENTATIONS

López Rivera F , Spatt D, Gopalakrishnan R, Winston F. Suppressors that make the essential transcription factor Spn1/lws1 dispensable	Nov. 2021
<ul style="list-style-type: none"> • Department of Biology Seminar, University of Puerto Rico-Río Piedras 	
López Rivera F , Spatt D, Gopalakrishnan R, Winston F. <i>Saccharomyces cerevisiae</i> mutants that bypass the need for the essential transcription factor Spn1/lws1 (poster)	Sept. 2020
<ul style="list-style-type: none"> • Cold Spring Harbor Laboratory: Epigenetics and Chromatin Virtual Meeting 	
López Rivera F , Spatt D, Winston F. Genetic Analysis of the Essential Transcription Factor Spn1 in <i>Saccharomyces cerevisiae</i> (poster)	
<ul style="list-style-type: none"> • Harvard Medical School Department of Genetics Retreat • Harvard Medical School Department of Genetics Retreat (poster award) • 18th New England Science Symposium 	Feb. 2020, MA Feb. 2019, MA Apr. 2019, MA
López Rivera F , Spatt D, Winston F. Genetic Analysis of the Essential Transcription Factor Spn1 in <i>Saccharomyces cerevisiae</i>	
<ul style="list-style-type: none"> • Harvard Medical School, Department of Genetics Data/Journal Club 	Jan. 2020, Nov. 2018, MA
López Rivera F , Spatt D, Winston F. Elucidating the Function of the Essential Protein Spn1 in Transcription and Chromatin Organization. Albert J. Ryan Fellows Retreat	May 2018, NH
López Rivera F , Spatt D, Winston F. Elucidating the Function of the Essential Protein Spn1 in Transcription and Chromatin Organization (poster)	
<ul style="list-style-type: none"> • 17th New England Science Symposium <li style="padding-left: 20px;">Ruth and William Silen M.D. Award in the category of "Microbiology, Immunology, Genetics, or Molecular Biology" (2nd place) • Ford Foundation Fellowship Conference • Program in Genetics and Genomics G4+ Symposium 	Apr. 2018, MA May 2018, DC May 2018, MA
López Rivera F , Wunderlich Z, Bragdon M, DePace A. Flanking sequences compensate for mutations in <i>Drosophila melanogaster</i> minimal enhancers (poster)	
<ul style="list-style-type: none"> • 13th New England Science Symposium <li style="padding-left: 20px;">The Beth Israel Deaconess Medical Center Department of Neonatology Award (outstanding neonatology-related poster presentation) • 2nd Ivy Plus Symposium 	Apr. 2014, MA Mar. 2014, MA
López F , Restrepo C. The Application of Dendrochronological Techniques in Tropical Tree Species	Mar. 2012, PR

HONORS, AWARDS, AND SCHOLARSHIPS

<ul style="list-style-type: none"> • University of Utah Vice President for Research Administrative Supplement to Promote a Diverse Research Community (recommended for funding) • NSF Postdoctoral Research Fellowship in Biology (recommended for award) • Biomedical Science Careers Program Hope Scholarship • Ford Foundation Pre-Doctoral Fellowship • Harvard GSAS Professional Development Fund • Albert J. Ryan Fellowship • Harvard Biological and Biomedical Sciences PhD Program in Genetics and Genomics NIH Training Grant • Member of the Golden Key International Honour Society • Scholarship for Children of Members of the Government of Puerto Rico 	Apr. 2023 Mar. 2023 2018-2020 2017-2020 2018 2018 2016-2017 2012-present 2012
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- Employees Association (AEELA)
- Honor Enrollment at the University of Puerto Rico, Río Piedras 2007-2012
- The Puerto Rico Louis Stokes Alliance for Minority Participation (PR-LSAMP), Summer Undergraduate Research Opportunity 2011
- Honors at the School of Architecture at the University of Puerto Rico, Río Piedras, Dean's List 2006-2011
- The National Science and Mathematics Access to Retain Talent Grant (SMART) 2008-2009
- Academic Competitiveness Grant (ACG) 2006-2008

TEACHING, LEADERSHIP, AND VOLUNTEER EXPERIENCE

Teaching and Leadership

- Vice-President of the Harvard Puerto Rican Student Association (HPRSA) Harvard-wide student group 2019-2020, MA
- Research talk to senior students at Carvin High School Sept. 2019, PR
- Research talk to AP biology students from the Acton-Boxborough High School 2017-2019, MA
- Co-President and co-Founder of the Harvard Puerto Rican Student Association (HPRSA) Harvard-wide student group 2018-2020, MA
- Recruited students across Harvard University.
 - Obtained and maintained official group recognition.
 - Successfully drafted and submitted funding grants.
 - Organized Puerto Rico-related events for the Harvard and Massachusetts communities.
 - Advocated for compatriots back in the archipelago.
 - Established and maintained relationships with other organizations across Harvard and the US.
- Peer Mentor Coordinator of the Harvard Medical School Summer Honors Undergraduate Research Program Summer 2018, MA
- Matched undergraduate students with current doctoral student mentors.
 - Organized social events for mentors and mentees.
 - Led two journal clubs on the discovery of the CRISPR system.
 - Proctored exams taken by two undergraduate summer students.
- High school student's research mentor in Dr. Fred Winston's lab at Harvard Medical School Aug. 2017, MA
- Introduced a high school student from the Commonwealth High School in Boston to research in genetics and molecular biology for two weeks
 - The student learned about yeast genetics, yeast transformation, PCR, gel electrophoresis, and Sanger sequencing while she helped me characterize a group of yeast mutants that I obtained from a genetic selection and screen.
- Principles of Molecular Biology Teaching Assistant at Harvard Medical School Fall 2016, MA
- Led six discussion sections throughout the semester, which consisted of group discussions or students chalk talks that answered experimental design questions about topics in molecular biology.
 - Graded problem sets, worksheets, and student chalk talks.
 - Attended all BCMP 200 lectures during the semester.
- Math tutor for high school students at Centro de Acción Urbana, Comunitaria y Empresarial (CAUCE) Jan.-Jun. 2013, PR
- Assisted math and art teachers who tutored high school students after school during the regular school semester and in a summer camp.

Education courses and workshops

- Teaching 101 Course: Bringing Effective Teaching Practices to your Classroom at Harvard Medical School 2021
- Science Undergraduate Mentoring Workshop Intensive I by the Harvard Faculty of Arts and Sciences Division of Science Jan. 20, 2021
- BBS 301: Embedded Teaching Practicum for Teaching Assistants at Harvard Medical School Fall 2016, MA

Mentoring and volunteering

- English to Spanish translator of COVID-19 [comics](#) 2020
- Volunteer at the Harvard Biological and Biomedical Sciences PhD Program Student Recruitment Diversity Breakfast Jan., Feb. 2019-2021
- Spanish-English translator and slideshow maker at International House of Glory, (Framingham, MA), now Radical Church (Leominster, MA) 2017-2020
- Volunteer at 2019 Ivy Plus Puerto Rico Graduate Student Fair Sept. 2019
- Student Panelist at the Biomedical Science Careers Conference Skills Workshops for College and High School Students Nov. 2018
- Student Panelist at Sociedad Latina Educational Events Jul., Nov. 2018
- Volunteer at the *I love Science* Family Festival Feb. 2018
- Peer Mentor at the Harvard Medical School Summer Honors Undergraduate Research Program Summer 2017
- Volunteer at Harvard Medical School Explorations Program Oct. 2014