Juan Manuel Vazquez

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RESEARCH INTERESTS

From prokaryotes to mammals, lifespan is one of the most diverse and omniprescent life history traits. Aging is both implicated in and affected by a number of biological processes at all scales of life; yet our understanding of the genetics and directionality of aging-associated traits is limited in scope. The advent of cost-effective genomics at tree-of-life scale has enabled new frontiers in the study of aging and aging-associated traits using functional and comparative biology. My work focuses on tackling interdisciplinary questions aging with equally interdisciplinary approaches, ranging from cellular and molecular biology to comparative evolutionary genomics and population genetics. I have developed a system for studying the evolution of longevity-associated traits in bats using modern functional genomics by generating chromosome-scale reference genomes and over 200 primary cell lines for over 10 species of closely-related bats with a diversity of lifespans. This system will enable us to not only identify genes and regulatory pathways associated with the evolution of increased or decreased longevity; but also understand how the mechanisms behind these findings in a native context.

EDUCATION

University of Chicago, Ph.D. Human Genetics **2015 - 2020**
University of Chicago, M.sc. Human Genetics **2015 - 2020**

Laboratory of: Vincent J Lynch, Department of Human Genetics
Dissertation title: *The Role of Gene Duplicates in Resolving Peto's Paradox in* Afrotheria *and* Chiroptera.
Committee Members: Marcelo Nobrega, Joseph Thorton, Yang Li, Vincent J Lynch, Yoav Gilad

University of Rochester, B.S. Biology, Molecular Genetics **2011 - 2015**

University of Rochester, B.A. Chemistry **2011 - 2015**

RESEARCH EXPERIENCE

Postdoctoral Researcher, Peter H Sudmant, **2020 - Present**
University of California-Berkeley

Focus 1: Evolution of longevity-associated traits in Californian bats. Generating chromosome-level genomes, primary cell library for >200 individuals, and phased population genetic data from 9 species of *Myotis*.
Focus 2: Fidelity of chromatin structure in muscle aging at the single cell level. Using multiplexed single-cell ATAC + gene expression in a trio of mouse strains.

Ph.D. Candidate, Vincent J Lynch, University of Chicago **2016 - 2020**

Thesis title: "The Role of Gene Duplication in Mediating Peto's Paradox in *Afrotheria* and *Chiroptera*"
Functional Genomics and Cell Biology in African Elephant (*Loxodonta africana*), the Bowhead Whale (*Balaena mysticetus*), and the Little Brown Bat (*Myotis lucifugus*).

Rotation, Alex Ruthenberg, University of Chicago **Summer 2016**

Optimized an Internally Calibrated ChIP (ICeChip) methodology in *C. elegans* to study H3K4me3 patterns at the onset of sexual maturity.

Research Assistant, Vera Gorbunova and Andrei Seluanov, University of Rochester — **January 2014 - May 2015**

Researched: oxidative stress tolerance across rodents using primary fibroblasts; the effects of SIRT6-knockouts on cell growth and tumorigenesis; self-assembled hydrogels using Naked Mole Rat-derived hyaluronic acid and their use in cancer and pluripotent stem cells; and the molecular mechanism of hyaluronic acid-mediated cancer resistance in the Naked Mole Rat (*Heterocephalus glaber*).

SCHOLARSHIP

Journal Articles

Karin BR, Arellano S, Wang L, Walzer K, Pomerantz A, **Vazquez JM**, Chatla K, Sudmant PH, Bach BH, Smith LL, McGuire JA. (2023). "Highly-multiplexed and efficient long-amplicon PacBio and Nanopore sequencing of hundreds of full mitochondrial genomes." *BMC Genomics* 10.1186/s12864-023-09277-6.

Lauterbur ME, Cavassim Alves MI, Gladstein AL, Gower G, Pope NS, Tsambos G, Adrion J, Belsare S, Biddanda A, Caudill V, Cury J, Echevarria I, Haller BC, Hasan AR, Huang X, Iasi LNM, Noskova E, Obšteter J, Corrêa Pavinato VA, Pearson A, Peede D, Perez MF, Rodrigues MF, Smith CCR, Spence JP, Teterina A, Tittes S, Unneberg P, **Vazquez JM**, Waples RK, Wohns AW, Wong Y, Baumdicker F, Cartwright RA, Gorjanc G, Gutenkunst RN, Kelleher J, Kern AD, Ragsdale AP, Ralph PL, Schrider DR, Gronau I. (2023). "Expanding the stdpopsim species catalog, and lessons learned for realistic genome simulations." *eLife* 10.7554/eLife.84874.1.

Vazquez JM, Kraft M, Lynch VJ (2022). "A CDKN2C retroduplication in Bowhead whales is associated with the evolution of extremely long lifespans and alerted cell cycle dynamics." *bioRxiv* 10.1101/2022.09.07.506958.

Vazquez JM, Pena MT, Muhammad B, Kraft M, Adams LB, Lynch VJ (2022). "Parallel evolution of reduced cancer risk and tumor suppressor duplications in Xenarthra." *eLife* 10.7554/eLife.82558.

Yamamoto R*, Chung R*, **Vazquez JM**, Sheng H, Steinberg P, Ioannidis NM, Sudmant PH (2021). "Tissue-specific impacts of aging and genetics on gene expression patterns in humans." *Nature Communications* 10.1038/s41467-022-33509-0.

Kolora SRR*, Owens GL*, **Vazquez JM**, Stubbs A, Chatla K, Jainese C, Seeto K, McCrea M, Sandel MW, Vianna JA, Maslenikov K, Bachtrog D, Orr JW, Love M, Sudmant PH (2021). "Origins and evolution of extreme lifespan in Pacific Ocean rockfishes." *Science* 10.1126/science.abg5332.

Glaberman S, Bulls SE, **Vazquez JM**, Chiari Y, Lynch VJ (2021). "Concurrent evolution of anti-aging gene duplications and cellular phenotypes in long-lived turtles." *Genome Biology and Evolution* 10.1093/gbe/evab244.

Vazquez JM, and Lynch VJ (2021). "Pervasive Duplication of Tumor Suppressors in Afrotherians during the Evolution of Large Bodies and Reduced Cancer Risk." *eLife* 2021;10:e65041.

Vazquez JM, Sulak M, Chigurupati S, Lynch VJ (2018). "A Zombie LIF Gene in Elephants Is Upregulated by TP53 to Induce Apoptosis in Response to DNA Damage." *Cell Reports*, 24(7), 1765-1776.

Patrick A, Seluanov M, Hwang C, Tam J, Khan T, Morgenstern A, Wiener L, **Vazquez JM**, Zafar H, Wen R, Muratkalyeva M, Doerig K, Zagorulya M, Cole L, Catalano S, Ladd A, Coppi A, Coşkun Y, Tian, X, Ablaeva J, Nevo E, Gladyshev V, Zhang Z, Vijg J, Seluanov A, Gorbunova V (2016). "Sensitivity of primary fibroblasts in culture to atmospheric oxygen does not correlate with species lifespan.", *Aging*, 8 (5), 841-847.

Invited Talks & Lectures

École Normale Supérieure de Lyon, Molecular Evolution Seminar Series. **A CDKN2C retroduplication in Bowhead whales is associated with the evolution of extremely long lifespans and alerted cell cycle dynamics**. 11 July 2023.

University of California, Berkeley, **IB 169: Evolutionary Medicine**. *Evolutionary Dynamics of Cancer I: From Single Cells to Elephants and Whales.* 11 April 2023.

San Jose State University, *A CDKN2C retroduplication in Bowhead whales is associated with the evolution of extremely long lifespans and alerted cell cycle dynamics.* 04 October 2022.

North American Society for Bat Research. *Bat to the Future: Bat Biology Beyond Genomes.* 07 August 2022, Austin, TX, USA.

Stanford University, *Resolving the Evolution of Longevity and Associated Traits in Bats Using Functional and Population Genomics*, 13 June 2022.

Cal Poly Humboldt, *Resolving the Evolution of Longevity and Associated Traits in Bats Using Functional and Population Genomics*, 10 November 2021.

Oral Presentations

Marine Mammal Symposium, University of California-Berkeley. *A CDKN2C retroduplication in Bowhead whales is associated with the evolution of extremely long lifespans and alerted cell cycle dynamics.* 25 May 2023, Berkeley, CA, USA.

Bay Area Aging Meeting. *Evolution of Non-Allometric Longevity in a Clade of Long-Lived Bats Resolved Using Chromosome-Length Genome Assemblies.* 11 May 2023, Novato, CA, USA

UCB Center for Computation Biology Retreat. *Building a Model System for Studying the Evolution of Extraordinary Longevity in Bats Using Functional Genomics.* 05 November 2022, Green Mountain Retreat, CA, USA.

Biodiverse Genomes Conference. *Evolution of Non-Allometric Longevity in a Clade of Long-Lived Bats Resolved Using Chromosome-Length Genome Assemblies.* 12 September 2022, Virtual (International).

International Society for Evolutionary Medicine and Public Health. *Evolution of Non-Allometric Longevity in a Clade of Long-Lived Bats Resolved Using Chromosome-Length Genome Assemblies.* 07 July 2022, Lisbon, Portugal.

eLife Evolutionary Medicine Symposium. *Of Mice and Elephants: Trade-Offs of Tumor Suppressor Duplication and Body Size Evolution in Afrotheria.* 13 December 2021, Virtual (International).

American Aging Associate (AGE) Meeting. *A Novel Model System for the Study of Evolution of Longevity and Longevity-Associated Traits Using Western Bats.* 20 July 2021, Madison, WI, USA.

Club EvMed: Virtual Evolutionary Medicine Conversations. *Of Mice and Elephants: Trade-Offs of Tumor Suppressor Duplication and Body Size Evolution in Afrotheria.* 29 June 2021, Virtual (International).

Bat1K Battelite Meeting. *Western Bat Genomes Project.* 20 May 2021, Virtual (International).

Puerto Rico Virtual Research Talks. *Como crecen los elefantes: La evolución de resistencia al cáncer en mamíferos gigantes.* 18 February 2021, Virtual (International).

Aging Science in Isolation Talk Series. *Gene Duplication and Peto's Paradox in Afrotherians.* 19 May 2020, Virtual (International).

North American Society for Bat Research. *Stress Response and a P53 Duplication in the Long-Lived Bat,* Myotis lucifugus. 24 October 2019, Kalamazoo, MI, USA.

Biology of Aging Gordon Research Conference. *Stress Response and a P53 Duplication in the Long-Lived Bat,* Myotis lucifugus. 16 July 2019, Sunday River, MA, USA.

Poster Presentations

Biology of Aging Gordon Research Conference. **Vazquez JM**, Lauterbur ME, Fraser D, Buchalski M, Enard D, Sudmant PH. "A Model System for Studying the Evolution of Longevity-Associated Traits Using Functional Genomics." 01 - 07 July 2023, Castelldefels, Catalonia, Spain.

Systems Biology of Aging Gordon Research Conference. **Vazquez JM**, Lauterbur ME, Fraser D, Buchalski M, Enard D, Sudmant PH. "A Model System for Studying the Evolution of Longevity-Associated Traits Using Functional Genomics." 29 May - 03 June 2022, Sunday River, MA, USA.

Biology of Genomes. **Vazquez JM**, Lauterbur ME, Fraser D, Buchalski M, Enard D, Sudmant PH. "A Model System for Studying the Evolution of Longevity-Associated Traits Using Functional Genomics." 10-14 May 2022, Cold Spring Harbor, NY, USA.

NDiSTEM. **Vazquez JM**, Lynch VJ. "Gene Duplications and Peto's Paradox in the African Elephant and Paenungulates." 12 October 2018, San Antonio, TX, USA.

Biology of Aging Gordon Research Seminar and Conference. **Vazquez JM**, Lynch VJ. "A Role for Gene Duplication in Peto's Paradox." 8-14 July 2017, Les Diablerets, CH.

FUNDING, AWARDS, AND FELLOWSHIPS

Fellowships, Scholarships, and Training Grants

NIA T32 Trainee **2023 - 2024**

NIH R13AG063483-01

NSF Postdoctoral Research Fellowship in Biology (#2109915). **2021-2023**

A Novel Model System for Studying the Evolution and Genomics of Longevity

Life Sciences Research Foundation Postdoctoral Fellowship. **2020**
Finalist, unfunded (no sponsors).

NSF Postdoctoral Research Fellowship in Biology. **2020**
Meritorious, unfunded.

Yale Ciencia Academy Fellowship, **2019**
Yale University

NIGMS R25 Trainee: Initiative to Maximize Student Development , **2015-2017**
University of Chicago 5R25GM109439-03

Howard Bryant Memorial Scholarship, **2012 - 2014**
University of Rochester

Dean's Scholarship, **2011 - 2015**
University of Rochester

Grants

NIA U-13 Supplement, 2019 Biology of Aging Gordon Research Conference, **2019**
NIA R13AG063483-01. $13,757.11

Diversity and Inclusion Pilot Program Grant, **2019**
University of Chicago. $5,000.00

Diversity and Inclusion Small Projects Grant, **2019**
University of Chicago. $2,000.00

Diversity and Inclusion Pilot Program Grant, **2018**
University of Chicago. $10,000.00

Diversity and Inclusion Small Projects Grant, **2018**
University of Chicago. $2,000.00

Awards and Recognitions

2022 Best Lighting Talk. UCB Center for Computational Biology Retreat. **2022**

2021 Trainee Diversity, Equity, and Inclusion Legacy Award. University of Chicago **2021**

SACNAS Chapter of the Year Award, **2019**
Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS).

The Chapter of the Year Award is presented to the SACNAS chapter which demonstrates exceptional leadership and aptitude in chapter development, professional development, recruiment and membership, community outreach, and fundraising.

SACNAS Chapter Role Model Award for Outstanding Professional Development, **2018**
Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS).

In recognition of the UChicago SACNAS Chapter's exceptional work in organizing and executing the first-ever Midwest Regional SACNAS Conference.

PROFESSIONAL ACTIVITIES

Conferences

Discussion Leader, Gordon Research Seminar - Biology of Aging, Castelldefels, Catalonia, Spain 2023

Session: Mentorship and Career Development

Chair, Gordon Research Seminar - Biology of Aging, Sunday River, MA, USA. **2017 - 2019**

Co-chair: Victor Bustos.
Funded by NIA R13AG063483-01

Chair, Midwest Regional SACNAS Conference, Chicago, IL, USA. **2019**

A full-day, 200-person, free conference with multiple panels, workshops, student speakers, poster session, and keynote address; target audience is underrepresented groups in STEM and STEM-allied fields.
Lead a team of 5 co-chairs.
Raised $14,000 for conference expenses, with $2000 of travel funding for attendees.

Co-chair, Inaugural Midwest Regional SACNAS Conference, Chicago, IL, USA. **2018**

A full-day, 220-person, free conference with multiple panels, workshops, student speakers, poster session, and keynote address; target audience is underrepresented groups in STEM and STEM-allied fields.
One of 5 co-chairs working with Conference Chair.
Raised $16,000 for conference expenses, with $2500 of travel funding for attendees.

Organizations

Co-Lead, Marine Mammal Research Collaborative Network. **2023 - Present**

Project Co-Lead, Bat1K: Longevity and Aging Working Group. **2023 - Present**

Working Group Leader, GBatNet: "How Old is this Bat" Methylation Aging Working Group. **2022 - Present**

Regional Chair, Bat1K: Western North America. **2021 - Present**

President, **2018 - 2020**
Society for the Advancement of Chicanos and Native Americans in Science, University of Chicago.

Received the SACNAS National Chapter of the Year Award.
Led the 2019 Midwest Regional SACNAS Conference Planning Team.
Established the SACNAS Midwest Meeting Planning Commmittee for facilitating inter-chapter communication, organization, and conference planning.

Treasurer, **2017 - 2018**
Society for the Advancement of Chicanos and Native Americans in Science, University of Chicago.

Student Representative, **2017 - 2018**
Deparment of Human Genetics, University of Chicago.

Committees

Member, AGE Trainee Chapter: Diversity, Equity, Inclusion, and Outreach Committee. **2020 - 2022**

Member, AGE Trainee Chapter: Grants, Meetings, and Opportunities Committee Member. **2020 - 2022**

Member, Biological Sciences Division Diversity & Inclusion Representative Selection Committee, University of Chicago. **2017 - 2018**

Board Member, Community Service Fund, Student Government, University of Chicago. **2015-2016**

Panels and Presentations

Panelist, "How to be an Effective Student Leader", Midwest Regional SACNAS Conference, Chicago, IL. **April 2019**

Part of a larger talk on how to start-up and lead an organization, panelists consisted of student leaders from across the Midwest answering questions from attendees.

Panelist, "How to Succeed in Grad School", Summer Graduate Research Program, University of Chicago. **August 2018**

Panel focused on the experiences of panelists as underrepresented minorities in STEM, and how they navigated life through their PhDs. Panelists shared their advice and stories about how they overcame various obstacles in academia.

Panelist, "Discover UChicago", University of Chicago_ **2018**

The *Discover UChicago* program provides undergraduates with an opportunity to come to the University for a week and learn about campus life and research. At the program's conclusion, current students come to give attendees general advice about professional skills, applying to graduate programs, and selecting mentors and programs.

TEACHING AND MENTORING EXPERIENCE

Teaching

Organizer and Team Leader, Cal Summer Genomics Experience. **Spring 2022**

Team Leader, Cal Summer Genomics Experience. **Spring 2021**

Organized and ran a pilot experimental field genomics class held over 3 days. 12 students formed teams led by instructors to address unique genetics questions. Students collected samples in the field, then extracted DNA and sequenced genes of interest using Nanopore sequencing.

Volunteer Workshop Aide, StdPopSim Introductory Workshop - Australasia. **2021**

Assisted a workshop focused on introducing the StdPopSim Python package for population genetics simulations.

Organizer, Mock Interview Prep for Prospective Ph.D. Students, **01/2021**

Day-long session for Berkeley undergraduates applying to grad school programs where we provided interview training and preparation, including talks, a workshop, and mock interviews.

Tutor & Workshop Leader, Educational Endeavors. **2016 - 2020**

Over 670 hours of experience teaching and tutoring students at the high school and undergraduate levels. Tutored in all subjects ranging from STEM fields (Biology, Physical Sciences, Math, Forensics), to language arts (English, Spanish, French) and social sciences (History, Economics) at regular, AP, and collegiate levels. Assisted with and led various tutoring workshops with students from the Daniel Murphy Scholarship Fund and LINK Unlimited.

Teacher, Ideal Student Workshop and Test Prep, 8th Grade Class, **Spring 2019**
Swift Elementary School.

Taught a 10-week, 1-hour series on executive life skills, study skills, and practice for taking standardize tests such as the NWEA-MAP exam. Classes were a combination of experiential, game-based learning; group work; and interactive lectures.

Teaching Assistant, BIOS 20235 Biological Systems, University of Chicago. **Winter 2019**

The second part of the introductory Biology course series for advanced students, focusing on developmental, ecology, and evolutionary biology. In addition to grading and organizing the course, TAs guided discussion sections for students to discuss weekly papers in a collaborative setting.

Volunteer Assistant Instructor, Introduction to Python with Real-World Applications, **2018**
Rauner College Prep.

Taught data science to a class of 12 high school biology students in the context of genomics along with 4 other volunteers.

Teaching Assistant, BIOS 21306 Human Genetics and Evolution, **Winter 2017**
University of Chicago.

Undergraduate course focusing on historic and modern advances in our understanding of human genetics at various scales. In addition to keeping attendance and organizing the course, he taught a lesson on classic and modern techniques for sequencing DNA & RNA; detecting epigenetic modifications in the genome; and on detecting signatures of selection in the genome.

Teaching Assistant, BIOS 21306 Human Genetics and Evolution, **Winter 2017**
University of Chicago.

Undergraduate course focusing on historic and modern advances in our understanding of human genetics at various scales. In addition to keeping attendance and organizing the course, he taught a lesson on classic and modern techniques for sequencing DNA & RNA; detecting epigenetic modifications in the genome; and on detecting signatures of selection in the genome.

Laboratory and Lecture Teaching Assistant, CHM 210H Honors Organic Chemistry Lab, **Spring 2013**
University of Rochester.

Instructor: Joeseph Dinnocenzo. Assisted in the instruction of the lab lecture, lead workshop-style discussions to create the experimental procedures for the labs with students. Oversaw and administered the proper functioning of the lab. Aided and taught students, as well as assessed them for quality work and analytic skills in lab work and in lab reports.

Laboratory and Lecture Teaching Assistant, CHM 173Q Freshman Organic Chemistry Lab, **Fall 2012**
University of Rochester.

Instructor: Bradley Nilsson. Oversaw an organic chemistry lab of 16 freshmen students, grading reports and ensuring the proper functioning of the lab. Ran weekly workshops and lectures for students to design their experiments for the week.

Mentoring

Supervisor, Sarah Gabrielle Villa, B.sc., University of California-Berkeley **2023 - Present**

Group leader, *Thriving in Science* Postdoc Support Group **2020**

Supervisor, Diana Sam, B.sc., University of California-Berkeley **2020 - 2021**

Supervisor, Katia Renault, B.sc., University of California-Berkeley **2020 - 2023**

Mentor, Lily Rahnama, Ph.D., Molecular and Cellular Biology, University of California-Berkeley **2020 - Present**

Mentor, Nadya Ali, Ph.D, Committee on Evolutionary Biology, University of Chicago **2018 - 2022**

Supervisor, Stephanie E. Bulls, M.S, University of South Alabama. **2019-2020**

Supervisor, Eric Chen, B.s, University of Chicago. **2018 - 2019**

MEDIA, SERVICE, AND OUTREACH

Interviews

Neo Life: Donovan, Robin. "The Salty Secrets of Extreme Longevity." News article. Neo Life, 04/21/2022. https://neo.life/2022/04/the-salty-secrets-of-extreme-longevity/

Nature, Career News: Woolston, Chris. "Junior researchers hit by coronavirus-triggered hiring freezes." News article. Nature Career News. Nature, 06/02/2020. https://www.nature.com/articles/d41586-020-01656-3.

NPR, Science Friday: Flatow, Ira. "How A 'Zombie Gene' Helped Elephants Evolve Protection From Cancer." Audio blog post. Science Friday. NPR, 08/17/2018. https://www.sciencefriday.com/segments/how-a-zombie-gene-helped-elephants-evolve-protection-from-cancer/.

CBC News: Kachur, Torah. "This gene prevents elephants from getting cancer and scientists are taking note." News article. CBC News. CBC, 08/16/2018. https://www.cbc.ca/news/canada/this-gene-prevents-elephants-from-getting-cancer-1.4787721.

El Español: Íñiguez De Onzoño, Javier. "El misterioso gen zombi que protege a los elefantes contra el cáncer." News article. El Español. El Español, 08/16/2018. https://www.elespanol.com/ciencia/investigacion/20180815/misterioso-gen-zombi-protege-elefantes-cancer/330218017_0.html.

Smithsonian Magazine: Wu, Katherine J. "Cancer Is One Worry Elephants Can Feel Free to Forget." News article. Smithsonian Magazine. The Smithsonian Institute, 08/14/2018. https://www.smithsonianmag.com/science-nature/cancer-one-worry-elephants-forget-180969993/.

Public Outreach Events

Speaker: "De Elefantes y Manatíes: La evolución de resistencia al cáncer en mamíferos gigantes." Cientificos en Linea. **2021/03/16**

A 30-minute talk for Puerto Rico public TV, geared towards middle/high schoolers with basic biology knowledge as a learning supplement during the COVID-19 pandemic.

Mentor, METAS+ Program, Online (Puerto Rico). **2021 - 2022**

An NIH-funded, 2-year Mentor-coaching for senior undergrads at the University of Puerto Rico focused on preparing them for the transition to grad school.

Mentor, Cientifico Latino, Online (Berkeley, CA). **2020**

Provided mentorship and feedback for undergraduate URMs applying to grad programs, and assisted with essays and career planning.

Organizer, Merritt Genomics Virtual Lab Tour, Online (Berkeley, CA). **2020**

Organized and directed a 90-minute tour of 3 labs virtually, with a showcase of pre-recorded experiments for community college and high school students in Berkeley.

Speaker, Merritt Genomics "Scientist Feature" Class Event, Online (Berkeley, CA). **2020**

Conversations about my path and life in science with high schoolers and community college students in Berkeley, with an emphasis on career paths

Volunteer & Organizer, High School Lab Tours, Department of Human Genetics, University of Chicago. **2016-2019**

Organized and assisted with seasonal visits of the lab spaces by students from local, disadvantaged high schools.

Volunteer Demonstrator & Organizer, *Science Works*, Museum of Science and Industry, Chicago, IL. **2016 - 2018**

Science Works is an event hosted by the Museum of Science and Industry of Chicago that showcases real-life scientists and science to the general public.
Alongside other Human Genetics personnel, the team organized and participated in a variety of scientific demonstrations.

Volunteer Demonstrator, *Stand Up for Science*, Field Museum, Chicago, IL. **2018**

Organized and participated in various demonstrations, and spoke about science to members of the general public at the Field Museum.

CERTIFICATES AND MINI-COURSES

Torrey Pines Academic Lab Management & Leadership Symposium, **Spring 2021**

5-day virtual symposium focused on developing a plan for future research labs, from job search to lab management, including staffing, project management, and funding.

Successfully Managing Your Team of Scientists, **Summer 2018**
University of Chicago myCHOICE program

16-hour workshop introducing concepts in team management in industry and academia. Attendees were able to apply knowledge from each session in practical exercises under various scenarios.

Introduction to Effective Teaching in STEM, **Spring 2018**
University of Chicago myCHOICE program

Attendees honed their teaching skills through lectures and practical exercises in this evidence-based pedagogy course.

Beyond the Bench: The Business of Running a Lab, **Fall 2017**
University of Chicago myCHOICE program.

A rotating panel of primary investigators and heads of facilities at the University of Chicago taught students every week about the behind-the-scenes work that went into starting and running their labs.

PROFESSIONAL MEMBERSHIPS

GBatNet **2022 -**

International Society for Evolution, Medicine, and Public Health **2022 -**

Western Bat Working Group	**2020 -**
North American Society for Bat Research	**2019 -**
American Aging Association	**2019 -**
Society for the Advancement of Chicanos/Hispanics and Native Americans in Science	**2018 -**
American Association for the Advancement of Science	**2015 - 2016**

ADDITIONAL SKILLS

Languages: English (native), Spanish (native), French (fluent)

Programming: Python (expert), R (expert), Bash (expert), Julia (novice), Rust (novice)

DNA & RNA Sequencing: short-read (Illumina) and 3rd Generation (Oxford Nanopore and PacBio SMRT-Seq2)

Epigenetics: ChIP-seq (IcE-ChIP, native, and denatured), ATAC-seq, Hi-C

Single Cell Sequencing: 10x Multiome (ATAC+Gene Expression)

Field Work: 413 hours of experience handling bats

in vivo models: Mice

Primary Cell Culture, including primary cell line generation and iPSC generation

Genetic Engineering via CRISPR/*Cas9* knock-outs

Microscopy: Confocal Microscopy (Leica SP6, SP8); live cell imaging (Olympus Viva View FL)

Flow Cytometry: Cell-cycle (EdU-Hoescht, Fucci), TUNEL, FACS

Molecular Biology: qPCR (RT, ChIP); Western Blot; high molecular weight DNA extraction

Other skills and interests: Sailing, hiking, guitar, public speaking