Paul L. Maurizio

Contact Information

The University of Chicago, Dept. Medicine
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Education

DOCTOR OF PHILOSOPHY (Ph.D.) in Bioinformatics & Computational Biology 2018
The University of North Carolina at Chapel Hill; Department of Genetics

MASTER OF SCIENCE (Sc.M.) in Molecular Microbiology & Immunology 2011
Johns Hopkins Bloomberg School of Public Health
Certificate in Vaccine Science & Policy; Department of International Health 2010

BACHELOR OF ARTS (B.A.), Double Major: Biochemistry; Religion 2005
Swarthmore College

Academic Positions Held

THE UNIVERSITY OF CHICAGO, Section of Genetic Medicine

- **Postdoctoral Fellow** 06/2020–Present
- **Postdoctoral Scholar** 08/2018–05/2020
  Supervisor: Luis B. Barreiro, Ph.D.
  Research Areas: single-cell RNA-seq; mapping dynamic *M. tuberculosis* infection response eQTLs in human macrophages; immunogenomics; gene regulatory networks; social environmental effects on immune regulation

JOHNS HOPKINS UNIVERSITY, Baltimore, MD

- **Visiting Scholar**, Bloomberg School of Public Health 07/2011–06/2012
  Department of Molecular Microbiology & Immunology
  Supervisor: Fidel Zavala, M.D.
  Research Areas: molecular parasitology; transgenesis; preclinical vaccine & adjuvant studies

Graduate Research

Graduate Research Assistant, UNC-CH 05/2013–05/2018

- Advisors: Mark T. Heise, Ph.D. & William Valdar, Ph.D.
- Committee: Terrence S. Furey, Ph.D. (chair); Fernando Pardo-Manuel de Villena, Ph.D.; Ralph S. Baric, Ph.D.; Jeremy E. Purvis, Ph.D.

Graduate Research Assistant (Rotations), UNC-CH 07/2012–05/2013

- Advisors: David M. Margolis, M.D.; Aravinda M. de Silva, Ph.D.; Kristina De Paris, Ph.D.

Graduate Research Assistant, JHU 11/2009–05/2011

- Advisor: Douglas E. Norris, Ph.D.

Grants, Fellowships & Scholarships

Awardee, NIH/NIAID LRP, Loan Repayment Program 2022–Present
Research in Emerging Areas Critical to Human Health (L70)

PI, NIH/NIA F32, Ruth L. Kirschstein National Research Service Award 2020–Present
Sponsors: Luis B. Barreiro, Ph.D.; Matthew Stephens, Ph.D. (Statistics)
Proposal: "Quantifying gene expression and network regulation in single cells to reveal the consequences of stress on the immune response" (#F32AG064883)

PI, UChicago Pilot Grant, Department of Medicine 2019–Present
Advisors: Luis B. Barreiro, Ph.D.; Patrick Wilson, Ph.D. (Rheumatology)
Proposal: "Modeling the effects of social stress on cell-to-cell variation in the immune response to influenza vaccination"

Fellow, NIH T32 Fellowship, Virology Training Grant, UNC-CH 2015–2016

Scholar, Master's Tuition Scholarship, JHU 2010–2011

Fellow, Joshua Lippincott Fellowship, Swarthmore College 2009–2010

Fellow, NSF Summer REU in Prokaryotic Biology, University of Georgia 2004
Advisor: Juergen Wiegel, Ph.D., Department of Microbiology

Fellow, NASA Astrobiology Summer Program, Penn State University 2003
Advisor: Hiroshi Ohmoto, Ph.D., Department of Geosciences

Honors & Awards

Award, Diversity, Equity & Inclusion, Biological Sciences Division, UChicago 11/2022
ISFS Associate, Intersections Science Fellows Symposium (ISFS) 11/2021
Award, Travel, 2nd Annual Symposium, National Science Policy Network, NYC, NY 2018
Award, Travel, 2nd Penn Symposium on Math. & Comp. Bio, Phila., PA *(declined)* 2017
Award, Notable Poster, 1st Annual Research Computing Symposium, UNC-CH 2014
Award, Student Membership, Tropical Medicine Dinner Club of Baltimore 2010 & 2011
Award, Blue Ribbon Poster, Johns Hopkins Global Health Day, JHU 2011
Award, Global Health Field Research, JHU Center for Global Health 2010
Award, Simpson Student Fund, Tropical Medicine Dinner Club of Baltimore 2010
Deans' Award, Swarthmore College 2005

Peer-Reviewed Publications

Parrett JM, Lukasiewicz A, Chmielewski S, Szubert-Kruszynska A, **Maurizio PL**, Grieshop K and Radwan J. **2023**. A sexually-selected male weapon characterised by strong additive genetic variance and no evidence for sexually antagonistic polyphenic maintenance. *Evolution*. (*accepted, 02/2023*)

Grieshop K, **Maurizio PL**, Arnqvist G and Berger D. **2021**. Selection in males purges the mutation load on female fitness. *Evol Letters*. 5(4):328-343. doi: 10.1002/evl3.239. PMID: 34367659.

Sanz J, **Maurizio PL**, Snyder-Mackler N, Simons ND, Voyles T, Kohn J, Michopoulos V, Wilson M, Tung J and Barreiro LB. **2020**. Social history and exposure to pathogen signals modulate social status effects on gene regulation in rhesus macaques. *Proc Natl Acad Sci USA*. 117(38):23317-22. doi: 10.1073/pnas.1820846116. PMID:31611381.

Maurizio PL†, Fuseini H, Tegha G, Hosseinipour M and De Paris K. **2019**. Signatures of divergent anti-malarial treatment responses in peripheral blood from adults and young children in Malawi. *Malaria J*. 18(1):205. doi: 10.1186/s12936-019-2842-7. PMID:31234875. († = corresp. author)

Shorter JR*, **Maurizio PL***, Bell TA, Shaw GD, Miller DR, Gooch TJ, Spence JS, McMillan L, Valdar W and Pardo-Manuel de Villena F. **2019**. A diallel of the mouse Collaborative Cross founders reveals strong strain-specific maternal effects on litter size. *G3: Genes, Genomes, Genetics*. 9(5):1613-1622. doi: 10.1534/g3.118.200847. PMID:30877080. (* = equal contribution)

Maurizio PL, Ferris MT, Keele GR, Miller DR, Shaw GD, Whitmore AC, West A, Morrison CR, Noll KE, Plante KS, Cockrell AS, Threadgill DW, Pardo-Manuel de Villena F, Baric RS, Heise MT and Valdar W. **2018**. Bayesian diallel analysis reveals *Mx1*-dependent and *Mx1*-independent effects on response to influenza A virus in mice. *G3: Genes, Genomes, Genetics*. 8(2): 427-445. doi: 10.1534/g3.117.300438. PMID:29187420.

Turner SD, **Maurizio PL**, Valdar W, Yandell BS and Simon PW. Dissecting the genetic architecture of shoot growth in carrot (*Daucus carota* L.) using a diallel mating design. **2018**. *G3: Genes, Genomes, Genetics*. 8(2): 411-426. doi: 10.1534/g3.117.300235. PMID:29187419.

Espinosa DA, Yadava A, Angov E, **Maurizio PL**, Ockenhouse CF and Zavala F. **2013**. Development of a chimeric *Plasmodium berghei* strain expressing the repeat region of the *P. vivax* circumsporozoite protein for in vivo evaluation of vaccine efficacy. *Infection and Immunity*. 81(8):2882-2887. doi: 10.1128/IAI.00461-13. PMID:23716612.

Walsh MC, Kim GK, **Maurizio PL**, Molnar EE and Choi Y. **2008**. TRAF6 auto-ubiquitination-independent activation of the NFκB and MAPK pathways in response to IL-1 and RANKL. *PLoS One*. 3(12):e4064. doi: 10.1371/journal.pone.0004064. PMID:19112497.

Preprints, Abstracts & Other Contributions (selected)

Maurizio PL, Aguirre-Gamboa R, Sanz J, Giraud-Gatineau A, Randolph HE, Von Platen C, Loulergue P, Launay O, Yotova V, Dumaine A, Brosch R, Tailleux L* and Barreiro LB*. **2022**. Dynamic genetic control of the gene expression response to *Mycobacterium tuberculosis* infection in human macrophages. Biology of Genomes, May 10^{th}–14^{th}. (*abstract*; * co-senior)

Hampton BK, Jensen KL, Whitmore AC, Gralinski LE, Leist SR, Linnertz CL, **Maurizio P**, Menachery VD, Morrison CR, Noll KE, Plante KS, Shaefer A, Shaw GD, West A, Pardo-Manuel de Villena F, Baric RS, Heise MT and Ferris MT. **2021**. Genetic regulation of immune homeostatic lung leukocyte populations influences respiratory virus induced disease in collaborative cross mice. *J Immunol.* 206(Supplement 1):24.05-24.05. (*abstract*)

Campbell CR, **Maurizio PL**, Simons ND, Batista J, Voyles T, Cobb M, Dumaine A, Michopoulos V, Barreiro L and Tung J. **2021**. Social behavioral control of cell-to-cell gene expression variance in rhesus macaque immune cells. Biology of Genomes, May 11^{th}–14^{th}. (*abstract*)

Hampton BK, Jensen KL, Whitmore AC, Linnertz CL, **Maurizio P**, Miller DR, Morrison CR, Noll KE, Plante KS, Shaw GD, West A, Baric RS, Pardo-Manuel de Villena F, Heise MT and Ferris MT. **2021**. Genetic regulation of homeostatic immune architecture in the lungs of Collaborative Cross mice. bioRxiv 2021.04.09.439180. doi: 10.1101/2021.04.09.439180. (*preprint* 2021-04-10)

Lee J, Strattan JS, Kagda M and **Maurizio P**. **2020**. ENCODE-DCC/chip-seq-pipeline2: Zenodo integration for citation purposes (v1.5.2). Zenodo. doi: 10.5281/zenodo.3978629. (*software contribution*)

Simons ND, **Maurizio PL**, Batista J, Michopoulos V, Barreiro LB and Tung J. **2020**. Parallel gene regulatory signatures of social stress and aging in rhesus macaques. 289^{th} Annual Meeting of the American Association of Physical Anthropologists, April 15^{th}–18^{th}. (*abstract*)

Keele GR, **Maurizio PL**, Oreper D and Valdar W. **2018**. Bayesian decision theoretic design of two-founder experimental crosses given diallel data. bioRxiv 489682. doi: 10.1101/489682. (*working paper* 2018-10-07)

Maurizio PL. **2018**. Modeling the Host Genetic Determinants of Influenza Virus Pathogenesis in Mice. Doctor of Philosophy (Ph.D.) Dissertation. University of North Carolina at Chapel Hill. 270 pp. (*dissertation*)

Maurizio PL and Ferris MT. **2017**. "The Collaborative Cross Resource for Systems Genetics Research of Infectious Diseases." *Methods in Molecular Biology: Systems Genetics - Methods and Protocols*. Springer/Humana Press: New York, NY. Editors: Klaus Schughart, Robert Williams. doi: 10.1007/978-1-4939-6427-7_28. PMID:27933545. (*chapter*)

Maurizio PL. **2011**. Detection and vertical transmission of *Culex* flavivirus in *Culex quinquefasciatus* (Diptera: Culicidae) mosquitoes from Zambia, Africa. Master of Science (Sc.M.) thesis. Johns Hopkins University. 127 pp. (*thesis*)

Kendall GC, Mokhonova E, Moran M, **Maurizio P**, Spencer M, Nelson S, Miceli MC. **2010**. High throughput screening for the identification of small molecules that modulate exon skipping on the *DMD* gene. Ottawa Conference on New Directions in Biology and Disease of Skeletal Muscle, Ottawa, Canada, May 5^{th}-8^{th}. (*abstract*)

Mesbah NM, **Maurizio P**, Zhang CL, Romanek CS, Mills G and Wiegel J. **2005**. Isolation of halophilic thermophilic '*Caloramator halophilus*' sp. nov. from salt flats of Northern Nevada. American Society for Microbiology 105^{th} General Meeting. Atlanta, GA, June 5^{th}-9^{th}. (*abstract*)

Additional Professional Experience

Bioinformatics Consultant, Teiko Bio Inc., Salt Lake City, UT (remote) 09/2021-10/2021
Analyzed high-dimensional human cytometry data (CyTOF) for clinical cancer research clients.

Staff Research Associate, University of California, Los Angeles, CA 10/2007–07/2009
Department of Microbiology, Immunology & Molecular Genetics
Supervisor: M. Carrie Miceli, Ph.D.

Research Specialist, University of Pennsylvania, Philadelphia, PA 10/2005–09/2007
Department of Pathology & Laboratory Medicine
Supervisor: Yongwon Choi, Ph.D.

Ecological Field Assistant, Grand Canyon Trust, Flagstaff, AZ 05/2005–07/2005

Conference Presentations (selected)

Poster, Biology of Genomes, Cold Spring Harbor, NY 05/2022
"Dynamic genetic control of the gene expression response to *Mycobacterium tuberculosis* infection in human macrophages"

Flash Talk, Intersections Science Fellows Symposium, virtual 11/2021
"Uncovering cell-type-specific effects of social stress on the immune response in macaques"

Talk, Division of Aging Biology New Investigators Forum, NIH/NIA 07/2021
"Uncovering cell-type-specific effects of social stress on the immune response"

Talk (*), 15th Complex Trait Community Meeting: Memphis, TN 06/2017
"Diallel analysis reveals *Mx1*-dependent and independent effects driving influenza virus severity"

Poster, Gordon Research Conference: Lucca (Barga), Italy 02/2015
Quantitative Genetics & Genomics; "Characterization of parent-of-origin effects on host response to influenza A virus in reciprocal cross mice."

Oral, Southeastern Regional Virology Conference: Atlanta, GA. 04/2014
"Influenza infections in a diallel cross of mice reveal parent-of-origin effects influencing viral pathogenesis"

Poster (*), Entomological Society of America Eastern Branch 03/2011
82nd Annual Meeting: Harrisburg, PA.

(*)=Presentation Award

Campus Presentations (selected)

Panelist, Sharing of Diverse Perspectives: Postdoc Edition, UChicago 05/2021
Graduate Recruitment Initiative Team

Presenter, Committee on Immunology Work-in-Progress, UChicago 05/2021

Panelist, PDA Seminar on Postdoc Fellowships, UChicago 02/2021

Presenter, Department of Human Genetics Work-in-Progress, UChicago 11/2019

Keynote Speaker, Midwest FLI Summit, UChicago 04/2019
Invited by Socioeconomic Diversity Alliance to present my first-gen experience

Panelist, Carolina Grad Student Firsts, UNC-CH and Duke University 01/2018–04/2018

Teaching & Mentorship

Champion Mentor, First-Generation, Low-Income, Immigrant (FLI) Network
- Dang Nguyen, UChicago undergraduate; Majors: Comp Sci/Math 2020–Present
- Christian Porras, Present: M.D./Ph.D. student at Mt. Sinai MSTP 2018–2020

Guest Speaker, Skype-A-Scientist
- Ericson Elementary, 5th grade, San Diego, CA 11/2021
- The Liberi School, 7th grade, Hudson, NY 02/2021
- Leitch Elementary, 2nd grade, Fremont, CA 11/2020

Coding Instructor, Introduction to R, How to Learn to Code, UNC-CH 2016
https://bit.ly/IntroToR-HTLTC

Coding Helper, Software Carpentry Workshop (Git, SQL), UNC-CH 2016

Teaching Assistant, Foundations in Population Genomics, BCB 722, UNC-CH 2014

Teaching Assistant, Global TEFL Network, Zhejiang University, Hangzhou, China 2007

Teaching Assistant, Biological Chemistry Laboratory, CHEM 038, Swarthmore 2004

Professional Development

Selected Participant, Grant Writing Coaching Groups, The Leadership Alliance 2021–2022
Selected Participant, University of Pittsburgh Study 2020–2022
Building up a diverse pipeline for the biomedical research workforce
Participant, Academic Job Market Working Groups, UChicagoGRAD 08/2021–09/2021
Selected Participant, *GENETICS* Peer Review Training Program 2018–2020
Attendee, The Allied Genetics Conference 2020 (TAGC), April 22nd-25th, online 2020
Attendee, The Genetics of Human Disease, Cell Press Symposium, Chicago, IL 2019
Participant, Scientific Writing from the Reader's Perspective Workshop, UNC-CH 2017
Participant, Rigor & Reproducibility Workshop, UNC-CH 2016
Student, Systems Genetics Course, The Jackson Lab, Bar Harbor, ME 2014
Participant, Next Generation Sequencing Workshop, UNC-CH 2014

Peer-Review

Reviewer, *Heredity* (Genetics Society) 2022–Present
Reviewer, *Microbiology Spectrum* (American Society for Microbiology) 2021–Present
Reviewer, *Journal of Virology* (American Society for Microbiology) 2020–Present
Reviewer, *Database* (Oxford University Press) 2019–Present
Reviewer, *Genetics* (Genetics Society of America) 2018–Present
Reviewer, UChicago BSD Career Advancement for Postdocs Travel Awards 2021

Service & Outreach

Invited Moderator, Creating Chicago's 1st Asian American Majority Ward 05/2022
Office of Multicultural Student Affairs
Volunteer, UChicago-DuSable Museum of African American History Collab. 08/2021–Present
Co-founder, Pan-Asian Resource Group, UChicago 03/2021–Present
Co-founder, Pan Asian Coalition, Biological Sciences Division, UChicago 03/2021–Present
Member, Committee on Immunology DEI Committee, UChicago 03/2021–Present
Member, Postdoctoral Association (PDA) Steering Committee, UChicago 11/2020–Present
• **Chair**, Policy Committee; **Co-organizer**, Fellowship Writing Accountability Group
Presentation Judge, Chicago EYES on Cancer/Diversity Research Symposium 08/2021
Board of Directors, Universities Allied for Essential Medicines, 501(c)(3) 10/2015–10/2019
Session Chair, Virology Colloquium, UNC-Chapel Hill, Chapel Hill, NC 10/2015
Session Chair, Evolution 2014 Conference, Raleigh, NC 06/2014
Peer Mentor, 1st-Year Group, Biol. & Biomed. Sci. Program, UNC-CH 09/2013–12/2013
Guest Blogger, 12th Annual World Vaccine Congress, National Harbor, MD 04/2012
HIV Tester & Counselor, Institute for Human Virology, Baltimore, MD 07/2010–01/2012
Tutor, Health Professions Recruitment and Exposure Program, JHU 01/2010–03/2010

Quantitative Skills & Training

Programming, Computing & Statistics: Python, R, RStudio, SQL, Matlab, Mathematica, Unix, JAGS, BUGS, Stan, bash, git, STATA, MCMCglmm, EMMREML, matrixEQTL

Graduate Courses Taken in Quantitative Methods: Bayesian Statistics, Databases, Mathematical Modeling, Sequence Analysis, Infectious Disease Dynamics, Introduction to Statistical Modeling, Statistical Methods in Public Health, Structural Bioinformatics, Topics in Computer Science: Computational Genetics, Topics in Population Genetics