Adelaide Tovar, Ph.D.

Postdoctoral Fellow
Gilbert S. Omenn Department of Computational Medicine & Bioinformatics
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EDUCATION

2015 – 2021	**Ph.D., Genetics & Molecular Biology** The University of North Carolina at Chapel Hill, Chapel Hill, NC
2011 – 2015	**S.B. in Course 7 (Biology)** Massachusetts Institute of Technology, Cambridge, MA

RESEARCH TRAINING

04/2021 – present	**Postdoctoral Fellow**, Gilbert S. Omenn Department of Computational Medicine and Bioinformatics, University of Michigan Advisors: Drs. Steve Parker, Ph.D. and Jacob Kitzman, Ph.D. Project: Developing and applying novel approaches to screen disease-associated noncoding variants
08/2015 – 02/2021	**Graduate Student**, Department of Genetics, The University of North Carolina at Chapel Hill Advisor: Dr. Samir Kelada, M.P.H., Ph.D. Dissertation: “Dissecting respiratory responses to ozone exposure with genetics and genomics”
08/2013 – 07/2015	**Undergraduate Research Assistant**, Department of Biological Engineering, Massachusetts Institute of Technology Advisors: Drs. Darrell Irvine, Ph.D. and Gregory Szeto, Ph.D. Thesis: “Developing an improved immunotherapy for late-stage cancers by engineered immunomodulation”
06/2013 – 08/2013	**Undergraduate Summer Researcher**, Department of Biology, University of North Texas Advisor: Dr. Pamela Padilla, Ph.D. Project: Identifying gene-by-diet interactions involved in responses to anoxia/hypoxia in *C. elegans*

FUNDING

09/2024 – 08/2029	**MOSAIC Pathway to Independence Award (K99/R00)**, NIH/NHGRI K99 HG013676 Title: *Using the continuum of genetic causality to investigate trans regulatory mechanisms*
02/2023, 09/2023	**UROP Supplemental Funding**, University of Michigan
09/2022 – 08/2025	**Postdoctoral Diversity Enrichment Program**, Burroughs Wellcome Fund Title: *Dissecting context-specific gene regulatory grammars*
07/2022 – 06/2024	**REACH Loan Repayment Program**, NIH/NIDDK L70 DK134031 Title: *Annotating the environmental and cellular context of diabetes-associated variants with high-throughput sequencing and reporter assays*

05/2022 – 08/2024	**Opportunity Pool Funding**, NIDDK/Accelerating Medicines Partnership Program for Common Metabolic Diseases *A consortium-wide modular MPRA resource to assess cellular contexts of T2D variants*
09/2021 – 08/2023	**T32 Postdoctoral Training Program in Basic Diabetes Research**, NIH/NIDDK *Annotating the environmental and cellular context of diabetes-associated variants*
08/2020 – 05/2021	**Dissertation Completion Fellowship**, UNC Graduate School
11/2018, 09/2019	**Graduate Student Travel Scholarship**, International Mammalian Genome Society
02/2019	**Transportation Grant**, UNC Graduate School
10/2016 – 10/2019	**Research Supplement to Promote Diversity in Health-Related Research**, NIH/NIEHS *Administered under parent grant R01 ES024965 awarded to PI Kelada*

HONORS AND AWARDS

2025	**Semi-finalist**, ASHG/Charles J. Epstein Trainee Award for Excellence in Human Genetics Research
2025	**Emerging Scholar in Genome Sciences**, University of Virginia Department of Genome Sciences
2023	**Postdoctoral Leadership Academy**, SACNAS
2023	**Rising Star in Genetics and Genomics**, University of Utah Department of Human Genetics
2022	**Human Genetics Scholar**, ASHG
2019, 2020	**Outstanding Poster Presentation Award**, International Mammalian Genome Society
2020	**Fellow**, Yale Ciencia Academy for Career Development Fellow
2019	**First Place Poster Presentation Award**, UNC Initiative for Maximizing Student Development
2019	**Minority Trainee Development Scholarship**, American Thoracic Society
2015	**S. Klein First Prize in Technical Writing**, MIT
2015	**Award Winner**, Wellcome Image Awards (received jointly with Gregory Szeto and Jeffrey Wyckoff)
2015	**Winner**, MIT Koch Institute for Integrative Cancer Research Image Awards (received jointly with Gregory Szeto and Jeffrey Wyckoff)

PREPRINTS AND PUBLICATIONS

*Equal contribution is highlighted with **

1. Nishino K, Kitzman JO, Parker SCJ, **Tovar A**. Functional dissection of metabolic trait-associated gene regulation in steady state and stimulated human skeletal muscle cells. *bioRxiv*. 2024 Nov; 625886. 10.1101/2024.11.28.625886

2. Varshney A, Manickam N, Orchard P, **Tovar A**, Zhang Z, Feng F, Erdos MR, Narisu N, Ventresca C, Nishino K, Rai V, Stringham HM, Jackson AU, Tamsen T, Gao C, Koues OI, Welch JD, Burant CF, Williams LK, Jenkinson C, DeFronzo RA, Norton L, Saramies J, Lakka TA, Laakso M, Tuomilehto J, Mohlke KL, Kitzman JO, Koistinen HA, Liu J, Boehnke M, Collins FS, Scott LJ, Parker SCJ. Population-scale skeletal muscle single-nucleus multi-omic profiling reveals extensive context specific gene regulation. *bioRxiv*. 2023 Dec; 571696. 10.1101/2023.12.15.571696. *In revision at Nature Genetics.*

3. **Tovar A**, Kyono Y, Nishino K, Bose M, Varshney A, Parker SCJ, Kitzman JO. Using a massively parallel reporter assay to discover context-dependent regulatory activity in type 2 diabetes-linked noncoding

regions. *bioRxiv*. 2023 Oct; 561391. 10.1101/2023.10.08.561391. *In review at HGG Advances*.

4. **Tovar A**, Smith GJ, Thomas JM, McFadden KM, Kelada SNP. A locus on chromosome 15 contributes to acute ozone-induced lung injury in Collaborative Cross mice. *Am J Respir Cell Mol Biol*. 2022 Nov;67(5):528-538. 10.1165/rcmb.2021-0326OC

5. **Tovar A***, Crouse WL*, Smith GJ, Thomas JM, Keith BP, McFadden KM, Moran TP, Furey TS, Kelada SNP. Integrative phenotypic and genomic analyses reveal strain-dependent responses to acute ozone exposure and their associations with airway macrophage transcriptional activity. *Am J Physiol Lung Cell Mol Physiol*. 2022 Jan 1;322(1):L33-L49. 10.1152/ajplung.00237.2021

6. Smith GJ, **Tovar A**, McFadden KM, Moran TP, Wagner JG, Harkema JR, Kelada SNP. A model of ozone-induced non-atopic asthma from the Collaborative Cross. *Am J Respir Cell Mol Biol*. 2021 Dec;65(6):672-674. 10.1165/rcmb.2020-0577LE

7. Smith GJ, **Tovar A**, Kanke M, Wang Y, Deshane JS, Sethupathy P, Kelada SNP. Ozone-induced changes in the murine lung extracellular vesicle small RNA landscape. *Physiol Rep*. 2021 Sep;9(18):e15054. 10.14814/phy2.15054

8. Laudermilk LT, **Tovar A**, Homstad AK, Thomas JM, McFadden KM, Tune MK, Cowley DO, Mock JR, Ideraabdullah F, Kelada SNP. Baseline and innate immune response characterization in the *Zfp30* knockout mouse strain. *Mamm Genome*. 2020 Aug;31(7-8):205-214. 10.1007/s00335-020-09847-z

9. **Tovar A***, Smith GJ*, Thomas JM, Crouse WL, Harkema J, Kelada SNP. Transcriptional profiling of the murine airway response to acute ozone exposure. *Toxicol Sci*. 2020 Jan 1;173(1):114-130. 10.1093/toxsci/kfz219

10. Weiser M, Simon JM, Kochar B, **Tovar A**, Israel JW, Robinson A, Gipson GR, Schaner MS, Herfarth HH, Sartor RB, McGovern DPB, Rahbar R, Sadiq TS, Koruda MJ, Furey TS, Sheikh SZ. Molecular classification of Crohn's disease reveals two clinically relevant subtypes. *Gut*. 2018 Jan;67(1):36-42. 10.1136/gutjnl-2016-312518

SELECTED PRESENTATIONS

Invited

09/2025 — **6th Annual Emerging Scholars in Genome Sciences**, University of Virginia, Charlottesville, VA
Title: *Functional annotation of over 25,000 type 2 diabetes-associated variants across contexts*

06/2024 — **Diabetes Genetic Convergence – Rare to Common Variants in Networks**, American Diabetes Association's 84th Scientific Sessions, Orlando, FL
Title: *Exploring regulatory convergence in rare and common diabetes with massively parallel reporter assays*

05/2023 — **Rising Stars in Genetics and Genomics Symposium**, University of Utah, Salt Lake City, UT
Title: *Using massively parallel reporter assays to uncover context-specific gene regulation in type 2 diabetes*

06/2020 — **Science in a Snapshot Seminar Series,** Genetics Society of America, virtual
Title: *Gene-environment interactions underlie respiratory responses to the air pollutant ozone*

Platform

10/2025 **American Society of Human Genetics Annual Meeting**, Boston, MA
Title: *Functional annotation of over 25,000 type 2 diabetes-associated variants*

07/2025 **Gordon Research Conference on Human Genetics and Genomics**, Portland, ME
Title: *Assessing cellular contexts of type 2 diabetes-associated variants at scale*

04/2025 **Accelerating Medicines Partnership for Common Metabolic Disease Parliament Meeting**, Philadelphia, PA
Title: *Assessing cellular contexts of type 2 diabetes-associated variants at scale*

11/2024 **American Society of Human Genetics Annual Meeting**, Denver, CO
Title: *Assessing cellular contexts of type 2 diabetes-associated variants at scale*

07/2023 **Gordon Research Seminar on Human Genetics and Genomics**, Waterville Valley, NH.
Title: *Using massively parallel reporter assays to discover context-specific regulatory grammars*

03/2023 **Accelerating Medicines Partnership for Common Metabolic Disease Parliament Meeting**, Boston, MA
Title: *A consortium-wide modular MPRA resource to assess cellular contexts of diabetes-associated variants*

06/2022 **American Diabetes Association's 82nd Scientific Sessions**, New Orleans, LA
Title: *A modular massively parallel reporter assay uncovers context-specific activity of diabetes-associated regulatory elements*

09/2021 **American Society of Human Genetics Annual Meeting**, virtual
Title: *A modular massively parallel reporter assay uncovers context-specific allelic activity of GWAS variants*

04/2020 **The Allied Genetics Conference**, virtual.
Title: *A GxE QTL on Chr. 15 underlies susceptibility to air pollution-induced lung injury in mice*

05/2019 **American Thoracic Society International Conference**, Dallas, TX
Title: *Investigating susceptibility to ozone-induced lung inflammation and injury using the Collaborative Cross genetic reference population*

MENTORSHIP

2023 – present **Mentor**, Lovelyn Epelle, Ph.D. student in Human Genetics, University of Michigan

2023 – present **Mentor,** Benjamin (Ben) Li, MSTP student in Bioinformatics, University of Michigan

2023 – present **Mentor**, Miranda Jefferds, B.S. student in Biochemistry, University of Michigan

2023 – present **Mentor**, Gabriella (Ellie) Bloss, B.S. student in Biochemistry, University of Michigan

2022 – 2025 **Mentor**, Hailey McMillen, B.S. in Biology, Health, and Society, University of Michigan
Currently: Medical assistant at University of Colorado Anschutz Medical Campus

2022 – 2025	**Mentor**, Kirsten Nishino, B.S. in Molecular, Cellular, and Developmental Biology and B.S. in Life Science Informatics, University of Michigan *Currently: Ph.D. student in Genetics, Genomics, and Systems Biology at the University of Chicago*
2023 – 2024	**Mentor**, Sanjana Yadav, B.S. student in Computer Science, University of Michigan
2023	**Mentor**, Ronak Arun, B.S. in Biology, University of Michigan
2022 – 2023	**Mentor**, Elli Gasper, B.S. student in Biology, University of Michigan
2021 – 2022	**Mentor**, Maya Bose, Ph.D. student in Bioinformatics, University of Michigan
2019 – 2021	**Mentor**, Morgan Nalesnik, Ph.D. in Toxicology & Environmental Medicine
2018 – 2020	**Mentor**, Daniel Vargas, B.S. in Biology, UNC *Currently: Software engineer at The College Board*
2018 – 2019	**Mentor**, Jessica Bustamante, B.A. in Biology, UNC *Currently: Prenatal Genetic Counselor at Prisma Health*
2017	**Mentor**, Abbott Ndukwe, B.S. in Psychology, UNC *Currently: Project Manager at Cisco*

UNIVERSITY AND PROFESSIONAL SERVICE

Ad Hoc Reviewer
Genetics, *Cell Genomics*, *eLife*, *PLoS Genetics*

Abstract Reviewer
ASHG (2022, 2025), ADA (2023, 2024), ABRCMS (2022)

Application Reviewer
Intersections Science Fellows Symposium (2021), SACNAS (2021 – 2023)

Moderator/Session Chair
ASHG (2022, 2023), ADA (2024)

11/2024 – present	**Committee Member**, Atlas of Variant Effects Alliance Variant Effects Seminar Series
01/2022 – present	**MPRA Working Group Chair**, Accelerating Medicines Partnership for Common Metabolic Diseases
07/2019 – 08/2020	**Chair**, UNC Academic and Research-Intensive Careers Cohort
05/2019 – 05/2020	**Family Leader**, UNC Department of Genetics Network
05/2018 – 05/2020	**Advisor**, UNC University Career Services Pre-Graduate Educational Advising Program (PGEAP)
05/2018 – 05/2020	**Peer Mentor**, UNC BBSP First-Year Group
05/2019 – 08/2019	**Member**, UNC PGEAP Recruitment & Training Committee

TEACHING EXPEREINCE AND TRAINING

01/2024 – 04/2024 **Postdoctoral Short Course on College Teaching in STEM**, University of Michigan

08/2017 – 05/2020 **Academic Coach/Tutor**, UNC
GNET 621: Introduction to Genetic Analysis, GNET 632: Advanced Molecular Biology, BCB 720: Advanced Statistical Modeling

01/2017 – 05/2017 **Teaching Assistant**, UNC GNET 632: Advanced Molecular Biology

11/2015 – 08/2016 **Tutor**, Tutor.com

09/2014 – 05/2015 **Tutor**, MIT Department of Biology

09/2014 – 12/2014 **Tutor**, InstaEDU

08/2013 – 05/2014 **AP Biology Instructor**, MIT Educational Studies Program

OUTREACH

08/2021 – 06/2022 **Co-Chair, Education & DEI**, Michigan DNA Day

08/2017 – 05/2018 **Teacher**, UNC DNA Day CONNECT

04/2016 – 04/2018 **Ambassador**, North Carolina DNA Day

04/2015 **Volunteer**, Cambridge Science Festival