CURRICULUM VITAE

Name: **Likhitha Kolla**
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EDUCATION

2028 (est.)	MD (Student)		University of Pennsylvania, Perelman School of Medicine
2026 (est.)	PhD (Student)	Biostatistics *GPA:4/4*	University of Pennsylvania
			Committee: Drs. Kristin Linn and Ravi B. Parikh, Taki Shinohara, Atheendar Venkataramani, & Nandita Mitra
2018	B.S. (*summa cum laude*)	Biology (with Honors) and Computational & Applied Mathematics & Statistics	William & Mary

POSTGRADUATE FELLOWSHIPS AND APPOINTMENTS

2018-2019	NIDCD/NIH IRTA Postbaccalaureate Research Training Program
2019-2027	Medical Scientist Training Program (MSTP) Fellow, University of Pennsylvania
2021-2027	Associate Fellow, Leonard Davis Institute (LDI) of Health Economics
2022-2027	Innovation Fellow, Penn Center for Cancer Care Innovation (PC3I)

RESEARCH INTERESTS

Statistics, Algorithm Fairness, AI/ML, Bioethics, Risk Prediction, Big Data, Health Policy, Implementation Science

SKILLS

Technical: *SAS, R, Python, Stata*

RESEARCH GRANTS AND FELLOWSHIPS

2023-2027
$47,694/yr
NRSA F31 Pre-Doctoral Award, National Library of Medicine / National Institute of Health (Primary PI)
"Addressing Algorithmic Unreliability and Dataset Shift in EHR-based Risk Prediction Models"

2017-2018
Charles Center Honors Fellowship, William & Mary
"Investigating and Modeling Stromal-Cancer Interactions on Autophagy Activity in Renal Carcinomas"
https://scholarworks.wm.edu/honorstheses/1213/

2017
National Science Foundation (NSF) REU Summer Fellowship Award, Cold Spring Harbor Laboratory (CSHL) Undergraduate Research Program (URP)
"Mapping the Immune Landscape for Breast Cancer Subtypes"

2016
Howard Hughs Medical Institute (HHMI) Summer Fellowship, William & Mary
"Circuit Control: Creating a Toolbox Allowing for Precision Circuit Control"
https://2016.igem.org/Team:William_and_Mary

2016
Mary E. Ferguson Memorial Research Award, William & Mary
"*Nucleophagy Regulation in the Tumor Microenvironment*"

OTHER AWARDS

2024	Symposium on Artificial Intelligence for Learning Health Systems Travel Award
2023	Biomedical Graduate Student Travel Award, University of Pennsylvania
2023	Center for Global Health Travel Award, University of Pennsylvania, Rwanda
2019-22	NIH Medical Scientist Training Program T32 GM007170
2019, Declined	UVA Biomedical Sciences Outstanding Candidate (BIMS-OC) Award
2019	NIDCD/NIH Annual Retreat, Best 10-Minute Talk Award
2018	Letter of recognition from U.S. Representative Barbara Comstock for academic achievement
2018	Thomas Jefferson Prize in Natural Philosophy, William & Mary, *Press: https://www.wm.edu/news/stories/2018/likhitha-kolla-18-awarded-thomas-jefferson-prize-in-natural-philosophy.php*
2017	Phi Beta Kappa, William & Mary
2017	Barry M. Goldwater Scholarship Honorable Mention, U.S. Government
2017	Trainee Award for Best Presentation, 1st Annual Commonwealth of VA Cancer Research Conference. Only undergraduate awardee.
2016	International Genetically Engineered Machine (iGEM) Competition, Gold Medalist Team, Nominated for Best Foundational Advances & Best Poster
2015-18	James Monroe Scholar, William & Mary
2014-18	Dean's List, William & Mary
2014	AP Scholar with Distinction

RESEARCH EXPERIENCE

2024-	[a] Health Equity and Clinical Risk Prediction, UPenn Biostatistics	MD-PhD Student; Dissertation Research	Drs. Kristin Linn and Ravi B. Parikh
2021-23	[b] Human Algorithm Collaboration Lab (HACLab), UPenn Biostatistics	MD-PhD Student; Pre-dissertation	Drs. Jinbo Chen and Ravi B. Parikh
2023	Partners in Health, Rwanda, Clinical and Operations Research	MD-PhD Visiting Student, Statistician	Dr. Larry Shulman
2019-20	Complex Systems Lab, UPenn, Computational Neuroscience	MD-PhD Rotating Student	Dr. Dani Bassett
2018-19	[c] Lab of Cochlear Development, National Institute for Deafness and Other Communication Disorders	Quantitative researcher; NIH IRTA Postbac	Dr. Matt Kelley
2018	[c] Honors Thesis (Biology), W&M	Undergraduate Honors Student	Drs. Liz Allison & William Buchser
2017	[c] Cold Spring Harbor Laboratory (CSHL), Undergraduate Research Program (URP)	Quantitative URP Researcher, 1 of 20 selected from >2000 international applicants	Dr. Mickey Atwal
2015-17	Buchser Lab, Biology, W&M	Undergraduate Researcher	Dr. William Buchser
2016	International Genetically Engineered Machine (iGEM), Synthetic Bioengineering, W&M	iGEM Team Member; Quantitative Modeling	Dr. Margaret Saha
2013-14	Eleftherianos Lab, Entomology, George Washington University	High School Researcher	Dr. Ioannis Eleftherianos

a. Investigating role of social determinants of health data in clinical risk prediction. Developing statistical methodologies to improve algorithmic reliability and equity of deployed risk prediction models, specifically Veteran Health Administration's (VHA) Care Assessment Needs (CAN) models for hospitalization and mortality risk. Collaborating with Dr. Amol Navathe and the Parity Center.
b. Evaluated extent, mechanisms, and resource allocation impacts of model performance drift in deployed clinical risk prediction models, including a Penn mortality prediction model and VHA CAN models. Collaborated with Drs. Kristin Linn and Amol Navathe.
c. Analyzed high-dimensional sequencing and/or imaging data to discern disease heterogeneity.

ACADEMIC SERVICE

2024   Member, Penn BGS RCR Committee, collaborated to revise current RCR modules (Diversity, Inclusion, and Equity & Responsible Authorship) to update and create ethics case studies relevant for computational students (with Dr. Mary Putt)

2022-23   Program Representative, Graduate Group in Epidemiology and Biostatistics (GGEB), University of Pennsylvania, responsible for spending BGS budget for GGEB students

2021-   Interviewer and Student Panelist, Perelman School of Medicine and Penn MSTP

INDUSTRY / NON-PROFIT COLLABORATIONS

2023-	Mendel.ai (with Ravi Parikh)	Student Consultant, Statistics
2023-24	Partners in Health (with Larry Shulman)	Student Consultant, Operations
2023-24	Gilead Sciences (with Larry Shulman)	Student Consultant, Statistics & Informatics
2021	GNC Healthcare (with Ravi Parikh)	Medical Student Consultant, Writing

OTHER PROFESSIONAL / LEADERSHIP EXPERIENCE

2022-23	Student writer, Last Writers Program, Penn Medicine Hospice
2019-20	Board Member & Editor, Apenndx.com, PSOM student run medical magazine
2019-20	Student leader, Global Oncology, Perelman School of Medicine (with Dr. L. Shulman)
2020	Student organizer, MD-PhD Computational Biology Journal Club, PSOM/Penn
2015-18	Student leader, Branch Out Community Service, William & Mary
2015-18	President, Biology Club, William & Mary

PROFESSIONAL SOCIETIES

2023-	Student Member	American Statistical Association
2023-	Student Member	American Medical Informatics Association
2022-	Student Member	American Society for Clinical Oncology
2022-	Student Member	American Physician Scientists Association
2022-	Student Member	American College of Physicians

TEACHING AND MENTORSHIP

Fall 2023, 2024	*BIOM 6100*	Foundations in Statistics	Graduate TA	University of Pennsylvania, Biomedical Graduate Studies
Summer 2023-	*PIH/IMB*	+ Statistical Methods for Clinical and Public Health Research, Rwanda	Curriculum Development,	Partners in Health / Ishuti Mu Buzima (PIH / IMB)

			Facilitator, Guest Lecture	
Spring 2023	*HCIN 6026*	Using Data for Transformation	Curriculum Development, Supervising TA	University of Pennsylvania, Medical Ethics and Health Policy
Fall 2022	*EPID 5260*	Biostatistics for Epidemiology Methods I	Graduate TA	University of Pennsylvania, Biostatistics
Fall 2021	*PSOM Core 2*	*Internal Medicine Clerkship	Medical Student Liaison	Perelman School of Medicine, Internal Medicine
Spring 2018	*BIOL 356*	Random Walks in Biology	Undergraduate TA	William & Mary, Mathematics
Fall 2017	*BIOL 306*	Microbiology	Undergraduate TA	William & Mary, Biology
Spring 2017	BIOL 432	Animal Physiology	Undergraduate TA	William & Mary, Biology

 * Selected for displaying academic and professional excellence in the Internal Medicine clerkship. Advise incoming clerkship students on transitioning into the wards, studying for the shelf exam, and presenting patient reports.
+ Prepared and led a week-long quantitative/statistics training session to build computational research capacity in Rwanda. Fifteen students participated. Topics covered include building test statistics, nonparametric and parametric hypothesis tests, regression models
TA = Teaching Assistant

PUBLICATIONS

Kolla, L., Parikh, R. (2024). Uses and limitations of artificial intelligence in oncology. *Cancer. https://doi.org/10.1002/cncr.35307*

Lee, J., **Kolla, L.,** Chen, J. (2024) Active Prediction Model Revision and Evaluation with Application to Electronic Health Records. *Scientific Reports. https://doi.org/10.1038/s41598-024-58633-3*

Parikh, RB, Zhang, Y, **Kolla, L,** Chivers, C, Courtright, KR, Zhu, Z, Navathe, AS, Chen, J. (2023) Performance Drift in a Mortality Prediction Algorithm among Patients with Cancer during the SARS-CoV-2 pandemic. *JAMIA.* https://doi.org/10.1093/jamia/ocac221

Kolla L, Chen J, Parikh RB. Time of Clinic Appointment and Serious Illness Communication in Oncology (2023). *Cancer Control*. doi:10.1177/10732748231170488.

Rando, H, Lordan, R, **Kolla, L,** Sell, E, Lee, A, Wellhausen, N, Naik, A, Kamil, J, COVID-19 Review Consortium, Gitter, A, Greene, C. (2023) The Coming of Age of Nucleic Acid

Vaccines during COVID-19. *mSystems.*
https://journals.asm.org/doi/full/10.1128/msystems.00928-22

Rando, HM., Lordan, R., Lee, AJ, Naik, A., Welhausen, N., Sell, E., **Kolla, L.**, Gitter, A., Greene, CS. (2023) Application of Traditional Vaccine Development Strategies to SARS-CoV-2. *mSystems.* https://doi.org/10.1128/msystems.00927-22

Kolla, L., Gruber, FK, Khalid, O, Hill, C, Parikh, RB. (2021) The case for AI-driven cancer clinical trials – The efficacy arm in silico. *BBA-Reviews on Cancer.* https://doi.org/10.1016/j.bbcan.2021.188572 (with GNC Healthcare)

Brill, K.T., Taiber, S., Anaya, A., Bordeynik-Cohen, M., Rosen, E., **Kolla, L.** et al. (2021) Identification and characterization of key long non-coding RNAs in the auditory system. *RNA Biology.* https://www.tandfonline.com/doi/full/10.1080/15476286.2020.1836456

Kolla, L.,* Kelly, M.*, Mann, Z., Anaya-Rocha, …Burns, J., Hertzano, R., Driver, E., Kelley, M. (2020) Characterization of cochlear hair celldevelopment at the single cell level. *Nature Communications.* https://doi.org/10.1038/s41467-020-16113-y *Co-first authors. *Press: https://www.nih.gov/news-events/nih-research-matters/researchers-create-developmental-map-mouse-cochlea*

Skelley, A., **Kolla, L.**, Tamburro, M., Bar, K. (2020) Science over stigma: The Need for Evidence-Based MSM Blood Donation Policies in the USA. *Lancet Haematology.* *https://doi.org/10.1016/S2352-3026(20)30326-4*

Rosenberg, D., **Kolla, L.**, Heo, D., Cassio, E., Veenstra, M., Zhang, Z., Allison, L, and Buchser, W. Modulating Intra-Nuclear LC3 with SmallMolecules Rescues Cells from a Docetaxol- Induced Phenotype. Submitted to *bioRxiv* in 2020. https://www.biorxiv.org/content/10.1101/2020.10.28.355826v1

Kolla, L.,* Heo, D.*, Rosenberg, D., Barlow, S., Maxinova, A., Cassio, E., and Buchser, W. (2018) High content screen for identifying smallnuclear LC3 modulators in a renal cancer cell line. *Scientific Data*. https://doi.org/10.1038/sdata.2018.116 *Co-first authors

Peek J, Harvey C, Gray D, Rosenberg D, **Kolla L.**, Levy-Myers R, Yin R, McMurry JL, Kerscher O (2018) SUMO targeting of a stress-tolerant Ulp1 SUMO protease. PLoS ONE 13:e0191391. https://doi.org/10.1371/journal.pone.0191391

Jacob Beal, Traci Haddock-Angelli, Geoff Baldwin, Markus Gershater, Ari Dwijayanti, Marko Storch, Kim De Mora, Meagan Lizarazo, Randy Rettberg, with **the iGEM Interlab Study Contributors.** (2018) Quantification of bacterial fluorescence using independent calibrants. *PloS One. https://doi.org/10.1371/journal.pone.0199432*

MANUSCRIPTS, IN PROGRESS

Kolla, L., … Parikh, RB. Extent and Impact of Performance Drift in a Nationally Deployed Population Health Risk Algorithm in the Veterans Health Administration. *In Review*

Parikh, RB.*, **Kolla, L.,*** …Emanuel, EJ. Human-AI Teaming to Improve Accuracy and Efficiency of Eligibility Criteria Prescreening for Oncology Trials: A Randomized Controlled Trial. *In Review at a biomedical journal *co-first authorship*

Kolla, L., Park, S., Roberts, CB, Kreisler, C., Linn, K., Navathe, A., Chen, J., Parikh, RB. Heterogeneity in performance drift in national population health risk prediction models. *In Preparation.*

BOOK CHAPTERS

Kolla, L., Parikh, R., Chapter 12- Digital Health in Oncology. Part of *The Digital Doctor* textbook, *Elsevier publishing*, pages 167–177. Academic Press. https://doi.org/10.1016/B978-0-443-15728-8.00018-5

PRESENTATIONS

2023-24	*Algorithmic reliability and dataset shift in a national mortality prediction algorithm*	Podium Talk, at Academy Health Annual Meeting 2024 & at AMIA Annual Symposium 2023
2024	*Can Machines Think (Like Doctors): The Case for AI Literacy in Medical Education*	Penn Talks Teaching Competition, University of Pennsylvania
2024	*Algorithmic reliability and dataset shift in the VA CAN 2.5 Models*	VHA Modeling Group, Veterans Health Administration
2023	*Algorithmic reliability and dataset shift in EHR-based risk prediction models*	Lightning Talk, Penn ASSET/IBI Symposium on Trustworthy AI for Health Care
2021	*Human-machine collaboration: improving mortality predictions*	Works in Progress, Biostatistics, University of Pennsylvania
2019	*Characterization of Cochlear Development using Single-cell RNA-seq.*	National Institute for Deafness and Other Communication Diseases, Annual Retreat
2017	*Modulating Intra-Nuclear LC3 with Small Molecules Rescues Cells from a Docetaxel- Induced Phenotype.*	1st Virginia Annual Cancer Research Conference, William & Mary's Undergraduate Science Research Symposium
2017	*Mapping the Immune Landscape for Breast Cancer Subtypes*	Cold Spring Harbor Laboratory, Undergraduate Research Program Symposium
2016	*The Circuit Control Toolbox*	International Genetically Engineered Machine Competition (iGEM)

SELECTED POSTERS AND OTHER PRESENTATIONS

Kolla, L., Park, S., Roberts, CB, Kreisler, C., Linn, K., Navathe, A., Chen, J., Parikh, RB. (2024) Characterizing performance drift and dataset shift in a national population health risk prediction model. *Symposium on Artificial Intelligence for Learning Health Systems, May 2024.*

Parikh, R., Guido, M., Laventure, B., Beothy, L., Girard, A., Yang, **Kolla, L**., Chen, J., Emanuel, EJ (2024) Human-AI Teaming to Improve Accuracy and Timeliness of Common Trial Eligibility Criteria from Electronic Health Record (EHR) Data: Interim Analysis of a Randomized Trial. *American Society for Clinical Oncology, Conference 2024* (contributed to statistical design, collaborated with Mendel.ai)

Kolla., L. Parikh, RB, Chen, J. (2023) Algorithmic reliability and dataset shift in EHR-based risk prediction models. *Presented at ENAR (Eastern Northern American Region) Spring Meeting 2023; Penn ASSET/IBI Symposium on Trustworthy AI for Health Care, Fall 2023; and Penn MSTP (Medical Scientist Training Program) Annual Retreat 2023*

Kolla, L., Chen, J., Parikh, R. (2022) Appointment time and serious illness conversation rate in oncology. *Presented at American Society for Clinical Oncology (ASCO) Annual Meeting 2022; National MD-PhD Student Conference 2022; and Penn MSTP (Medical Scientist Training Program) Annual Retreat 2022*

Kolla, L., Kelly, M., Mays, J., Palemo, A., So, K., Nguyen, M., Burns, J., Kelley, M. (Feb 2019) *Characterization of Cochlear Developmentusing Single-cell RNA-seq.* Association for Research in Otolaryngology (Feb 2019).

Kolla, L., Rosenberg, D., Heo, D., Cassio, E., Barlow, S., Maximova, A., Buchser, W., (2017) *Modulating Intra-Nuclear LC3 with Small Molecules Rescues Cells from an Docetaxel-Induced Phenotype.* CellPress Symposia: Cancer, Inflammation, and Immunity. **Received a William and Mary Travel grant to attend conference (Jun 2017).**

Clifton, K., Gao, C., Jones, E., **Kolla, L**., Maniaci, J., Marken, J., Monnette, C., Reiss, A., Halleran, A., Smith, G., and Saha, M. (November 2016)*The Circuit Control Toolbox.* Oral presentation and poster session at iGEM 2016 Giant Jamboree. **Gold medalist team and nominated for Best Undergraduate Poster and Best Foundational Advance Project.**

REFERENCES

Matthew Kelley, PhD	Chief, Laboratory of Cochlear Development, NIDCD/NIH	kelleymt@nidcd.nih.gov
Kristin Linn, PhD	Assistant Professor, Biostatistics, University of Pennsylvania	klinn@pennmedicine.upenn.edu
Ravi B. Parikh, MD, MPP	Associate Professor, Emory School of Medicine	ravi.bharat.parikh@emory.edu
Margaret Saha, PhD	Chancellor Professor, Biology, William & Mary	mssaha@wm.edu