

# AKSHAYA THOUTAM

v-akthoutam@microsoft.com | [akshayathoutam.github.io](https://akshayathoutam.github.io) | [LinkedIn](#) | [GitHub](#) | [Google Scholar](#)

## EDUCATION 2020-2023

---

### B.S Neuroscience, GEORGIA INSTITUTE OF TECHNOLOGY

- Minor in Health and Medical Sciences
- Relevant Coursework: Linear Algebra, Integral Calculus, Biostatistics, Machine Learning in Bioscience, Cancer Biology and Technology, Tumor Microenvironment and Immuno-Oncology (MIT), Advanced Computational Biology: Genomes Networks Evolution (MIT), Statistical Inference for Brain and Cognitive Sciences (MIT), Artificial Intelligence in Medicine II (Harvard)

## PUBLICATIONS

---

1. Zeinab Navidi, **Akshaya Thoutam**, Madeline Hughes, Srivatsan Raghavan, Peter Winter, Lorin Crawford, and Ava P. Amini. Adaptive Resampling For Improved Cellular Representation Learning in Imbalanced Single-cell Samples. (2025). *In submission*.
2. Alan DenAdel, Madeline Hughes, **Akshaya Thoutam**, Ava P. Amini, and Lorin Crawford. Evaluating the role of pre-training dataset size and diversity on single-cell foundation model performance. (2024). *Under Review – Nature Methods*.
3. Ajay Nadig, **Akshaya Thoutam**, Madeline Hughes, Srivatsan Raghavan, Peter Winter, Ava P. Amini, and Lorin Crawford. Consequences of training data composition for deep generative models in single cell biology (2025). *Under Review – Cell Press*.
4. Greg Gibson, Dermot McGovern, **Akshaya Thoutam**, the NIDDK IBD Genetics Consortium, Judy Cho and John Rioux. Eleven Grand Challenges for Inflammatory Bowel Disease Genetics and Genomics. (2024). *Inflammatory Bowel Disease*
5. Nasrin Hooshmand, **Akshaya Thoutam**, Max Anikovskiy, Hagar Labouta & Mostafa El-Sayed (2021). Localized Surface Plasmon Resonance as a Tool to Study Protein Corona Formation on Nanoparticles. *Journal of Physical Chemistry C*, 125(45), 24765–24776
6. **Akshaya Thoutam**, Narasiah & Kolliputi (2021). Epigenetics of pulmonary diseases. In T. Tollefsbol (Ed.), *Medical Epigenetics* (2nd ed., pp. 45-67). Publisher. ISBN: 9780128239285
7. **Akshaya Thoutam**, Mason Breitzig, Richard Lockey & Narasiah Kolliputi (2020). Coronavirus: a shift in focus away from IFN response and towards other inflammatory targets. *Journal of cell communication and signaling*, 1–2

## RESEARCH EXPERIENCE

---

Biomedical Machine Learning | **MICROSOFT RESEARCH**

(Feb 2024 – Present)

**Predoctoral Research Assistant**

- Manipulating single cell foundation models to increase data depth and biology in capturing cell-state level biology
- Creating an end-to-end pipeline for alignment and analysis of single-cell RNA seq data

Levin Lab (Genomics) | **BROAD INSTITUTE OF HARVARD/MIT**

(May 2023 – September 2023)

**Computational Associate Intern**

- Integrated long-read MAS-seq data, Visium spatial transcriptomics data, and single-nucleus RNA-seq to investigate spatially organized RNA isoform diversity in a pilot study on Parkinson's disease.
- Analyzed single-nucleus RNA-seq data of a SCN2A knock-out mice cortex from the SCHEMA Schizophrenia initiative.

Knott Lab (Genomics + ML) | **CEDARS SINAI**

(May 2022 – October 2022)

**Computational Associate Intern**

- Analyzed temporal and spatial differences of cell types with scRNA-seq and ATAC-seq data from patients of an ER+ Breast Cancer clinical trial to characterize the tumor microenvironment in three different time periods to elucidate the molecular mechanisms that drive ER+ breast cancer.

Gibson Lab | **GEORGIA TECH**

(May 2021 – December 2023)

**Computational Research Assistant**

- Curated 133,488 B cells characterized from 246 tumor samples across 9 human cancer types to identify distinct molecular characteristics in the tumor microenvironment across cancer types - creation of pan-cancer atlas of B cells.
- Compared the Immune transcriptional spectrum across healthy colon, IBD, Crohn's Disease, and colon cancer progression.

Laser Dynamics Lab | **GEORGIA TECH**

(May 2021 – May 2022)

**Research Assistant**

- Computationally modeled and synthesized gold and silver plasmonic nanoparticles of different morphologies for their applications in bio-sensing and photothermal therapy in cancer treatment

Kolliputi Lab (Immunology) | **UNIVERSITY OF SOUTH FLORIDA**

(May 2020 – March 2021)

**Research Writer**

- Compared respiratory viruses MERS-CoV, SARS-CoV-1, human parainfluenza virus 3 (HPIV3), respiratory syncytial virus (RSV), and Influenza A Virus (IAV) to SARS-CoV-2 to uncover monocyte cytokine production as a driving feature of COVID-19 infection.
- Invited to write the chapter on 'The Epigenetics of Pulmonary Disease' for the textbook Medical Epigenetics, 2E (Elsevier)

## POSTERS

---

1. **Akshaya Thoutam**, Madeline Hughes (2025, April). Evaluating the role of pre-training dataset size, diversity, and composition on single-cell foundation model performance. [RECOMB 2025 Research in Computational Molecular Biology](#).
2. **Akshaya Thoutam**, William Watson, Mohan William, Regina Nwosu (April 2023). 5HT2c against lorcazerin on spontaneous nerve root 3 activity in crayfish model. [Georgia Tech Undergraduate Neuroscience Symposium](#)
3. Hira Anis, **Akshaya Thoutam**, Makeda Hailu, Vishal Dhere, Greg Gibson, Erin Connolly (2023, April) Single-cell Pan-cancer atlas reveals diversity and plasticity of tumor-infiltrating plasma cells. [Atlanta Workshop for Single Cell Omics 2023](#)
4. **Akshaya Thoutam** & Greg Gibson (2022, October). A Pan-cancer Single-cell Transcriptional Atlas of Tumor-infiltrating B cells. [National Symposium for Undergraduate Research](#)
5. **Akshaya Thoutam**, Erin Connolly, Greg Gibson (2022, April). A Pan-cancer Single-cell Transcriptional Atlas of Tumor-infiltrating Plasma Cells. [Atlanta Workshop for Single Cell Omics 2022](#).
6. **Akshaya Thoutam**, Erin Connolly, Greg Gibson (2022, April). A Pan-cancer Single-cell Transcriptional Atlas of Tumor-infiltrating Plasma Cells. [Atlanta Workshop for Single Cell Omics 2022](#).

## TALK

---

1. **Akshaya Thoutam** & Greg Gibson (2023, April). Pan-cancer atlas of tumor-infiltrating B cells. Georgia Institute of Technology [Undergraduate Research Symposium](#)

## AWARDS/HONORS

---

**College of Sciences Deans Scholar** | [Georgia Institute of Technology](#)  
**Early Research Award** | [Georgia Institute of Technology](#)  
**Robert Gunn Student Award (Finalist)** | [American Physiology Society](#)

Awarded every semester  
August 2021  
April 2023

## LEADERSHIP

---

**Down to Dance (Founder/President)** | [Georgia Institute of Technology](#)  
**Urban Health and Wellness committee leader** | [GT AMSA](#)  
**Fundraising committee leader** | [GT AMSA](#)

August 2020 – May 2023  
September 2020 – May 2021  
September 2020 – May 2021

**SHADOWING**

---

**Pediatric Pathology** | Boston Children’s Hospital | **90 hours**  
**Pediatric Heme Oncology** | Boston Children’s Hospital | **8 hours**  
**Neurosurgery** | Atlanta Veteran Affairs Medical center | **80 hours**  
**Pediatrician** | All Pediatrics Tampa | **100 hours**  
**Sarcoma Oncology** | Moffitt Cancer Center | **40 hours**  
**Thoracic surgery** | Moffitt Cancer Center | **40 hours**

**VOLUNTEERING**

---

<b>Emergency Department</b>   Massachusetts General Hospital   <b>74 hours</b>	August 2024 - Present
<b>Arts in medicine Program</b>   Emory Winship Cancer Center   <b>150 hours</b>	August 2020 – May 2021
<b>Care package</b>   Advent Health Florida   <b>100 hours</b>	March 2020 – December 2020
<b>Recycling initiative</b>   Cedars Sinai Hospital   <b>200 hours</b>	May 2022 – August 2022