# AKSHAYA **THOUTAM**

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LinkedIn Profile

## EDUCATION

**2020-2023**

**B.S NEUROSCIENCE,** GEORGIA INSTITUTE OF TECHNOLOGY

- Minor in Health and Medical Sciences
- Graduate Bioinformatics classes taken: (1) Biostatics, (2) Machine Learning in Bioscience, (3) Cancer Biology and Technology
- Philosophy classes taken: (1) Ethics, (2) Philosophy of Science, (3) Science, Technology, and human values

## EXPERIENCE

**H-INDEX: 3**
**CITATIONS: 39**
**I10-INDEX: 2**

### MICROSOFT RESEARCH

**PREDOCTORAL RESEARCH ASSISTANT – BIO MACHIENE LEARNING TEAM**
**FEB 2024 – PREESENT**
Working with Ava Amini and Lorin Crawford on project ex vivo: a joint cancer research collaboration between Microsoft, the Broad Institute of MIT and Harvard, and the Dana Farber cancer Institute. The goal is to effectively model cancer ex vivo, in a patient-specific manner, to stratify patients and identify therapies that target diverse aspects of human cancers more effectively.

### BROAD INSTITUE OF HARVARD/MIT

**COMPUTATIONAL ASSOCIATE INTERN (COMPUTATIONAL BIOLOGY) – STANLEY CENTER FOR PSYCHIATRIC RESEARCH**
**MAY 2023 – SEPTEMBER 2023**
Worked under Dr. Joshua Levin in the Stanley center for Psychiatric Research. Project (1) Working on the analysis of differential RNA isoforms in a Parkinson's dataset using long-read Iso-MAS-seq data, Visium spatial transcriptomics data, and single-nucleus RNA-seq data. Project (2) Analysis of SCN2A knock-out mice cortex single-nucleus RNA-seq data from the SCHEMA Schizophrenia initiative.

### GEORGIA INSTITUTE OF TECHNOLOGY

**COMPUTATIONAL ASSOCIATE INTERN (GENOMICS) – CEDARS SINAI**
**MAY 2022 – OCTOBER 2022**

Worked under the supervision of Dr. Simon Knott in the Center for Bioinformatics and Functional Genomics at Cedars-Sinai. I was part of a small team consisting of myself and two others. I focused on analyzing the scRNA-seq data of the ER+ cohort out of a clinical trial consisting of ER+ breast cancer and Triple Negative Breast Cancer (TNBC) patients. We studied the temporal and spatial differences of cell types (T-cells, B-cells, Endothelial, Fibroblasts, Mast, and Epithelial) to characterize the tumor microenvironment in three different time periods of the clinical trial to elucidate the molecular mechanism that drives ER+ breast cancer. Our overall goal was to find new therapeutic targets for future clinical trials. All the analysis was done using python libraries and toolkits such as Scanpy, Harmonypy, Celltypist, SCVI, ScanVI, etc.

### COMPUTATIONAL RESEARCH ASSISTANT (GENOMICS) – GIBSON LAB

**MAY 2021 – DECEMBER 2023**

Worked in Dr. Greg Gibson's lab for predictive health genomics research. The main goal of the research is to describe and characterize B cells as they differentiate through each B cell subsets due to immune system response to an infection, autoimmune activity, or in the context of a healthy state. Project (1) Analyzed a subset of cells with high immunoglobulin gene markup to determine if they were a technical artifact derived from clustering or if they were legitimate biology. Project (2) Analyzed B cells of various cancer samples to collectively create a pan-cancer B atlas. Project (3) Compared B cell transcriptional landscape across colon cancer, IBD, and Crohn's Disease progression. Analysis done with Seurat and Scanpy.

## PUBLICATIONS

- **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.

- **Akshaya Thoutam**, Narasiah & Kolliputi (2021). Epigenetics of pulmonary diseases. In T. Tollefsbol (Ed.), *Medical Epigenetics* (2nd ed., pp. 45-67). Publisher. ISBN: 9780128239285

- 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

- 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. Manuscript pending review at Journal Gut

- "A single cell and spatial atlas of ER+ breast cancer response to pembrolizumab and radiation therapy". Journal **Nature** – Middle author on manuscript pending review.

## CONFERENCES

- **Akshaya Thoutam**, Erin Connolly, Greg Gibson (2022, April). A Pan-cancer Single-cell Transcriptional Atlas of Tumor-infiltrating Plasma Cells. Poster presented at the Atlanta Workshop for Single Cell Omics 2022.

- **Akshaya Thoutam** & Greg Gibson (2022, October). A Pan-cancer single-cell transcriptional atlas of tumor-infiltrating B cells. Poster presented at the National Symposium for Undergraduate Research. (52/352 selected)

- **Akshaya Thoutam**, Greg & Gibson (2023, April). Pan-cancer atlas of tumor-infiltrating B cells. Oral presentation at the Georgia Institute of Technology Undergraduate Research Symposium.

- 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. Poster presentation at Atlanta Workshop for Single Cell Omics 2023

- William Watson, **Akshaya Thoutam**, Mohan William, Regina Nwosu (April 2023). 5HT2c against lorcaserin on spontaneous nerve root 3 activity in crayfish model. Poster at 2023 Georgia Tech Undergraduate Neuroscience Symposium.

## AWARDS

- Early Research Award - Georgia Institute of Technology
- Georgia Institute of Technology - College of Sciences Deans Award
- American Physiology Society – Robert Gunn Student Award Finalist