

# Yen Giang Nguyen

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## RESEARCH EXPERIENCE

### Bioinformatics Intern

Jun 2024 - Now

*Henderson Laboratory at Van Andel Institute, Grand Rapids, MI*

#### ❖ Project 1: CosMx vs. Xenium Comparative Analysis

- Compared the performance of the 1000-plex CosMx Mouse Neuro Panel to the 247-plex Xenium Mouse Neuro Panel on mouse brain motor cortex using R on high-performance computing computer under the guidance of Dr. Michael Henderson.
- Performed quantitative analysis of CosMx and Xenium data sets through data visualization and linear regression of features.
- Annotated cell types in both datasets using supervised cell typing with the InSituType package, presenting results through flightpath plots, UMAP, and heatmaps.
- Conducted differential expression analysis of CosMx and Xenium through Seurat and MAST packages and compared results through volcano plot and violin plot.

#### ❖ Project 2: Vulnerability Values of Pathology Human Brains

- Built linear regression and compared the correlation coefficient of Allen Brain Atlas data with vulnerability values of pathology human brains using Python and Jupyter Notebook.

## EDUCATION

### Kalamazoo College, Kalamazoo, MI

2023 - 2027

*Candidate of Bachelor of Arts: Biology & Mathematics / GPA: 3.86 | Dean's List*

- **Concentration:** Neuroscience, Biological Physics, Biochemistry & Molecular Biology
- **Coursework:** Linear Algebra, Calculus III, Ordinary Differential Equation, Topology & Mathematical Statistics

## PRESENTATION

#### ❖ Gene Therapy in the Central Nervous System – ImageJ as a tool for image analysis

- Conference: Society for Neuroscience 2024
- Date: Oct 5 - 9, 2024

#### ❖ Comparing Single-cell Spatial Transcriptomics Techniques

- Talk: Aligning Science Across Parkinson's – Spatial Transcriptomics
- Date: Sep 17, 2024

## EXTRACURRICULAR ACTIVITIES

#### ❖ Projects in Mathematics and Applications (PiMA)

Jul 2023

*A summer camp aimed to assist and mentor students who are curious to learn about Mathematics and its applications; Participated in this year's theme of Applied Mathematics in Bioinformatics.*

- Led a group of 4 to build a math model for bulk RNA-Seq quantification by using the Bayesian network, maximum likelihood estimation, and expectation maximization.

#### ❖ Cambridge Future Scholar Program

Nov 2021 - Mar 2022

*Participated in the Regenerative Neurobiology and Gene Therapy course by Dr. Bart Nieuwenhuis, a lecturer at the University of Cambridge.*

- Analyzed microscopy images using ImageJ and collected, and prepared data for presentation.
- Wrote the neuroscience literature review of 'Axon Regeneration in Dorsal Root Ganglion' over a period of 7 weeks.

## SKILLS

- **Programming:** R, Python, LaTeX, HTML
- **Tools:** Visual Code Studio, R Studio, Jupyter Notebook, Github
- **Libraries:** ggplot2, Seurat, InSituType, MAST, pandas, NumPy, seaborn
- **Lab:** Light microscope, polymerase chain reaction, restriction enzymes, DNA purification, gel electrophoresis, dissecting microscope, immunohistochemistry