# JOY NYAANGA

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## EDUCATION

**Ph.D.** **Northwestern University** – Evanston, IL **Expected 2022**
*Quantitative Biology*

**M.A.** **Princeton University** – Princeton, NJ **2017 - 2018**
*Molecular Biology*

**B.S.** **John Carroll University** – University Heights, OH **2013 - 2017**
*Double Major: Biochemistry; Cell and Molecular Biology*

## SKILLS

**Computing:** R, GitHub, Python, bash, AWS
**Data science:** data analysis, data mining, visualization, dashboarding
**Statistics:** regression models, maximum likelihood, gaussian mixture modeling, model selection

## RELEVANT RESEARCH AND PROJECTS

**Ph.D. Candidate | Northwestern University** **2018 - Present**

- Investigate the genetic variation underlying differences in developmental growth using *Caenorhabditis elegans*
- Collaborate with mathematicians to build mechanistic models to explore complex growth relationships
- Design and optimize a high-throughput experimental platform for the acquisition of developmental traits
- Develop and implement an R package to facilitate handling and visualization of image-based data
- Mentor and train six undergraduate and high school students on independent computational research projects

**Computational Biology/Data Science Intern | Celsius Therapeutics** **Summer 2021**

- Evaluated lineage reconstruction and trajectory analysis methods in single-cell RNAseq data
- Benchmarked and implemented multiple trajectory inference algorithms on clinical-stage data

**Masters Student | Princeton University** **2017 - 2018**

- Probed RNA-protein interactions regulated by 8-oxoG to uncover cellular changes caused by oxidative stress
- Modeled biochemical reactions in Python to study the dynamics of protein networks

**Summer Research Student | Cleveland Clinic** **Summer 2016**

- Computationally identified mutations that altered N-glycosylation in factor VIII, a procoagulant protein
- Constructed plasmids containing mutations of interest

**Undergraduate Researcher | John Carroll University** **2015 - 2016**

- Studied lipid peroxidation of linoleic acid using gas chromatography – mass spectrometry
- Presented results in a university poster competition (awarded special merit)

## SELECT LEADERSHIP & OUTREACH

**Graduate Teaching Assistant | Northwestern University** **2020 - 2021**

- Collaborated with faculty to instruct 100+ students across three introductory biology courses
- Facilitated in-class discussions, and provided verbal and written assessment on course progress

**Campus Tour Guide | John Carroll University** **2015 - 2017**

- Managed correspondence with prospective students and parents
- Demonstrated the importance of clear communication while leading campus walking tours and visit programs

## SELECT HONORS & AWARDS

**NSF-Simons Center Scholar**, Northwestern University **2019 – Present**
*Fully funded scholar as part of the NSF Center for Quantitative Biology*

**Rev. George J. Pickel, S.J. Senior Chemistry Award**, John Carroll University **2017**
*Recognized for outstanding scholarship, leadership, integrity, and commitment*

## PUBLICATIONS

*Peer-reviewed:*

**Nyaanga, J.**, Crombie, T. A., Widmayer, S. J. & Andersen, E. C. easyXpress: An R package to analyze and visualize high-throughput *C. elegans* microscopy data generated using CellProfiler. PLoS One 16, e0252000 (2021)

*Preprint:*

**Nyaanga, J**. *et al*. Highly scaled measurements of *C. elegans* development suggest that physical constraints guide growth trajectories and animal shape. bioRxiv 2021.04.01.438121 (2021) doi:10.1101/2021.04.01.438121