

Shayne M. Plourde (He/Him/His)

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OVERVIEW

My training in Mathematics, Computer Science, and Biology allows me to investigate questions at the cutting edge of computational biology. I can work on both biological experiments and modeling projects. This allows for a high level of interdisciplinary collaboration with my peers leading to novel results.

SKILLS SUMMARY

- **Laboratory:** Confocal Microscopy, FRAP, Image Analysis, Experimental Design, Scientific Writing
- **Programming:** Googling, Documentation, Data Analysis, Parameterization, ODE/PDEs, OOP
- **Languages/Software:** Python, Matlab, Julia, R, C/C++, JAVA, Inkscape, LaTeX, XMGrace
- **Skills:** Management, Writing, Collaboration, Public Speaking, Bioinformatics, Independence

PROJECTS

- **Mathematical and Biological Exploration of Cellular Patterning and Positioning**
 - **Developed:** an ODE/PDE model of *C. elegans* centrosomes to identify maturation asymmetries.
 - **Acquired and Analyzed:** high quality microscopy data for parametrizing the PDE model. This formed the basis for understanding the mechanisms responsible for the observed asymmetries.
 - **Mentored:** students in microscopy protocols, modeling concepts, and data analysis pipelines.
- **Mathematical Modelling of Pollen Aperture Formation**
 - **Developed:** a Turing model of aperture positioning that recapitulated *Arabidopsis thaliana* pollen surface patterning and predicted the behavior of two novel mutants before *in vivo* experiments.
 - **Collaborated:** with biologists to inform both the modeling and biological experiments
- **Computational Model of Microcalcification Growth**
 - **Designed:** agent based JAVA model of breast tumor growth to determine chance of metastasis.

EXPERIENCE

- **CompUMAINE Research Associate** Orono, Maine
 - **Performed:** blinded analysis of mammograms to identify the fractal dimension of the tissue
 - **Collaborated:** with various senior researchers on various mathematical modeling projects. We predicted the fractal dimension of tissue impacts the microcalcifications growth and metastasis.
- **Executive Board Leadership of OSU Cycling Team** OSU
Secretary, President, Vice President and Social Media
 - **Informed:** members of club activities and requirements with presentations and emails.
 - **Directed:** during the pandemic. I was able to quickly change plans to keep members engaged.
- **Graduate Teaching Associate - Mathematics & Biology Training** OSU
 - **Managed:** lab or recitation. Responsible for lesson planning, grading and answering questions.

PRESENTATIONS / PUBLICATIONS

- **Presentations:** SMB invited speaker 2023, IGP Seminar 2022/2023 (talk) & 2021 (poster)
- **1st Author:** [Pollen model in PLOS-ONE](#), [Tumor model in Comput Biol Med](#) 2016 top articles

EDUCATION

- **The Ohio State University** Columbus, Ohio
Ph.D. - Molecular, Cellular, Developmental Biology Expected Graduation: July 2023
M.M.S - Mathematical Biosciences
- **The University of Maine - Orono** Orono, Maine
B.A. - Mathematics, minor: Computer Science, Magna Cum Laude with High Honors