Shayne M. Plourde (He/Him/His)

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I'm a PhD candidate with over 8 years of research experience in mathematical modeling, computer science and biology. I analyze collected or shared data and make informative visualizations and models. My dual training gives me unique expertise which can lead to stronger models and better collaborations.

SKILLS SUMMARY

- **Biological/Laboratory:** Microscopy, Experimental Design, Scientific Writing, Critical Thinking
- **Programming:** Googling, Documentation, Data Analysis, Parameterization, ODE/PDEs, OOP
- **Languages/Other:** Python, Matlab, Julia, R, Inkscape, XMGrace, LaTeX, Pandas, Matplotlib, GitHub
- **Leadership:** Management, Collaboration, Public Speaking, Independent research, Mentorship
- **Personal:** Making coffee, Cycling for 100 miles, Cartography, TTRPG worldbuilding, Fantasy Books

EXPERIENCE / PROJECTS

- **Mathematical AND Biological Exploration of Cellular Patterning Based on Ground Truths**
  - I acquired and analyzed over 100 high-quality 4D microscopy images to parameterize the model.
  - I developed a novel compartmental ODE model of centrosome maturation combining the dynamics of three biological hypotheses, giving them a novel mathematical understanding.
  - I am currently expanding the model into a whole signaling network model by collecting and critically analyzing previously published results.
- **Identifying Novel Pollen Patterning Mutants *in silico,* Prior to Biological Experiments**
  - I developed a Turing model to predict the behavior of novel Arabidopsis thaliana pollen mutants in collaboration with biologists which improved modeling and biological experiments 100%.
- **Agent Based Model of Microcalcification Growth Reveals Importance of Tissue Composition**
  - I Built an agent based model that was used to discover that the composition of the fatty and dense tissue in the tumor microenvironment impacts the growth and the chance of metastasis.

NON-RESEARCH EXPERIENCE

- **Laboratory Research Associate/Leader**   Dawes Lab, OSU
  - I Organized/led productive meetings, Wrote/Edited scientific publications and talks, Purchasing.
  - I Wrote an after damage report leading to 100% replacement of equipment and supplies.
  - I mentored five students in microscopy protocols, modeling concepts, and data analysis pipelines.
  - I presented my works in many different talks, including being an invited speaker to SMB2023
- **OSU Cycling Team Executive Board (President, VP, and other roles)**   OSU
  - *Directed*: through the lockdowns. Kept members engaged; increased membership 25%.

PUBLICATIONS / CERTIFICATES

- *1st Author*: **Pollen model in PLOS-ONE**, **Tumor model in Comput Biol Med** 2016 top articles
- *Certificate*: Spring 2023 Erdos Data Science Bootcamp

EDUCATION

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