

Serge E. Parent, Ph.D.

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<https://SergeEParent.github.io>
Phone available upon request.

Summary:

I am a quantitative biologist with an interest in regenerative medicine and a belief that computation can help us better understand and predict biological systems. I offer the ability to communicate computational and scientific ideas to varied audiences, scientific analysis skills, data manipulation, analysis, and visualization skills using Python, familiarity with experimental biology and the scientific method, and an enthusiasm for working with new kinds of data and new people to make a positive impact. I have worked on projects from conception to publication, including experimental design and execution, organization and analysis of the resulting data using computational tools I wrote/designed, drawing of conclusions, and writing of peer-reviewed, published scientific articles.

Skills:

- **Python** coding to analyze multidimensional imaging datasets and other large, complex datasets
 - *using: numpy, pandas, scipy, matplotlib, seaborn, and other packages*
- **mathematical** and **computational modeling** of biological processes
 - *incl. modeling with differential equations, regression fitting, statistical testing*
- **3D modeling** and **3D printing**
 - *incl. attendance of Connaught 3D Bioprinting Workshop; Aug. 2016*
- quantitative fluorescent **confocal microscopy**
- **version control** (*Git and GitHub*)
- ability to **read, critically assess, and present data and scientific ideas** from the literature
- experimental embryology (*incl. microinjections, microdissections, and primary cell culture*)
- molecular biology (*incl. preparing mRNA from plasmids for microinjection*)

Education:

Ph.D. – Cell & Systems Biology (Collaborative Specialization in Developmental Biology)
Thesis: Cell-Cell Adhesion Dynamics & Cortical Tensions in Embryonic Tissue Structure & Mechanics
Sept. 2014 – Oct. 2022 (University of Toronto, CA)

B.Sc. – Cell & Molecular Biology
Sept. 2010 – Apr. 2014 (University of Toronto, CA)

Competitive Awards:

- Alexander Graham Bell Scholarship C-GSD; Sept. 2018 – Dec. 2020 (\$81,667 CDN)
- Yoshio Masui Prize in Development, Molecular or Cell Biology; Jan. 2018 (\$2,500 CDN)
- Ontario Graduate Scholarship; Jan. 2018 – Aug. 2018 (\$10,000 CDN)

Publications:

- **Parent, S. E.**, O. Luu, A. E. E. Bruce, R. Winklbauer. *1st round peer review*. Two-phase kinetics and cell cortex elastic behavior in *Xenopus* gastrula cell-cell adhesion.
- **Parent, S. E.**, D. Barua, R. Winklbauer. 2017. Mechanics of fluid-filled interstitial gaps. I. Modeling gaps in a compact tissue. *Biophys. J.* 113(4): 913–922.
DOI: [10.1016/j.bpj.2017.06.062](https://doi.org/10.1016/j.bpj.2017.06.062).

- Fei, Z., K. Bae, **S. E. Parent**, K. Goodwin, G. Tanentzapf, A. E. E. Bruce. 2019. A cargo model of yolk syncytial nuclear migration during zebrafish epiboly. *Development* 146(1): dev169664. DOI: [10.1242/dev.169664](https://doi.org/10.1242/dev.169664).
- Barua, D., **S. E. Parent**, R. Winklbauer. 2017. Mechanics of fluid-filled interstitial gaps. II. Gap characteristics in *Xenopus* embryonic ectoderm. *Biophys. J.* 113(4): 923–936. DOI: [10.1016/j.bpj.2017.06.063](https://doi.org/10.1016/j.bpj.2017.06.063).
- Winklbauer, R., **S. E. Parent**. 2017. Forces driving cell sorting in the amphibian embryo. *Mech. Dev.* 144(Pt A): 81–91. DOI: [10.1016/j.mod.2016.09.003](https://doi.org/10.1016/j.mod.2016.09.003).
- Luu, O., E. W. Damm, **S. E. Parent**, D. Barua, T. H. L. Smith, J. W. H. Wen, S. E. Lepage, M. Nagel, H. Ibrahim-Gawel, Y. Huang, A. E. E. Bruce, R. Winklbauer. 2015. PAPC mediates self/non-self-distinction during Snail1-dependent tissue separation. *J. Cell Biol.* 208(6): 839–856. DOI: [10.1083/jcb.201409026](https://doi.org/10.1083/jcb.201409026).

Conferences:

- **Parent, S. E.***, A. E. E. Bruce, R. Winklbauer. (2019 Jul. 26–30). A biophysical analysis of cell-cell adhesion in the *Xenopus* gastrula. Presented at: Society for Developmental Biology 78th Annual Meeting. Boston, MA. (International conference; poster presentation).
- **Parent, S. E.***, A. E. E. Bruce, R. Winklbauer. (2017 Jul. 13–17). Exploring tissue separation at Brachet’s Cleft at the level of individual cell pairs. Presented at: Society for Developmental Biology 76th Annual Meeting. Minneapolis, MN. (U.S. conference; poster presentation).
- **Parent, S. E.***, A. E. E. Bruce, R. Winklbauer. (2016 Aug. 4–8). Exploring the mechanobiology of Brachet’s Cleft at the level of individual cell pairs. Presented at: Society for Developmental Biology 75th Annual Meeting. Boston, MA. (International conference; poster presentation).

**Presenting author.*

Teaching Experience:

- 2 semesters overseeing a 4th-year project student doing experiments I designed
– resulted in data contributing to a publication
- 3 semesters experience in leading seminars and labs in Developmental Biology
- 2 semesters experience as a teaching assistant in Stem Cell Biology
- 1 semester experience in leading 2nd-year lab courses
- 2 semesters experience in leading 1st-year lab courses