

**Dr Stuart Johnston**

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## Academic History

- **University of Melbourne** Victoria  
*Discovery Early Career Research Award Fellow* 2020 - Present
- **University of Melbourne** Victoria  
*Postdoctoral Research Fellow* 2017 - 2020
  - Worked under the supervision of Prof. Edmund Crampin.
- **Queensland University of Technology (QUT)** Queensland  
*Doctorate of Philosophy:* 2013 - 2017
  - Completed under the supervision of Prof. Matthew Simpson and awarded without correction.
- **Queensland University of Technology** Queensland  
*Bachelor of Applied Science (First Class Honours)* 2012 - 2013
  - Completed an honours thesis under the supervision of Prof. Matthew Simpson and Dr Michael Plank (University of Canterbury) and obtained a GPA of 7.0/7.0.
- **Queensland University of Technology** Queensland  
*Bachelor of Mathematics* 2010 - 2012
  - Graduated with a GPA of 6.96/7.0 and a University Medal.

## Publications

Citations: 457, h-index: 11 (Google Scholar)

- ST Johnston**, M Faria & EJ Crampin, 2021, “Understanding nano-engineered particle-cell interactions: biological insights from mathematical models,” *Nanoscale Advances*, 3 (8), 2139-2156.
- ST Johnston**, & KJ Painter, 2021, “Modelling collective migration via nonlocal communication,” *bioRxiv* 2021.05.09.443340.
- Y Li, **ST Johnston**, PR Buenzli, P van Heijster & MJ Simpson, 2021, “Dimensionality affects extinction of bistable populations,” *arXiv* 2101.01389.
- ST Johnston**, M Faria & EJ Crampin, 2020, “Isolating the sources of heterogeneity in nano-engineered particle-cell interactions,” *Journal of the Royal Society Interface*, 7 (166), 20200221.
- ST Johnston**, MJ Simpson & EJ Crampin, 2020, “Predicting population extinction in lattice-based birth-death-movement models,” *Proceedings of the Royal Society A* 476 (2238), 20200089.
- NT Fadai, **ST Johnston** & MJ Simpson, 2020, “Unpacking the Allee effect: determining individual-level mechanisms that drive global population dynamics,” *Proceedings of the Royal Society A* 476 (2241) 2020350.
- ST Johnston** & EJ Crampin, 2019, “Corrected pair correlation functions for environments with obstacles,” *Physical Review E*, 99(3), 032124.
- ST Johnston** & KJ Painter, 2019, “The impact of short- and long-range perception on population movements,” *Journal of Theoretical Biology*, 460, 227-242.
- G Lin, MA Rahim, MG Leeming, C Cortez-Jugo, QA Besford, Y Ju, **ST Johnston**, J Zhou & F Caruso, 2019, “Selective metal-phenolic assembly from complex multicomponent mixtures,” *ACS Applied Materials and Interfaces*, 11(19) 17714-17721.

- M Faria, KF Noi, Q Dai, M Bjornmalm, **ST Johnston**, K Kempe, F Caruso & EJ Crampin, 2019, “Revisiting cell-particle association in vitro: a quantitative method to compare particle performance,” *Journal of Controlled Release*, 307, 355-367.
- ST Johnston**, M Faria & EJ Crampin, 2018, “An analytic approach for quantifying the influence of nanoparticle polydispersity on cellular delivered dose,” *Journal of the Royal Society Interface*, 15 (144), 20180364.
- G Yun, QA Besford, **ST Johnston**, JJ Richardson, S Pan, M Biviano, RR Dagastine & F Caruso, 2018, “Self-assembly of nano- to macroscopic metal-phenolic materials,” *Chemistry of Materials*, 30(16), 5750-5758.
- ST Johnston**, RE Baker & MJ Simpson, 2017, “A new and accurate continuum description of moving fronts,” *New Journal of Physics*, 19, 033010.
- ST Johnston**, RE Baker, DLS McElwain & MJ Simpson, 2017, “Co-operation, competition and crowding: A discrete framework linking Allee kinetics, nonlinear diffusion, shocks and sharp-fronted travelling waves,” *Scientific Reports* 7, 421134.
- ST Johnston**, RE Baker & MJ Simpson, 2016, “Filling the gaps: a robust description of adhesive birth-death-movement processes,” *Physical Review E*, 93(4), 042413.
- ST Johnston**, JV Ross, BJ Binder, DLS McElwain, P Haridas & MJ Simpson, 2016, “Quantifying the effect of experimental design choices for *in vitro* scratch assays,” *Journal of Theoretical Biology*, 400, 19-31.
- ST Johnston**, ET Shah, LK Chopin, DLS McElwain & MJ Simpson, 2015, “Estimating cell diffusivity and cell proliferation rate by interpreting IncuCyte ZOOM™ assay data using the Fisher-Kolmogorov model,” *BMC Systems Biology*, 9 (38).
- ST Johnston**, MJ Simpson & RE Baker, 2015, “Modelling the movement of interacting cell populations: a moment dynamics approach,” *Journal of Theoretical Biology*, 370, 81-92.
- ST Johnston**, MJ Simpson, DLS McElwain, BJ Binder, & JV Ross, 2014, “Interpreting scratch assays using pair density dynamics and approximate Bayesian computation,” *Open Biology*, 4 (9), 140097.
- ST Johnston**, MJ Simpson & DLS McElwain, 2014, “How much information can be obtained from tracking the position of the leading edge in a scratch assay?” *Journal of the Royal Society Interface*, 11 (97), 20140325.
- ST Johnston**, MJ Simpson & MJ Plank, 2013, “Lattice-free models of collective motion with adhesion,” *Physical Review E*, 88, 062720.
- ST Johnston**, MJ Simpson & RE Baker, 2012, “Mean field descriptions of collective migration with strong adhesion,” *Physical Review E*, 85(5), 051922.

## Research Supervision

Muli Tang, Masters of Science, University of Melbourne, 2020-

Volkan Ozcoban, Research Assistant in Nanobiotechnology, University of Melbourne, 2021-

Volkan Ozcoban, Summer Vacation Research Program, University of Melbourne, 2021.

Celia Dowling, Undergraduate Research Project, University of Melbourne, 2021.

## Conferences

- Invited to present at the annual meeting of the Mathematical Biology Special Interest Group at ANZIAM 2020.
- Invited to attend the MATRIX workshop on Spatio-Temporal Stochastic Processes in Biology in Victoria, Australia.
- Contributed talk at the 2018 Society of Mathematical Biology Conference in Sydney, Australia.
- Invited to attend the American Mathematics Society Agent-based Modelling Research Community in Rhode Island, USA.
- Contributed talk at the 2015 Symposium on Collective Cell Migration in Heidelberg, Germany.
- Contributed talk at the 2015 Society of Mathematical Biology Conference in Atlanta, USA.
- Invited to present research seminars at the University of Oxford, the University of Melbourne, the University of Nottingham, the University of Bath, Politecnico di Torino and Heriot-Watt University.
- Contributed talks at the 2014-2021 ANZIAM Conferences.

## Service

- 2021 - Present** Member of the University of Melbourne Human Ethics Committee (Low and Negligible Risk).
- 2020 - Present** Member of the Executive of the Victorian Branch of ANZIAM.
- 2020** Member of the organisation committee for ANZIAM 2021.
- 2020** Organiser of the annual meeting of the Mathematical Biology Special Interest Group of ANZIAM for 2021.
- 2018 - 2021** Organiser of bi-weekly internal seminar series for the Mathematical and Computational Biology group.
- 2018** Guest lecturer for a Masters course in Mathematical Biology at the University of Melbourne.
- 2015 - Present** Reviewer for a range of journals, including Journal of the Royal Society: Proceedings A, Physica A, SIAM Applied Mathematics, Nanoscale, Biophysical Journal, Experimental Cell Research, Journal of Theoretical Biology, ANZIAM Journal and PLOS ONE.

## Relevant Teaching and Work Experience

- **University of Melbourne** Melbourne  
*Lecturer* *July 2020 - November 2020*
  - Development of course materials for a third year computational biology course.
  - Delivery of lectures and tutorials for a third year computational biology course.
- **Queensland University of Technology** Brisbane  
*Ambassador* *June 2012 - June 2016*
  - Developing and presenting mathematical workshops aimed at senior level high school students.
- **Queensland University of Technology** Brisbane  
*Sessional Academic* *February 2012 - November 2016*
  - Delivering and organising tutorials for first year engineering and mathematics units.

- **Australian Mathematical Sciences Institute (AMSI), QUT** Brisbane  
*Researcher* *November 2011 - February 2012*
  - Worked under the supervision of Prof. Matthew Simpson and Prof. Ruth Baker (University of Oxford).
  - Investigated the formation of clusters of adhesive cancer cells with exclusion processes.
- **Queensland University of Technology** Brisbane  
*Research Assistant* *November 2010 - February 2011*
  - Worked under the supervision of Prof. Graeme Pettet.

## Prizes

- 2020** University of Melbourne BioInspiration Hallmark Research Grant (\$10,000 AUD).
- 2019** Australian Research Council DECRA Fellowship (\$425,000 AUD).
- 2019** University of Melbourne Establishment Grant (\$50,000 AUD).
- 2019** Victoria Fellowship (\$18,000 AUD).
- 2018** Funding to attend, and an invitation to join, the American Mathematics Society Agent-based Modelling Research Community (\$3,000 AUD).
- 2017** Australian Mathematics Society Lift-off Fellowship (\$5,000 AUD).
- 2016** BMC Systems Biology Top Ten Journal Publication.
- 2015** QUT Science and Engineering Faculty Award for High Quality Publications.
- 2015** Society of Mathematical Biology's Landahl Travel Award.
- 2014** Queensland University of Technology Vice-Chancellor's Performance Award (Course Development).
- 2014** Oxford Departmental Scholarship (Mathematics) (Declined).
- 2014** Oxford Australia Scholarship (Declined).
- 2013** Wound Management Innovation Co-operative Research Council Grant.
- 2013** QUT Vice-Chancellor's Top-Up Scholarship.
- 2013** Australian Postgraduate Award.
- 2010-2013** Dean's List Award.
- 2012** QUT University Medal.
- 2011-2012** Australian Mathematical Sciences Institute Vacation Research Scholarship.
- 2011-2012** QUT Vacation Research Scholarship.
- 2010** QUT School of Mathematical Sciences Staff Prize - First Year.
- 2010** Dean's Scholars Program Scholarship.