# Dr Adrianne Jenner

Senior Lecturer (Assistant Professor in North America)
School of Mathematical Sciences
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## Research career summary

Dr Jenner completed her PhD in Applied Mathematics from the University of Sydney in 2019. Following this, she was awarded the prestigious Quebec Health Research Fund Postdoctoral Fellowship 90,000 CAD, ranked 1st out of 581 applicants. After completing her postdoctoral fellowship at the University of Montreal, Canada, she started a 4-year lecturing position at QUT in 2021. She was then converted to a continuing lecturer position in 2022. In 2023, Dr Jenner was a Chief Investigator on a successfully funded Australian Research Council (ARC) Discovery Project worth $586,000 AUD. In 2024, Dr Jenner was awarded the competitive ARC Discovery Early Career Researcher Award (DECRA) worth $443,237 AUD (sole CI). Her research focuses on developing new stochastic and deterministic methods for approximating variability in patient data, particularly related to cancer, COVID-19, and multiple sclerosis.

## Summary statistics for publications

- Published over 30 peer-reviewed papers since 2018
- Citation count over 566
- H-index of 13 and i10-index of 16
- Published in high impact journals such as *Chemical Reviews* (IF 72.087), *Journal of ImmunoTherapy of Cancer* (IF 12.485), *PLOS Pathogens* (7.467), and *iScience* (6.107).

## Professional experience

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| 2023-current | Senior Lecturer, | School of Mathematical Sciences, QUT, Brisbane, Australia |
| 2021-2023 | Lecturer, | School of Mathematical Sciences, QUT, Brisbane, Australia |
| 2020-2021 | Research Affiliate, | CHU Sainte Justine Hospital, Montreal, Canada |
| 2018 | Research Affiliate, | Indiana University, Bloomington, Australia |

## Education

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|---|---|---|
| 2015-2019 | Doctor of Philosophy, Applied Mathematics, | University of Sydney, Sydney, Australia |
| 2014-2015 | Bachelor of Science, Honours (*First Class*), | University of Sydney, Sydney, Australia |
| 2010-2013 | Bachelor of Mathematics (*Distinction*), | University of Wollongong, Wollongong, Australia |

## Selected grants

**Total** $1,443,284 AUD

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|---|---|---|
| 2024 | Australian Research Council Discovery Early Career Researcher Award (DECRA) (sole CI) | $443,237 AUD |
| 2023 | Faculty of Science Research Group: Computational Bioimaging Group (lead CI) | $150,000 AUD |
| 2023 | Australian Research Council Discovery Project (2nd CI) | $586,000 AUD |
| 2023 | London Mathematical Society (LMS) travel support scheme | £2,000 GBP |
| 2023 | Helibronn Institute for Mathematical Research | £2,880 GBP |
| 2022 | QUT Early Career Researcher Scheme | $20,000 AUD |
| 2022 | QUT Mathematical School Research Support Scheme | $1,800 AUD |
| 2021 | Centre for Data Science First Byte Funding Scheme (Second round) | $10,000 AUD |
| 2021 | QUT Mathematical School Research Support Scheme | $2,575 AUD |
| 2021 | Centre for Data Science First Byte Funding Scheme (First round) | $10,000 AUD |
| 2019 | Quebec Health Research Funds (FRQS) Postdoctoral Scholarship | 90,000 CAD |
| 2019 | Center for Applied Mathematics in Bioscience and Medicine Postdoctoral fellowship | 7,000 CAD |
| 2019 | Canadian conference on cancer research travel scholarships | 1,000 CAD |
| 2019 | Australian Mathematics Society Lift-Off Fellowship | $4,000 AUD |
| 2019 | Postgraduate Research Support Scheme | $3,500 AUD |
| | Other grants | ~$50,000 AUD |

**Accepted publications.**

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1. Lacy, M., & **Jenner, A.L.** (2024) “Impact of resistance on therapeutic design: a Moran model of cancer growth”. *Bulletin of Mathematical Biology* (Accepted)
2. Wang, X., **Jenner, A.L.**, … & Drovandi, C. (2024) "Calibration of agent based models for monophasic and biphasic tumour growth using approximate Bayesian computation." *Journal of Mathematical Biology* 88 (3), 28.
3. Germano, D.P.J., …**Jenner, A.L.,** …(2024) “Active remodelling of tissues to describe biphasic rheological responses” *The ANZIAM Journal*, 1-20.
4. Le Sauteur-Robitaille, J., Crosley, P., Hitt, M., **Jenner, A. L.,** & Craig, M. (2023). “Mathematical modeling predicts pathways to successful implementation of combination TRAIL-producing oncolytic virus and PAC-1 to treat granulosa cell tumors of the ovary.” *Cancer Biology & Therapy*, 24 (1), 2283926.
5. Dallaston, M., …, **Jenner, A.L.** (2023) “The effect of chemotaxis on T-cell regulatory dynamics.” *Journal of Mathematical Biology* 87 (6), 84.
6. **Jenner, A.L.** & Burrage, P.M. (2023) “Modelling the flow through ion channels at the cell membrane.” *International Journal of Mathematical Education in Science and Technology*, 1-19.
7. Surendran, A., Le Sauteur-Robitaille, J., … **Jenner, A.L.** & Craig, M. (2023). “Approaches to generating virtual patient cohorts with applications in oncology.” *Personalized Medicine Meets Artificial Intelligence: Beyond “Hype”, Towards the Metaverse*. 97-119.
8. Weatherley, G., Araujo, R.P., Dando, S.J. & **Jenner, A.L.** (2023) “Could Mathematics be the key to unlocking the mysteries of multiple sclerosis.” *Bulletin of Mathematical Biology, 85(8),* 75.
9. Bon, J.J, …**Jenner, A.L.,** …& Wang, X. (2023). “Being Bayesian in the 2020s: opportunities and challenges in the practice of modern applied Bayesian statistics.” *Philosophical Transactions of the Royal Society A, 2247*, 381, 20220156
10. **Jenner, A.L.**, Kelly, W., Dallaston, M., Araujo, R., Parfitt, I., Steinitz, D., ... & Vine, K. L. (2023). “Examining the efficacy of localised gemcitabine therapy for the treatment of pancreatic cancer using a hybrid agent-based model.” *PLOS Computational Biology*, *19*(1), e1010104.
11. Gazeau, S., …, **Jenner, A.L.,** & Craig, M. (2023). “The race to understand immunopathology in COVID-19: perspectives on the impact of quantitative approaches to understand within-host interactions.” *ImmunoInformatics* 100021
12. **Jenner, A.L.**, Smalley, M., ... & Craig, M. (2022). “Agent-based computational modeling of glioblastoma predicts that stromal density is central to oncolytic virus efficacy.” *Iscience*, *25*(6), 104395.
13. Cardinal, O., Burlot, C., Fu, Y., Crosley, P., Hitt, M., Craig, M., & **Jenner, A. L.** (2022). “Establishing combination PAC-1 and TRAIL regimens for treating ovarian cancer based on patient-specific pharmacokinetic profiles using in silico clinical trials.” *Computational and Systems Oncology*, *2*(2), e1035.
14. Browning, A. P., Drovandi, C., Turner, I. W., **Jenner, A. L.**, & Simpson, M. J. (2022). “Efficient inference and identifiability analysis for differential equation models with random parameters.” *PLOS Computational Biology*, *18*(11), e1010734.
15. Browning, A. P., … Simpson, M. J., & **Jenner, A. L.** (2022). “Identifying cell-to-cell variability in internalization using flow cytometry.” *Journal of the Royal Society Interface*, *19*(190), 20220019.
16. Engeland, C.E., … & **Jenner, A.L.** (2023) “Improving immunovirotherapies: the intersection of mathematical modelling and experiments.” *ImmunoInformatics, 6,* 100011.
17. **Jenner, A. L.,** Aogo, R. A., ... & Craig, M. (2021). “COVID-19 virtual patient cohort suggests immune mechanisms driving disease outcomes.” *PLoS pathogens*, *17*(7), e1009753.
18. **Jenner, A. L.**, Cassidy, T., Belaid, K., Bourgeois-Daigneault, M. C., & Craig, M. (2021). “In silico trials predict that combination strategies for enhancing vesicular stomatitis oncolytic virus are determined by tumor aggressivity.” *Journal for immunotherapy of cancer*, *9*(2).
19. Crosley, P., …**Jenner, A.L.,** … & Hitt, M.M. (2021). Procaspase-activating compound-1 synergizes with TRAIL to induce apoptosis in established granulosa cell tumour cell line (KGN) and explanted patient granulosa. *International Journal of Molecular Sciences, 22(9),* 4699.
20. Alfonso, S, **Jenner, A.L.** & Craig, M. (2020). “Translational approaches to treating dynamical diseases through in silico clinical trials.” *Chaos: An interdisciplinary Journal of Nonlinear Science 30* (12)
21. **Jenner, A. L.**, Frascoli, F., Coster, A. C., & Kim, P. S. (2020). “Enhancing oncolytic virotherapy: Observations from a Voronoi Cell-Based model.” *Journal of Theoretical Biology*, *485*, 110052.
22. **Jenner, A.L**., Agog, R.A., Davis, C.L., Smith, A.M., Craig, M. (2020). “Leveraging computational modeling to understand infectious diseases.” *Current Pathobiology Reports, 8* 149-161.
23. Craig, M, **Jenner, A**.L., Namgung, B, Lee, L.P. & Goldman, A. (2020). “Engineering in medicine to address the challenge of cancer drug resistance: from micro-and nanotechnologies to computational and mathematical modelling.” *Chemical Reviews, 121*(6), 3352-3389.

24. **Jenner, A. L.**, Frascoli, F., Yun, C. O., & Kim, P. S. (2020). "Optimising hydrogel release profiles for viro-immunotherapy using oncolytic adenovirus expressing IL-12 and GM-CSF with immature dendritic cells." *Applied Sciences*, *10*(8), 2872.
25. Lee, T, **Jenner, A.**L., Kim, P.S. & Lee, J. (2020). "Application of control theory in a delayed-infection and immune-evading oncolytic virotherapy." *Mathematical Biosciences and Engineering*, *17*(3), 2361-2383.
26. **Jenner, A.L.,** Kim, P.S. & Frascoli, F. (2019). "Oncolytic virotherapy for tumours following a Gompertz growth law." *Journal of Theoretical biology*, *480*, 129-140.
27. **Jenner, A.L.,** Yun, C.O, Kim, P.S., Coster, A.C.F. (2018). "Modelling heterogeneity in viral-tumour dynamics: the effects of gene-attenuation on viral characteristics." *Journal of Theoretical Biology*, *454*,41-52.
28. **Jenner, A.L.,** Coster, A.C.F., Kim, P.S & Frascoli, F. (2018). "Treating cancerous cells with viruses." *Letters in Biomathematics*, *5*(2), S117-S136
29. **Jenner, A.L.,** Yun, C.O., … & Kim, P.S. (2018). "Modelling combined virotherapy and immunotherapy: strengthening the antitumour immune response mediated by IL-12 and GM-CSF expression." *Letters in Biomathematics*, *5*(sup1) S99-S116.
30. **Jenner, A. L.**, Yun, C. O., Kim, P. S., & Coster, A.C.F. (2018). "Mathematical modelling of the interaction between cancer cells and an oncolytic virus: insights into the effects of treatment protocols." *Bulletin of mathematical biology*, *80*, 1615-1629.

## Awards

2023 ECR/MCR researcher of the year

2023 Finalist for ECR/MCR teacher of the year

## PhD supervision

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| 2024-current | Luke Filipini (PhD – Associate supervision) |
| 2024-current | Mason Levy (PhD – Principal supervision) |
| 2022-current | Georgia Weatherley (PhD – Principal supervision) |
| 2022-current | Kaitlyn Brown (PhD – Principal supervision) |
| 2021-current | Noa Levi (PhD– Associate supervision) |
| 2021-current | Xiaoyu Wang (PhD – Principal supervision) |
| 2020-2024 | Justin Le Sauteur (PhD – Auxiliary supervision) |

## PhD supervision

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| 2024 | Plenary at the Australian and New Zealand Industrial and Applied Mathematics society (ANZIAM) Annual Meeting. |
| 2023 | Plenary at the European Molecular Biology Organisation (EMBO) and Barcelona Super Computing (BSC) "Computational models of lie: From moleculrl biology to digital twins" workshop. |
| 2023 | Plenary at the South Australian ANZIAM Annual Meeting. |
| 2023 | Invited Seminar at Oxford University. |
| 2023 | Invited Seminar at Birmingham University. |
| 2023 | Invited Seminar at Leeds University. |
| 2023 | Invited Seminar at City, University of London. |

## Research leadership

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| 2024-current | Secretary for the Mathematical Biology Special Interest Group (MBSIG) in Australia |
| 2023-current | QLD Representative for the Australia and New Zealand Industrial and Applied Mathematics society |
| 2022-current | Leader and founder of the Mathematics in Medicine (MiM) research group |
| 2024-current | Associate Editor for Mathematical Biosciences |
| 2021-2024 | Associate Editor for PLOS Computational Biology |
| 2021-current | Website publication committee member Society for Mathematical Biology |
| 2021-current | Editor at ImmunoInformatics |
| 2021 | Queensland Flying Scientist |
| 2021 | Invited contribution to the Mathematical Oncology Blog |
| 2019 | Presenter at the live Ockham's Razor Event as part of Vivid Sydney |

2018 Interviewed on the ABC 7.30 Report
2018 Social media coordinator for SMB2018

**Organised workshops**

2023 Banff International Research Station (BIRS) "Computational modelling of cancer biology and treatments"
2023 Mathematical Biology Special Interest Group (MBSIG) Annual Meeting
2021 Centre of mathematical research (CRM) "Computational modelling of cancer biology and treatments"
2020 Centre or mathematical research and centre for applied mathematics in biosciences and medicine (CAMBAM) "Computational modelling to study cancer biology and treatments"