Lucy Picard

Molecular Biologist and Bioinformatic Engineer

Contact

Address
Wellington, New Zealand, 6037

Phone
+64 27 721 9680

E-mail
lucypicard@outlook.com

LinkedIn
https://www.linkedin.com/in/lucy-picard-5155b41a9

Kia ora! I am a molecular biologist and bioinformatic engineer with a background in cancer research and genomic analysis, honed in industry and during my doctoral studies at the University of Otago, Wellington, New Zealand. My goals are to enhance and improve cancer therapeutics through DNA sequencing and innovative diagnostic tests, and I excel in collaborative environments. My work is characterised by a passion and commitment to advancing genomic medicine.

Work History

2022-05 – 2025-05

Doctoral studies

Department of Pathology and Molecular Medicine, University of Otago, Wellington

My PhD work investigates bladder cancer epigenetic changes in response to BCG immunotherapy, using lab-based and bioinformatic techniques. In addition, I am developing a proof-of-concept bioinformatic pipeline built to incorporate DNA mutations, epigenetics, and immune infiltrate into one diagnostic test utilising Oxford Nanopore sequencing technology. I have been involved in setting up our laboratory's computational hardware and the P2 Solo sequencing device, working closely with the university's research IT team to get this system up and running for multiple users.

During my PhD, I have developed my resilience in the face of challenges, enhanced my problem-solving skills, and refined my ability to work independently.

2017-11 - 2022-04

Bioinformatic Engineer

ImmunityBio/NantHealth – Los Angeles, CA, USA

In this role I worked on improving cancer therapeutics, analysing Next-Gen sequencing data and clinical research to map tumour molecular profiles to help identify better treatment options.

My responsibilities included:

- Viral alignments of the Sars-CoV-2 genome to identify mutations that might interfere with vaccine development.
- Developing machine learning algorithms to identify neoepitopes in cancer.
- Collaborative platform and pipeline development for patient tumour molecular profile summaries.
- Analysis of the binding ability of antigens, involving the development of a program for neoepitope design using a

Skills

- Bioinformatic and linux based tools, bash scripting
- Statistical, graphing, visual packages and programs
- Python for Data Science
- R for Data Science
- Pipeline development
- DNA and RNA extraction
- NGS library prep
- Standard genomic wet lab techniques
- Cell culture
- Project management

genetic algorithm.
- Mutational signature differences between WGS and WES
- Big data analysis on distributed datasets using PySpark.
- Collaboration with software engineers, bench scientists, and computational biologists.

2016-12 - 2017-05

Research Assistant

University of Otago - Christchurch, New Zealand

- Planned and carried out genomic lab tests and data analysis to supplement the paper submission sourced mainly from Honour's research.
- PCR, qPCR, NGS data analysis, data and writing preparation for submission to publications.

Education

2022-05 – 2025-05

PhD in Pathology (Cancer Genetics)

University of Otago, Wellington, New Zealand
Expected conferred date: August 2025

- Current title: Epigenetic interactions with the immune system in the bladder cancer context and its therapeutic implications.
- Invited speaker at Molecular Diagnostics SIG Meeting, Te Whatu Ora, Wellington in Nov 2024.
- Awarded $1250 Travel Grant from the Cancer Society Wellington Division to attend the London Calling international conference hosted by Oxford Nanopore Technologies
- University of Otago Doctoral Scholarship, 2022 - 2025 from University of Otago
- Executive member (2023), Treasurer (2024), Otago Postgraduate Association of Wellington.

2016-02 - 2016-11

Bachelor of Biomedical Sciences With Honours: Molecular Biology

University of Otago - Christchurch, New Zealand

- Degree Awarded with First Class
- Dissertation: Nanopore Sequencing of RNA from Breast Cancer Genes (http://hdl.handle.net/10523/6936)
- Recipient of Second place award in Canterbury 'Omics Symposium V student presentation competition

Research dissemination

Papers and Patents

- **Picard, L. C.**, Rich, F. J., Kenwright, D. N. & Stevens, A. J. Epigenetic changes associated with Bacillus Calmette-Guerin (BCG) treatment in bladder cancer. *Biochimica et Biophysica Acta (BBA) - Reviews on Cancer* **1879**, 189123 (2024).
- Benz, S. C., **de Jong, L.**, Nguyen, A. & Sanborn, J. Z. Detecting Homologous Recombination Deficiencies (HRD) in Clinical Samples. (2021). (Patent)
- Walker, L. C., **de Jong, L.C.** *et al.* Comprehensive Assessment of BARD1 Messenger Ribonucleic Acid Splicing With Implications for Variant Classification. *Front. Genet.* **10**, 1139 (2019).
- **de Jong, L. C**. *et al.* Nanopore sequencing of full-length BRCA1 mRNA transcripts reveals co-occurrence of known exon skipping events. *Breast Cancer Res* **19**, 127 (2017).

Posters and Presentations

- **Picard, L. C.,** Thunders, M. C., & Stevens, A. J. *In silico* characterisation of immune cell infiltrate across solid cancers. *Poster presented at Queenstown Research Week, Queenstown, NZ, 2022.*
- **Picard, L. C.,** Rich, F. J. & Stevens, A. J. Epigenetic consequences of BCG-activated leukocytes on Bladder cancer cells. *Poster presented at Genemappers Conference, Christchurch, NZ, 2024.*
- **Picard, L. C.,** Walker, L.C., & Stevens, A. J. Multi-biomarker diagnostics using nanopore sequencing technology. *Presentation at Wellington NZIMLS Molecular Diagnostics SIG meeting, Wellington, 2024*
- **Picard, L. C.,** Walker, L. C. & Stevens, A. J. Multi-biomarker diagnostic pipeline development using nanopore sequencing technology. *Poster to be presented at London Calling, Oxford Nanopore Technologies conference, in London, UK, May 2025.*