Qisheng Pan

+61 401-937-290 | qisheng.pan@student.uq.edu.au | homepage

RESEARCH INTEREST

I studied missense variants in human genome using computational biophysical measurements and Artificial Intelligence. In particular, I investigated the structural consequences of missense mutations and developed machine learning model to better predict variant of unknown clinical significance.

EDUCATION

University of Queensland	Brisbane, Australia
• Doctor of Philosophy (Computational Biology)	*Jun 2025 (expected)*
University of Melbourne	Melbourne, Australia
• Master of Science (Bioinformatics)	*2019-2021*
South China Normal University	Guangzhou, China
• Bachelor of Science (Biotechnology)	*2015-2019*

PUBLICATIONS

1. **Pan Q**, Parra G, Myung Y et al. AlzDiscovery: A computational tool to identify Alzheimer's disease-causing missense mutations using protein structure information, Protein Sci 2024.
2. **Pan Q**, Portelli S, Nguyen TB et al. Characterization on the oncogenic effect of the missense mutations of p53 via machine learning, Brief Bioinform 2023;25.
3. Serghini A, Portelli S, Troadec G et al. Characterizing and predicting ccRCC-causing missense mutations in Von Hippel-Lindau disease, Hum Mol Genet 2023.
4. Jessen-Howard D, **Pan Q**, Ascher DB. Identifying the Molecular Drivers of Pathogenic Aldehyde Dehydrogenase Missense Mutations in Cancer and Non-Cancer Diseases, Int J Mol Sci 2023;24.
5. Zhou Y, **Pan Q**, Pires DEV et al. DDMut: predicting effects of mutations on protein stability using deep learning, Nucleic Acids Res 2023;51:W122-W128.
6. Boer JC, **Pan Q**, Holien JK et al. A bias of Asparagine to Lysine mutations in SARS-CoV-2 outside the receptor binding domain affects protein flexibility, Front Immunol 2022;13:954435.
7. **Pan Q**, Nguyen TB, Ascher DB et al. Systematic evaluation of computational tools to predict the effects of mutations on protein stability in the absence of experimental structures, Brief Bioinform 2022;23.
8. Han YY, Jin K, **Pan QS** et al. Microglial activation in the dorsal striatum participates in anxiety-like behavior in Cyld knockout mice, Brain Behav Immun 2020;89:326-338.

TEACHING EXPERIENCES

Tutor, University of Queensland — *Feb 2025*

- **BINF6000: Bioinformatics Introduction**

Teaching Assistant, University of Queensland — *Aug 2024*

- **BIOT7060: Frontiers in Medical Biotechnology**

Instructor, University of Queensland — *Nov 2023*

- **Advanced Data Visualisation with *ggplot2***: This workshop is the one that I designed, prepared, and delivered, focusing on practical skills on presenting data using *R* and *ggplot2* package.

Teaching Assistant, University of Queensland — *Sept 2022*

- **Computing4lifescience Series**

MENTORSHIP

Research Supervisor (UG: undergraduate, MS: master's)

Georgina Becerra Parra (UG, 2022, UQ), Dana Jessen-Howard (MS, 2023, UQ), Joshua Khoo (MS, 2024, UQ), Wuyang Ren (MS, 2025, UQ)

HONOURS & AWARDS

- Conference support of SAAFE 2024 AMR Solutions Summit ($1000) *Sept 2024*
- Travel Awards of MM2023 conference ($300) *Dec 2023*
- SCMB Award for Outstanding Contribution to Research (Group Awards) *Nov 2023*
- Student Prize in the CTCMS Seminar *Mar 2023*
- Comprehensive Student Scholarship ($500) *Sept 2016*

COLLABORATIONS

Jeniffer Boer and Magdalena Plebanski, Royal Melbourne Institute of Technology, Australia *2022 - 2023*

- Investigating the variants of the Spike protein in Omicron SARS-CoV-2 virus

RESEARCH EXPERIENCES

Characterising the pathogenic effect of missense mutations via machine learning *2022 - now*

- Leveraged different computational biophysical measurements to annotate missense variants.
- Developed machine learning models to classify phenotypes of mutations.

Benchmarking computational biophysical measurements in the absence of experimental structures *2022 - now*

- Built high-throughput pipeline to generate protein homology models and AlphaFold models.
- Used different metric to assess the predictive performance of various machine learning models.

PRESENTATIONS

1. Poster presentation in the Lorne Protein 2025 Conference (Australia) *Nov 2024*
2. Poster presentation in the ABACBS 2024 Conference (Australia) *Nov 2024*
3. Poster presentation in the SAAFE 2024 AMR Solutions Summit (Australia) *Sept 2024*
4. Poster presentation in the Lorne Protein 2024 Conference (Australia) *Feb 2024*
5. Oral and poster presentations in the MM2023 Conference (Australia) *Dec 2023*
6. Poster presentation in the ABACBS 2023 Conference (Australia) *Dec 2023*
7. Research Talk in the 22nd International Conference on Bioinformatics (Australia) *Nov 2023*
8. Lighting talk in the GenGen seminar (UQ) *Apr 2023*
9. Oral presentations in the CTCMS seminar (UQ) *Mar 2023*
10. Poster presentations in the Lorne Protein 2023 Conference (Australia) *Feb 2023*
11. Poster presentation in the 18th Annual Research Student Symposium (UQ) *Nov 2022*
12. Oral presentations in the Joint Biomolecular and Medicinal Chemistry Theme Symposium (UQ) *Apr 2022*

TECHNICAL SKILLS

Programming: Python, R, Linux Bash, JavaScript
Software: BLAST, MODELLER, PyMol, AutoDock Vina, GALAXY, etc.
Machine learning: Random Forest, Neural Network, Feature selection, etc.

REFEREES

David B. Ascher	Professor, University of Queensland	d.ascher@uq.edu.au
Thanh-Binh Nguyen	Research Fellow, University of Queensland	thanhbinh.nguyen@uq.edu.au
Stephanie Portelli	Research Fellow, University of Queensland	s.portelli@uq.edu.au
Douglas E.V. Pires	Senior lecturer, University of Melbourne	douglas.pires@unimelb.edu.au
Cheng Long	Professor, South China Normal University	longcheng@m.scnu.edu.cn