# Patricia Wongsodirdjo

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## Professional Summary

I am a third-year PhD student working in the Antibody Therapeutics Lab at The Florey Institute of Neuroscience and Mental Health. My research focuses on exploring messenger RNA (mRNA) encoding antibodies as a platform to improve antibody delivery for Alzheimer's disease and developing novel mRNA delivery vehicles to enhance antibody delivery into the brain. I have established a mRNA synthesis pipeline to produce high-quality *in-vivo* grade therapeutic mRNA and brain-penetrating lipid nanoparticle synthesis expertise in the Antibody Therapeutics Lab. Additionally, I have published a first-author paper exploring mRNA encoding tau-targeting antibodies that has garnered worldwide media attention and is highly cited. As a result of my contributions in the lab, I was awarded the highly competitive Melbourne research scholarship to support my PhD and the MIND-AD-CRE NHMRC Centre of Research Excellence travel grant to present my research during my PhD.

## Education

**Doctor of Philosophy - Medicine, Dentistry and Health Sciences** Mar 2024 - 2027
**The University of Melbourne, Melbourne, Australia**
The Florey Institute of Neuroscience and Mental Health, Melbourne, Australia
Faculty of Medicine, Dentistry & Health Sciences

- ***Supervisors:***
  - A/Prof Rebecca Nisbet (Florey institute of neuroscience and mental health)
  - A/Prof Laura Vella (Florey institute of neuroscience and mental health)
- My PhD project aims to develop mRNA encoded antibodies therapeutics and brain-targeting delivery vehicles for the treatment of Alzheimer's disease.

**Master of Biomedical Science** Feb 2022 - Nov 2023
**The University of Melbourne, Melbourne, Australia**
The Florey Institute of Neuroscience and Mental Health, Melbourne, Australia
Faculty of Medicine, Dentistry & Health Sciences

- ***Supervisors:***
  - A/Prof Rebecca Nisbet (Florey institute of neuroscience and mental health)
  - A/Prof Laura Vella (Florey institute of neuroscience and mental health)
  - Dr Ya Hui Hung (Florey institute of neuroscience and mental health)
- My research project explored mRNA-based antibody therapeutics for Alzheimer's disease and investigated the use of extracellular vesicles to deliver mRNA-based therapeutics.
- ***Weighted average mark (WAM):*** 87/100 (First Class Honours)

**Bachelor of Science** Mar 2019 - Nov 2021
**The University of Melbourne, Melbourne, Australia**

- ***Major:*** Biotechnology—Pharmacology stream
- ***Weighted average mark (WAM):*** 83.7/100 (First class honours)

## Presentations

- **Alzheimer's Association International Conference (AAIC) 2023**
  Wongsodirdjo, P., Caruso, A. C., Vella, L. J., Hung, Y. H., Götz, J., & Nisbet, R. M. (2023). Neuronal targeting of tau using a mRNA-encoded tau-specific antibody fragment. Alzheimer's & Dementia, 19(S24). [Poster presentation]. Online. https://doi.org/10.1002/alz.082634
- **International Society for Extracellular Vesicles (ISEV) 2024**
  Wongsodirdjo, P., Hung, Y. H., Shabanpoor, F., Vella, L., & Nisbet, R. (2024, 11 May). mRNA loading of extracellular vesicles for the treatment of neurological disorders (Abstract No. 05.37) [Poster presentation]. International Society for Extracellular Vesicles (ISEV) Conference 2024, Melbourne, Australia.
- Wongsodirdjo, P., Vaidya, S., & Nisbet, R. M. (2025). Developing mRNA Brain Delivery Platforms [Oral presentation]. Graduate Research Symposium (internal), Florey Institute, Melbourne, Australia.
- **Cellular and Molecular Advances in Neurodegeneration (CAMAND) 2025**
  Wongsodirdjo, P., Yong, A. K., Caruso, A. C., Vaidya, S., Fletcher, E. L., & Nisbet, R. M. (2025). Development of mRNA-encoded antibody therapeutics for Alzheimer's disease [Poster presentation]. Cellular and Molecular Advances in Neurodegeneration (CAMAND) Conference, Tasmania, Australia.
- Wongsodirdjo, P., Yong, A. K., Fabb, S. A., Pouton, C. W., & Nisbet, R. M. (2026). Developing mRNA encoded antibodies and enhancing their delivery into the brain [Oral presentation]. Graduate Research Symposium (internal), Florey Institute, Melbourne, Australia.

## Publications

- Wongsodirdjo, P., Caruso, A. C., Yong, A. K., Lester, M. A., Vella, L. J., Hung, Y. H., & Nisbet, R. M. (2024). Messenger RNA-encoded antibody approach for targeting extracellular and intracellular tau. *Brain communications*, *6*(2), fcae100. https://doi.org/10.1093/braincomms/fcae100
- Purnianto, A., Mawal, C., Kulkarni, M. M., Su, H., Koukoulis, T. F., Wongsodirdjo, P., Hung, Y. H., Ayton, S., Bush, A. I., Barnham, K. J., & Vella, L. J. (2024). Small extracellular vesicles contain metals and transfer metal intercellularly. *Journal of extracellular biology*, *3*(10), e70012. https://doi.org/10.1002/jex2.70012

## Awards

- Melbourne research scholarship (Fee offset and allowance)
  - This scholarship was established by the University of Melbourne and is offered to high-achieving students undertaking research study.
- MIND-AD-CRE NHMRC Centre of Research Excellence in Mechanisms in Neurodegeneration–Alzheimer's disease travel grant (2026-2027)
  - This award enables PhD candidates and ECRs to attend major international conferences