

# Anna Harutyunyan, PhD

Director of Research & Analytics | Research Associate | Monash University | Melbourne, Australia



## EDUCATION

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- 2019 - 2023 **Doctor of Philosophy - Neuroscience**  
Department of Medicine, The University of Melbourne, VIC, Australia  
Thesis: Investigating the synergy between Alzheimer's Disease and epilepsy through data-driven molecular networks
- 2013 - 2017 **Bachelor of Science (Hons.) - Molecular Biology, Inorganic Chemistry**  
Joint degree with honours, Wilson College, Pennsylvania State University  
College of Medicine, PA, United States  
Ranked 1<sup>st</sup> in the cohort, Honours in Majors, Magna Cum Laude

## ACADEMIC APPOINTMENTS

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- 2024 - present **Research Fellow**, Department of Neuroscience, School of Translational Medicine, Monash University, VIC, Australia
- 2023 - 2024 **Research Officer**, Centre for Dynamic Imaging, Division of Advanced Technology and Biology, Walter and Eliza Hall Institute (WEHI), VIC, Australia
- 2021 - 2022 **Research Support Officer**, Western Centre for Health Research and Education University of Melbourne, Sunshine Hospital, VIC, Australia
- 2017-2019 **Research Associate**, Dept. of Biology and Biological Engineering, California Institute of Technology (Caltech), CA, United States
- 2016 - 2017 **Research Assistant**, Dept. of Molecular Biology and Biochemistry, Pennsylvania State University College of Medicine, PA, United States

## PEER-REVIEWED PUBLICATIONS

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- Harutyunyan A.**, Jones NC, Kwan P, Anderson A. Network Preservation Analysis Reveals Dysregulated Synaptic Modules and Regulatory Hubs Shared Between Alzheimer's Disease and Temporal Lobe Epilepsy. *Frontiers in Genetics*. 2022;13. <https://doi.org/10.3389/fgene.2022.821343>
- Harutyunyan A.**, Chong D, Li R, Shah AD, Ali Z, Huang C, et al. An Integrated Multi-Omic Network Analysis Identifies Seizure-Associated Dysregulated Pathways in the GAERS Model of Absence Epilepsy. *Int J Mol Sci*. 2022;23(11). <https://doi.org/10.3390/ijms23116063>
- Dejakaisaya H, **Harutyunyan A.**, Kwan P, Jones NC. Altered metabolic pathways in a transgenic mouse model suggest mechanistic role of amyloid precursor protein overexpression in Alzheimer's disease. *Metabolomics*. 2021;17(5):42. <https://doi.org/10.1007/s11306-021-01793-4>
- Casillas-Espinosa PM, Anderson A, **Harutyunyan A.**, Li C, Lee J, Braine EL, et al. Disease-modifying effects of sodium selenate in a model of drug-resistant, temporal lobe epilepsy. *Elife*. 2023;12.
- Gonzalez W.G., Zhang H., **Harutyunyan A.**, Lois C. Persistence of neuronal representations through time and damage in the hippocampus. *Science*. <https://doi.org/10.1126/science.aav9199>
- Buckwalter, J.M., Norouzi, D., **Harutyunyan A.**, et al. Regulation of chromatin folding by conformational variations of nucleosome linker DNA <https://doi.org/10.1093/nar/gkx562>

7. Dejakaisaya H, Lin R, **Harutyunyan A**, Chan J, Kwan P, Jones NC. Effect of ceftriaxone on the glutamate-glutamine cycle and seizure susceptibility of Tg2576 mouse model of Alzheimer's disease. *Journal of Alzheimer's Disease*. 2024;102(2):370-381. <https://doi.org/10.1177/13872877241289053>
8. Tinston J, Hudson MR, **Harutyunyan A**, Chen Z, Jones NC. Forty-hertz sensory entrainment impedes kindling epileptogenesis and reduces amyloid pathology in an Alzheimer disease mouse model. *Epilepsia*. 2024; 00: 1-13. <https://doi.org/10.1111/epi.18222>

## RESEARCH FELLOWSHIPS AND GRANTS

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2019-2023	Melbourne Research Scholarship (AUD\$145,600)
2019-2023	Melbourne International Fee Remission Scholarship (AUD\$185,000)
2023	Epilepsy Society of Australia Travel Fellowship (AUD\$2,500)
2022	MDHS Graduate Student Support Grant, University of Melbourne (AUD\$1,500)
2020	European Molecular Biology Laboratory Travel Grant, EMBL Australia (AUD\$2,000)
2016	SURIP Research Training Fellowship, Pennsylvania State University, (USD\$5,500)
2017	Pennsylvania Academy of Science Outstanding Research Grant (USD\$2,500)
2013-2017	Varter Derarian Scholarship (USD\$28,000)
2013-2017	Hagob Bogigian Scholarship (USD\$115,000)
2013-2017	Presidential Scholarship, Wilson College
2016	E. Grace White Summer Scholarship (USD\$2,000)
2016	Nova Research Award (USD\$2,000)

## HONOURS AND AWARDS

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2024	Nomination for The Chancellor's Prize for Excellence, University of Melbourne
2021	Best Platform Presentation Award, Asian & Oceanian Epilepsy Congress
2021	Special Commendation Award for best poster, Epilepsy Society of Australia
2021	ILAE Epilepsy Congress Bursary
2020	AusBiotech Student Scholarship
2017	Davison Grove Award for Excellence in Senior Research
2017	Elizabeth C. Boyd Award
2016	Margaret Criswell Disert Honours Award for best Honours Proposal
2016	Inducted into Phi Beta Kappa Honours Society
2014	Robert Shannon McElwain prize for the best student in Mathematics
2013	RA Ministry of Education and Science Medal

## INVITED TALKS AND PANELS

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2024	<b>Harutyunyan, A.</b> "Mechanisms of synergy between Alzheimer's Disease and epilepsy"; Vissel Group, St Vincent's Hospital Sydney, UNSW
2024	<b>Harutyunyan A.</b> "Network View if Disease"; Purton & Chrismani groups, Saint Vincent's Institute of Medical Research
2022	<b>Harutyunyan A.</b> "Seizure-associated gene modules in GAERS model of Absence Epilepsy"; Epilepsy Research Retreat
2019	<b>Harutyunyan A.</b> "Systems Biology in Personalized Medicine"; Translational Neuroscience Seminar, Monash University Central Clinical School
2017	<b>Harutyunyan A.</b> Research Day Symposium, Wilson College, <b>*Featured Speaker</b> (Disert Scholar Lecture)

## CONFERENCE PRESENTATIONS

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### Talks and Symposia

**Harutyunyan A.** Warren SLW, Anderson A, Kwan P, Jones NC. Molecular mechanisms of synergy between Alzheimer's Disease and seizures. Australasian Neuroscience Society Conference, Perth, Australia, 2024

**Harutyunyan A.** Anderson A, Kwan P, Jones N. Investigation of the molecular mechanisms mediating the synergy between recurrent seizures and Alzheimer's disease pathology. Melbourne Emerging Leaders in Biomedical Research Society: Advancing Discovery Symposium, Melbourne, Australia, 2024

**Harutyunyan A.** Anderson A, Kwan P, Jones NC. The synergistic relationship between Alzheimer's Disease and recurrent seizures is mediated by dysregulated gliosis and reactivation of immediate-early genes. *American Epilepsy Society Annual Meeting, Orlando, FL, United States of America, 2023* **\*featured platform talk**

**Harutyunyan A.** Anderson A, Kwan P, Jones NC. The synergistic relationship between Alzheimer's Disease and recurrent seizures is mediated by dysregulated gliosis and reactivation of immediate-early genes. *35<sup>th</sup> International Epilepsy Congress, Dublin, Ireland, 2023*

**Harutyunyan A.** Anderson A, Kwan P, Jones NC. The synergistic relationship between Alzheimer's Disease and recurrent seizures is mediated by neuroinflammation and dysregulated astroglial gliosis. *Workshop on Neurobiology of Epilepsy (WONOEP), Kildare, Ireland, 2023*

**Harutyunyan A.** Anderson A, Kwan P, Jones NC. The synergistic relationship between Alzheimer's Disease and recurrent seizures is mediated by reactivation of immediate-early genes. *Epilepsy Melbourne annual meeting, Melbourne, Australia, 2022*

**Harutyunyan A.** Warren SLW, Anderson A, Kwan P, Jones NC. Kindling-induced expression of immediate early genes is associated with increased seizure severity and neuroinflammation in 5xFAD model of Alzheimer's Disease. *MDHS Graduate Research Symposium, Melbourne, Australia, 2022*

**Harutyunyan A.** Anderson A, Kwan P, Jones NC. The role of immediate early genes and complement system in synergistic pathology of epilepsy and Alzheimer's Disease. *Students of Brain Research (SOBR) annual symposium, Melbourne, Australia, 2022*

**Harutyunyan A.** Casillas-Espinosa PM, Kwan P, Jones NC, Anderson A. Integrated multi-omic analysis of epileptic rats identifies disease modules and therapeutic targets. *Asian and Oceanian Epilepsy Congress, Japan/Virtual, 2021* **\*awarded best presenter prize**

**Harutyunyan A.** Casillas-Espinosa PM, Jones NC, Anderson A. Integrative multi-omic approaches for identification of seizure-associated modules. *Translational Neurogenetics Conference, Melbourne, Australia, 2021*

**Harutyunyan A.** Anderson A, Kwan P, Jones NC. Network View of Disease. *Epilepsy Society of Australia virtual meeting, 2020*

**Harutyunyan A.** Kwan P, Jones NC, Anderson A. Epilepsy in Alzheimer's Disease. *Students of Brain Research Symposium, Melbourne, Australia, 2019*

**Harutyunyan, A.** Austin, D., Harriger, M.D. Synthesis of Fe<sup>3+</sup>Azidothymidine and its effects on human hepatocytes and hepatocellular carcinoma cells. *Pennsylvania Academy of Science Conference, PA, United States, 2017*

### First-Author Conference Poster Presentations

**Harutyunyan A.** Anderson A, Warren SLW, Kwan P, Jones NC. The role of immediate early genes and complement system in synergistic pathology of epilepsy and Alzheimer's Disease: insights from a dual- pathology mouse model. *Society for Neuroscience, Washington DC, United States, 2023*

**Harutyunyan A.** Anderson A, Kwan P, Jones NC. Kindling-induced expression of immediate early genes is associated with increased seizure severity and neuroinflammation in Alzheimer's Disease. *13<sup>th</sup> FENS Forum of Neuroscience, Paris, France, 2022*

**Harutyunyan A.** Anderson A, Kwan P, Jones NC. Characterizing the molecular signature of epilepsy in Alzheimer's Disease. *Epilepsy Society of Australia Annual Conference, 2021* **\*special commendation for best poster**

**Harutyunyan A.** Gene coexpression network analysis reveals commonly dysregulated inflammatory modules in Alzheimer's Disease and temporal lobe epilepsy. *Monash University Graduate Research Symposium, Melbourne, Australia, 2019*

**Harutyunyan, A.** Buckwalter, J., Grigoryev, S.A., Design and construction of nucleosome arrays to determine linker accessibility of compact chromatin fibres. *Pennsylvania State University College of Medicine, PA, United States, 2016*

## COMPETITIVE PROGRAMS/WORKSHOPS

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2022 University of Melbourne - Melbourne Leaders Program  
2020 EMBL-EBI RNA sequence analysis workshop  
2013 Hubert Humphrey Fellowship Program

## CONTRIBUTION TO PEER-REVIEW

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2022 - present Epilepsy Research  
2024 - present STAR Protocols

## LEADERSHIP ROLES

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2022 - present **Director of Research and Analytics**, Sol Hermosa Inc.  
Melbourne, VIC, Australia  
2020 - 2021 **Consulting Graduate**, Epilepsy Foundation  
Melbourne, VIC, Australia

## PROFESSIONAL MEMBERSHIPS

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2024 - present Australasian Neuroscience Society  
2023 - present Society for Neuroscience  
2022 - present American Epilepsy Society  
2022 - present Federation of European Neuroscience Societies  
2020 - present Epilepsy Society of Australia

## PRESS RELEASE

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- <https://www.monash.edu/medicine/news/latest/2022-articles/link-between-alzheimers-disease-and-epilepsy-explored>
- <https://www.sciencedaily.com/releases/2019/08/190823140729.htm>
- <https://www.wilson.edu/research-role-model>