

Dr. Alicia J. Barber, PhD

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Education

Dartmouth College *Hanover, NH*

May 2024

Doctor of Philosophy, Integrative Neuroscience

- Thesis Title: *Inflammaging in the Alzheimer's Brain and Beyond: Insights from a Transgenic Mouse Model on the Sex-specific Pathophysiology of Alzheimer's disease*

University of Cambridge *Cambridge, UK*

November 2018

Master of Philosophy, Translational Biomedical Research

Overall Mark: 69.1% (Upper Second) | Thesis Mark: 72% (First) *UK Grading System

- Formulated an original theoretical clinical trial for surgical treatment of cervical cancer, *Cost Efficiency Analysis of Robotically-Assisted Trachelectomy*, that was chosen as best design and presentation

Union College *Schenectady, NY*

June 2017

Bachelor of Science, Neuroscience

Cumulative GPA: 3.64 | Major GPA: 3.7 | Cum Laude

Research Experience

PhD Candidate, *Dartmouth-Hitchcock Medical Center* – Lebanon, NH

July '20 – May '24

Advisor: Arti Gaur, PhD

- Focused on identifying sex-specific molecular disease signatures in Alzheimer's disease
- Proficient in murine care & technical procedures (animal handling, breeding, oral gavaging, blood collection, necropsy), RNA isolation, RNA-Seq bioinformatics, immunohistochemistry, flow cytometry

Research Scientist, *SUNY Poly. Institute* – Albany, NY

August '18 – July '19

Advisor: Scott Tenenbaum, PhD

- Focused on optimizing structurally interacting RNA technology for antiviral and cancer therapeutics
- Performed electrophoretic mobility shift assays, ribonucleoprotein immunoprecipitations, western blots, and cell culture maintenance.

MPhil Candidate, *Cambridge Institute for Medical Research* – Cambridge, UK

January – July '18

Advisor: Delphine Larrieu, PhD

- Focused on the aberrant DNA damage repair pathway in Cockayne Syndrome and the effect of NAT10 inhibition on premature aging
- Performed IncuCyte live cell analysis, Click-iT cell labeling, fluorescence-activated cell sorting, and immunofluorescence imaging

Publications

- Barber et al., "Age, Sex and Alzheimer's disease: A longitudinal study of 3xTg-AD mice reveals sex-specific disease trajectories and inflammatory responses mirrored in postmortem brains from Alzheimer's patients." *Alzheimer's Research and Therapy* (2024). DOI: 10.1186/s13195-024-01492-x
- Barber, Alicia. "Sharing Our Alzheimer's Journey on TikTok." *Being Patient* (2021)
- Barber, Alicia. "Alzheimer's Drugs Worth Repurposing?" *Being Patient* (2021)
- Barber, Alicia. "Amylyx 'Bulletproof Vest for Neurons' Tested as Potential Alzheimer's Therapy." *Being Patient* (2021)
- Barber, Alicia. "Now Recruiting: U.S. Trials for Alzheimer's 'Seaweed Drug' Oligomannate." *Being Patient* (2021)
- Barber, Alicia. "Essential Caregiver Program Aims to Reunite Families with Loved Ones in Long-Term Care." *Being Patient* (2021)
- Barber, Alicia. "TikTok Sisters Share Early-Onset Alzheimer's Story." *Being Patient* (2021)
- Barber, Alicia. "Let My Grandmother See Her Family: Her Memories Are Fading Day by Day." *New York Daily News* (2020)

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Awards

- Emerging Alumni Leader**, *Pembroke College, University of Cambridge* Dec '23
- Inaugural recipient of award for alumni who graduated within the last 10 years, recognizing rising stars and leaders of the future
- 3 Minute Thesis Competition**, *Dartmouth College* April '23
- Earned 3rd place for talk, "Survival of the fittest: A Sex-specific Inflammatory Response in Alzheimer's Disease"
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Presentations

Oral Presentations

- Barber et al., *Age, Sex and Alzheimer's disease: A longitudinal study of 3xTg-AD mice reveals sex-specific disease trajectories and inflammatory responses mirrored in postmortem brains from Alzheimer's patient*
- Neuroscience, Behavior & Health Forum (University of Vermont) Feb '24
- Barber et al., *Aged Alzheimer's Murine Model Reveals a Sex-specific Inflammatory Response*
- Dartmouth Neuroscience Day March '23
- Poster Presentations**
- Barber et al., *Longitudinal Analysis in an Alzheimer's Murine Model Reveals Sex-specific Inflammatory Response*
- Dartmouth-Hitchcock Medical Center Neurology Research Day Nov '23
 - Alzheimer's Association International Conference (Amsterdam, Netherlands) July '23
 - Dartmouth Center for Quantitative Biology Meeting April '23
 - Dartmouth Guarini Graduate Student Poster Session April '23
 - Dartmouth Neuroscience Day March '23
- Barber et al., *Elucidating the Role of Protein Translation and NAT10 Inhibition in Cockayne Syndrome*
- Experimental Medicine Training Initiative Research Day, Cambridge July '18
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Teaching and Mentorship

- Course Creator & Study Leader**, *Osher Lifelong Learning Institute at Dartmouth* September '23
- Developed and taught a multi-lesson course on Alzheimer's for an adult continuing education program
- Community Educator**, *Alzheimer's Association* August '22 - May '24
- Deliver education programs to individuals in New Hampshire focused on understanding and living with Alzheimer's disease
- Student Mentor**, *Polygence and Dartmouth College* June '20 – May '24
- Developed independent research projects for high school students and provided guidance and feedback
 - Mentored eight undergraduate students through lab-based research projects
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Science Communication

- Founder**, *Brain Health Media, LLC* March '22 - Present
- Founded a multimedia content creation company focused on interpreting innovations in neuroscience, partnering with nonprofits, academics, and industry
- Speaker/Commentator** Feb '21 – Present
- Invited onto live UK-based television program, *TalkTV*, multiple times to interpret clinical trial results
 - Invited to speak for multiple university student groups and podcasts, discussing my experience as a woman in STEM (*UC Irvine, Whittier College, University of Mississippi, be.SolTed Podcast, STEMsational Women*)
- Contributing Writer**, *Being Patient* Feb '21 – Sep '21
- Published articles on a range of dementia-related topics including interviews with early-stage patients and caregivers, summaries of new research and clinical trials, and the impact of the pandemic on memory care facilities

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Public Health Policy, Advocacy, and Awareness

Walk to End ALZ Planning Committee Member, *Alzheimer's Association*

Sep '22 – May '24

- Help to plan, execute, and manage the Upper Valley Walk to End Alzheimer's

Advocate

March '20 – Present

- Met with New Hampshire governor, senators, and representatives in support of bills to fund Alzheimer's research, awareness, education, and more
- Spoke at an "Isolation Kills Too" Rally, urging NY governor to sign an Essential Caregiver Bill into law
- Published an Op-Ed in the NY Daily News advocating for changes to nursing home visitation restrictions during the COVID-19 pandemic
- Appeared on multiple media outlets urging others to adhere to public health safety measures to protect vulnerable individuals and spoke to the importance of conducting research on Alzheimer's Disease (*People Magazine, CBS 12 News, News10 ABC*)

Health Care Experience

Resident Companion, *Pathways Nursing and Rehabilitation Center* – Niskayuna, NY

March – June 2017

- Spent one-on-one time with disabled and chronically ill pediatric patients with neurodevelopmental and neuromuscular disorders, traumatic brain injury, or other conditions, in need of 24-hour nursing care
- Learned unique ways to communicate with non-verbal children suffering from severe intellectual disabilities

International Student, *National Health Care Systems Term Abroad*

June – August 2016

- Explored the health care systems of the United States, Canada, England and the Netherlands in the context of their historical development
- Learned from diverse experts about the history, sociology, philosophy and legality of health care in each country

Fellow, *U-Care Fellowship, Joan Nicole Prince Home* – Scotia, NY

June – August 2015

- Provided direct bedside care to terminally ill residents at a comfort care home to gain an enhanced understanding of the medical and personal hardships connected to the end of life
- Passed medications, assisted with toileting and bathing, prepared food, provided company and emotional support, monitored changes in health status and communicated these changes with hospice nurses, family members and other volunteers

Physician Shadow, *Koinonia Primary Care* – Albany, NY

July – September 2014

- Interacted with a diverse patient population, inquiring about pre-existing conditions, lifestyle habits, recently developed concerns and current state of welfare in order to better understand chosen courses of treatment while simultaneously improving communication and examination skills
- Observed frequent risk factors and health concerns found within inner city populations while shadowing appointments, resulting in an enhanced comprehension of the myriad of medical issues faced by impoverished patients

Scientific Society Membership

Society for Neuroscience

Organization for the Study of Sex Differences

Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (ISTAART)

Psi Chi International Honor Society

Nu Rho Psi National Honor Society