



Brittany N. Dugger, Ph.D.

Clinical Interests Dr. Dugger is overwhelmingly excited and honored to contribute fundamental knowledge that will aid in creating better biomarkers, therapies, and models of human diseases for all individuals. Throughout her career she has led, enabled, and enhanced many cross disciplinary projects, resulting in more than 60 peer-reviewed manuscripts and numerous private, state, and federally funded grants. Dr. Dugger has extensive expertise the neuropathology of Alzheimer's disease and related disorders, digital neuropathology, cross disciplinary dialog development and maintenance, clinicopathologic correlates, mentorship, advocacy, and administrative execution and oversight.

Research/Academic Interests Dr. Dugger's research focuses on:

1. understanding the heterogeneity within neurodegenerative diseases
2. understanding the interaction of peripheral changes to aging and neurodegenerative diseases
3. developing scalable workflows for deeper phenotyping of neurodegenerative diseases

Title Co-Leader Neuropathology Core UC-Davis Alzheimer's Disease Research Center
Co-Leader UC-Davis School of Medicine Machine Learning Working Group
Department Liaison, UC-Davis Women in Medicine and Health Sciences
Assistant Professor Department of Pathology and Laboratory Medicine

Specialty Neuropathology, Digital Pathology, Alzheimer's Disease, Dementia

Department [Pathology and Laboratory Medicine](#)

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Education Ph.D., Neurobiology of Disease, Mayo Clinic Graduate School, Jacksonville FL 2011
B.S., Microbiology/Health and Humanities, Michigan State University, East Lansing MI 2005

Internships Biology, University of Puerto Rico - Rio Piedras, San Juan PR 2005

Fellowships Neuropathology, Banner Sun Health Research Institute, Sun City AZ 2011-2013



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Honors and Awards

Paper of the Year, Movement Disorders Journal, 2017
Asao Hirano Award for Best Paper in Neurodegenerative Diseases, American Association of Neuropathologists, 2013
\$10,000 Parkinson's Action Network Postdoctoral Advocacy Award, 2013

Select Recent Publications

To view a detailed list of Dr. Dugger's publications, please [click here](#).

Shakir M, Dugger BN. Advances in Deep Neuropathological Phenotyping of Alzheimer's disease: Past, Present, and Future. *J Neuropathol Exp Neurol*. 2022 Jan 4;81(1):2-15. doi:10.1093/jnen/nlab122. Online ahead of print PMID:34981115.

Lai Z, Wang C, Hu Z, Dugger BN, Cheung SC, Chuah CN. A Semi-supervised Learning for Segmentation of Gigapixel Histopathology Images from Brain Tissues. *Annu Int Conf IEEE Eng Med Biol Soc*. 2021 Nov;2021:1920-1923. doi:10.1109/EMBC46164.2021.9629715. PMID: 34891662.

Dugger BN, Taha AY. Measuring peripheral markers of neuroinflammation in Alzheimer's disease - Challenges and opportunities. *Brain Behav Immun*. 2020 Aug;88:840-841. doi:10.1016/j.bbi.2020.06.004. Epub 2020 Jun 4. PMID:32505713.

Otoki Y, Kato S, Nakagawa K, Harvey DJ, Jin LW, Dugger BN, Taha AY. Lipidomic Analysis of Postmortem Prefrontal Cortex Phospholipids Reveals Changes in Choline Plasmalogen Containing Docosahexaenoic Acid and Stearic Acid Between Cases With and Without Alzheimer's Disease. *Neuromolecular Med*. 2021 Mar;23(1):161-175. doi:10.1007/s12017-020-08636-w. Epub 2021 Jan 21. PMID:33475971.

Vizcarra JC, Gearing M, Keiser MJ, Glass JD, Dugger BN, Gutman DA. Validation of machine learning models to detect amyloid pathologies across institutions. *Acta Neuropathol Commun*. 2020 Apr 28;8(1):59. doi:10.1186/s40478-020-00927-4. PMID:32345363.



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Adler CH, Beach TG, Zhang N, Shill HA, Driver-Dunckley E, Caviness JN, Mehta SH, Sabbagh MN, Serrano GE, Sue LI, Belden CM, Powell J, Jacobson SA, Zamrini E, Shprecher D, Davis KJ, Dugger BN, Hentz JG. Unified Staging System for Lewy Body Disorders: Clinicopathologic Correlations and Comparison to Braak Staging. *J Neuropathol Exp Neurol*. 2019 Oct 1;78(10):891-899. doi:10.1093/jnen/nlz080. PMID:31504679.

Josephs KA, Mackenzie I, Frosch MP, Bigio EH, Neumann M, Arai T, Dugger BN, Ghetti B, Grossman M, Hasegawa M, Herrup K, Holton J, Jellinger K, Lashley T, McAleese KE, Parisi JE, Revesz T, Saito Y, Vonsattel JP, Whitwell JL, Wisniewski T, Hu W. LATE to the PART-y. *Brain*. 2019 Sep 1;142(9):e47. doi:10.1093/brain/awz224. Erratum in: *Brain*. 2019 Dec 1;142(12):e73. PMID:31359030.

Tang Z, Chuang KV, DeCarli C, Jin LW, Beckett L, Keiser MJ, Dugger BN. Interpretable classification of Alzheimer's disease pathologies with a convolutional neural network pipeline. *Nat Commun*. 2019 May 15;10(1):2173. doi:10.1038/s41467-019-10212-1. PMID:31092819.

Talmage C, Coon DW, Dugger BN, Knopf RC, O'Connor KA, Schofield SA, Social Leisure Activity, Physical Activity and valuation of Life: Findings from a longevity study. *Activities Adaptation and Aging*. 2019 Feb 15;44(1) 61-84. doi:10.1080/01924788.2019.1581026.

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