Banner Sun Health Research Institute

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| **EDUCATION** |  |  |
| Emory University School of Medicine, Atlanta, GA | 2010 |
| Postdoctoral, Pharmacology |  |  |
| University of Puerto Rico (RCM), San Juan, PR | 2006 |  |
| PhD, Anatomy |  |  |
| University of Puerto Rico (CUC), Cayey, PR | 2000 |  |
| Bachelor of Science, Biology |  |  |
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**WORK EXPERIENCE**

Banner Sun Health Research Institute, Sun City, AZ

Director neuropathology Dec 2020-PresentStaff supervision, consultations on tissue requests from researchers, brain dissections for both diagnostic and tissue banking purposes, microscopic examination of brain tissue and research projects management.

Banner Sun Health Research Institute, Sun City, AZ Dec 2010- Dec 2020

*Neuroanatomist Supervisor*

Staff supervision, consultations on tissue requests from researchers, brain dissections for both diagnostic and tissue banking purposes, microscopic examination of brain tissue and research projects management.

Emory University School of Medicine, Atlanta , GA Jan 2007- Dec 2010

*Postdoctoral Fellow*

Study the molecular basis of neuron-degeneration at the hippocampus after status epilepticus and determine whether neuronal COX2 induction is involved in loss of inhibition and cognitive deficits using genetically manipulated animal models.

University of Puerto Rico (RCM), San Juan, PR May 2006-Dec 2006

*Postdoctoral Fellow*

Polymorphic central pattern generation: endogenous motor neuron properties contribute to program-specific activity.

University of Puerto Rico (RCM), San Juan, PR May 2002-May 2006

*Graduate Laboratory Assistant*

Conditional rhythmicity and synchronization by dpamine in a bilateral pair of motor neurons in *Aplysia californica*.

University of Puerto Rico (RCM), San Juan, PR Jan 2003-Jan 2004

*Teaching Assistant*

Neuroscience-Medical School.

University of Florida, Gainesville, FL Jun 2000-May 2001

*Laboratory Technician*

Glycogen phosphorylase is activated in response to glucose deprivation but is not responsible for enhanced glucose transport activity in 3T3-L1 adipocytes.

University of Puerto Rico (CUC), Cayey, PR Aug 1999-May 2000

*Undergraduate Tutor*

Organic Chemistry

University of Puerto Rico (RCM), San Juan, PR May 1999-Dec 1999

*Research Assistant*

Over expression of the catalytic subunit of *Escherichia coli* Aspartate Transcarbamylase with pBAce.

University of Illinois, Chicago, IL Jun 1998-Aug 1998

*Teaching Assistant*

Development of a temporary ear plug for further experiments with *Meriones ungruculatus* (gerbil).

**AFFILIATIONS**

Arizona State University Sep 2022-present

# CERTIFICATIONS/LICENSES HONORS

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| 2009-2010 | National Research Service Award Training Grant F32-NINDS |
| 2008 | Counter ACT Network Research Symposium Travel Award |
| 2007 | FENS, Neuroscience Training in Europe Travel Award |
| 2006 | APS/NIDDK Minority Travel Fellowship |
| 2004 | ASCB, Minority Affairs Committee (MAC) Scholarship |
| 2004 | Neural System and Behavior (MBL) Internship |
| 2004-2006 | SFN, Minority Neuroscience Fellowship |
| 2002-2006 | Outstanding Student of the Anatomy Department |
| 1997-2000 | Board of Honor |
| 1997-2000 | The National Dean’s List |

**RESEARCH EXPERIENCE**

* Micro and macro surgery
* Histological Techniques
* Primary mammalian neuronal and pure glia cultures
* Cell-based assays
* Molecular Biology Techniques
* Fluorescence Imaging
* FACS sorting
* Animal Behavior
* Electrophysiology (intracellular, field and whole cell patch clamp)

# PUBLICATIONS

Su W, Saravia J, Risch I, Rankin S, Guy C, Chapman NM, Shi H, Sun Y, Kc A, Li W, Huang H, Lim SA, Hu H, Wang Y, Liu D, Jiao Y, Chen PC, Soliman H, Yan KK, Zhang J, Vogel P, Liu X, Serrano GE, Beach TG, Yu J, Peng J, Chi H. [CXCR6 orchestrates brain CD8(+) T cell residency and limits mouse Alzheimer's disease pathology.](https://www.ncbi.nlm.nih.gov/pubmed/37679549/)Nat Immunol. 2023 Oct;24(10):1735-1747. doi: 10.1038/s41590-023-01604-z. Epub 2023 Sep 7. PubMed PMID: 37679549.

Judd JM, Jasbi P, Winslow W, Serrano GE, Beach TG, Klein-Seetharaman J, Velazquez R. [Inflammation and the pathological progression of Alzheimer's disease are associated with low circulating choline levels.](https://www.ncbi.nlm.nih.gov/pubmed/37548694/)Acta Neuropathol. 2023 Oct;146(4):565-583. doi: 10.1007/s00401-023-02616-7. Epub 2023 Aug 7. PubMed PMID: 37548694; PubMed Central PMCID: PMC10499952.

Towns C, Richer M, Jasaityte S, Stafford EJ, Joubert J, Antar T, Martinez-Carrasco A, Makarious MB, Casey B, Vitale D, Levine K, Leonard H, Pantazis CB, Screven LA, Hernandez DG, Wegel CE, Solle J, Nalls MA, Blauwendraat C, Singleton AB, Tan MMX, Iwaki H, Morris HR. [Defining the causes of sporadic Parkinson's disease in the global Parkinson's genetics program (GP2).](https://www.ncbi.nlm.nih.gov/pubmed/37699923/)NPJ Parkinsons Dis. 2023 Sep 12;9(1):131. doi: 10.1038/s41531-023-00533-w. PubMed PMID: 37699923; PubMed Central PMCID: PMC10497609.

Sepulveda-Falla D, Villegas Lanau CA, White C, Serrano GE, Acosta-Uribe J, Mejía-Cupajita B, Villalba-Moreno ND, Lu P, Glatzel M, Kofler JK, Ghetti B, Frosch MP, Lopera Restrepo F, Kosik KS, Beach TG. [Comorbidities in Early-Onset Sporadic versus Presenilin-1 Mutation-Associated Alzheimer's Disease Dementia: Evidence for Dependency on Alzheimer's Disease Neuropathological Changes.](https://www.ncbi.nlm.nih.gov/pubmed/37646002/)medRxiv. 2023 Aug 16;. doi: 10.1101/2023.08.14.23294081. PubMed PMID: 37646002; PubMed Central PMCID: PMC10462216.

Beach TG, Adler CH, Shill HA, Zhang N, Driver-Dunckley ED, Mehta SH, Serrano GE. [Accuracy of the Early Diagnosis of Parkinson's Disease.](https://www.ncbi.nlm.nih.gov/pubmed/37565398/)Mov Disord. 2023 Aug;38(8):1573-1574. doi: 10.1002/mds.29556. PubMed PMID: 37565398.

Zaman M, Fu Y, Chen PC, Sun H, Yang S, Wu Z, Wang Z, Poudel S, Serrano GE, Beach TG, Li L, Wang X, Peng J. [Dissecting Detergent-Insoluble Proteome in Alzheimer's Disease by TMTc-Corrected Quantitative Mass Spectrometry.](https://www.ncbi.nlm.nih.gov/pubmed/37356496/)Mol Cell Proteomics. 2023 Aug;22(8):100608. doi: 10.1016/j.mcpro.2023.100608. Epub 2023 Jun 24. PubMed PMID: 37356496; PubMed Central PMCID: PMC10392608.

Hamsafar Y, Chen Q, Borowsky AD, Beach TG, Serrano GE, Sue LI, Adler CH, Walker DG, Dugger BN. [Biochemical analyses of tau and other neuronal markers in the submandibular gland and frontal cortex across stages of Alzheimer disease.](https://www.ncbi.nlm.nih.gov/pubmed/37330193/)Neurosci Lett. 2023 Jul 27;810:137330. doi: 10.1016/j.neulet.2023.137330. Epub 2023 Jun 16. PubMed PMID: 37330193.

Haney MS, Pálovics R, Munson CN, Long C, Johansson P, Yip O, Dong W, Rawat E, West E, Schlachetzki JC, Tsai A, Guldner IH, Lamichhane BS, Smith A, Schaum N, Calcuttawala K, Shin A, Wang YH, Wang C, Koutsodendris N, Serrano GE, Beach TG, Reiman EM, Glass CK, Abu-Remaileh M, Enejder A, Huang Y, Wyss-Coray T. [APOE4/4 is linked to damaging lipid droplets in Alzheimer's microglia.](https://www.ncbi.nlm.nih.gov/pubmed/37546938/)bioRxiv. 2023 Jul 25;. doi: 10.1101/2023.07.21.549930. PubMed PMID: 37546938; PubMed Central PMCID: PMC10401952.

Choudhury P, Zhang N, Adler CH, Chen K, Belden C, Driver-Dunckley E, Mehta SH, Shprecher DR, Serrano GE, Shill HA, Beach TG, Atri A. [Longitudinal motor decline in dementia with Lewy bodies, Parkinson disease dementia, and Alzheimer's dementia in a community autopsy cohort.](https://www.ncbi.nlm.nih.gov/pubmed/37422286/)Alzheimers Dement. 2023 Jul 8;. doi: 10.1002/alz.13357. [Epub ahead of print] PubMed PMID: 37422286.

Walker JE, Oliver JC, Stewart AM, Beh ST, Arce RA, Glass MJ, Vargas DE, Qiji SH, Intorcia AJ, Borja CI, Cline MP, Hemmingsen SJ, Krupp AN, McHattie RD, Mariner MR, Lorenzini I, Aslam S, Tremblay C, Beach TG, Serrano GE. [Measuring up: A Comparison of Tapestation 4200 and Bioanalyzer 2100 as Measurement Tools for RNA Quality in Postmortem Human Brain Samples.](https://www.ncbi.nlm.nih.gov/pubmed/37461632/)medRxiv. 2023 Jul 6;. doi: 10.1101/2023.07.03.23291969. PubMed PMID: 37461632; PubMed Central PMCID: PMC10350153.

Piras IS, Brokaw D, Kong Y, Weisenberger DJ, Krate J, Delvaux E, Mahurkar S, Blattler A, Siegmund KD, Sue L, Serrano GE, Beach TG, Laird PW, Huentelman MJ, Coleman PD. [Integrated DNA Methylation/RNA Profiling in Middle Temporal Gyrus of Alzheimer's Disease.](https://www.ncbi.nlm.nih.gov/pubmed/36596913/)Cell Mol Neurobiol. 2023 Jul;43(5):2289-2307. doi: 10.1007/s10571-022-01307-3. Epub 2023 Jan 3. PubMed PMID: 36596913; PubMed Central PMCID: PMC10287777.

Makarious MB, Lake J, Pitz V, Fu AY, Guidubaldi JL, Solsberg CW, Bandres-Ciga S, Leonard HL, Kim JJ, Billingsley KJ, Grenn FP, Alvarez Jerez P, Alvarado C, Iwaki H, Ta M, Vitale D, Hernandez D, Torkamani A, Ryten M, Hardy J, Scholz SW, Traynor BJ, Dalgard CL, Ehrlich DJ, Tanaka T, Ferrucci L, Beach TG, Serrano GE, Real R, Morris HR, Ding J, Gibbs JR, Singleton AB, Nalls MA, Bhangale T, Blauwendraat C. [Large-scale rare variant burden testing in Parkinson's disease.](https://www.ncbi.nlm.nih.gov/pubmed/37348876/)Brain. 2023 Jun 22;. doi: 10.1093/brain/awad214. [Epub ahead of print] PubMed PMID: 37348876.

Kaivola K, Chia R, Ding J, Rasheed M, Fujita M, Menon V, Walton RL, Collins RL, Billingsley K, Brand H, Talkowski M, Zhao X, Dewan R, Stark A, Ray A, Solaiman S, Alvarez Jerez P, Malik L, Dawson TM, Rosenthal LS, Albert MS, Pletnikova O, Troncoso JC, Masellis M, Keith J, Black SE, Ferrucci L, Resnick SM, Tanaka T, Topol E, Torkamani A, Tienari P, Foroud TM, Ghetti B, Landers JE, Ryten M, Morris HR, Hardy JA, Mazzini L, D'Alfonso S, Moglia C, Calvo A, Serrano GE, Beach TG, Ferman T, Graff-Radford NR, Boeve BF, Wszolek ZK, Dickson DW, Chiò A, Bennett DA, De Jager PL, Ross OA, Dalgard CL, Gibbs JR, Traynor BJ, Scholz SW. [Genome-wide structural variant analysis identifies risk loci for non-Alzheimer's dementias.](https://www.ncbi.nlm.nih.gov/pubmed/37388914/)Cell Genom. 2023 Jun 14;3(6):100316. doi: 10.1016/j.xgen.2023.100316. eCollection 2023 Jun 14. PubMed PMID: 37388914; PubMed Central PMCID: PMC10300553.

Mrdjen D, Amouzgar M, Cannon B, Liu C, Spence A, McCaffrey E, Bharadwaj A, Tebaykin D, Bukhari S, Hartmann F, Kagel A, Vijayaragavan K, Oliveria JP, Yakabi K, Serrano G, Corrada M, Kawas CH, Fullaway C, Bosse M, Tibshirani R, Beach T, Angelo M, Montine T, Bendall S. [Spatial proteomics reveals human microglial states shaped by anatomy and neuropathology.](https://www.ncbi.nlm.nih.gov/pubmed/37398389/)Res Sq. 2023 Jun 2;. doi: 10.21203/rs.3.rs-2987263/v1. PubMed PMID: 37398389; PubMed Central PMCID: PMC10312937.

Beach TG, Sue LI, Scott S, Intorcia AJ, Walker JE, Arce RA, Glass MJ, Borja CI, Cline MP, Hemmingsen SJ, Qiji S, Stewart A, Martinez KN, Krupp A, McHattie R, Mariner M, Lorenzini I, Kuramoto A, Long KE, Tremblay C, Caselli RJ, Woodruff BK, Rapscak SZ, Belden CM, Goldfarb D, Choudhury P, Driver-Dunckley ED, Mehta SH, Sabbagh MN, Shill HA, Atri A, Adler CH, Serrano GE. [Cerebral white matter rarefaction has both neurodegenerative and vascular causes and may primarily be a distal axonopathy.](https://www.ncbi.nlm.nih.gov/pubmed/37071794/)J Neuropathol Exp Neurol. 2023 May 25;82(6):457-466. doi: 10.1093/jnen/nlad026. PubMed PMID: 37071794; PubMed Central PMCID: PMC10209646.

Tremblay C, Choudhury P, Belden CM, Goldfarb D, Lorenzini I, Beach TG, Serrano GE. [The role of sex differences in depression in pathologically defined Alzheimer's disease.](https://www.ncbi.nlm.nih.gov/pubmed/37234269/)Front Aging Neurosci. 2023;15:1156764. doi: 10.3389/fnagi.2023.1156764. eCollection 2023. PubMed PMID: 37234269; PubMed Central PMCID: PMC10206015.

Salvadó G, Ossenkoppele R, Ashton NJ, Beach TG, Serrano GE, Reiman EM, Zetterberg H, Mattsson-Carlgren N, Janelidze S, Blennow K, Hansson O. [Specific associations between plasma biomarkers and postmortem amyloid plaque and tau tangle loads.](https://www.ncbi.nlm.nih.gov/pubmed/36912178/)EMBO Mol Med. 2023 May 8;15(5):e17123. doi: 10.15252/emmm.202217123. Epub 2023 Mar 13. PubMed PMID: 36912178; PubMed Central PMCID: PMC10165361.

Judd JM, Jasbi P, Winslow W, Serrano GE, Beach TG, Klein-Seetharaman J, Velazquez R. [Low circulating choline, a modifiable dietary factor, is associated with the pathological progression and metabolome dysfunction in Alzheimer's disease.](https://www.ncbi.nlm.nih.gov/pubmed/37214864/)bioRxiv. 2023 May 8;. doi: 10.1101/2023.05.06.539713. PubMed PMID: 37214864; PubMed Central PMCID: PMC10197582.

Billingsley KJ, Ding J, Jerez PA, Illarionova A, Levine K, Grenn FP, Makarious MB, Moore A, Vitale D, Reed X, Hernandez D, Torkamani A, Ryten M, Hardy J, Chia R, Scholz SW, Traynor BJ, Dalgard CL, Ehrlich DJ, Tanaka T, Ferrucci L, Beach TG, Serrano GE, Quinn JP, Bubb VJ, Collins RL, Zhao X, Walker M, Pierce-Hoffman E, Brand H, Talkowski ME, Casey B, Cookson MR, Markham A, Nalls MA, Mahmoud M, Sedlazeck FJ, Blauwendraat C, Gibbs JR, Singleton AB. [Genome-Wide Analysis of Structural Variants in Parkinson Disease.](https://www.ncbi.nlm.nih.gov/pubmed/36695634/)Ann Neurol. 2023 May;93(5):1012-1022. doi: 10.1002/ana.26608. Epub 2023 Feb 3. PubMed PMID: 36695634; PubMed Central PMCID: PMC10192042.

Chahine LM, Beach TG, Adler CH, Hepker M, Kanthasamy A, Appel S, Pritzkow S, Pinho M, Mosovsky S, Serrano GE, Coffey C, Brumm MC, Oliveira LMA, Eberling J, Mollenhauer B. [Central and peripheral α-synuclein in Parkinson disease detected by seed amplification assay.](https://www.ncbi.nlm.nih.gov/pubmed/36972727/)Ann Clin Transl Neurol. 2023 May;10(5):696-705. doi: 10.1002/acn3.51753. Epub 2023 Mar 27. PubMed PMID: 36972727; PubMed Central PMCID: PMC10187727.

Valentino RR, Scotton WJ, Roemer SF, Lashley T, Heckman MG, Shoai M, Martinez-Carrasco A, Tamvaka N, Walton RL, Baker MC, Macpherson HL, Real R, Soto-Beasley AI, Mok K, Revesz T, Warner TT, Jaunmuktane Z, Boeve BF, Christopher EA, DeTure M, Duara R, Graff-Radford NR, Josephs KA, Knopman DS, Koga S, Murray ME, Lyons KE, Pahwa R, Parisi JE, Petersen RC, Whitwell J, Grinberg LT, Miller B, Schlereth A, Seeley WW, Spina S, Grossman M, Irwin DJ, Lee EB, Suh E, Trojanowski JQ, Van Deerlin VM, Wolk DA, Connors TR, Dooley PM, Frosch MP, Oakley DH, Aldecoa I, Balasa M, Gelpi E, Borrego-Écija S, de Eugenio Huélamo RM, Gascon-Bayarri J, Sánchez-Valle R, Sanz-Cartagena P, Piñol-Ripoll G, Molina-Porcel L, Bigio EH, Flanagan ME, Gefen T, Rogalski EJ, Weintraub S, Redding-Ochoa J, Chang K, Troncoso JC, Prokop S, Newell KL, Ghetti B, Jones M, Richardson A, Robinson AC, Roncaroli F, Snowden J, Allinson K, Green O, Rowe JB, Singh P, Beach TG, Serrano GE, Flowers XE, Goldman JE, Heaps AC, Leskinen SP, Teich AF, Black SE, Keith JL, Masellis M, Bodi I, King A, Sarraj SA, Troakes C, Halliday GM, Hodges JR, Kril JJ, Kwok JB, Piguet O, Gearing M, Arzberger T, Roeber S, Attems J, Morris CM, Thomas AJ, Evers BM, White CL, Mechawar N, Sieben AA, Cras PP, De Vil BB, De Deyn PPPP, Duyckaerts C, Ber IL, Seihean D, Turbant-Leclere S, MacKenzie IR, McLean C, Cykowski MD, Ervin JF, Wang SJ, Graff C, Nennesmo I, Nagra RM, Riehl J, Kovacs GG, Giaccone G, Nacmias B, Neumann M, Ang LC, Finger EC, Blauwendraat C, Nalls MA, Singleton AB, Vitale D, Cunha C, Carvalho A, Wszolek ZK, Morris HR, Rademakers R, Hardy JA, Dickson DW, Rohrer JD, Ross OA. [Creating the Pick's disease International Consortium: Association study of MAPT H2 haplotype with risk of Pick's disease.](https://www.ncbi.nlm.nih.gov/pubmed/37163045/)medRxiv. 2023 Apr 24;. doi: 10.1101/2023.04.17.23288471. PubMed PMID: 37163045; PubMed Central PMCID: PMC10168402.

Driver-Dunckley ED, Zhang N, Serrano GE, Dunckley NA, Sue LI, Shill HA, Mehta SH, Belden C, Tremblay C, Atri A, Adler CH, Beach TG. [Low clinical sensitivity and unexpectedly high incidence for neuropathologically diagnosed progressive supranuclear palsy.](https://www.ncbi.nlm.nih.gov/pubmed/37040756/)J Neuropathol Exp Neurol. 2023 Apr 20;82(5):438-451. doi: 10.1093/jnen/nlad025. PubMed PMID: 37040756; PubMed Central PMCID: PMC10117158.

Tremblay C, Serrano GE, Dunckley N, Zhang N, Fiock KL, Adler CH, Driver-Dunckley E, Mehta SH, Shill HA, Beach TG. [Postmortem Cerebellar Volume Is Not Reduced in Essential Tremor: A Comparison with Multiple System Atrophy and Controls.](https://www.ncbi.nlm.nih.gov/pubmed/36938740/)J Parkinsons Dis. 2023;13(3):333-340. doi: 10.3233/JPD-225033. PubMed PMID: 36938740; PubMed Central PMCID: PMC10200177.

Chen S, Chang Y, Li L, Acosta D, Li Y, Guo Q, Wang C, Turkes E, Morrison C, Julian D, Hester ME, Scharre DW, Santiskulvong C, Song SX, Plummer JT, Serrano GE, Beach TG, Duff KE, Ma Q, Fu H. [Spatially resolved transcriptomics reveals genes associated with the vulnerability of middle temporal gyrus in Alzheimer's disease.](https://www.ncbi.nlm.nih.gov/pubmed/36544231/)Acta Neuropathol Commun. 2022 Dec 21;10(1):188. doi: 10.1186/s40478-022-01494-6. PubMed PMID: 36544231; PubMed Central PMCID: PMC9773466.

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Chen PC, Han X, Shaw TI, Fu Y, Sun H, Niu M, Wang Z, Jiao Y, Teubner BJW, Eddins D, Beloate LN, Bai B, Mertz J, Li Y, Cho JH, Wang X, Wu Z, Liu D, Poudel S, Yuan ZF, Mancieri A, Low J, Lee HM, Patton MH, Earls LR, Stewart E, Vogel P, Hui Y, Wan S, Bennett DA, Serrano GE, Beach TG, Dyer MA, Smeyne RJ, Moldoveanu T, Chen T, Wu G, Zakharenko SS, Yu G, Peng J. [Alzheimer's disease-associated U1 snRNP splicing dysfunction causes neuronal hyperexcitability and cognitive impairment.](https://www.ncbi.nlm.nih.gov/pubmed/36636325/)Nat Aging. 2022 Oct;2(10):923-940. doi: 10.1038/s43587-022-00290-0. Epub 2022 Oct 12. PubMed PMID: 36636325; PubMed Central PMCID: PMC9833817.

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