

VEDAD DELIC

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EDUCATION

Postdoctoral Fellowship Parkinson's Disease/neurodegeneration 2015-2018

UAB: Neurology department, Birmingham, AL

PhD, Cell and Molecular Biology 2015

USF: Cell Biology Microbiology and Molecular Biology department, Tampa, FL

MS, Molecular Medicine 2009

USF: Morsani College of Medicine, Tampa, FL

CORE EXPERTISE

- Cell and molecular biologist with years of experience developing strategies to alleviate AD, ALS, PD, TBI and age-related neurodegeneration
- Experienced with primary cell culture, mouse and rat models of neurodegenerative diseases
- Extensive experience using histological, enzymatic, and various medium throughput cell-free approaches as well as various behavioral tests applicable to the study of neurodegeneration
- Experienced in medium to high throughput image analysis of whole tissue sections and confocal microscopy
- Drug discovery experience using cell and animal models of neurodegeneration
- Team leadership experience on an extensive preclinical Parkinson's disease drug discovery project with industry and academic collaborators
- Extensive teaching and course development experience using team taught and "flipped" classroom approaches

PROFESSIONAL EXPERIENCE

- 2021 – Present Assistant Professor, Rutgers NJMS. Pharmacology, Physiology & Neuroscience Department
- 2018 – Present Research Scientist / Principal investigator, Research & Development Veterans Affairs
- 2018 – Present Research Scientist Veterans Biomedical Research Institute (VBRI) New Jersey Health Care System
- 2018 – Present Associate director of the Lab of Molecular Biology, VANJHCS
- 2015 – 2018 Michael J Fox Foundation Postdoctoral Fellow in the Department of neurology, University of Alabama at Birmingham, School of Medicine, Center for Neurodegeneration and Experimental Therapeutics (CNET)
 - o Worked to determine if the most common genetic contributor to Parkinson's disease in humans, the G2019S-LRRK2 mutation, affects aggregation of endogenous alpha synuclein in the brain of rats seeded with exogenous pre formed alpha synuclein fibrils.
 - o Helped to secure additional funding from Michael J Fox foundation
 - o Contributed to 5 medium and high impact manuscripts
 - o Opportunity to present at 2017 SFN
- 2014 – Instructor and course designer at Center of Excellence for Aging and Brain Repair, USF Morsani College of Medicine
 - o Designed a course to better prepare graduate students for a professional career in biomedical sciences (GMS7930.020F14 Intro to Research in BiomedSci)
- 2013 – Course director for Scientific methods and writing Office of Undergraduate Research USF
 - o I designed a course to assist students engaged in undergraduate research who desire to enhance their understanding of the research process and improve their science writing skills. This class is the first of its kind offered at USF for undergraduate students. (BSC4933.036S13 spring)

- 2011 – 2015 – Dr. Bradshaw’s Laboratory CMMB, University of South Florida
 - o Developing strategies for Preventing Age and Neurodegenerative Disease-associated Mitochondrial Dysfunction
 - o Contributed to 8 manuscripts
 - o Gained extensive experience mentoring graduate, undergraduate students
 - o Received mentorship and teaching awards
 - o 4 invited talks
- 2009 – 2011 – Dr. Citron’s Laboratory of Molecular Biology, Bay Pines VA
 - o Mechanisms of neuronal loss and treatments for Traumatic Brain Injuries

PUBLICATIONS

1. **Delic V**, Karp J, Klein J, Stalnaker JK, Murray KE, Ratliff WA, Myers EM, Beck KD, Citron BA. Pyridostigmine bromide, chlorpyrifos, and DEET combined Gulf War exposure insult depresses mitochondrial function in neuroblastoma cells. *J Biochem Mol Toxicol*. 2021 Sept. 1. In press.
2. **Delic V**, Ratliff WA, Citron BA. Sleep Deprivation, a Link Between Post-Traumatic Stress Disorder and Alzheimer’s Disease. *J Alzheimers Dis*. February 16, 2021. PMID: 33459652
3. Ratliff WA, Saykally JN, Keeley KL, Driscoll DC, Murray KE, Okuka M, Mervis RF, **Delic V**, Citron BA. Sidestream Smoke Affects Dendritic Complexity and Astrocytes After Model Mild Closed Head Traumatic Brain Injury. *Cell Mol Neurobiol*. 2021 Jan 8. PMID: 33417143
4. Ratliff WA, **Delic V**, Pick CG, Citron BA. Dendritic arbor complexity and spine density changes after repetitive mild traumatic brain injury and neuroprotective treatments. *Brain Res*. 2020 Nov 1. PMID: 32292111
5. Ratliff WA, Qubty D, **Delic V**, Pick CG, Citron B. Repetitive Mild Traumatic Brain Injury and Transcription Factor Modulation. *J Neurotrauma*. 2020 Sep 1. PubMed PMID: 3229211
6. **Delic V**, Beck KD, Pang KCH, Citron BA. Biological links between traumatic brain injury and Parkinson's disease. *Acta Neuropathol Commun*. 2020 Apr 7;8(1):45. Review. PMID: 32264976
7. **Delic V**, Noble K, Zivkovic S, Phan TA, Reynes C, Zhang Y, Phillips O, Claybaker C, Ta Y, Dinh VB, Cruz J, Prolla TA, Bradshaw PC. The effects of AICAR and rapamycin on mitochondrial function in immortalized mitochondrial DNA mutator murine embryonic fibroblasts. *Biol Open*. 2018 Nov 16;7(11). PMID: 30177551
8. **Delic V**, Chandra S, Abdelmotilib H, Maltbie T, Wang S, Kem D, Scott HJ, Underwood RN, Liu Z, Volpicelli-Daley LA, West AB. Sensitivity and specificity of phospho-Ser129 α -synuclein monoclonal antibodies. *J Comp Neurol*. 2018 Aug 15;526(12):1978-1990. PMID: 29888794
9. **Delic V**, Kurien C, Cruz J, Zivkovic S, Barretta J, Thomson A, Hennessey D, Joseph J, Ehrhart J, Willing AE, Bradshaw P, Garbuzova-Davis S. Discrete mitochondrial aberrations in the spinal cord of sporadic ALS patients. *J Neurosci Res*. 2018 Aug;96(8):1353-1366. PMID: 29732581
10. Harms AS, **Delic V**, Thome AD, Bryant N, Liu Z, Chandra S, Jurkuvenaite A, West AB. α -Synuclein fibrils recruit peripheral immune cells in the rat brain prior to neurodegeneration. *Acta Neuropathol Commun*. 2017 Nov 21;5(1):85. PMID: 29162163
11. Zhao HT, John N, **Delic V**, Ikeda-Lee K, Kim A, Weihofen A, Swayze EE, Kordasiewicz HB, West AB, Volpicelli-Daley LA. LRRK2 Antisense Oligonucleotides Ameliorate α -Synuclein Inclusion Formation in a Parkinson's Disease Mouse Model. *Mol Ther Nucleic Acids*. 2017 Sep 15;8:508-519. PMID: 28918051

12. Abdelmotilib H, Maltbie T, **Delic V**, Liu Z, Hu X, Fraser KB, Moehle MS, Stoyka L, Anabtawi N, Krendelchtchikova V, Volpicelli-Daley LA, West A. α -Synuclein fibril-induced inclusion spread in rats and mice correlates with dopaminergic Neurodegeneration. *Neurobiol Dis.* 2017 Sep;105:84-98. PMID: 28576704
13. **Delic V**, Griffin JWD, Zivkovic S, Zhang Y, Phan TA, Gong H, Chaput D, Reynes C, Dinh VB, Cruz J, Cvitkovic E, Placides D, Frederic E, Mirzaei H, Stevens SM Jr, Jinwal U, Lee DC, Bradshaw PC. Individual Amino Acid Supplementation Can Improve Energy Metabolism and Decrease ROS Production in Neuronal Cells Overexpressing Alpha-Synuclein. *Neuromolecular Med.* 2017 Sep;19(2-3):322-344. PMID: 28620826
14. Quasem I, Achille AN, Caddick BA, Carter TA, Daniels C, Delaney JA, **Delic V**, Denton KA, Duran MC, Fatica MK, Ference CM, Galkiewicz JP, Garcia AM, Hendrick JD, Horton SA, Kun MS, Koch PW, Lee TM, McCabe CR, McHale S, McDaniel LD, Menning DM, Menning KJ, Mirzaei-Souderjani H, Mostajabian S, Nicholson DA, Nugent CK, Osman NP, Pappas DI, Rocha AM, Rosario K, Rubelmann H, Schwartz JA, Seeley KW, Staley CM, Wallace EM, Wong TM, Zielinski BL, Hanson TE, Scott KM. Peculiar citric acid cycle of hydrothermal vent chemolithoautotroph *Hydrogenovibrio crunogenus*, and insights into carbon metabolism by obligate autotrophs. *FEMS Microbiol Lett.* 2017 Aug 1;364(14). PubMed PMID: 28854673
15. Sawmiller D, Li S, Mori T, Habib A, Rongo D, **Delic V**, Bradshaw PC, Shytle RD, Sanberg C, Bickford P, Tan J. Beneficial effects of a pyrroloquinolinequinone-containing dietary formulation on motor deficiency, cognitive decline and mitochondrial dysfunction in a mouse model of Alzheimer's disease. *Heliyon.* 2017 Apr. PMID: 28413833
16. O'Neal-Moffitt G, **Delic V**, Bradshaw PC, Olcese J. Prophylactic melatonin significantly reduces Alzheimer's neuropathology and associated cognitive deficits independent of antioxidant pathways in A β PP(swe)/PS1 mice. *Mol Neurodegener.* 2015 Jul 11;10:27. PMID: 26159703
17. **Delic V**, Brownlow M, Joly-Amado A, Zivkovic S, Noble K, Phan TA, Ta Y, Zhang Y, Bell SD, Kurien C, Reynes C, Morgan D, Bradshaw PC. Calorie restriction does not restore brain mitochondrial function in P301L tau mice, but it does decrease mitochondrial FOF1-ATPase activity. *Mol Cell Neurosci.* 2015 Jul;67:46-54. PMID: 26048366
18. Dragicevic N, **Delic V**, Cao C, Copes N, Lin X, Mamcarz M, Wang L, Arendash GW, Bradshaw PC. Caffeine increases mitochondrial function and blocks melatonin signaling to mitochondria in Alzheimer's mice and cells. *Neuropharmacology.* 2012 Dec;63(8):1368-79. PMID: 22959965
19. Dragicevic N, Smith A, Lin X, Yuan F, Copes N, **Delic V**, Tan J, Cao C, Shytle RD, Bradshaw PC. Green tea epigallocatechin-3-gallate (EGCG) and other flavonoids reduce Alzheimer's amyloid-induced mitochondrial dysfunction. *J Alzheimers Dis.* 2011;26(3):507-21. PMID: 21694462
20. BOOK CHAPTER
 - a. Melatonin: Therapeutic value and Neuroprotection Chapter 16: Melatonin's mitochondrial protective role in Alzheimer's mice: role of melatonin receptors 2014
 - b. **Vedad Delic** and Patrick C. Bradshaw
 - Editors : V Srinivasan, Gabriella Gobbi, Samuel D Shillcutt, Sibel Suzen
 - Publishers : Taylor&Francis , CRC Press

INVITED TALKS

Thursday, February 18th 2021, Parkinson's disease pathology and associated risk factors: Lessons from preclinical animal models. Florida State University, College of Medicine. Tallahassee, FL.

Friday, August 16th 2019, Traumatic Brain Injury and Parkinson's disease, Bay Pines VA Clinical Research Traumatic Brain Injury Strategic Planning Session, Clearwater, FL.

Thursday, August 2nd 2018 Inhibition of Leucine Rich Repeat Kinase 2 (LRRK2): therapeutic strategy for preventing Parkinson's disease following a traumatic brain injury. Department of Pharmacology, Physiology & Neuroscience, Rutgers New Jersey Medical School. VA New Jersey Health Care System, East Orange Medical Center and the Veterans Biomedical Research Institute.

Monday, June 22nd 2015 Modified tricarboxylic acid cycle intermediates and amino acids partially restore mitochondrial function in a novel cell model of Parkinson's disease. University of Alabama at Birmingham, School of Medicine, Department of Neurology.

Friday, May 22nd 2015 Strategies to restore Alzheimer's disease and Parkinson's disease induced mitochondrial dysfunction. Yale School of Medicine, seminar New Haven, CT.

Wednesday July 22nd 2015 Modified tricarboxylic acid cycle intermediates and amino acids partially restore mitochondrial function in a novel cell model of Parkinson's disease. Bay Pines VA Grand Rounds invited talk Bay Pines, FL, USA.

Wednesday June 4th 2014 Alzheimer's Parkinson's and Aging: Strategies to Prevent age and disease-induced mitochondrial dysfunction. Invited talk works in progress series. USF Morsani college of Medicine. Tampa, FL, USA.

Friday February 21st 2014. CMMB Departmental Seminar. University of South Florida: Alzheimer's Parkinson's and Aging: Strategies to Prevent age and disease-induced mitochondrial dysfunction. Tampa, FL, USA.

ABSTRACTS

October 19, 2019 Simple weight-drop model of closed head diffuse traumatic brain injury in rats without preparatory surgery
Society for Neuroscience, Chicago, IL.

November 11-15 2017 Role of leucine rich repeat kinase (LRRK2) in an α -synuclein rat model of late onset Parkinson disease.
Society for Neuroscience, D.C.

March 10, 2015 May 2, 2015 Mitochondrial electron transport chain (ETC) alterations in the spinal cord grey and white matter of ALS patients.
Graduate Student Research Symposium, University of South Florida, Tampa Florida USA.

December 9– 11 2014 Calorie restriction does not restore brain mitochondrial function in P301L tau mice, but it does decrease mitochondrial FOF1-ATPase activity. Cell Symposia: Stem cell energetics Berkeley, CA, USA.

April 30 - May 2, 2015 Mitochondrial electron transport chain (ETC) changes in the spinal cord grey and white matter of ALS patients. American Society for Neural Therapy and Repair 22nd annual conference. Clearwater Beach, FL, USA.

TEACHING

Guest lecture Neurobiology of Disease, Rutgers Spring 2021 (NEURN5040001)

Guest lecture Behavioral, Cognitive and Clinical Neuroscience Rutgers Fall 2020 (CBNP5032Q01)

Introduction to research in biomedical sciences USF College of Medicine 2014 graduate level course (GMS 7930)

Intro to Interdisciplinary science research USF honors college instructor Spring 2014 (IDH-3350).

Guest lecturer USF general genetics (mitochondrial inheritance and cloning) Fall 2013

Cell Biology Lab TA USF 2012-2015 (PCB3023)

Research methods and writing USF spring 2013 course director (BSC4933)

Biology I lab TA USF 2011-2012 (BSC 2010L)

UNDERGRADUATE AND GRADUATE STUDENTS MENTORED

- Kenyaria Noble 2012-2014
- Anh Phan 2012-2015
- Stephen Bell 2013-2014
- Crupa Curien 2013-2015
- Christian Raynes 2013-2015
- Vinh Dinh 2013-2015
- Yumang Zhang 2012-2015
- Yen Ta 2012
- Oluwakemi Philips 2011-2012
- Stacy Medrano 2011-2012
- Charles Claybaker 2012
- Mira Janjus 2011-2012
- Emily Nickoloff 2011
- Josean Cruz 2014-2015
- Eni Cvitkovic 2014-2015
- Ernide Frederick 2014
- Danielle Kem summer 2017
- Sidhanth Chandra 2016-2018
- Hunter J Scott 2017-2017
- Hanhan Li 2018-2018
- Joshua Karp 2019- present
- Julian Klein 2020 - 2021

POSTDOCTORAL MENTORSHIP

- Gabriel Arismendi, M.D. Neurology resident, 2021. Exosome intercellular communication in TBI

HONORS AND AWARDS

Travel award competition

Sponsoring Organization or Institution: Society for Neural Therapy and Repair

Date Awarded: 03/04/2015

Outstanding CMMB T.A. Award

Sponsoring Organization or Institution: University of South Florida CMMB department

Date Awarded: 8/1/2014

Certificate of Appreciation

Sponsoring Organization or Institution: United States Army 3rd Ranger Battalion

Date Awarded: 10/1/2012

Fred L & Helen M Tharp stipend

Sponsoring Organization or Institution: Fred L & Helen M Tharp endowment

Date Awarded: 4/1/2012

MEMBERSHIP

The American Society for Neural Therapy and Repair (ASNTR) 2015 – present

Advisory Council for Charles Claybaker D.U.S.T.O.F.F Foundation 2015 – present

National Neurotrauma Society 2019 – present

Society for Neuroscience (SFN) 2017 – present

FUNDING

Active

BLR&D (Citron, Bruce)

1/1/2020 - 12/31/2025

3 calendar

VA

\$300,000 per year

SDR: Genomic analysis of blast tube induced TBI in mice

Goals: Dr. Delic, as a coinvestigator will contribute 25% effort on behavioral and histological outcome measures of this grant. The overall goal of the project is to identify genes that affect the degree of blast-induced functional impairment and post-injury recovery by studying a set of model mouse strains that encompass most of the genetic variations available. This will help us understand which genes play roles in the post-injury outcomes, develop optimal models for blast studies, and lead towards the elucidation of therapeutic targets.

RR&D (Delic, Vedad)

6/1/2020 - 5/30/2025

12 calendar

VA CDA-2

\$212,042 per year

Exercise and pharmacological LRRK2 inhibition for preventing PD

Goals: Dr. Delic, is the principal investigator on this grant. The overall goal of the project is to determine the relationship between TBI, exercise, and alpha synuclein pathology in PD. This will help us answer fundamental questions about the relationship between TBI and PD.

Pending

None