ZILA MARTINEZ-LOZADA, PhD
Assistant Professor
Nova Southeastern University
Department of Psychology and Neuroscience
3301 S. University Drive, Fort Lauderdale, FL, 33314
zmartine@nova.edu

Education

PhD in Genetics and Molecular Biology February 2015
At Cinvestav-IPN, Mexico City, Mexico
Dissertation: "Participation of the Glutamate/Aspartate Transporter (GLAST) in the glutamatergic signaling."
Advisor: Prof. Arturo Ortega

***Master* in Genetics and Molecular Biology** August 2010
At Cinvestav-IPN, Mexico City, Mexico
Dissertation: "Glutamate/Aspartate Transporter (GLAST) as a signal transducer molecule."
Advisor: Prof. Arturo Ortega

B.S. in Biochemistry June 2008
At Universidad Autonoma Metropolitana (UAM), Mexico City, Mexico
Summa Cum Laude.

Research Interests

- Astrocyte development, the generation of astrocyte heterogeneity, and astrocyte functions
- Intercellular interactions, specifically communication of astrocytes with neurons and blood vessels
- Glutamate transporters: their function, expression regulation, interaction with other proteins, and malfunction in disease
- Formation of the neurovascular unit

Employment History

Assistant Professor August 2024 – Present
Nova Southeastern University
Department of Psychology and Neuroscience

Research Associate July 2021 – July 2024
The Children's Hospital of Philadelphia (CHOP), Department of Pediatrics
Advisors: Prof. Michael B. Robinson & Prof. Eric Marsh

Postdoctoral Fellow July 2015 – July 2021
The Children's Hospital of Philadelphia (CHOP), Department of Pediatrics
Advisor: Prof. Michael B. Robinson

Visiting Scholar June – July 2014
University of Genova, Department of Experimental Medicine
Advisor: Prof. Giambattista Bonanno

PhD Residence/Visiting Scholar 2012 – 2013
Virginia Commonwealth University (VCU), Department of Anatomy and Neurobiology
Advisor: Prof. Babette Fuss

Graduate Researcher 2009 – 2015
Cinvestav-IPN, Department of Genetics and Molecular Biology
Advisor: Prof. Arturo Ortega

Grants

Bridge to Faculty Program
The Children's Hospital of Philadelphia
$137,600 USD
July 2022 – June 2024

AWRP Winter 2017 Postdoctoral Fellowship
17POST33670330
American Heart and Stroke Association
$104,060 USD
July 2017 – June 2019

Postdoctoral Training Grant
CVU No.263889
CONACYT, Mexico
$50,000 USD
July 2015 – June 2017

Doctoral Training Grant
CONACYT, Mexico
July 2010 – June 2014

Master's Degree Training Grant
CONACYT, Mexico
July 2008 – June 2010

Teaching Interest

- Introduction to Neuroscience
- Methods in Neuroscience
- Glia Biology
- Neurovascular unit
- Signal Transduction / Gene Expression Regulation
- Molecular and Cellular Neurobiology
- Neurobiology of the Disease
- The Aging Brain

Teaching and Mentoring Experience

- Instructor, Introduction to Neuroscience at Nova Southeastern University, Since 08/2024
- Mentor in the laboratory the following graduate students: Orquidia Guadalupe Mendez, Lucia Garcia Lara, Miguel Angel Escalante Lopez, and Esha Parikh; undergraduate students: Alejandra Molina Lopez, Charytin Avalos, Isabella Song, and Rahul Pandit, and several high school students, 2016 - present
- Mentor students at the CHOP Research Institute Summer Scholars Program (CRISSP) and high school students at the CHOP Research Internship for Scholars and Emerging Scientists (RISES) students, 2022 – 2024
- Teaching Assistant, Cinvestav-IPN, Master in Toxicology, 2013-2015
  Signaling pathways, Molecular Biology, and Neurotoxicology classes (assisted professor, held discussion sections, graded papers)
- Instructor, Ingenes Institute, Master in Gynecological Endocrinology, and Infertility, Epigenetics pre-recorded class (sole responsibility), 2014
- Teaching Assistant, Cinvestav-IPN, Master in Genetics and Molecular Biology, Molecular Biology of eukaryotic cells class (assisted professor, held discussion sections, graded papers), 2011-2013

Academic and Professional Honors and Awards

- Laboratory-Based Research Poster Award, CHOP Poster Day 2022
- Young Investigator Travel Award to the 8th Molecular Psychiatry Association Meeting 2022
- Outstanding Achievement in Poster Presentation Brain-In-Flux Meeting 2019
- Alavi-Dabiri Postdoctoral Fellowship Award, CHOP/Penn 2018
  (The goals of this award are to support a young investigator who has demonstrated excellence in research related to intellectual and developmental disabilities)
- Marian Kies Memorial Award, American Society for Neurochemistry 2017
  (This award is given to a junior scientist for outstanding research conducted during graduate training)
- Travel Award, 25th Meeting of the International Society for Neurochemistry August 2015
- Young Investigator Travel Award, Sociedad Chilena de Neurociencia October 2014
- Lindau Nobel Laureate Meeting Scholarship, Academia Mexicana de Ciencias July 2014
- Young Investigator Training Program Fellowship, FENS July 2014
- CAEN Travel Award to the 45th Annual ASN Meeting March 2014
- Young Investigator Educational Enhancement Award (YIEEA), ASN March 2014
- Poster Award, 12th ISN Advanced School of Neurochemistry April 2013
- Young Latin American Scholars Award (YLAS), ASN March 2012
- Best Poster Presentation at the 8th IBRO World Congress of Neuroscience July 2011
- Best student Class of 2008 (first class honor), M.Sc., Cinvestav-IPN 2010
- University Merit Medal (first class honor), B.S. UAM 2008

Publications

1. Mueller, S.M., McFarland White, K., Fass, S.B., Chen, S., Shi, Z., Ge, X., Engelbach, J.A., Gaines, S.H., Bice, A.R., Vasek, M.J., Garbow, J.R., Culver, J.P., **Martinez-Lozada, Z.**, Cohen-Salmon, M., Dougherty, J.D., Sapkota, D., "Evaluation of the gliovascular functions of Aqp4 readthrough isoforms". Frontiers in Cellular Neuroscience (2023), Vol. 17 DOI: 10.3389/fn-cel.2023.1272391
2. **Martinez-Lozada, Z.#**, Farmer, W.T.#, Krizman, E., Schober, A., Robinson, M.B., Murai, K.K., "Cooperative regulation of the astrocytic transcriptome by neurons and endothelial cells." Journal of Neurochemistry (2023) Jul, DOI:10.1111/jnc.15908 #These authors contributed equally to this manuscript.
   Fig 1A of this publication was selected as the cover image for the Journal of Neurochemistry October 2023, Volume 167, Issue 1 DOI: 10.1111/jnc.15641
   In this manuscript, we show that neurons and endothelial cells cooperatively induce the maturation of astrocytes, with neurons having more prominent effect at the transcriptome level and endothelial cells at the regulation of alternative RNA splicing. We also showed that neurons and endothelia have antagonistic effects on the astrocyte transcriptome, with neurons inducing transcription of genes associated with metabolic processes, extracellular and lysosomal transport, and Shh and Wnt signaling. In contrast, endothelial cells induce transcription of genes related to RNA-protein complexes, DNA repair, and mitochondria transport.
3. **Martinez-Lozada, Z.**, Ortega A., "Excitatory Amino Acid Transporters: Beyond Their Expected Function". Milestone Review. Journal of Neurochemistry (2023) Mar, DOI: 10.1111/jnc.15809
4. **Martinez-Lozada, Z.***, Hewett S.J., Zafra F., Ortega A., "Editorial: The known, the unknown, and the future of glutamate transporters". Frontiers in Cellular Neuroscience (2022) Aug, DOI: 10.3389/fncel.2022.100583
   *corresponding author
5. **Martinez-Lozada, Z.**, Robinson, M. B., "Reciprocal communication between astrocytes and endothelial cells is required for astrocytic glutamate transporter expression". *Neurochemistry International* (2020) Oct, 130:104787. DOI: 10.1016/j.neuint.2020.104787
   In this manuscript, we show that endothelial cells induce glutamate transporter 1 (GLT1) expression in astrocytes through a Notch-dependent mechanism. And that this was dependent upon first astrocytes secreting a signal that induces expression of the Notch-ligand Dll4 in endothelial cells. These data demonstrate a bilateral/reciprocal communication between astrocytes and endothelial cells.
6. Lee, M.L., **Martinez-Lozada, Z.**, Krizman, E.N., Robinson, M.B., "Brain endothelial cells induce astrocytic expression of the glutamate transporter GLT-1 by a Notch-dependent mechanism". *Journal of Neurochemistry* (2017) Aug. DOI: 10.1111/jnc.14135
   Fig 6D of this publication was selected as cover image for Journal of Neurochemistry December 2017, Volume 143, Issue 5 DOI: 10.1111/jnc.13825

7. Suarez-Pozos, E., **Martinez-Lozada,Z.,** Mendez-Flores, O.G., Guillem, A.M., Hernandez-Kelly, L.C., Castelan, F., Olivares-Bañuelos, T.N., Chi-Castañeda, D., Naijimi, M., Ortega, A., "Characterization of the cystine/glutamate antiporter in cultured Bergmann glia cells". *Neurochemistry International* (2017) Sep, 108:52-59. DOI: 10.1016/j.neuint.2017.02.011
8. **Martínez-Lozada, Z.,** Guillem, A.M., Robinson, M.B., "Transcriptional Regulation of Glutamate Transporters: From Extracellular Signals to Transcription Factors". *Advances in Pharmacology* (2016) March, DOI: 10.1016/bs.apha.2016.01.004
9. Guillem, A.M., **Martínez-Lozada, Z.**, Hernandez-Kelly L.C., López-Bayghen, E., López-Bayghen, B., Calleros O.A., Campuzano M.R., Ortega, A. "Methylphenidate Increases Glutamate Uptake in Bergmann Glial Cells". *Neurochemical Research* (2015) Nov, 40(11): 2317-24. DOI: 10.1007/s11064-015-1721-z
10. **Martínez-Lozada, Z.,** Ortega, A. "Glutamatergic transmission: a matter of three". *Neural Plasticity* (2015) Article ID 787396, DOI: 10.1155/2015/787396
11. Flores-Mendez M., Escalante-Lopez M., **Martínez-Lozada, Z.,** Hernandez-Kelly L.C., Najimi M., Sokal E., Ortega, A. "Glutamate-dependent translational control through ribosomal protein S6 phosphorylation in cultured Bergmann glial cells". *Neurochemical Research* (2015) May; 40(5): 915-23 DOI: 10.1007/s11064-015-1544-y
12. **Martínez-Lozada, Z.,** Waggener, CT., Kim, K., Hayashi, Y., Ortega, A., Fuss, B. "Activation of Sodium-dependent Glutamate Transporters regulates Oligodendrocyte Maturation via signaling through CaMKIIβ's Actin Binding/Stabilizing Domain". *Glia* (2014) Sep; 62 (9): 1543-58 DOI: 10.1002/glia.22699
    In this manuscript, we demonstrated that the glutamate signaling through activation of the glutamate transporters, GLT1 and GLAST, induces the morphological aspects of oligodendrocyte maturation. In a calcium-dependent effect associated with phosphorylation of the calcium/calmodulin-dependent kinase type IIb. This work highlighted the signaling properties of the glutamate transporters and their contribution to oligodendrocyte maturation and CNS myelination.
13. Balderas, A., Guillem, AM., **Martínez-Lozada, Z.,** Hernández-Kelly, LC., Aguilera, J., Ortega, A. "GLAST/EAAT1 regulation in cultured Bergmann glia cells: Role of the NO/cGMP signaling pathway". *Neurochemistry International* (2014) Jul; (73): 139-45 DOI: 10.1016/j.neuint.2013.10.011
14. Flores-Mendez, MA., **Martínez-Lozada, Z.,** Monroy, HC., Hernández-Kelly, LC., Barrera, I., Ortega, A. "Glutamate-Dependent translational control in cultured Bergmann Glia Cells: eIF2α Phosphorylation". *Neurochemical Research* (2013) Jul 38 (7): 1324-32 DOI: 10.1007/s11064-013-1024-1
15. **Martinez-Lozada, Z.,** Guillem, AM., Flores-Mendez, M., Hernandez-Kelly, LC., Vela, C., Meza, E., Zepeda, RC., Caba, M., Rodriguez, A., Ortega, A. "GLAST/EAAT1-induced Glutamine release via SNAT3 in Bergmann glial cells: Evidence of a functional and physical coupling". *Journal of Neurochemistry* (2013) May 125 (4): 545-54 DOI:10.1111/jnc.12211
16. Lopez-Colome, AM., **Martinez-Lozada, Z.,** Guillem, AM., López, E., Ortega, A. "Glutamate transporter-dependent mTOR phosphorylation in Müller glia cells". *ASN Neuro* (2012) Jul 23 4(5): e00095: 331-342 DOI: 10.1042/AN20120022
17. **Martínez-Lozada, Z.**, Hernández-Kelly, LC., Aguilera, J., López-Bayghen, E., Ortega, A. "Signaling through EAAT-1/GLAST in cultured Bergmann glial cells". *Neurochemistry International* (2011) Nov 59 (6): 871-879 DOI: 10.1016/j.neuint.2011.07.015

Invited Talks

1. Martinez-Lozada, Z. "Astrocyte Development in the Cerebral Cortex: Lessons from Transcriptional Regulation of the Glutamate Transporter 1 (GLT1)", University of Rhode Island, George & Anne Ryan Institute for Neuroscience, May 2024, Kingston, RI, USA.
2. Martinez-Lozada, Z. "Astrocyte Development in the Cerebral Cortex: Lessons from Transcriptional Regulation of the Glutamate Transporter 1 (GLT1)", Nova Southeastern University, Department of Neuroscience, March 2024, Fort Lauderdale, FL, USA.
3. Martinez-Lozada, Z. "Astrocyte Development in the Cerebral Cortex: Lessons from Transcriptional Regulation of the Glutamate Transporter 1 (GLT1)", UPenn School of Arts & Sciences, Department of Biology, November 2023. Philadelphia, PA, USA.
4. Martinez-Lozada, Z. "Generation of Astrocyte Diversity: Lessons from Transcriptional Regulation of the Glutamate Transporter 1 (GLT1)", Great Lakes Glia meeting, October 2022. Traverse City, MI, USA.

5. Martinez-Lozada, Z. “Using transcriptional regulation of the glutamate transporter 1 (GLT-1) to define mechanisms that contribute to astrocyte development”, Anatomy and Neurobiology Seminar Series, April 2021. Virginia Commonwealth University, Richmond, VA, USA.
6. Martinez-Lozada, Z. “My journey studying astrocytes”, Lunch & Learn Talk, January 2021. The Children’s Hospital of Philadelphia, PA, USA.
7. Martinez-Lozada, Z. “Reciprocal communication between astrocytes and endothelial cells is required for astrocytic glutamate transporters expression”, Toxicology Department Seminar Series, December 2020. Cinvestav del IPN, Mexico City, Mexico.
8. Martinez-Lozada, Z. “Na^+-Dependent Glutamate Transporters as Signal Transduction Molecules in Glial Cells”, X Annual Meeting of the Chilean Society of Neuroscience, October 2014. Sociedad Chilena de Neurociencias, Valdivia, Chile.
9. Martinez-Lozada, Z. “Activation of Glutamate Transporters Regulates Oligodendrocyte Maturation”, Seminar at the Pharmacy Department, Sezione di Farmacologia e Tossicologia, June 2014. Universita Di Genova, Genova, Italy.

Oral Presentations

1. Martinez-Lozada, Z., Guillem, A.M., Song, I. Krizman, E., Takano, H., Rothstein, J., Robinson, M.B. “Characterization of a Subpopulation of Astrocyte Progenitor Cells in the Neonatal Subventricular Zone”, American Society of Neurochemistry, April 2024. Portland, Oregon, USA.
2. Martinez-Lozada, Z., Guillem, A.M., Song, I. Krizman, E., Robinson, M.B. “Generation of Astrocyte Diversity: Lessons from Transcriptional Reporters of the Glutamate Transporter 1 (GLT1)”, Neuroscience Chalk Talk, November 2022. The Children’s Hospital of Philadelphia, PA, USA.
3. Martinez-Lozada, Z., Farmer, W.T., Murai, K.K., Robinson, M.B. “Neurons and endothelia regulate astrocyte transcriptome” American Society of Neurochemistry, April 2022. Roanoke, VA, USA. ***Chair of symposium*** “Supplying the synapse from the inside and out”.
4. Martinez-Lozada, Z., Farmer, W.T., Murai, K.K., Robinson, M.B. “Neurons and endothelia regulate astrocyte transcriptome” Molecular Psychiatry meeting, March 2022. Lahaina, HA, USA. ***Chair of symposium*** “The role of astrocytes in neurodevelopmental and psychiatric disorders”.
5. Martinez-Lozada, Z., Farmer, W.T., Murai, K.K., Robinson, M.B., “Neurons and Endothelial Cells Induce Astrocyte Maturation” American Society of Neurochemistry, July 2021.
6. Martinez-Lozada, Z., Robinson, M.B., “Origin of astrocyte subpopulations: Lessons from GLT-1 reporter mouse lines” The Children’s Hospital of Philadelphia, Neuroscience Chalk Talk, May 2021. Philadelphia, PA, USA.
7. Martinez-Lozada, Z., Robinson, M.B., “Reciprocal communication between astrocytes and endothelial cells is required for astrocytic glutamate transporters expression” International Symposium for Networking in Neuroscience, September 2020.
8. Martinez-Lozada, Z., Robinson, M.B., “Identification of different cell populations in glutamate transporter 1 (GLT-1) reporter mice during development” The Children’s Hospital of Philadelphia, Glia Journal Club, Agosto 2020.
9. Martinez-Lozada, Z., Robinson, M.B., “Reciprocal communication between astrocytes and endothelial cells is required for astrocytic glutamate transporters expression” The Children’s Hospital of Philadelphia, Glia Journal Club, December 2019. Philadelphia, PA, USA.
10. Martinez-Lozada, Z., Lee, M.L., Robinson, M.B., “Reciprocal communication between astrocytes and endothelial cells is required for astrocytic glutamate transporters expression” Brain-In-Flux 2019 Meeting, August 2019. Quebec, Canada.
11. Martinez-Lozada, Z., Lee, M.L., Krizman, E.N., Robinson, M.B., “Endothelial cells regulate different aspects of the astrocyte biology” American Society for Neurochemistry 2018 Annual Meeting, March 2018. Riverside, California. USA. ***Colloquium Organizer***.
12. Martinez-Lozada, Z., Lee, M.L., Krizman, E.N., Robinson, M.B., “Astrocyte subpopulations engage different mechanisms to control expression of the glutamate transporter 1 (GLT-1)”. The Children’s Hospital of Philadelphia, Neuroscience Chalk Talk, May 2016. Philadelphia, PA, USA.

Continuing Education

Grant Proposal Success Group — Oct 2022 – June 2024
Academic Training and Outreach Programs, The Children’s Hospital of Philadelphia, PA, USA

Neuroscience Grants Club 2020 – July 2024
Intellectual & Developmental Disabilities Research Center (IDDRC), Neuroscience Affinity Group,
The Children's Hospital of Philadelphia, PA, USA

Preparing for College Teaching in STEM Feb – April 2024
Center for Excellence in Teaching, Learning, & Innovation, University of Pennsylvania, Philadelphia, PA, USA

Tutorials in Genomics & Bioinformatics: RNA Sequencing November 2023
Cold Spring Harbor Laboratory, NY, USA

Project Management One-Day Workshop November 2022
Skill Path, The Children's Hospital of Philadelphia, PA, USA

Effective and Inclusive Mentoring Workshop April 2021
Center for Teaching and Learning, University of Pennsylvania, Philadelphia, PA, USA

Principles of Scientific Teaching Workshop May 2020
Academic Training and Outreach Programs, The Children's Hospital of Philadelphia, PA, USA

Preparing for Academic Teaching June 2019
Academic Training and Outreach Programs, The Children's Hospital of Philadelphia, PA, USA

Active Learning in STEM Classes July 2018
Center for Teaching and Learning, University of Pennsylvania, Philadelphia, PA, USA

Graduate Writing Workshop for International Students April 2018
English Language Programs, University of Pennsylvania Philadelphia, PA, USA

Ethics of Peer Review: A Guide for Manuscript Reviewers September 2017
Biomedical Postdoctoral Programs, University of Pennsylvania, Philadelphia, PA, USA

Building Language Skills and Strategies for Successful Aug-Sept 2016
Communication in the 21st Century
English Language & Biomedical Postdoctoral Programs, University of Pennsylvania, Philadelphia, PA, USA

Scientific Writing for Non-Native Speakers of English April 2016
The Children's Hospital of Philadelphia, Philadelphia, PA, USA

Strategically Speaking: Building Fluency for Confident Communication Jan-Mar 2016
English Language & Biomedical Postdoctoral Programs, University of Pennsylvania, Philadelphia, PA, USA

Manuscript and grant writing & Effective poster or talk preparation July 2014
9th FENS Forum of Neuroscience, Milan, Italy

8th IBRO Canadian School of Neuroscience Development and Plasticity May 2014
International Brain Research Organization & McGill University, Montreal, Canada

Glia/Immune Interactions, Pathophysiological Mechanisms of Neurodegeneration March 2014
and Targets for Therapeutics
Pre-meeting Workshop, American Society for Neurochemistry, Long Beach, CA, USA

Neurochemistry of Glia-Neuron Interaction April 2013
12th ISN Advanced School of Neurochemistry
International Society for Neurochemistry, Chichén Itzá, Yucatán, Mexico

Intra and Intercellular Communication in the Nervous System, November 2011
III Advanced School of Neuroscience. Institut de Neurociencies, Universitat Autonoma de Barcelona,
Universidad Autonoma de Querétaro & Cinvestav-IPN, Mexico City, Mexico

Signal Transduction in the Central Nervous System Facts and Principles Oct-Nov 2010
II IBRO-LARC School of Neuroscience in Mexico City
International Brain Research Organization & Cinvestav-IPN, Mexico City, Mexico

Workshop of Immunohistochemistry May 2010
Diagno Cell – Bio SB, Mexico City, Mexico.

Neurotransmitter Receptors. IBRO-LARC Advanced School Oct-Nov 2009
International Brain Research Organization & Cinvestav-IPN, Mexico City, Mexico

Professional Affiliations

Member, Society for Neuroscience (SfN) since 2010
Member, American Society for Neurochemistry (ASN) since 2012
Member, International Society for Neurochemistry (ISN) since 2012
Member, SACNAS (Advancing Chicanos/Hispanics & Native Americans in Science) since 2020

Academic Service & Leadership

Ad Hoc Reviewer, Front. in Neurosci., Front. Hum. Neurosci., Front. Cell Neurosci., British J. Pharm.,
Neurochem. Res., ASN Neuro, and PLOS ONE 2015 – present
Member, International Society of Neurochemistry Travel Award Committee 2022 – present
Organizer, Philadelphia Bioscience Symposium “INSPIRE” 2023 – 2024
Panelist, Researchers of the Future, CHOP & Santa Casa de Sao Paulo School of
Medical Sciences 2024
Panelist, Hispanic Heritage Celebration, Cell & Developmental Biology & Penn SACNAS 2023
Volunteer, CHOP Science Academy 2023 – 2024
Poster Judge, CRISSP (The CHOP Research Institute Summer Scholars Program) 2021 – 2023
Guest Editor, Frontiers in Neuroscience 2021 – 2022
Panelist, Motherhood & Science: Discussions and Reflections, CHOP 2022
Member and Circle Lead, Mentoring Circles organized by
Biomedical Postdoctoral Council - Diversity Committee, UPenn 2021
Program Committee, ASN 2020/2021 Annual Meeting 2019 – 2021
Evaluator, Biomedical Postdoctoral Council Research Symposium Abstracts 2019
Evaluator, Abroad Postdoctoral Training Grants, CONACYT Mexico 2019
Educational Outreach, Girls Advancing in STEM, lab tour and science demonstration 2018
Lead of Social Medial, Young Investigator Advisory Committee, ASN 2015 – 2021