Bistra Iordanova, PhD

Assistant Professor
Department of Bioengineering
Swanson School of Engineering
University of Pittsburgh
Pittsburgh, Pennsylvania

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Citizenship: United States
Birthplace: Veliko Tarnovo, Bulgaria
Children: Zora Bogomila, 2011 and Yana Kalina, 2016

EDUCATION

Ph.D. Biophysics and Biological Sciences, Carnegie Mellon University and Center for Neural Basis of Cognition, Pittsburgh, PA — 2011
B.S. Mathematics and Biology, City College of San Francisco, Senior year transfer to University of California at Berkeley, CA — 2004
M.A. Psychopathology and Linguistics, Sofia University, Bulgaria — 1998

APPOINTMENTS

Assistant Professor, Department of Bioengineering, Swanson School of Engineering, University of Pittsburgh — 2022-present
Research Assistant Professor, Department of Bioengineering, Swanson School of Engineering, University of Pittsburgh — 2017-2022
Postdoctoral Associate, Department of Radiology, School of Medicine, University of Pittsburgh, Dr. Seong Gi Kim. — 2012-2017
Graduate Research Associate, Department of Biological Sciences, Center for Neural Basis of Cognition, Carnegie Mellon University, Dr. Eric Ahrens. — 2005-2011
Research Associate, Departments of Radiology and Bioengineering, UC San Francisco, Dr. Mike Weiner, and Dr. Colin Studholme — 2003-2005
Research Fellow, Department of Vision Science, UC Berkeley and Helen Wills Neuroscience Institute CA, Dr. Young Dan — 2003-2003
Teaching Assistant, City College of San Francisco, San Francisco, CA Calculus and Linear Algebra, Cellular and Molecular Biology — 2001-2003

AWARDS AND HONORS

Trans-Disciplinary Collaboration Pilot Award ($83,050) — 2025 - 2026
NIH NINDS R01 ($2.6 million) — 2020 - 2025
Alzheimer's Association Research Fellowship ($175, 000) — 2017 - 2021
Alzheimer's Disease Research Center Seed Grant ($25,000) — 2019 - 2020
Brain Institute MR Brain Imaging Development Seed ($50,000) — 2018
Young Investigator Award, Royal Society for Brain Imaging ($3,000) — 2017
NINDS T32 Training Fellowship, Neurobiology of Neurological Disease — 2016 - 2017
Alzheimer's Imaging Consortium Fellowship ($2,000) — 2016
International Society for MRI in Medicine *Summa Cum Laude* Award — 2013
National Science Foundation Graduate Research Fellowship (NSF GRF) — 2007 - 2011
Academic Excellence Award, Carnegie Mellon University, Pittsburgh, PA ($2,000) — 2005
Biology Transfer Consortium Fellowship, UC Berkeley, Berkeley, CA ($5,000) — 2003

FUNDING

Current Research Support

NIH NINDS R01 **Role: PI** **$2,581,762**
Project period: 2020-2025, Code: 1RF1NS116450-01
Title: "Neurovascular and metabolic sex differences in contributions to cognitive impairment and dementia including Alzheimer's disease" - The goal of this project is to deliver an integrative view on sex differences in dynamic neurovascular coupling and real time neuroenergetics in rodent dementia models, particularly Alzheimer's disease. It will allow earlier diagnosis of cognitive decline and dementia on a sex-specific timeline, it will improve personalized medicine and provide more accurate biomarkers for treatment.

Trans-Disciplinary Collaboration Pilot Award **Role: PI / MPI with Rebecca Deek** **$83,050**
Project period: 2025-2026, CTSI/SSOE/SPH
Title: "Identifying inflammatory biomarkers of dementia via multimodal integration of neuroimaging and omics data" – The goal of this project is to 1) collect data across several domains, *in vivo* brain cell imaging, gene expression in the same cells, and proteins from blood in the same animals and 2) develop statistical and machine learning models that can identify axes of large, shared variations across species and domains. These axes can serve as therapeutic targets, if they can be altered, or as biomarkers if they are accessible for non-invasive quantification.

Completed Research Support

Alzheimer's Association Research Fellowship **Role: PI** **$175,000**
Project period: 2018-2021, Code: AARF-17-504501
Title: "Relationship between Cerebral Amyloid Angiopathy and Neurovascular Deficits"
Alzheimer's Disease Research Center seed grant **Role: PI** **$25,000**
Project period: 2018-2020, Code: ADRC NIA P50 AG005133-36.1
Title: "Sex differences in vascular contributions to Alzheimer's disease"
NINDS T32 NS 86749 Training Fellowship, Neurobiology of Neurological Disease 2016-2017
Title: "Effects of cerebral amyloid angiopathy on blood flow and oxygen metabolism"
National Science Foundation Graduate Research Fellowship (NSF GRF) 2007-2011
Title: "Magnetic Resonance Imaging of gene expression in the brain"

RESEARCH

My research focuses on the interactions between neurons, astrocytes, immune cells, and brain vessels to assure a proper blood supply to activated brain areas, a phenomenon commonly referred to "neurovascular coupling". The underlying cellular mechanisms and signaling mediators are poorly understood. This is important because the dysfunction of specific populations of cells could have dramatic repercussions on the local blood flow and the energy supply to the brain. Moreover, several neurological conditions are associated with a cerebrovascular pathology and impaired neurovascular coupling responses. One such condition is Alzheimer's disease, in which the cerebrovascular dysfunction is an integral part of the disease process. Recently, we also began to investigate age and sex-specific changes in brain metabolism and its effects on vascular health that collectively drive differences in etiology, onset, and progression of Alzheimer's disease.

We employ a set of interdisciplinary approaches that combine molecular tools such as optogenetics and reporter protein design with systems-level methods such as *in vivo* multichannel electrophysiology, Magnetic Resonance Imaging, two-photon, and intrinsic optical imaging. We collect multi-modal datasets *in vivo* during brain rest, during sensory stimulation, or under low oxygenation. We use bioimage and signal processing algorithms to identify accessible molecular targets connected to brain dysfunction. The end goal is to provide mechanistic insights into the neurometabolic and vascular deficits of vulnerable populations and motivate tailored therapeutics that can benefit all humans.

1. Zhao Y, Schweitzer N, Jin T, Fitz NF, Koldamova R, and **Iordanova B.** Sex-specific metabolic and vascular trajectories in mouse model of Alzheimer's disease. (*in preparation*).
2. Schweitzer N, Cover C, Aizenstein H, Wu M, Vazquez A, **Iordanova B**. Near-lifespan mesoscopic optical imaging of cerebrovascular function reveals age and sex differences in preclinical Alzheimer's disease model (*in review, Brain Communications*).
3. Schweitzer N, Shen Y, Zhao Y, Cover C, Alam MS, Deek R, Aizenstein H, Wu M, Koldamova R, Vazquez A, Fitz N, and **Iordanova B.** Linking trajectories of cerebrovascular remodeling and dysfunction to cross-species brain vessel transcriptome in Alzheimer's disease. (*in review, Nature Aging*).
4. **Iordanova B**, Toader A, Alexander H, Manole MD and Vazquez AL. Neurometabolic coupling exposes divergent trajectories of evoked and resting state brain activity after pediatric cardiac arrest (*in review, JCBFM*).
5. Shen Y, Schweitzer N, Cover C, Vazquez AL and **Iordanova B.** Red blood cell velocity in brain capillaries is associated with cerebral amyloid angiopathy load. Biomedical Optics (2024).
6. Schweitzer N, Son SJ, Thurston R, Li J, Chen CL, Howard Aizenstein, Yang S, **Iordanova B**, .. Minjie Wu. Sex-Specific risk factors and clinical dementia outcomes for white matter hyperintensities in a large South Korean cohort. Alzheimer's Research & Therapy (2024)
7. Schweitzer N, Son SJ, Aizenstein H, Yang S, **Iordanova B**,.. Minjie Wu. Higher HbA1c is associated with greater two-year progression of white matter hyperintensities. *Diabetes*. Jan 11 (2024).
8. Schweitzer N, Li J, Thurston R, Lopresti B, Klunk W, Snitz B, Tudorascu D, Cohen A, Kamboh M, Halligan-Eddy E, **Iordanova B**, Villemagne V, Aizenstein H and Wu M. Sex-dependent alterations in hippocampal connectivity are linked to cerebrovascular and amyloid pathologies in normal aging. *Alzheimer's Dement*. 20: 914–924 (2024).
9. Li J, Stetten D, Schweitzer N, Shi Z, Ibrahim T, Yang S, **Iordanova B**, Aizenstein HJ and Wu M. Age- and Sex-Related Morphological Changes in Cerebral Blood Vessels: a 7T TOF MRA Study. *Alzheimer's Dement*. (2023)
10. Wu M, Schweitzer N, **Iordanova B**, Halligan-Eddy E, Tudorascu DL, Mathis CA, Lopresti BJ, Kamboh MI, Cohen AD, Snitz BE, Klunk WE, Aizenstein HJ. In Pre-Clinical AD Small Vessel Disease is associated with altered hippocampal connectivity and atrophy. *Am J Geriatric Psychiatry.* (2023).
11. Oghifobibi O, Toader A, Nicholas M, Nelson B, Wolf M, Kline A, Nouraie S, Bondi C, **Iordanova B,** Clark R, Bayir H, Loughran P, Watkins S, Croix C, Kochanek P, Vazquez A, Manole M. Resuscitation with epinephrine worsens capillary no-reflow after experimental pediatric cardiac arrest: *in vivo* multiphoton microscopy evaluation. *J Cereb Blood Flow Metabolism*. Dec 42(12):2255-2269. *(2022*).
12. Fitz N, Nam K, Wolfe C, Letronne F, Playso B, **Iordanova B**, Kozai T, Biedrzycki R, Kagan V, Tyurina Y, Han X, Lefterov I, Koldamova R. Phospholipids of APOE lipoproteins activate microglia in an isoform-specific manner in preclinical models of Alzheimer's disease. *Nature Communications*. Jun 7;12(1):3416 (2021)
13. Poplawsky AJ, **Iordanova B**, Vazquez AL, Kim SG, Fukuda M. Postsynaptic activity of inhibitory neurons evokes hemodynamic fMRI responses. *Neuroimage.* Jan 15; 225:117457. (2020)
14. **Iordanova B**, Fukuda M, Klunk W, Vazquez AL. Vascular and metabolic dysfunctions in APP/PS1 mouse model of Alzheimer's disease. *J Cereb Blood Flow Metabolism.* Jul 1(14), (2019).
15. **Iordanova B,** Vazquez A, Kozai T, Fukuda H, Kim SG. Optogenetic investigation of the variable neurovascular coupling along the interhemispheric circuits. *J Cereb Blood Flow Metabolism.* Apr; 38(4):627-640. (2018).

16. Jin T, **Iordanova B**, Hitchens KT, Modo M, Wang P, Mehrens H, Kim SG. Chemical exchange-sensitive spin-lock MRI of glucose and analogs in brain tumors. *Magn Reson Med* Aug;80(2):488-495. (2018).
17. **Iordanova B**, Li L, Clark RS, Manole MD. Alterations in cerebral blood flow after resuscitation from cardiac arrest. *Frontiers in Pediatrics* Aug 16;5:174 (2017).
18. **Iordanova B**, Murphy MC, Klunk WE and Vazquez AL. In vivo NADH fluorescence imaging of double transgenic Alzheimer's Disease mice reveals chronic tissue hypoxia. *Alzheimer's & Dementia* 12(7): P1047-P1048. (2016).
19. **Iordanova B,** Vazquez AL, Poplawsky A, Fukuda M, Kim SG. Neural and hemodynamic responses to optogenetic and sensory stimulation in the rat somatosensory cortex. *J Cereb Blood Flow Metabolism.* Jun;35(6):922-32. (2015).
20. **Iordanova B**, Hitchens TK, Robison C, Ahrens ET. Engineered mitochondrial ferritin as a magnetic resonance imaging reporter in mouse olfactory epithelium. *PLoS One.* Aug 30;8(8) (2013).
21. **Iordanova B**, Goins WF, Clawson DS, Hitchens TK, E.T. Ahrens ET. Quantification of HSV1-mediated expression of the ferritin MRI reporter in the mouse brain. *Gene Ther*. Jun; 20(6):589-96. (2013).
22. **Iordanova B,** and Ahrens ET. *In vivo* magnetic resonance imaging of ferritin-based reporter visualizes native neuroblast migration. *Neuroimage.* Jan 16;59(2):1004-12 (2012).
23. **Iordanova B** and Ahrens ET. Chapter 26: MR reporter gene imaging of cancer. Molecular Imaging Probes for Cancer Research. Editor: Xiaoyuan Chen (NIH, USA). WSPC; 1 ed. (April 28, 2012).
24. **Iordanova B**, Robison CS, Goins WF, Ahrens ET. Single chain ferritin chimera as an improved MRI gene reporter. *Prilozi*. 31(2):151-5 (2010).
25. **Iordanova B**, Robison CS, Ahrens ET. Design and characterization of a chimeric ferritin with enhanced iron loading and transverse NMR relaxation rate. *J Biol Inorg Chem.* 15(6):957-65 (2010).
26. **Iordanova B**, Rosenbaum D, Norman D, Weiner M, Studholme C. MR imaging anatomy in neurodegeneration: a robust volumetric parcellation method of the frontal lobe gyri with quantitative validation in patients with dementia. *Am J Neuroradiol*. Sep;27(8):1747-54 (2006).
27. Rousseau F, Glenn OA, **Iordanova B**, Rodriguez-Carranza C, Vigneron DB, Barkovich JA, Studholme C. Registration-based approach for reconstruction of high-resolution in utero fetal MR brain images. *Acad Radiol*. Sep;13(9):1072-8 (2006).
28. Studholme C, Drapaca C, **Iordanova B**, Cardenas V. Deformation-based mapping of volume change from serial brain MRI in the presence of local tissue contrast change. *IEEE Trans Med Imaging.* May; 25:626-39 (2006).
29. Rodriguez-Carranza C, Rousseau F, **Iordanova B**, Glenn O., Vigneron D, Barkovich J, Studholme C. An ISO-surface folding analysis method applied to premature neonatal brain development *Proc. SPIE Medical Imaging.* Mar (2006).
30. Rousseau F, Glenn O, **Iordanova B**, Rodríguez-Carranza C, Vigneron D, Barkovich J, Studholme C. A novel approach to high resolution fetal brain MR imaging. *Med Image Comput Comput Assist Interv*. 548-555. (2005).

SCIENTIFIC MEETINGS – POSTERS AND ORAL PRESENATIONS

1. Zhao Y, Jin T, Fitz N, Yi Lu, Koldamova R, **Iordanova B.** "Sex-specific metabolic and vascular brain aging in preclinical models of dementia." AAIC Toronto, Canada (July 27 – 31, 2025).
2. Schweitzer N, Shen Y, Zhao Y, Cover C, Alam M, Deek R, Aizenstein H, Wu M, Fitz N, Koldamova R, Vazquez A, **Iordanova B.** "Linking functional trajectories of cerebrovascular dysfunction to the vessel transcriptome in preclinical models of dementia." BRAIN International Conference, Seul, South Korea, (June 1-4, 2025).
3. Hunter E, **Iordanova B**, Li J, Aizenstein H, Wu M. "Unsupervised anomaly detection in elderly brain MRI using a 3D perceptual autoencoder" OHBM Annual Conference, Brisbane, Australia, (June 24-28, 2025).
4. Hunter E, Zhan L, Aizenstein H, Wu M and **Iordanova B. "**Combining susceptibility mapping, water diffusion, and brain network measures to analyze white matter integrity in AD mouse model." International Society for Magnetic Resonance in Medicine (ISMRM) Annual Meeting, Honolulu, Hawaii, (May 10-15, 2025).
5. Schweitzer N, **Iordanova B**, Thurston R, Lopresti B, Snitz B, Tudorascu D, Cohen A,. Aizenstein H, Wu M. "Astrocyte reactivity explains tau-related effects on hippocampal dysfunction and longitudinal atrophy in preclinical Alzheimer's disease". Human Amyloid Imaging (HAI) Conference, San Juan, Puerto Rico ((Jan 15-17, 2025).
6. Singh A, Shen Y, Schweitzer N, Vazquez A and **Iordanova B.** "Two-photon imaging of red blood cell velocity in small brain vessels of Alzheimer's mice" Biomedical Engineering Society (BMES) meeting. Baltimore, MD (Oct 23-26, 2024).
7. Shi Z, Li J, Huang Y, Schweitzer N, **Iordanova B**, Ibrahim T, Yang S, Stetten G, Aizenstein H, Wu M "Exploring age-related morphological changes in cerebral arteries: a 7T TOF MRA study" OHBM Seoul, Korea (Jun 23-27, 2024).
8. Schweitzer N, Thurston R, Lopresti B, Klunk W, Snitz B, **Iordanova B**, Villemagne V, Aizenstein H, Wu M. "Exploring the interplay of plasma phosphorylated tau with GFAP, sex on hippocampal connectivity in preclinical Alzheimer's Disease". OHBM Seoul, Korea (Jun 23-27, 2024).
9. Schweitzer N, Son SJ, Fitz N, **Iordanova B**, Aizenstein H, Wu M "Differentially expressed proteins underpinning diabetes-driven white matter hyperintensity progression". OHBM Seoul, Korea (Jun 23-27, 2024).
10. Shen Y, Schweitzer N, Cover C, Vazquez A and **Iordanova B.** "Red blood cell velocity in brain capillaries is associated with cerebral amyloid angiopathy load". Optica Biophotonics Congress: Biomedical Optics, Fort Lauderdale, FL (7-10 Apr, 2024).
11. Hunter E, Zhan L, Zhao Y, Wu M, Aizenstein H, and **Iordanova B.** "Analyzing effects of cerebral microbleeds on brain connectivity in Alzheimer's disease". Society for Neuroscience Meeting, Washington, DC (11-15 Oct, 2024).
12. Shen Y, Vazquez A, **Iordanova B.** "Cerebral Capillary transit-time heterogeneity estimation with mesoscopic imaging". Society for Neuroscience Meeting, Washington, DC (11-15 Oct, 2023).
13. Zhao Y, Jin T, Fitz N, Lu Y, Koldamova R, and **Iordanova B.** "Sex differences in brain creatine of Alzheimer's disease mouse model." Society for Neuroscience Meeting, Washington, DC (11-15 Oct, 2023).
14. Schweitzer N, Zhao Y, Cover C, Wu M, Aizenstein H, Vazquez A, and **Iordanova B.** "Cerebrovascular tortuosity as a potential early biomarker in Alzheimer's Disease – optical and MRI study in a mouse model." Society for Neuroscience Meeting, Washington, DC (11-15 Oct, 2023).
15. Zhao Y, Jin T, Fitz NF, Koldamova R, and **Iordanova B**. "Sex differences in the brain phosphagen energy system in Alzheimer's disease mouse model". 31st International Symposium on Cerebral Blood Flow and Metabolism 2023 in Brisbane, Australia (12 - 15 June 2023)

16. Li J, Stetten G, Schweitzer N, Ibrahim T, **Iordanova B**, Aizenstein H, Wu M. “Vessel Mapper - a robust vessel segmentation algorithm for 3D images” Annual Meeting of the Organization for Human Brain Mapping in Montreal, Quebec, Canada (July 22 - 26, 2023)
17. Li J, Schweitzer N, Z Shi Z, Ibrahim T, Yang S, **Iordanova B**, Aizenstein H, Wu M. “Age- and sex-related morphological changes in cerebral blood vessels: a 7T TOF MRA Study” (Alzheimer's Association International Conference in Amsterdam, Netherlands (Jul 16 – 20, 2023).
18. Schweitzer N, Jinghang L, Lopresti B, Klunk B, Snitz B, Tudorascu D, Cohen A, Kamboh I, Halligan E, Villemagne V, **Iordanova B**, Aizenstein H, Wu M. “Risk architecture for altered hippocampal connectivity in normal aging are different between men and women”. Alzheimer's Association International Conference in Amsterdam, Netherlands (Jul 16 – 20, 2023).
19. Hunter E, Foley L, Zhao Y, Aizenstein H, Wu M, **Iordanova B.** “Examining T2* relaxometry in diffusion tensor space to quantify cerebral microbleeds in Alzheimer’s disease mouse model”. International Society for Magnetic Resonance in Medicine 23rd Meeting in Toronto, Canada (June 3 - 8, 2023)
20. Zhao Y, Jin T, Fitz NF, Koldamova R, and **Iordanova B. “**Sex-specific decoupling of cerebral blood flow and glucose metabolism in Alzheimer’s disease mouse model”. Alzheimer's Association International Conference in San Diego, CA (Jul 31 – Aug 4, 2022).
21. Schweitzer N, Vazquez AL, Wu M, Aizenstein H, and **Iordanova B.** “Age and sex-specific neurovascular dysfunctions in Alzheimer’s disease mouse model”. Alzheimer’s Disease & Related Disorders Meeting, (June 16, 2022)
22. Schweitzer N, Vazquez AL, Wu M, Aizenstein H, and **Iordanova B.** “Neurovascular dysfunctions in mouse models of Alzheimer’s Disease”. Psychiatry Research Day (June 9, 2022)
23. Schweitzer N, Cover C, Wu M, Aizenstein H, Vazquez A, and **Iordanova B.** “Sex differences in vascular reactivity of APP/PS1 mouse model of Alzheimer’s disease”. The 30th BRAIN & BRAIN PET International Symposium in Glasgow, Scotland, (May 29-June 1, 2022)
24. Zhao Y, Jin T, Fitz NF, Koldamova R, Vazquez AL, and **Iordanova B. “**Sex-specific cerebral blood flow trajectories in mouse models of Alzheimer’s Disease”. Alzheimer's Association International Conference in Denver, CO (Jul 26-30, 2021).
25. Schweitzer N, Farhat N, Wu M, Kofler J, Berardinelli J, Ibrahim T, **Iordanova B**, and Aizenstein HJ. A novel method for tracking the progression of WMHs through the alignment of premortem to postmortem MRI and histopathology. Alzheimer's Imaging Consortium, (July 26-30, 2021).
26. Toader A, **Iordanova B**, Kochanek PM, Alexander H, Fukuda M, Li L, Clark R, Manole M and Vazquez A. “In vivo assessment of neuronal and metabolic activity in the cortex after pediatric cardiac arrest”. Pediatric Academic Societies Meeting Philadelphia, PA (April 29-May 6th, 2020).
27. Fukuda M, Poplawsky A, **Iordanova B**, Vazquez AL and Kim SG. “Contributions of GABAergic neurons to neurovascular coupling in the olfactory bulb”. 42nd Annual Meeting of the Japan Neuroscience Society in Niigata, Japan (July 25-28, 2019).
28. **Iordanova B**, Fukuda M, Klunk W and Vazquez AL. “Vascular and metabolic dysfunctions in APP/PS1 mouse model of Alzheimer’s Disease” The 29th International Symposium on Cerebral Blood Flow, Metabolism and Function in Yokohama, Japan (July 4-7, 2019).
29. Fukuda M, Poplawsky A, **Iordanova B**, Vazquez AL; Kim SG. “Coupling of neuronal activity to blood flow in dendrodendritic synapses is mediated by postsynaptic GABAergic cells in olfactory bulb” The 29th International Symposium on Cerebral Blood Flow, Metabolism and Function in Yokohama, Japan (July 4-7, 2019).
30. **Iordanova B**, Toader A, Kochanek P, Alexander H, Fukuda M, Li L, Clark R, Manole MD, Vazquez AL. *“In vivo* assessment of cortical neural and metabolic activity after pediatric cardiac arrest”. 15th Annual Rehabilitation Institute Research Day, Pittsburgh, PA (May 22, 2019).
31. **Iordanova B**, Klunk W, Vazques AL. “Deficiencies in cerebrovascular response and tissue oxygenation of transgenic AD mice” McGowan Institute for Regeneration Medicine annual retreat in Pittsburgh, PA (March 11-12, 2019).

32. Lefterov I, Letronne F, **Iordanova B**, Fitz NF, Wolfe C, Nam KN, Playso B, Kozai TDY, Koldamova R. “Effect of APOE lipoproteins on microglial response to intracranial infusion of Aβ - *in vivo* two-photon imaging and transcriptomic analysis”. Society for Neuroscience Meeting, *San Diego*, CA. (Nov 3-7, 2018)
33. **Iordanova B**, Poplawsky AJ, Kozai TDY, Fukuda M, Kim SG and Vazquez A. “Left-right brain connectivity - how cells drive MRI functional signals” Brain Day, University of Pittsburgh, Brain Institute, Pittsburgh, PA. (October 25, 2018)**.**
34. **Iordanova B,** Poplawsky AJ, Fukuda H, Vazquez A. **“**Neurovascular control along the interhemispheric circuits”, The Royal Society meeting on Interpreting BOLD in Christ Church, Oxford, UK. (Sep 9-11, 2018).
35. **Iordanova B**, Klunk W and Vazquez A. “Hypercapnia exposes deficiencies in cerebrovascular response and tissue oxygenation of transgenic AD mice”, Alzheimer's Association International Conference in Chicago, MI (July 22-26, 2018).
36. Koldamova R, Lefterov I, Fitz N, Nam KN**,** Wolfe C, **Iordanova B**. “Effect of Apoe Isoform on Microglial Response to Amyloid-Beta”, Alzheimer's Association International Conference in Chicago, MI (July 22-26, 2018)
37. Poplawsky AJ, Fukuda H, **Iordanova B**, Vazquez A, Kang BM, Kim J, Suh M, Kim SG. “What layer-specific fMRI responses in the rat olfactory bulb tell us about vascular regulation, hemodynamic spread, and the role of GABA cells in neurovascular coupling”. 47th Society for Neuroscience Meeting in Washington, DC. (Nov 11-15, 2017).
38. **Iordanova B**, Vazquez AL. “*In vivo* NADH fluorescence imaging of double transgenic AD mice reveals chronic tissue hypoxia”. Brain Day, University of Pittsburgh, Brain Institute, Pittsburgh, PA. (October 26, 2017).
39. **Iordanova B**, “Alzheimer's Disease – Neuroimaging, Biomarkers and Beyond”, Symposium on Aging and Alzheimer's Disease: Opportunities for Therapeutic Interventions hosted by Alzheimer's Association and University of Pittsburgh in Varna, Bulgaria (October 19-20, 2017).
40. **Iordanova B**, Kochanek PM, Alexander H, Fukuda M, Li L, Clark RSB, Manole MD, Vazquez AL. “*In vivo* Assessment of Cortical Neural and Metabolic Activity After Pediatric Cardiac Arrest”, Brain 28th Symposium on Cerebral Blood Flow, Metabolism and Function. Berlin, Germany. (April 1-4, 2017).
41. **Iordanova B**, Kochanek PM, Alexander H, Fukuda M, Li L, Clark RSB, Manole MD , Vazquez AL. “Cortical Neural and Metabolic Activity After Pediatric Cardiac Arrest”, 15th Annual Safar Center Symposium in Pittsburgh, PA (May 22-23, 2017).
42. **Iordanova B**, Murphy MC, Klunk WE and Vazquez AL. “*In vivo* NADH fluorescence imaging of double transgenic Alzheimer’s Disease mice reveals chronic tissue hypoxia”. Alzheimer’s Association International Conference 2016 in Toronto, Canada (Jul 24-28, 2016).
43. Jin T, **Iordanova B**, Wang P, and Kim SG. “Chemical exchange-sensitive spin-lock MRI of glucose and deoxyglucose in brain tumors” International Society for MRI in Medicine 24th Scientific Meeting in Singapore, (7-13 May, 2016)
44. Jin T, **Iordanova B**, Wang P, and Kim SG**. “**Chemical Exchange-Sensitive Spin-Lock MRI of Glucose and Deoxyglucose in Brain Tumors”. PENN-CEST Translational Imaging Symposium in Philadelphia, PA (Oct 25-28, 2015).
45. **Iordanova B**, Vazquez AL, Poplawsky AJ, Kozai TD, Fukuda M, Murphy M and Kim SG. “Optogenetic control of hemodynamic response in rat somatosensory cortex - fMRI and optical study” International Society for Magnetic Resonance in Medicine 23rd Meeting in Milan, Italy. (May 10-16, 2014).
46. **Iordanova B**, Vazquez AL, Poplawsky AJ, Kozai TD, Fukuda M and Kim SG. “Optogenetic control of neurovascular coupling along the transcallosal circuits in rat somatosensory cortex” SFN scientific meeting, *San Diego*, CA. (Nov 9-13, 2013).
47. **Iordanova B**, Hitchens TK, Robison C, Pusateri LK, Ahrens ET. “Mitochondrial ferritin with cytoplasmic localization as an MRI reporter in olfactory sensory neurons”. ISMRM 20th Scientific Meeting in Melbourne, Australia (5-11 May, 2012).

48. **Iordanova B** and Ahrens ET. "*In vivo* magnetic resonance imaging of ferritin-based reporter visualizes native neuroblast migration." ISMRM 19th Scientific Meeting in Montréal, Québec, Canada. (7-13 May, 2011).
49. **Iordanova B** and Ahrens ET. "Chimeric ferritin as an MRI reporter gene in the mouse brain." Gordon research conference *In Vivo* Magnetic Resonance in Andover, NH. (25-30 July, 2010).
50. **Iordanova B**, Robison C and Ahrens ET. "Chimeric ferritin as a reporter for MRI" ISMRM 17th Scientific Meeting in Honolulu, Hawaii, HI. (18-24 April, 2009).
51. **Iordanova B**, Robison C, Goins WF and Ahrens ET. "MRI Transverse Relaxation Rate Correlates with Number of Viral Particles Expressing H-Ferritin in the CNS." ISMRM 16th Scientific Meeting in Toronto, Ontario, Canada. (3-9 May, 2008).
52. **Iordanova B**, Robison C, Goins WF and Ahrens ET. "HSV vector mediated expression of novel MRI reporters. 11th Annual Meeting of the American Society of Gene Therapy in Boston, MA. (May 28-June 1, 2008).
53. Studholme C, Rodriguez-Carranza C, Cardenas V, **Iordanova B**, Miller S, Mukherjee P, Glenn O, Vigneron D, Barkovich A. Deformation Morphometry study of the Influences on the Pattern of Brain Tissue Development in Premature Neonates, Human Brain Mapping in Toronto, Ontario, Canada (April, 2005).

TEACHING

University of Pittsburgh

Instructor (Spring 2025-present) Biomedical Optical Microscopy, BIOENG 1383
Instructor (Fall 2021-present) Quantitative Cellular Neuroscience, BIOENG2585
Instructor (Spring 2019-present) Brain MRI Methods, BIOENG1150
Co-Instructor Dr. Takashi Kozai (Fall 2018-2020) Intro to Neural Interface Engineering, BIOENG1615
Co-Instructor Dr. Aaron Batista (Spring 2018-2021) Quantitative Systems Neuroscience, BIOENG1586
Co-Instructor Dr Aryn Gittis (Fall 2020) Advanced Cellular Neuroscience – Pitt BIOE section CMU3762
Visiting Lecturer (Spring 2023 - present) Neuroimaging for Research in Psychiatry, BIOENG3195
Visiting Lecturer (Spring 2018 - present) Intro to Cell Biology, BIOENG1071, Lance Davidson
Visiting Lecturer (Spring 2018 - present) Neurobiology of Disease, MSNBIO 2005/NROSCI 2078
Visiting Lecturer (Spring 2018 - 2019) Neuroscience for Medical Students, MS-1

Carnegie Mellon University

Teaching Assistant (Spring 2008/Spring 2009) Quantitative Biology for Engineers, Dr Frederick Lanni
Teaching Assistant (Fall 2007) Optical Imaging in Cellular Biology, Dr Alan Waggoner
Grader (Fall 2005/2006) Modern Biology

University of California at Berkeley

Neurobiology mentor (Summer 2003), Helen Wills Neuroscience Institute
Facilitator (Spring 2004), Experimental Methods in Cellular Neuroscience

City College of San Francisco

Undergraduate Teaching Assistant (Fall/Spring 2002-2003) Cellular Biology
Undergraduate Teaching Assistant (Fall/Spring 2000-2002) Calculus for engineers I & II, Linear algebra

Sofia University, Bulgaria

Teaching Assistant (Fall/Spring 1996-1997) Etymology of Slavic languages

GRADUATE AND UNDERGRADUATE TRAINEES

Current PhD students:

1. Yifan Zhao – fifth year PhD student, Bioimaging and signals, Bioengineering Department. Thesis "Sex-specific vascular and metabolic contributions to Alzheimer's Disease".
2. Noah Schweitzer – fifth year PhD student, Bioimaging and signals, Bioengineering Department, co-mentored with Dr Howard Aizenstein. Thesis: "The application of deep learning in understanding white matter damage from cerebral small vessel disease"
3. Yucheng Shen – third year PhD student, Bioimaging and signals, Bioengineering Department.
4. Emani Hunter – third year PhD student, Bioimaging and signals, Bioengineering Department.
5. Saba Gharooni Khorrami – first year PhD student, Neural engineering, Bioengineering Department.

Current Undergraduate students:

1. Arushi Singh, Department of Bioengineering – Project: "Resting State Hemodynamics in Alzheimer's mouse models".

Past students:

1. Thomas Brower, Department of Neuroscience – Project: "Quantification of tissue plaques and cerebral amyloid angiopathy in Alzheimer's mouse models using longitudinal two photon imaging." Currently working on MD at Cornel Medical School
2. Kate Leitholf, Department of Bioengineering – Project: "Analysis of sex-specific structural connectivity in 11.7 Tesla MR diffusion tensor images", current position at RNEL.
3. Danesh Thirukumaran, Department of Bioengineering – Project: "Quantification of cerebral iron accumulation and microbleeds using MR susceptibility weighted imaging in Alzheimer's mouse models", current position at NIH PhD program in neuroscience.
4. Andrew Toader, Electrical and Computer Engineering – Project – "Neurometabolic trajectories of sensory-evoked response and resting state brain connectivity after cardiac arrest resuscitation", current position – Medical Student at Lake Erie College of Osteopathic Medicine

PROFESSIONAL SOCIETIES

International Society for MRI in Medicine (ISMRM)
Society for Neuroscience (SFN)
Association for Women in Science (AWIS)
Society of Women Engineers (SWE)
International Society for Cerebral Blood Flow and Metabolism (ISCBFM)
Optica (formerly OSA)
Neurophotonics - Society of Photographic Instrumentation Engineers (SPIE)

PROFESSIONAL SERVICE

University of Pittsburgh Service:

Co-organizer Neurovascular Coupling Cluster – University of Pittsburgh and Carnegie Mellon collaborative cluster sponsored by CMU Neuroscience Institute
Bioengineering in Psychiatry Seminar Series T32 STEM REP educational outreach
Faculty advisor to the Graduate BME at the Department of Bioengineering
Women in Medicine and Science Yearly Forum - post-doctoral advising committee

SSOE Underrepresented minority programs:

STRIVE program mentor and faculty member.
BRIDGE program faculty member, application reviewer and organization service

US Scientific Study Section Reviewer:
NIH Multiple Etiology Dementia (MED) Federal advisory committee
NIH Special Study Section (ZRG1 MDCN 91) Cellular and Molecular Aspects of the Blood-Brain Barrier and Neurovascular System and Therapeutic Strategies
NIH Study Section (ZRG1 CN-A 81) Special Topics in Clinical Neuroscience
NIH Study Section (BIVT) Brain Imaging, Vision, Bioengineering and Low Vision Technology
NIH Special Study Section to RFA-AG-23-014 Mechanisms of Brain Hypoperfusion in AD/ADRD
NIH NIA ADRC Pittsburgh Brian research annual seed program application reviewer

International External Scientific Reviewer:
Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grants
United Kingdom Medical Research Council – Neurosciences and Mental Health Board; Neurology and neurodegeneration board.

Editorial Board:
Biomedical Optics, Frontiers in Neuroimaging, Neurophotonics - SPIE
Associate editor:
Neurophotonics SPIE, Neurophotonics 2025 Issue Titled
"Understanding brain disease with live imaging"

***Ad hoc* manuscript reviewer:**
Nature Methods, Nature Biomedical Engineering, Neuroimage, Journal of Cerebral Blood Flow and Metabolism (JCBFM), Journal of Alzheimer's Disease, PLOS One, Frontiers in Aging Neuroscience, American Journal of Neuroradiology, Frontiers of Neurology, Frontiers in Neuroimaging

Abstract reviewer and poster judge:
International Society for MRI in Medicine Annual Meeting - poster sessions
Swanson School of Engineering Summer Undergraduate Research Internship (SURI) program
Annual Pitt Bioengineering Day
Annual Carnegie Mellon Forum on Biomedical Engineering

COMMUNITY SERVICE

Volunteer poster judge at Pittsburgh community events:
Annual Pittsburgh Regional Science & Engineering Fair – Member of the Senior Divisions of Math, Engineering and Medicine, Organized by the Carnegie Science Center

Parent volunteer and scientific mentor in Pittsburgh public school system:
Girls of Steel Robotics Club - Building a Pipeline for Girls in STEM – First Lego league challenge
Colfax K-8 chess club, Strong women, Strong girls (SWSG) – guest mentor at Pittsburgh Chapter