

BINU P. THOMAS, PHD

Assistant Professor
Advanced Imaging Research Center
University of Texas Southwestern Medical Center
2201 Inwood Rd. NE 4th flr. Rm.# 112, Dallas, TX 75390

Mobile: (817) 247-8005
Email: binupthom@gmail.com

EDUCATION

Ph.D.	Biomedical Engineering – University of Texas Southwestern Medical Center / University of Texas at Arlington Dissertation Title: MRI Assessment of Brain Vascular Reactivity to Physiological Challenges – Advisor: Hanzhang Lu, PhD	Jul. 2014
M.S.	Biomedical Engineering – University of Texas Southwestern Medical Center/University of Texas at Arlington Thesis Title: Brain Metabolite Concentrations: Software for Automated Reporting – Advisor: James L. Fleckenstein, M. D.	Dec. 2002
B.E.	Biomedical Engineering – University of Mumbai, Mumbai, India	Jul. 1999
Post-doc.	Neuroimaging and neuroscience – University of Texas at Dallas Advisor: Bart Rypma, PhD	Apr. 2018

ACADEMIC APPOINTMENTS

University of Texas Southwestern Medical Center, Dallas, TX (Advanced Imaging Research Center) **Sept. 2020-Present**

Assistant Professor

- Facilitate technical operations for the human MRI core - for three 3T and 7T MRI scanner.
- Troubleshoot technical issues.
- Study brain function in aging, mild cognitive impairment (MCI), Alzheimer's disease (AD), obesity and traumatic brain injury using MRI methods like Arterial Spin Labeling, cerebrovascular reactivity to CO₂ inhalation, functional MRI, cerebral metabolic rate of oxygen (CMRO₂), diffusion tensor imaging (DTI) etc.
- Mentor and advice faculty, post-docs and students at all levels.

Adjunct Assistant Professor - University of Texas at Arlington (Department of Bioengineering) **April. 2018-Present**

PROFESSIONAL POSITIONS

University of Texas Southwestern Medical Center, Dallas, TX (Advanced Imaging Research Center) **Aug. 2014-Sept.2020**

Sr. Research Scientist

- Study brain function in aging, mild cognitive impairment (MCI), Alzheimer's disease (AD) using MRI methods like ASL, CVR, fMRI, CMRO₂, DTI etc.
- Consult and collaborate with investigators on data analysis for neuroimaging research.
- Provide technical direction and assistance to staff to maintain operations of a 7T and three 3T MRI scanners.
- Implement, test MRI pulse sequences and post-processing methods.
- Plan and review projects for the MRI program.
- Train groups to use fMRI peripheral devices like eye tracker, tDCS, hypercapnia/ hyperoxia monitors etc.
- Present research at conferences, publish articles in peer-reviewed journals.

University of Texas Southwestern Medical Center, Dallas, TX (Advanced Imaging Research Center) **Jan. 2010-Aug. 2014**

Graduate Research Assistant

- Worked as a consultant to design and implement MRI studies for 5 groups.
- 6 oral presentations given at international conferences.
- Published 3 first author and 7 co-author papers in reputed scientific journals.
- Performed technical development to improve MRI data acquisition and analysis of brain vascular reactivity to physiological challenges.
- Performed research to evaluate benefits of exercise on brain vascular function, and to understand physiology of diseases such as Mild Cognitive Impairment (MCI), Alzheimer's disease, Tinnitus and Obesity.
- Lead data acquisition and analysis of advanced MRI application techniques in Neuroimaging.

- Developed algorithms for image analysis.
- Effective use of data modelling, time series data analysis and statistical techniques.
- Optimized appropriate imaging parameters for data acquisition on 3 Tesla Philips MRI scanners.
- Support the installation and use of physiology monitoring devices, and MRI ancillary equipment.
- Performed scans using the Philips MRI scanners, well versed with use of MRI scanners.
- Performed tests to assess signal, noise, temporal SNR, quality of MRI images.
- Train and mentor collaborators on MRI physics, and data analysis.

University of Texas Southwestern Medical Center, Dallas, TX (Department of Psychiatry with Carol Tamminga) Mar. 2003-Dec. 2009

Computer programmer III

- Designed clinical imaging studies to evaluate brain function and structure to understand physiology of diseases such as Schizophrenia, Bipolar Disorder and Depression.
- Managed multiple MRI, PET and structural imaging projects. Worked as lead data analyst on all projects.
- Trained faculty, staff and students to analyze MRI images.
- Taught a course on MRI physics and image analysis methods.

Meadows Diagnostic Imaging Center, Dallas, TX (Neuro-radiology Div., Department of Radiology) Oct. 2000-Dec. 2002

Graduate Research Assistant

- Designed and implemented a software that indicates abnormalities in patient brains immediately after an MR Spectroscopy (MRS) scan.
- Software was implemented using VC++ to program the Graphical User Interface (GUI); connectivity to an SQL database was done with JDBC.

HONORS AND AWARDS

- Abstract chosen as hot topic at SFN 2017, lay summary of abstract presented to media Aug. 2017
- Vice President, IEEE-EMBS; University of Texas at Arlington. Sept. 2000-Aug. 2001
- Travel Award for ISMRM Conference. 2014, 2013, 2012, 2011
- Science, Technology, Engineering, and Mathematics scholarship; University of Texas at Arlington. 2014, 2013, 2012, 2011, 2010
- ISMRM Magna Cum Laude award (top 15%) – Oral presentation – International Society for Magnetic Resonance in Medicine 2014
- ISMRM Summa Cum Laude award (top 3%) – Oral presentation 2013
- ISMRM Magna Cum Laude award (top 15%) – Oral presentation 2013, 2012

PRESS RELEASE

- Exercise improves memory, boosts blood flow to brain May. 2020
Study: 1-year workout program shows benefits for older people at risk of dementia
<https://www.utsouthwestern.edu/newsroom/articles/year-2020/exercise-improves-memory-boosts-blood-flow-to-brain.html>

TEACHING

1. Metabolic Imaging course – BME 5375
Basic Principles of Functional MRI Jul. 2023
Basic Principles of Oxygen extraction fraction and cerebral metabolic rate of oxygen consumption Jul. 2023
MRI scan demonstration of functional MRI, oxygen extraction fraction and cerebral metabolic rate of oxygen consumption Jul. 2023

BOOK CHAPTERS

1. Lu H, Thomas BP, Liu P
Cerebrovascular Reactivity (CVR) in Aging, Cognitive Impairment, and Dementia. Cerebrovascular Reactivity, 103-118, 2022.

PUBLICATIONS

36. Hou X, Guo P, Wang P, Liu P, Lin D, Fan H, Li Y, Wei Z, Lin Z, Jiang D, Jin J, Kelly C, Pillai J, Huang J, Pinho M, **Thomas BP**, Welch BG, Park D, Patel VM, Hillis AE, and Lu H, Deep-learning-enabled Brain Hemodynamic Mapping Using Resting-state fMRI. *Digital Medicine* 2023; 6, 116.
35. Turner MP, Zhao Y, Abdelkarim D, Liu P, Spence JS, Hutchison JL, Sivakolundu DK, **Thomas BP**, Hubbard NA, Xu C, Taneja K, Lu H, Rypma B Altered linear coupling between stimulus-evoked blood flow and oxygen metabolism in the aging human brain. *Cerebral Cortex* January 2023; 135-151.
34. Anwar N, Tucker WJ, Puzziferri N, Samuel TJ, Zaha VG, Lingvay I, Almandoz J, Wang J, Gonzales EA, Brothers RM, Nelson MD and **Thomas BP (Senior and corresponding author)** Cognition and brain oxygen metabolism improves after bariatric surgery-induced weight loss: A pilot study. *Front. Endocrinol.* December 2022; 13:954127. doi: 10.3389/fendo.2022.954127.
33. Scheel N., Keller JN, Binder EF, Vidoni ED, Burns JM, **Thomas BP**, Stowe AM, Hynan LS, Kerwin DR, Vongpatanasin W, Rossetti H, Cullum MC, Zhang R, Zhu DC Evaluation of Noise Regression Techniques in Resting-State fMRI Studies Using Data of 434 Older Adults. *Frontiers Neuroscience* October 2022; 16, 1006056.
32. Su P, Liu P, Pinho MC, **Thomas BP**, Qiao Y, Huang J, Welch BG, and Lu H Non-contrast hemodynamic imaging of Moyamoya disease with MR Fingerprinting ASL. *J. of MRI*, February 2022; 88, 116-122
31. **Thomas BP**, Tarumi T, Wang C, Zhu DC, Tomoto T, Cullum MC, Dieppa M, Diaz-Arrastia R, Bell K, Madden C, Zhang R, Ding K (**Corresponding author**) Hippocampal and Rostral Anterior Cingulate Blood Flow is Associated with Affective Symptoms in Chronic Traumatic Brain Injury. *Brain Research* 2021; 1771, 147631
30. Liu P, Liu G, Pinho M, Lin Z, **Thomas BP**, Rundle M, Park DC, Huang J, Welch BG, Lu H Cerebrovascular Reactivity Mapping Using Resting-State BOLD Functional MRI in Healthy Adults and Patients with Moyamoya Disease. *Radiology*, March 2021; 299 (2), 419-425
29. Hubbard NA, Turner MP, Sitek KR, West KL, Kaczmarzyk JR, Himes L, **Thomas BP**, Lu H, Rypma B Resting cerebral oxygen metabolism exhibits archetypal network features. *Human Brain Mapping*, 2021; 42 (7), 1952-1968
28. Taneja K, Liu P, Xu C, Turner M, Zhao Y, Abdelkarim D, **Thomas BP**, Rypma B, Lu H Quantitative Cerebrovascular Reactivity in Normal Aging: Comparison between Phase-Contrast and Arterial Spin Labeling MRI. *Frontiers in Neurology*, 2020; 11, 758
27. **Thomas BP**, Tarumi T, Sheng M, Tseng BY, Womack K, Cullum CM, Rypma B, Zhang R, Lu H. (**Corresponding author**) Brain Perfusion Change in Patients with Mild Cognitive Impairment (MCI) After 12 Months of Aerobic Exercise Training. *Journal of Alzheimer's Disease*, 2020; 75 (2020) 617–631
26. West KL, Sivakolundu DK, Maruthy GB, Zuppichini MD, Liu P., **Thomas BP**, Spence JS, Lu H, Okuda DT, Rypma B Baseline cerebral metabolism predicts fatigue and cognition in Multiple Sclerosis patients. *Neuroimage: Clinical*, 2020; 27, 102281
25. Tiwari V, Daoud EV, Hatanpaa KJ, Gao A, Zhang S, An Z, Ganji SK, Raisanen JM, Lewis CM, Askari P, Baxter J, Levy M, Dimitrov I, **Thomas BP**, Pinho MC, Madden CJ, Pan E, Patel TR, DeBerardinis RJ, Sherry AD, Mickey BE, Malloy CR, Maher EA, Choi C. Glycine by MR spectroscopy is an imaging biomarker of glioma aggressiveness. *Neuro-oncology*, July 2020; 22 (7), 1018-1029
24. **Tucker WJ***, **Thomas BP***, Puzziferri N, Samuel TJ, Zaha VG, Lingvay I, Almandoz J, Wang J, Gonzales EA, Brothers RM, Nelson MD. (*** Co-1st authors**) Impact of bariatric surgery on cerebral vascular reactivity and cognitive function: A non-randomized pilot study. *Pilot Feasibility Stud.* December 2020; 6 (1), 1-13
23. Tarumi T, Rossetti H, **Thomas BP**, Harris T, Tseng BY, Turner M, Wang C, German Z, Martin-Cook K, Stowe AM, Womack KB, Mathews D, Kerwin DR, Hynan L, Diaz-Arrastia R, Lu H, Cullum CM, Zhang R. Exercise Training in Amnesic Mild Cognitive Impairment: A 1-Year Randomized Controlled Trial. *Journal of Alzheimer's Disease*, 2019; 71 (2): 421-433

22. *Taneja K, Lu H, Welch BG, **Thomas BP**, Pinho M, Lin D, Hillis AE, Liu P.*
Evaluation of cerebrovascular reserve in patients with cerebrovascular diseases using resting-state MRI: A feasibility study. *Magnetic Resonance Imaging*, January 2019;59: 46-52
21. *Ding K, Tarumi T, Zhu DC, Tseng BY, **Thomas BP**, Turner M, Repshas J, Kerwin DR, Womack KB, Lu H, Cullum CM, Zhang R.*
Cardiorespiratory Fitness and White Matter Neuronal Fiber Integrity in Mild Cognitive Impairment. *Journal of Alzheimer's Disease*, 2018;61: 729-39
20. *Takashi T, **Thomas BP**, Wang C, Zhang L, Liu J, Turner M, Riley JR, Tangella N, Womack K, Kerwin D, Cullum M, Lu H, Vongpatanasin W, Zhu D, Zhang R.*
Ambulatory Pulse Pressure, Brain Neuronal Fiber Integrity, and Cerebral Blood Flow in Older Adults. *Journal of Cerebral Blood flow and Metabolism*, May 2019; 39 (5): 926-936
19. **Gopal KV***, **Thomas BP***, Nandy R, Mao D, Lu H. (***Co-first author**)
Potential Audiological and MRI Markers of Tinnitus. *Journal of AAA*, September 2017; 28: 742-57.
18. *Hubbard NA, Sanchez AY, Caballero C, Ouyang M, Turner MP, Himes L, Faghihahmadabadi S, **Thomas BP**, Hart J, Jr., Huang H, Okuda DT, Rypma B.*
Evaluation of visual-evoked cerebral metabolic rate of oxygen as a diagnostic marker in multiple sclerosis. *Brain Sciences*, June 2017; 7: 64.
17. *Hubbard NA, Turner MP, Ouyang M, Himes L, **Thomas BP**, Hutchison J, Faghihahmadabadi S, Davis S, Strain J, Spence J, Krawczyk D, Huang H, Lu H, Hart J, Jr., Frohman T, Frohman E, Okuda DT, Rypma B.*
Calibrated Imaging Reveals Altered Grey Matter Metabolism Related to White Matter Microstructure and Symptom Severity in Multiple Sclerosis. *Human Brain Mapping*, July 2017; 38 (11): 5375-5390.
16. **Thomas BP**, Sheng M, Tseng BY, Takashi T, Martin-Cook K, Womack KB, Cullum MC, Levine BD, Zhang R, Lu H.
Reduced global brain metabolism but maintained vascular function in amnesic mild cognitive impairment. *Journal of Cerebral Blood flow and Metabolism*, 2017; 37: 1508-16
15. *Peng S, Ravi H, Sheng M, **Thomas BP**, Lu H.*
Searching for a Truly "Isometabolic" gas challenge in physiological MRI. *Journal of Cerebral Blood flow and Metabolism*, 2017; 37: 715-25
14. *Puziferri N, Zigman JM, **Thomas BP**, Mihalakos P, Gallagher R, Lutter M, Carmody T, Lu H, Tamminga CA.*
Brain Imaging Demonstrates a Reduced Neural Impact of Eating in Obesity. *Obesity*, 2016; 24: 829-36
13. *Ravi H, **Thomas BP**, Peng S, Liu H, Lu H.*
On the optimization of imaging protocol for the mapping of cerebrovascular reactivity (CVR). *Journal of Magnetic Resonance Imaging*, 2016; 43: 661-8
12. **Gopal KV***, **Thomas BP***, Mao D, Lu H. (*** Co-first authors**)
Efficacy of Carnitine in Treatment of Tinnitus: Evidence from Audiological and MRI Measures—A Case Study. *Journal of the American Academy of Audiology*, 2015 March 5; 26: 311-24
11. *Sheng M, Lu H, Liu P, **Thomas BP**, McAdams CJ.*
Cerebral perfusion differences in women currently with and recovered from anorexia nervosa. *Psychiatry Research: Neuroimaging*, 2015 May 30; 232(2): 175-83
10. *Brown ES, Jeon-Slaughter H, Lu H, Jamadar R, Issac S, Shad M, Denniston D, Tamminga C, Nakamura A, **Thomas BP**.*
Hippocampal Volume in Healthy Controls Given 3-Day Stress Doses of Hydrocortisone. *Neuropsychopharmacology*, 2014 December; 40: 1216-21
9. **Thomas BP**, Liu P, Park SC, vanOsch MJP, Lu H.
Cerebrovascular reactivity in the brain white matter: magnitude, temporal characteristics and age effects. *Journal of Cerebral Blood flow and Metabolism*, 2014 February; 34(2): 242-7
8. **Thomas BP**, Liu P, Aslan S, King KS, vanOsch MJP, Lu H.
Physiologic underpinnings of negative BOLD cerebrovascular reactivity in brain ventricles. *Neuroimage*. 2013 December; 83: 505-12
7. **Thomas BP**, Yezhuvath US, Tseng BY, Liu P, Levine BD, Zhang R, and Lu H.
Life-long aerobic exercise preserved baseline cerebral blood flow but reduced vascular reactivity to CO₂. *Journal of Magnetic Resonance Imaging*. 2013 November; 38(5): 1177-83

6. *Brown ES, Lu H, Denniston D, Uh J, **Thomas BP**, Carmody TJ, Auchus RJ, Diaz-Arrastia R, Tamminga CA.* A randomized, placebo-controlled proof-of-concept, crossover trial of phenytoin for hydrocortisone-induced declarative memory changes. *Journal of Affective Disorder*, 2013 Sep 5; 150(2): 551-8
5. *Ileva EI, Bidesi AS, **Thomas BP**, Meda SA, Francis A, Moates AF, Witte B, Keshavan MS, Tamminga CA.* Brain gray matter phenotypes across the psychosis dimension. *Psychiatry Research*. 2012 Oct 30; 204(1): 13-24.
4. *Shad MU, Keshavan MS, Steinberg JL, Mihalakos P, **Thomas BP**, Motes MA, Soares JC, Tamminga CA.* Neurobiology of Self-awareness in schizophrenia: an fMRI study. *Psychiatry Research*. 2012 Apr 4; 138: 113-9
3. *Tamminga CA, **Thomas BP**, Chin R, Mihalakos P, Youens K, Wagner AD, Preston AR.* Hippocampal novelty activations in schizophrenia: disease and medication effects. *Schizophrenia Research*. 2012 April 3; 138(2-3): 157-63
2. *Shad MU, Bidesi AS, Chen LA, **Thomas BP**, Ernst M, Rao U.* Neurobiology of decision-making in adolescents. *Behavioral Brain Research*. 2011 Feb 2; 217(1): 67-76
1. *Shohamy D, Mihalakos P, Chin R, **Thomas BP**, Wagner AD, Tamminga C.* Learning and generalization in schizophrenia: effects of disease and antipsychotic drug treatment. *Biological Psychiatry*. 2010 May 15; 67(10): 926-32

PUBLICATIONS IN PROGRESS

1. *Chan KL, Lu H, Lin Z, Puts NAJ, Henning A, and **Thomas BP**. (2023)* Changes in occipital GABA, glutamate/glutamine concentrations and cerebral oxygen metabolism in response to visual stimulation.

COLLOQUIA AND INVITED TALKS

20. ***Thomas BP**. (2022)* Long term effects of exercise on cerebral physiology. Imaging Cerebral Physiology (ICP) Network webinar, virtual seminar series.
19. *Chan KL, Lu H, Lin Z, Henning A, and **Thomas BP**. (2022)* Changes in occipital GABA, glutamate/glutamine concentrations and cerebral oxygen metabolism in response to visual stimulation. International Society for Magnetic Resonance in Medicine (ISMRM). London, United Kingdom.
18. ***Thomas BP**. (2021)* Assessment of brain function deterioration, and effects of exercise intervention in Mild Cognitive Impairment (MCI) using CBF, CMRO₂, and CVR to CO₂. **Keynote speaker** at Cerebral Autoregulation Research Network (CARNet), Cerebral blood flow virtual seminar series.
17. ***Thomas BP**. (2021)* Deterioration in Brain Function in Aging and Mild Cognitive Impairment: Can Aerobic Exercise Ameliorate it? Department of Internal Medicine, Texas Tech University Health Sciences Center, Lubbock, Texas.
16. ***Thomas BP**. (2020)* Mild Cognitive Impairment: Deterioration in Brain Function. Can Aerobic Exercise Ameliorate it? Department of Radiology and Advanced Imaging Research Center, Faculty Research Day, Univ. of Texas Southwestern Medical Center, Dallas, Texas.
15. ***Thomas BP**. (2019)* Aging and Mild cognitive impairment: Deterioration in brain function. Can aerobic exercise ameliorate it? Department of Radiology, Christian Medical College (CMC), Vellore, Tamil Nadu, India.
14. ***Thomas BP**. (2019)* Mild cognitive impairment: Memory and brain function deficits. Can aerobic exercise ameliorate it? Avid Radiopharmaceuticals, Philadelphia, Pennsylvania.
13. ***Thomas BP**. (2019)* Echo planar imaging and Echo planar time-resolved imaging. Ultra high field imaging meeting, Advanced Imaging Research Center, Dallas, Texas.
12. ***Thomas BP**, Sheng M, Tseng BY, Tarumi T., Martin-Cook K, Womack KB, Cullum M, Levine B, Rypma B, Zhang R, Lu H. (2018)* Global brain oxygen metabolism is reduced but vascular function is intact in amnesic mild cognitive impairment. Society for Neuroscience (SFN). San Diego, California.

11. **Takashi T, Thomas BP, Wang C, Tomoto T, Pasha E, Zhang R. (2018)**
Aerobic Exercise and Cerebral White Matter Integrity in MCI Patients: A 1-Year Randomized Controlled Trial. American College of Sports Medicine (ACSM). Minneapolis, Minnesota.
10. **Thomas BP, Takashi T, Sheng M, Tseng BY, Womack K, Cullum MC, Rypma B, Zhang R, Lu H. (2017)**
One-year aerobic exercise increases regional cerebral blood flow in anterior cingulate cortex: a blinded, randomized trial in patients with amnesic Mild Cognitive Impairment. Society for Neuroscience (SNF). Washington DC.
9. **Thomas BP, Takashi T, Sheng M, Tseng BY, Womack K, Cullum MC, Zhang R, Lu H. (2017)**
One-year aerobic exercise increases regional cerebral blood flow in anterior cingulate cortex: a blinded, randomized trial in patients with amnesic Mild Cognitive Impairment. International Society for Magnetic Resonance in Medicine (ISMRM). Honolulu, Hawaii.
8. **Thomas BP. (2015)**
MRI assessment of Brain vascular reactivity to physiological challenges. Banner Alzheimer's Institute. Phoenix, Arizona.
7. **Thomas BP. (2014)**
MRI assessment of Cerebrovascular reactivity to physiological challenges. Advanced Imaging Research Center, University of Texas Southwestern Medical Center. Dallas, Texas.
6. **Thomas BP, Gopal K, D'Souza M, Mao D, Lu H. (2014)**
Tinnitus is associated with hyperactivity in the frontal lobe and reduced activity in the auditory cortex. International Society for Magnetic Resonance in Medicine (ISMRM). Milan, Italy.
5. **Thomas BP, Liu P, King KS, vanOsch MJP, Lu H. (2013)**
Physiologic underpinnings of negative cerebrovascular reactivity in brain ventricles. International Society for Magnetic Resonance in Medicine (ISMRM). Salt Lake city, Utah.
4. **Thomas BP, Sheng M, Tseng B, Liu P, Martin-Cook K, Cullum M, Weiner M, Levine B, Zhang R, Lu H. (2013)**
Characterization of CMRO2, resting CBF, and cerebrovascular reactivity in patients with very early stage of Alzheimer's disease. International Society for Magnetic Resonance in Medicine (ISMRM). Salt Lake city, Utah.
3. **Thomas BP, Liu P, Park D, van Osch MJP, Lu H. (2012)**
Cerebrovascular reactivity in the brain white matter: magnitude, temporal delays and age effects. International Society for Magnetic Resonance in Medicine (ISMRM). Melbourne, Australia
2. **Thomas BP, Yezhuvath US, Zhang R, Tseng B, Levine B, Lu H. (2011)**
Paradoxically reduced cerebral vascular reactivity in Masters Athletes. International Society for Magnetic Resonance in Medicine (ISMRM). Toronto, Canada
1. **Thomas BP, Chin RB, Youens K, Tamminga CA. (2005)**
Hippocampal activation patterns during novelty detection with successful memory in schizophrenia. International Congress on Schizophrenia Research (ICOSR). Savannah, Georgia

PUBLISHED ABSTRACTS

62. **Morales, J., Wright, B., Guilliod, R., Thakur, B., Kundig, C., Tessler, J., Berry, J., Zhang, R., Thomas, B.P., Levine, B., Bell, K., Pinto, S. (2023)**
Hyperbaric Oxygen Therapy for Persistent Post-Concussion Syndrome: A Double-Blind Randomized Controlled Pilot Study. Poster presented at: Women in Science and Medicine Advisory Committee (WISMAC). Dallas, Texas, USA.
61. **Thomas BP, Mari Z, and Mishra V. (2023)**
3D Multi-Delay pCASL to Understand Perfusion Changes in Patients with Parkinson's disease with Mild Cognitive Impairment. International Congress of Parkinson's disease and Movement Disorders. Copenhagen, Denmark.
60. **Morales J, Wright B, Guilliod R, Thakur B, Kundig C, Tessler J, Berry J, Zhang R, Thomas BP, Levine B, Bell K, Pinto, S. (2023)**
Hyperbaric Oxygen Therapy for Persistent Post-Concussion Syndrome: A Double-Blind Randomized Controlled Pilot Study. Poster presented at: Women in Science and Medicine Advisory Committee (WISMAC); April 5, 2023; Dallas, Texas
59. **Thomas BP, Mari Z, and Mishra V. (2023)**
Pilot investigation of MRI-derived Perfusion measures in cognitively impaired patients with Parkinson's disease. International Association of Parkinsonism and Related Disorders (IAPRD). Chicago, Illinois.

58. Chan KL, Lu H, Lin Z, Henning A, and **Thomas BP**. (2022) Changes in occipital GABA, glutamate/glutamine concentrations and cerebral oxygen metabolism in response to visual stimulation. International Society for Magnetic Resonance in Medicine (ISMRM). London, United Kingdom.
57. Maheen Z, **Thomas BP**, Ma J, Pena P, Chen J, Ratnaker J, Malloy CR, Bartnik-Olson B, and Park JM. (2022) Assessment of human brain pyruvate oxidation using functional hyperpolarized ¹³C MRS. International Society for Magnetic Resonance in Medicine (ISMRM). London, United Kingdom.
56. Anwar N, Tucker WJ, Puzifferri N, Samuel TJ, Zaha VG, Lingvay I, Almandoz J, Wang J, Gonzales EA, Brothers RM, Nelson MD, **Thomas BP**. (2021) Brain Function in Obesity: A Pilot Study to Assess Effects of Bariatric Surgery. International Society for Magnetic Resonance in Medicine (ISMRM). Vancouver, Canada.
55. **Thomas BP**, Wang C, Zhu DC, Tomoto T, Cullum CM, Dieppa M, Diaz-Arrastia R, Bell K, Madden C, Zhang R, Ding K. (2021) Hippocampal and Anterior Cingulate Blood Flow is Associated with Affective Symptoms in Chronic Traumatic Brain Injury. ISMRM. Vancouver, Canada.
54. Zhang B, Zaki A, Dimitrov I, **Thomas BP**, Pfrommer A, Henning A. (2021) Robust decoupling of a 7 Tesla 8-channel loop array for head and cervical spinal cord imaging. ISMRM. Vancouver, Canada.
53. Tarumi T, **Thomas BP**, Wang C, Zhu DC, Tomoto T, Cullum CM, Dieppa M, Diaz-Arrastia R, Bell K, Madden C, Zhang R, Ding K. (2021) Effect of Exercise Training on the Cerebral White Matter Integrity in Chronic Traumatic Brain Injury. Medicine and Science in Sports and Exercise conference.
52. Liu G, Lu H, Li Y, **Thomas BP**, Pinho M, Huang J, Welch BG, Park DC, and Liu P. (2020) Cerebrovascular reactivity mapping using resting-state fMRI: comparison with CO₂-inhalation method in 170 controls and 50 Moyamoya patients. ISMRM virtual conference.
51. Liu P, Welch BG, **Thomas BP**, Li Y, Pinho MC, Huang J, Lu H. (2019) Cerebrovascular Reactivity Predicts Surgical Decisions in Moyamoya Patients. Stroke conference.
50. Zhu DC, Scheel N, **Thomas BP**, Lee P, Wang DJJ, Keller JN, Binder EF, Vidoni ED, Burns JM, Kerwin DR, Vongpatanasin W, Cullum M, Zhang R (2019) Strategies for brain MRI data acquisition, quality control and analysis for the multicenter risk reduction of Alzheimer's disease (RRAD) clinical trial. Alzheimer's Association International conference (AAIC)
49. Liu P, Welch BG, **Thomas BP**, Li Y, Pinho MC, Huang J, and Lu H (2018) Sensitivity and specificity of cerebrovascular reactivity in predicting surgical decisions in Moyamoya patients. ISMRM. Paris, France.
48. **Thomas BP**, Sheng M, Tseng BY, Tarumi T., Martin-Cook K, Womack KB, Cullum M, Levine B, Rypma B, Zhang R, Lu H. (2018) Global brain oxygen metabolism is reduced but vascular function is intact in amnesic mild cognitive impairment. Society for Neuroscience (SFN). San Diego, California.
47. Takashi T, **Thomas BP**, Wang C, Tomoto T, Pasha E, Zhang R. (2018) Aerobic Exercise and Cerebral White Matter Integrity in MCI Patients: A 1-Year Randomized Controlled Trial. American College of Sports Medicine (ACSM). Minneapolis, Minnesota.
46. Tucker WJ, **Thomas BP**, Puzifferri N, Samuel TJ, Zaha VG, Lingvay I, Almandoz J, Brothers RM, Nelson MD. (2018) **(Co-first author)** The impact of bariatric surgery on cerebral vascular reactivity. Experimental Biology. San Diego, California
45. Sivakolundu D, West KL, Himes L, Turner MP, Hubbard NA, **Thomas BP**, Hart J, Frohman E, Okuda D, Rypma B. (2017) Calibrated fMRI Study Reveals Neural-Vascular Uncoupling in the Visual Cortex of Multiple Sclerosis Patients. Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS). Paris, France.
44. West KL, Sivakolundu D, Himes L, Turner MP, **Thomas BP**, Frohman E, Hart J, Okuda D, Rypma B. (2017) Evidence for Neural-Vascular Uncoupling in Multiple Sclerosis: A Calibrated fMRI Study in Motor Cortex. Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS). Paris, France.
43. **Thomas BP**, Takashi T, Sheng M, Tseng BY, Womack K, Cullum MC, Rypma B, Zhang R, Lu H. (2017) One-year aerobic exercise increases regional cerebral blood flow in anterior cingulate cortex: a blinded, randomized trial in patients with amnesic Mild Cognitive Impairment. Society for Neuroscience (SFN). Washington DC.

42. **Thomas BP, Takashi T, Sheng M, Tseng BY, Womack K, Cullum MC, Zhang R, Lu H. (2017)**
One-year aerobic exercise increases regional cerebral blood flow in anterior cingulate cortex: a blinded, randomized trial in patients with amnesic Mild Cognitive Impairment. International Society for Magnetic Resonance in Medicine (ISMRM). Honolulu, Hawaii.
41. *Reading D, Mathews D, Ng Y, Thomas BP, Oz O, Graff J, Yokoo T. (2017)*
Implementation of a Dual Parameter Segmentation Tool for Identification of Brown Adipose Tissue on Magnetic Resonance Imaging. International Society for Magnetic Resonance in Medicine (ISMRM). Honolulu, Hawaii.
40. *Peng SL, Ravi H, Sheng M, Thomas BP, Lu H (2015)*
Searching for a truly " iso-metabolic" gas challenge for the use in calibrated fMRI and cerebrovascular reactivity mapping. ISMRM. Toronto, Canada
39. **Thomas BP, Mishra V, Peng S, Huang H, Lu H. (2015)**
Characterization of Vascular Response in White Matter to Hypercapnia and Hyperoxia. International Society for Magnetic Resonance in Medicine (ISMRM). Toronto, Canada
38. **Thomas BP, Gopal K, D'Souza M, Mao D, Lu H. (2014)**
Tinnitus is associated with hyperactivity in the frontal lobe and reduced activity in the auditory cortex. International Society for Magnetic Resonance in Medicine (ISMRM). Milan, Italy
37. *Brown ES, Jeon-Slaughter H, Lu H, Jamadar R, Thomas S, Shad M, Denniston D, Tamminga CA, Uh J, Nakamura A, Thomas BP. (2014).* Rapid changes in hippocampal volume with Hydrocortisone administration. American College of Neuropsychopharmacology conference.
36. *Stan AD, Bushong D, Thomas BP. (2013)*
Cognitive training in pharmacological enhancement in Schizophrenia. American College of Neuropsychopharmacology conference.
35. **Thomas BP, Liu P, King KS, vanOsch MJP, Lu H. (2013)**
Physiologic underpinnings of negative cerebrovascular reactivity in brain ventricles. International Society for Magnetic Resonance in Medicine (ISMRM). Salt Lake city, Utah
34. **Thomas BP, Sheng M, Tseng B, Liu P, Martin-Cook K, Cullum M, Weiner M, Levine B, Zhang R, Lu H. (2013)**
Characterization of CMRO₂, resting CBF, and cerebrovascular reactivity in patients with very early stage of Alzheimer's disease. International Society for Magnetic Resonance in Medicine (ISMRM). Salt Lake city, Utah
33. **Thomas BP, Liu P, Park D, van Osch MJP, Lu H. (2012)**
Cerebrovascular reactivity in the brain white matter: magnitude, temporal delays and age effects. International Society for Magnetic Resonance in Medicine (ISMRM). Melbourne, Australia
32. *Shad MU, Keshavan MS, Soares JC, Mihalakos P, Thomas BP, Tamminga CA. (2012)*
Neurobiology of Insight deficits in Schizophrenia. Society of Biological Psychiatry conference.
31. *Lu H, Denniston D, Thomas BP, Uh J, Carmody TJ, Auchus R, Diaz-Arrastia R, Tamminga C, Brown ES (2011)*
Separating global and regional effects of hydrocortisone medication using normalized fMRI. ISMRM. Toronto, Canada.
30. **Thomas BP, Yezhuvath US, Zhang R, Tseng B, Levine B, Lu H. (2011)**
Paradoxically reduced cerebral vascular reactivity in Masters Athletes. International Society for Magnetic Resonance in Medicine (ISMRM). Toronto, Canada.
29. *Mihalakos P, Thomas BP, Fang Y, Preston A, Shohamy D, Chen J, Wagner AD, Tamminga CA. (2011)*
Hippocampal-dependent memory in treated and untreated Schizophrenia. International Congress on Schizophrenia Research (ICOSR).
28. *Alaraisanen A, Isohanni M, Mihalakos P, Thomas BP, Ivleva E, Tamminga CA. (2011)*
Medial Temporal lobe and basal ganglia mediated learning in chronic schizophrenia patients, their siblings and healthy volunteers. A 45-year follow-up within the northern Finland 1996 birth cohort study. International Congress on Schizophrenia Research (ICOSR).
27. *Tseng BY, Thomas BP, Uh J, Palmer D, Armstrong K, Cullum CM, Diaz-Arrastia RF, Levine BD, Lu H, Zhang R. (2010)*
The Impact of Life-Long Exercise on Brain Structure: A Voxel-Based Morphometric Study of Masters Athlete's Brain. Society for Neuroscience conference.
26. *Tamminga CA, Thomas BP, Mihalakos P, Kirane H, Lu H, Preston A, Shohamy D, Wagner AD. (2009)*
Alterations in hippocampal function in schizophrenia. International Congress on Schizophrenia Research (ICOSR).

25. Moore DS, Shepard M, Mihalakos P, **Thomas BP**, Witte B, Cullum M, Bellak A, Tamminga CA. (2009) Cognitive remediation in Schizophrenia. International Congress on Schizophrenia Research (ICOSR).
24. Ivleva E, **Thomas BP**, Moates A, Cole D, Witte B, Tamminga CA. (2009) Gray and white matter volumetric intermediate phenotypes across the psychosis spectrum. International Congress on Schizophrenia Research (ICOSR).
23. Mihalakos P, **Thomas BP**, Kirane H, Wagner AD, Tamminga CA. (2009) Functional associations of declarative memory deficits in schizophrenia. International Congress on Schizophrenia Research (ICOSR).
22. **Thomas BP**, Mihalakos P, Uh J, Kirane H, Wagner AD, Lu H, Tamminga CA. (2009) Altered hippocampal neuronal activity and perfusion in schizophrenia. International Congress on Schizophrenia Research (ICOSR).
21. Shad MU, **Thomas BP**, Mihalakos P, Faryal M, Tamminga CA. (2009) Impact of pharmacotherapy on hippocampal volume and function in Schizophrenia. International Congress on Schizophrenia Research (ICOSR).
20. Balfour ME, Moore D, **Thomas BP**, Tamminga CA. (2009) Functional neuroimaging following cognitive remediation in Schizophrenia. International Congress on Schizophrenia Research (ICOSR).
19. Kirane H, Collins M, Dantu S, Mihalakos P, **Thomas BP**, Tamminga CA. (2009) Evaluation of Medial Temporal lobe structures in Schizophrenia using BOLD fMRI during Novelty detection with multiple stimuli. International Congress on Schizophrenia Research (ICOSR).
18. Tamminga CA, Ghose S, **Thomas BP**, Mihalakos P, Lu H. (2008) Medial Temporal cortex pathophysiology in Schizophrenia: Actions of antipsychotic drugs. Schizophrenia Research conference.
17. Tamminga CA, **Thomas BP**, Uh J, Lu H. (2008) Effects of antipsychotic drugs on regional neuronal activity and activation: ASL, VASO, and fMRI BOLD. Schizophrenia Research conference.
16. Shad MU, Muddasani S, **Thomas BP**, Tamminga CA. (2007) Structural correlates of poor insight in Schizophrenia. Society of Biological Psychiatry conference.
15. Shad MU, Muddasani S, **Thomas BP**, Moore D, Tamminga CA. (2007) Insight and parietal cortical volume in Schizophrenia. International Congress on Schizophrenia Research (ICOSR).
14. **Thomas BP**, Chin RB, Preston A, Shohamy D, Wagner AD, Tamminga CA. (2007) Hippocampal Activation Patterns During Novelty Detection with Successful Memory in Schizophrenia. International Congress on Schizophrenia Research (ICOSR).
13. Shad MU, **Thomas BP**, Chin RB, Eamma J, Tamminga CA. (2007) Neurobiological correlates of poor Insight in Schizophrenia. Society of Biological Psychiatry conference.
12. Muddasani S, Shad MU, **Thomas BP**, Tamminga CA. (2007) Insight and Cerebellar volume in Schizophrenia. Society of Biological Psychiatry conference.
11. Tamminga CA, Mihalakos P, **Thomas BP**, Lu H, Ghose S, Wagner AD. (2007) In Vivo Function of the Medial Temporal Lobe in Schizophrenia: Psychosis and Antipsychotic drugs. American College of Neuropsychopharmacology conference.
10. Aslan S, Uh J, Mihalakos P, **Thomas BP**, Tamminga CA, Lu H. (2007) Regional CBV Characteristics in Normal Subjects and its Relation to CBF: a VASO and ASL MRI study. International Society for Magnetic Resonance in Medicine (ISMRM).
9. Chin RB, **Thomas BP**, Mihalakos P, Shohamy D, Preston A, Wagner AD, Tamminga CA. (2006) Declarative Memory in Schizophrenia: Antipsychotic Drug Actions. Society for Neuroscience.
8. **Thomas BP**, Chin RB, Youens K, Tamminga CA. (2005) Hippocampal activation patterns during novelty detection with successful memory in schizophrenia. International Congress on Schizophrenia Research (ICOSR). Savannah, Georgia.

7. *Chin RB, Thomas BP, Youens KE, Preston A, Shohamy D, Rilling LM, Wagner AD, Tamminga CA. (2005)*
Hippocampally Dependent Learning and Memory in Schizophrenia. Society for Neuroscience Conference.
6. *Stanford AD, Chin RB, Thomas BP, Ivleva E, Tamminga CA. (2005)*
Deficit Syndrome and Memory Function in Schizophrenia. American College of Neuropsychopharmacology conference.
5. *Thomas BP, Chin RB, Youens K, Babcock EE, Wagner AD, Tamminga CA. (2005)*
Functional hippocampal and medial temporal lobe activation patterns during novelty detection in schizophrenia volunteers and normal controls. Human Brain Mapping conference. Toronto, Canada.
4. *Thomas BP, Tamminga CA, Ernst M, Rao U. (2005)*
Neuronal Substrates of Risk Taking in Depressed and Healthy Adolescents. Human Brain Mapping conference. Toronto, Canada.
3. *Awasthi SS, Cole D, Thomas BP, Collum M, Tamminga CA, Thaker G. (2005)*
Evaluation of cognition in smooth pursuit eye movement phenotypes in schizophrenia. International Congress on Schizophrenia Research (ICOSR).
2. *Thomas BP, Tamminga CA, Ernst M, Rao U. (2004)*
Neuronal risk markers for substance abuse in youth. American College of Neuropsychopharmacology conference.
1. *Tamminga CA, Chin RB, Thomas BP. (2004)*
Characteristics of hippocampal function in Schizophrenia. American College of Neuropsychopharmacology conference.

REVIEWER STATUS

Human Brain Mapping	2015-Present
Brain and Behavior	2015-Present
Brain Structure and Function	2015-Present
PLOS ONE	2016-Present
Journal of Affective Disorders	2018-Present
Journal of Magnetic Resonance Imaging	2018-Present
American Journal of Neuroradiology	2018-Present
Journal of Cerebral Blood Flow and Metabolism	2018-Present
NMR in Biomedicine	2019-Present
Frontiers in Aging Neuroscience	2020-Present
Journal of Experimental Gerontology	2020-Present
Journal of Applied Physiology	2020-Present
Journal of Biomedical Central Medicine	2021-Present

EDITORIAL BOARD MEMBERSHIP

Associate Editor of Frontiers in Medical Physics and Imaging	2022-
Review Editor of Brain Imaging Methods (Frontiers in Neuroscience, Neurology and Neuroimaging)	2022-
Review Editor of Frontiers in Physiology (Exercise Physiology)	2022-
Associate Editor, Journal of Alzheimer's Disease	2020-2021

MENTORING

Post-doctoral fellows directly supervised or mentored

Dates	Name	Program, School
2006 – 2008	Harshal Kirane	M.D. Psychiatry resident Carol Tamminga lab, UTSW
2008 – 2009	Margaret Balfour	M.D. Psychiatry resident Carol Tamminga lab, UTSW
2014	David Pinkerton	M.D. Radiology resident Sherwood Brown, Hanzhang Lu lab, UTSW
2015 - 2017	Tanusree Das	Post-doctoral fellow Carol Tamminga lab, UTSW

Pre-doctoral and doctoral students supervised or mentored

Dates	Name	Program, School
2012 - 2014	Harshan Ravi	Ph.D. candidate Hanzhang Lu lab, UTSW
2013 - 2014	Yan Fang	Ph.D. candidate Carol Tamminga lab, UTSW
2014 summer	Ajay	M.S. student, UTD, Summer intern Carol Tamminga lab, UTSW
2009 summer	Tyler Halpin Healy	SURF Summer intern Carol Tamminga lab, UTSW
2013 summer	Kayhan	SURF Summer intern Hanzhang Lu lab, UTSW
2013 summer	Hersh Trivedi	SURF Summer intern Hanzhang Lu lab, UTSW
2014 summer	Sidra Shah	SURF Summer intern Hanzhang Lu lab, UTSW
2020 – 2021	Nareen Anwar	B.S. student, UTD Binu Thomas lab, UTSW
2020 - 2021	Catherine	Ph.D. candidate Yi-Yuan Tang lab, Univ. of Texas Tech.
2019 - 2021	Mahrshi Jani	Ph.D. candidate Anke Henning lab, UTSW
2023 –	Suhaas Penukonda	B.S. student, UTD Binu Thomas lab, UTSW

PhD thesis committee

Date	Name	Program, School
Jan 2022	Muditha S. Bandara	Ph.D., Dept. of Biomedical Engineering, Colombo University

GRANT SUPPORT

Current Research Support

- 1) Nutrition and Obesity Research Center, UT Southwestern Medical Center (\$100,000)
(PI: Binu Thomas) 01/2023-01/2025
Title: Changes in cognition, brain function, and cardiometabolic outcomes in people with type 2 diabetes and obesity following treatment with tirzepatide to reduce risk of dementia.
Role: PI
The goal of this project is to assess the effect of obesity and weight loss with tirzepatide on brain, cognitive function, body composition, blood biomarkers, microbiome, and risk of Alzheimer's disease and related dementia.
- 2) R01 AG076660-01 (PI: Rong Zhang) 04/2022-03/2027
NIH/NIA
Title: Impact of Intensive Treatment of Systolic Blood Pressure on Brain Perfusion, Amyloid and Tau in Older Adults (IPAT-study).
Role: Co-I
The goal of this project is to determine the impact of BP lowering on brain perfusion, BOLD signal fluctuations, and white matter integrity as well as the relationship of these changes with brain amyloid and tau.
- 3) 5R01NS117547-02 (PI: Virendra Mishra) 04/2022-03/2026
NINDS
Title: Towards Generating a Multimodal and Multivariate Classification Model from Imaging and Non-Imaging Measures for Accurate Diagnosis and Monitoring of Dementia in Parkinsons disease.
Role: Co-I
The goal of the proposed research is to identify the best predictive biomarkers of dementia in Parkinson's disease (PDD) through a multimodal and multivariate statistical model utilizing both neuroimaging derived measures (diffusion-weighted MRI (dMRI), resting-state functional MRI (rsfMRI), and T1-weighted MRI measures) and non- imaging measures such as demographics (age, sex, years of education), clinical (disease duration and severity), genetics (LRRK2), and CSF-measures (Total Tau, β -Amyloid, α -synuclein).
- 4) RFA-NS-16-020 (PI: Rong Zhang) 09/2021-08/2026
NIH
Title: Washington University – University of Texas Southwestern VCID Consortium Site
Role: Co-I
The goal of the present project is to conduct imaging on Hispanic participants in order to investigate the vascular contributions of small vessels to cognitive impairment and dementia biomarkers.

- 5) R01MH115932-03 (PI: Sherwood Brown) 04/2019-03/2024
 NIMH
 Title: Exploring the Effects of Corticosteroids on the Human Hippocampus using Neurocognitive Testing and High-Resolution Brain Imaging
 Role: Co-I
 The major goal of this project is to determine the effect of cortisol on task-driven hippocampal activation using, for the first time, high-resolution (1.5 mm isotropic) fMRI of hippocampal subfields (i.e., DG/CA3, CA1, subiculum), determine the effect of cortisol on hippocampal subfield volume using high-resolution structural MRI, assess changes in hippocampal NAA, Glu, Cho and ml with cortisol using 1HMRS, determine the effect of cortisol on declarative and visuospatial memory, and determine whether sex, stress, early life adversity, age, physical activity, GCR number or sensitivity, or changes in sleep during cortisol administration, predict hippocampal CS response, as assessed by memory testing and multimodal neuroimaging.
- 6) R01NS106702-02 (PI: Babu Welch) 04/2019-03/2024
 NIH
 Title: An Integrated Vascular MR Imaging Suite in Brain Diseases.
 Role: Co-I
 The goal of the present project is to develop novel methods to perform an integrated vascular (iVas) imaging technique that will apply concomitant O2 and CO2 gas inhalation (but with different timing) and will simultaneously measure cerebral blood volume (CBV), cerebrovascular reactivity (CVR), bolus time-to-peak (TTP), and functional connectivity networks from the same dataset in a variety of brain disorders, including cerebrovascular diseases such as stroke, arterial stenosis, Moymoya disease, small vessel diseases, and vascular dementia, but also in other neurological conditions such as brain tumor and traumatic brain injury.
- Completed Research Support
- 1) R01AG047972-01A1 (PI: Bart Rypma) 09/2015-08/2020
 NIH
 Title: BOLD and its discontents: Age-differences in the neurophysiology of fMRI signal.
 Role: Consultant
 The goal of the project is to examine the mechanism of BOLD signal changes in aging by separately measuring components of the BOLD contributors such as CMRO2, cerebral blood flow, and neurovascular coupling ratio.
- 2) 1 R21 NS095342-01A1 (PI: Hanzhang Lu) 04/2016-03/2018
 NIH
 Title: Advanced MRI methods to image vascular physiology with respiratory manipulations.
 Role: Co-I
 The major goals of this project are to develop and validate gas-inhalation MRI methods in healthy subjects and in patients with stenotic cerebrovascular diseases.
- 3) R01 AG033106 (PI: Rong Zhang) 09/2009-08/2015
 NIH/NIA
 Title: Mild Cognitive Impairment: Cerebrovascular Dysfunction and Exercise Training
 Role: Co-I
 The goal of this study is to determine whether endurance exercise training improves cerebrovascular function and ameliorates brain atrophy, white matter lesions and cognitive decline in patients with mild cognitive impairment.