Benjamin Brewster Risk

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EDUCATION

Cornell University, Ithaca, NY

Ph.D., Statistics, August 2015

- Dissertation: *Topics in Independent Component Analysis, Likelihood Component Analysis, and Spatiotemporal Mixed Modeling*
- Advisors: David S. Matteson and David Ruppert

M.S., Statistics, January 2014

University of California Berkeley, Berkeley, CA

M.S., Environmental Science, Policy, and Management, May 2009

- Thesis: *A Robust-Design Formulation of the Incidence Function Model of Metapopulation Dynamics Applied to Two Species of Rails*
- Advisor: Steven R. Beissinger

Dartmouth College, Hanover, NH

B.A., Environmental and Evolutionary Biology, June 2003

- *summa cum laude*, with high major honors

ACADEMIC APPOINTMENTS

Department of Biostatistics & Bioinformatics, Emory University, Atlanta, GA

Associate Professor **May 2023 - present**

Assistant Professor **July 2017 - May 2023**

SAMSI (Statistical and Applied Mathematical Sciences Institute) and the **Department of Biostatistics, University of North Carolina, Chapel Hill**
Postdoctoral Research Associate **August 2015 - June 2017**

- Mentors: Hongtu Zhu (University of North Carolina, Chapel Hill), Daniel Rowe (Marquette University)

PUBLICATIONS

Methodology

1. J. Ran*, S. Shultz, **B. B. Risk**†, D. Benkeser†. Nonparametric motion control in functional connectivity studies in children with autism spectrum disorder. *Biometrics*. 82(2): ujag099, 2026. †Co-corresponding authors.

*Denotes a co-author who was a student or recent graduate at the time of the work.

2. R. J. Murden*, G. Tian*, D. Qiu, **B. B. Risk**. Probabilistic Joint and Individual Variation Explained (ProJIVE) for data integration. *Journal of Computational and Graphical Statistics*. In press, 2026.

3. Z. Zhang, A. Venkataraman, M. Cole, T. Ye, D. Qiu, F. V. Lin, **B. B. Risk**. The impact of multiband and in-plane acceleration on white matter microstructure analysis. *Human Brain Mapping*. 46(14): e70353, 2025.

4. Z. Wang*, I. Gaynanova, A. Aravkin, **B. B. Risk**. Sparse independent component analysis with an application to cortical surface fMRI data in autism. *Journal of the American Statistical Association*. 119(548): 2508–2520, 2024.

5. G. Tian*, J. Hanfelt, J. Lah, **B. B. Risk**. Mixture of regressions with multivariate responses for discovering subtypes in Alzheimer's biomarkers with detection limits. *Data Science in Science*. 3(1): 2309403, 2024.

6. L. Wang*, I. Gaynanova, **B. B. Risk**. singR: An R package for simultaneous non-Gaussian component analysis for data integration. *The R Journal*. 15(4): 69–83, 2023.

7. R. J. Murden*, Z. Zhang, Y. Guo, **B. B. Risk**. Interpretive JIVE: Connections with CCA and an application to brain connectivity. *Frontiers in Neuroscience*. 16: 969510, 2022.

8. M. B. Nebel, D. E. Lidstone, L. Wang*, D. Benkeser, S. H. Mostofsky, **B. B. Risk**. Accounting for motion in resting-state fMRI: What part of the spectrum are we characterizing in autism spectrum disorder?. *NeuroImage*. 257: 119296, 2022.

9. Y. Zhao*, D. S. Matteson, S. H. Mostofsky, M. B. Nebel, **B. B. Risk**. Group linear non-Gaussian component analysis with applications to neuroimaging. *Computational Statistics and Data Analysis*. 171: 107454, 2022.

10. **B. B. Risk**, I. Gaynanova. Simultaneous non-Gaussian component analysis (SING) for data integration in neuroimaging. *Annals of Applied Statistics*. 15(3): 1431–1454, 2021. Authors contributed equally.

11. **B. B. Risk**, R. J. Murden*, J. Wu, M. B. Nebel, A. Venkataraman, Z. Zhang, D. Qiu. Which multiband factor should you choose for your resting-state fMRI study?. *NeuroImage*. 234: 117965, 2021.

12. M. Cole, K. Murray, E. St-Onge, **B. B. Risk**, J. Zhong, G. Schifitto, M. Descoteaux, Z. Zhang. Surface-based connectivity integration: An atlas-free approach to jointly study functional and structural connectivity. *Human Brain Mapping*. 42(11): 3481–3499, 2021.

13. S. Kundu, **B. B. Risk**. Scalable Bayesian matrix normal graphical models for brain functional networks. *Biometrics*. 77(2): 439–450, 2021.

14. **B. B. Risk**, H. Zhu. ACE of space: Estimating genetic components of high-dimensional imaging data. *Biostatistics*. 22(1): 131–147, 2021.

15. D. Sung, **B. B. Risk**, M. Owusu-Ansah, X. Zhong, H. Mao, C. C. Fleischer. Optimized truncation to integrate multi-channel MRS data using rank-R singular value decomposition. *NMR in Biomedicine*. 33(7): e4297, 2020.

16. Z. Jin, **B. B. Risk**, D. S. Matteson. Optimization and testing in linear non-Gaussian component analysis. *Statistical Analysis and Data Mining: The ASA Data Science Journal*. 12(3): 141–156, 2019.

17. **B. B. Risk**, D. S. Matteson, D. Ruppert. Linear non-Gaussian component analysis via maximum likelihood. *Journal of the American Statistical Association*. 114(525): 332–343, 2019.

18. **B. B. Risk**, M. Kociuba, D. Rowe. Impacts of simultaneous multislice acquisition on sensitivity and specificity in fMRI. *NeuroImage*. 172: 538–553, 2018.

19. Q. Yu, **B. B. Risk**, K. Zhang, J. S. Marron. JIVE integration of imaging and behavioral data. *NeuroImage*. 152: 38–49, 2017.

20. **B. B. Risk**, D. S. Matteson, R. N. Spreng, D. Ruppert. Spatiotemporal mixed modeling of multi-subject task fMRI via method of moments. *NeuroImage*. 142: 280–292, 2016.

21. **B. B. Risk**, D. S. Matteson, D. Ruppert, A. Eloyan, B. S. Caffo. An evaluation of independent component analyses with an application to resting state fMRI. *Biometrics*. 70(1): 224–236, 2014.

22. **B. B. Risk**, P. de Valpine, S. R. Beissinger. A robust-design formulation of the incidence function model of metapopulation dynamics applied to two species of rails. *Ecology*. 92(2): 462–474, 2011.

Collaborative

23. B. Hu, **B. B. Risk**, N. M. Boulis, F. Nahab, J. W. Allen, A. G. Fedorov, C. C. Fleischer. Validation of magnetic resonance brain thermometry and bioheat modeling of brain temperature using direct measurements with an implanted fiber optic probe. *Operative Neurosurgery*. In press, 2026.

24. Q. E. Yuan, A. K. Bozack, V. Paquin, S. Abrishamcar, E. J. Arrant, Y. Xu, S. L. Rifas-Shiman, Y. Chen, L. V. Dimitrov*, **B. B. Risk**, M.-F. Hivert, E. Oken, A. Cardenas, A. Huels, B. S. Ku. Neighborhood exposome at birth and trajectories of epigenetic age acceleration across childhood. *JAMA Network Open*. 9(11): e2644321, 2026.

25. D. Sung, P. Kottke, **B. B. Risk**, J. W. Allen, A. G. Fedorov, C. C. Fleischer. First-principles multiscale modeling of cerebral hemodynamics enables personalized predictions of human brain temperature. *Scientific Reports*. 16(1): 24183, 2026.

26. **B. B. Risk**, L. Li, W. Jones, S. Shultz. Dynamics of infant white matter maturation from birth to 6 months. *Communications Biology*. 9(1): 1027, 2026.

27. J. Wu, **B. B. Risk**, T. James, N. Seyfried, D. Loring, F. Goldstein, A. Levey, J. Lah, D. Qiu. Non-linear associations of amyloid-beta with resting-state functional networks and their cognitive relevance in a large community-based cohort of cognitively normal older adults. *Alzheimer's Research & Therapy*. 18(1): 90, 2026.

28. I. Raghuvanshi, **B. B. Risk**, G. Sadigh, J. W. Allen, C. C. Fleischer. Neighborhood socioeconomic status and distance from home address to imaging center influence the acuity of brain MRI findings. *Journal of the American College of Radiology*. 23(3): 421–429, 2026.

29. Y. Chen, Q. Yuan, L. Dimitrov*, **B. B. Risk**, B. Ku, A. Huels. Interaction between neighborhood exposome and genetic risk in persistent distressing psychotic-like experiences in children. *Nature Mental Health*. 4(1): 136–145, 2026.

30. C. B. Macdonald, A. Bhattacharya, **B. B. Risk**, T. M. Zuleger, S. Mandava, R. Noeske, C. C. Fleischer. Comparison of magnetic resonance spectra acquired with hybrid PET/MR and standalone MR scanners. *Journal of Magnetic Resonance Imaging*. 62(6): 1854–1865, 2025.

31. R. J. Deligani, E. Opri, **B. B. Risk**, F. Goldstein, S. Factor, L. Higginbotham, N. Swann, S. Miocinovic. Cortical beta power modulation is asymmetric and reduced during movement execution and inhibition in Parkinson's disease. *Neurobiology of Disease*. 217: 107195, 2025.

32. S. B. Borgheai, B. Howell, F. Isbaine, A. M. Noecker, E. Opri, **B. B. Risk**, C. C. McIntyre, S. Miocinovic. Evaluation of DBS computational modeling methodologies using in-vivo electrophysiology in Parkinson's disease. *Brain Stimulation*. 18(6): 1996–2007, 2025.

33. L. V. Dimitrov*, G. M. Christensen, B. S. Ku, **B. B. Risk**, A. Huels. Association of social and environmental exposures at the neighborhood level with child brain volume. *Environment International*. 201: 109576, 2025.

34. A. Martel, D. Pittard, A. Devergnas, **B. B. Risk**, J. Nassi, W. Yu, J. Downer, T. Wichmann, A. Galvan. Microendoscopic calcium imaging in motor cortices of macaques during rest and movement. *iScience*. 28(6): 112767, 2025.

35. E. M. Luque, D. Sung, **B. B. Risk**, R. M. Goldberg, C. C. Fleischer. Coil combination using OpTIMUS results in improved signal-to-noise ratios of in vivo MR spectra acquired at 7T. *NMR in Biomedicine*. 38(6): e70044, 2025.

36. K. Bagley, C. Armstrong, **B. B. Risk**, F. Connor-Stroud, D. Levesque, A. Galvan. Evaluating ATP bioluminescence testing for microbial surveillance of materials and solutions used in the routine cleaning of cranial implant chambers in rhesus macaques (*Macaca mulatta*). *Journal of the American Association for Laboratory Animal Science*. 64(3): 393–405, 2025.

37. Q. Yuan, Y. Chen, Y. Xu, L. V. Dimitrov*, **B. B. Risk**, E. F. Walker, A. Huels, B. S. Ku. Cluster profiles of distressing psychotic-like experiences among children and associations with genetic risk, prenatal cannabis exposure, and social-environmental characteristics. *Schizophrenia Research*. 278: 119–127, 2025.

38. R. J. Murden*, N. D. Fields, Z. T. Martin, **B. B. Risk**, A. Alonso, A. Manatunga, C. L. Erving, R. Moore, S. Udaipuria, A. Quyyumi, V. Vaccarino, T. T. Lewis. Associations between obesity class and ambulatory blood pressure curves in African American women. *Obesity*. 33(3): 589–598, 2025.

39. B. S. Ku, Q. E. Yuan, G. Christensen, L. V. Dimitrov*, **B. B. Risk**, A. Huels. Exposure profiles of social-environmental neighborhood factors and persistent distressing psychotic-like experiences across four years among young adolescents in the US. *Psychological Medicine*. 55: e53, 2025.

40. S. B. Borgheai, E. Opri, F. Isbaine, E. R. Cole, R. J. Deligani, N. G. Laxpati, **B. B. Risk**, J. T. Willie, R. E. Gross, N. AuYong, C. C. McIntyre, S. Miocinovic. Neural pathway activation in the subthalamic region depends on stimulation polarity. *Brain Communications*. 7(1): fcaf006, 2025.

41. J. J. Lah, G. Tian*, **B. B. Risk**, J. J. Hanfelt, L. Wang*, L. Zhao, C. M. Hales, E. Johnson, M. B. Elmor, S. J. Malakauskas, C. Heilman, T. S. Wingo, C. D. Dorbin, C. P. Davis, T. I. Thomas, I. M. Hajjar, A. I. Levey, M. W. Parker. Lower prevalence of asymptomatic Alzheimer's disease among healthy African Americans. *Annals of Neurology*. 96(3): 463–475, 2024.

42. M. Essien, M. E. Cooper, A. Gore, T. L. Min, **B. B. Risk**, G. Sadigh, R. Hu, M. J. Hoch, B. D. Weinberg. Interrater agreement of BT-RADS for evaluation of follow-up MRI in patients with treated primary brain tumor. *American Journal of Neuroradiology*. 45(9): 1308–1315, 2024.

43. F. M. Gonzalez, C. N. Gleason, A. Tran, C. Wasyliw, **B. B. Risk**, E. S. Faulkner, A. M. Blackmon, D. A. Reiter. Differences in Achilles tendon mechanical properties between professional ballet dancers and collegiate athletes utilizing shear wave elastography. *Skeletal Radiology*. 53(7): 1381–1388, 2024.

44. S. J. Edwards, J. Yao, M. C. Schechter, M. Fayfman, G. Santamarina, T. Feiweier, G. Blanco, J. Alvarez, **B. B. Risk**, R. Rajani, D. A. Reiter. Feasibility of multiparametric perfusion assessment in diabetic foot ulcer using intravoxel incoherent motion and blood oxygenation-level dependent MRI. *Journal of Magnetic Resonance Imaging*. 59(5): 1555–1566, 2024.

45. J. A. Behnke, V. Ahluwalia, J. L. Smith, **B. B. Risk**, J. Lin, R. K. Gore, J. W. Allen. Assessment of white matter microstructure integrity in subacute postconcussive vestibular dysfunction using NODDI. *Imaging Neuroscience*. 2: imag-2-00147, 2024.

46. R. Agarwal, **B. B. Risk**, D. Sandlin, A. R. Mulamalla, G. Sadigh, J. W. Allen, C. C. Fleischer. Effects of financial toxicity and socioeconomic status on MRI follow-up time in multiple sclerosis. *Clinical Neuroimaging*. 1(1–2): e10, 2024.

47. S. K. Smith, **B. B. Risk**, R. H. Holm, E. Tilley, P. Chigwechokha, D. Capone, J. Brown, F. L. de los Reyes III. Microbial community function and bacterial pathogen composition in pit latrines in peri-urban Malawi. *PLOS Water*. 2(10): e0000171, 2023.

48. D. Sung, **B. B. Risk**, K. J. Wang, J. W. Allen, C. C. Fleischer. Resting-state brain temperature: Dynamic fluctuations in brain temperature and the brain-body temperature gradient. *Journal of Magnetic Resonance Imaging*. 57(4): 1222–1228, 2023.

49. C. Block, M. Patel, **B. B. Risk**, E. Staikova, D. Loring, C. Esper, L. Scorr, L. Higginbotham, P. Aia, M. DeLong, T. Wichmann, S. Factor, N. AuYong, J. Willie, N. Boulis, R. Gross, C. Buetefisch, S. Miocinovic. Patients with cognitive impairment in Parkinson's disease benefit from deep brain stimulation: A case-control study. *Movement Disorders Clinical Practice*. 10(3): 382–391, 2023.

50. K. Wang, D. Sung, **B. B. Risk**, J. W. Allen, C. C. Fleischer. Effects of orientation-dependent susceptibility on MR chemical shift brain thermometry. *Magnetic Resonance Imaging*. 95: 59–62, 2023.

51. D. Sung, **B. B. Risk**, P. Kottke, J. W. Allen, F. Nahab, A. G. Fedorov, C. C. Fleischer. Comparisons of healthy human brain temperature predicted from biophysical modeling and measured with whole brain MR thermometry. *Scientific Reports*. 12(1): 19285, 2022.

52. S. Beissinger, S. Peterson, L. A. Hall, N. Van Schmidt, J. Tecklin, **B. B. Risk**, O. M. Richmond, T. J. Kovach, A. M. Kilpatrick. Stability of patch-turnover relationships under equilibrium and nonequilibrium metapopulation dynamics driven by biogeography. *Ecology Letters*. 25(11): 2372–2383, 2022.

53. J. Wu, S. S. Shahid, Q. Lin, A. Hone-Blanchet, J. L. Smith, **B. B. Risk**, A. S. Bisht, D. W. Loring, F. C. Goldstein, A. I. Levey, J. J. Lah, D. Qiu. Multimodal magnetic resonance imaging reveals distinct sensitivity of hippocampal subfields

in asymptomatic stage of Alzheimer's disease. *Frontiers in Aging Neuroscience*. 14: 901140, 2022.

54. J. E. Hurtado, L. Heusel-Gillig, **B. B. Risk**, A. Trofimova, S. A. Abidi, J. W. Allen, R. K. Gore. Technology-enhanced visual desensitization home exercise program for post-concussive visually induced dizziness: A case series. *Physiotherapy Theory and Practice*. 38(8): 985–994, 2022.

55. C. E. Park, R. E. Sayed, **B. B. Risk**, D. C. Haussen, R. G. Nogueira, J. N. Oshinski, J. W. Allen. Carotid webs produce greater hemodynamic disturbances than atherosclerotic disease: A DSA time-density curve study. *Journal of NeuroInterventional Surgery*. 14(7): 729–733, 2022.

56. L. Webster, J. Newsome, M. Guo, S. Lee, B. S. Majdalany, J. Gichoya, M. Platner, K. Garcia-Reyes, R. Duszak Jr., Y. Liu, **B. B. Risk**, C. A. Cwiak, N. Kokabi. Utilization and comparative effectiveness of uterine artery embolization versus hysterectomy for severe postpartum hemorrhage: A National Inpatient Sample study. *Journal of Vascular and Interventional Radiology*. 33(4): 427–435, 2022.

57. M. E. Cooper, **B. B. Risk**, A. Corey, A. J. Fountain, J. W. Allen. Statistical learning of blunt cerebrovascular injury risk factors using the elastic net. *Emergency Radiology*. 28(5): 929–937, 2021.

58. S. Tigges, E. Krupinski, U. Luhanga, D. Schulman, **B. B. Risk**. Graphic narrative versus journal article for teaching medical students about P values: A randomized trial. *Journal of the American College of Radiology*. 18(8): 1176–1178, 2021.

59. K. Shinn, S. Gilyard, A. Chahine, S. Fan*, **B. B. Risk**, T. Hanna, J. Johnson, C. Hawkins, M. Xing, R. Duszak Jr., J. Newsome, N. Kokabi. Contemporary management of pediatric blunt splenic trauma: A National Trauma Databank analysis. *Journal of Vascular and Interventional Radiology*. 32(5): 692–702, 2021.

60. A. H. Chahine, S. Gilyard, T. N. Hanna, S. Fan*, **B. B. Risk**, J. O. Johnson, R. Duszak Jr., J. Newsome, M. Xing, N. Kokabi. Management of splenic trauma in contemporary clinical practice: A National Trauma Data Bank study. *Academic Radiology*. 28(S1): S138–S147, 2021.

61. D. Sung, P. A. Kottke, **B. B. Risk**, J. W. Allen, F. Nahab, A. G. Fedorov, C. C. Fleischer. Personalized predictions and non-invasive imaging of human brain temperature. *Communications Physics*. 4: 68, 2021.

62. D. Capone, P. Chigwechokha, F. L. de los Reyes III, R. Holm, **B. B. Risk**, E. Tilley, J. Brown. Impact of sampling depth on pathogen detection in pit latrines. *PLOS Neglected Tropical Diseases*. 15(3): e0009176, 2021.

63. D. Hsu, T. Rath, B. Branstetter, Y. Anzai, C. Phillips, A. Juliano, K. Mosier, M. Bazylewicz, S. Poliashenko, M. Kulzer, P. Rhyner, **B. B. Risk**, R. Wiggins, A. Aiken. Interrater reliability of NI-RADS on post-treatment PET/contrast-enhanced CT scans in head and neck squamous cell carcinoma. *Radiology: Imaging Cancer*. 3(3): e200131, 2021.

64. D. Capone, D. Berendes, O. Cumming, J. Knee, R. Nala, **B. B. Risk**, C. Stauber, K. Zhu, J. Brown. Analysis of fecal sludges reveals common enteric pathogens in urban Maputo, Mozambique. *Environmental Science & Technology Letters*. 7(12): 889–895, 2020.

65. S. Ekici, **B. B. Risk**, S. G. Neill, H. Shu, C. C. Fleischer. Characterization of dysregulated glutamine metabolism in human glioma tissue with ^{1}H NMR. *Scientific Reports*. 10: 20435, 2020.

66. M. C. Schechter, M. K. Ali, **B. B. Risk**, A. D. Singer, G. Santamarina, H. K. Rogers, R. R. Rajani, G. Umpierrez, M. Fayfman, R. R. Kempkar. Percutaneous bone biopsy for diabetic foot osteomyelitis: A systematic review and meta-analysis. *Open Forum Infectious Diseases*. 7(10): ofaa393, 2020.

67. M. Braileanu, **B. B. Risk**, N. Kadom, M. E. Mullins, E. A. Krupinski, A. M. Saindane, B. D. Weinberg. Structured curriculum vitae scoring as a standardized tool for selecting interview candidates for academic neuroradiology faculty positions. *Current Problems in Diagnostic Radiology*. 49(6): 377–381, 2020.

68. K. D. Herr, **B. B. Risk**, T. N. Hanna. Diagnostic radiology resident perspectives on fellowship training and career interest in emergency radiology. *Emergency Radiology*. 25(6): 653–658, 2018.

69. S. A. Kaiser, **B. B. Risk**, T. S. Sillett, M. S. Webster. Ecological and social factors constrain spatial and temporal opportunities for mating in a migratory songbird. *American Naturalist*. 189(3): 283–296, 2017.

70. F. Mestre, **B. B. Risk**, R. Pita, A. Mira, P. Beja. A metapopulation approach to predict species range shifts under different climate change and landscape connectivity scenarios. *Ecological Modelling*. 359: 406–414, 2017.

71. S. A. Kaiser, T. S. Sillett, **B. B. Risk**, M. S. Webster. Experimental food supplementation reveals habitat-dependent male reproductive investment in a migratory bird. *Proceedings of the Royal Society B: Biological Sciences*. 282(1803): 20142523, 2015.

72. O. M. Richmond, S. Chen, **B. B. Risk**, J. Tecklin, S. R. Beissinger. California Black Rails depend on irrigation-fed palustrine emergent wetlands in the Sierra Nevada Foothills. *California Agriculture*. 64(2): 85–93, 2010.

Letters and commentary

73. C. K. Block, M. Patel, **B. B. Risk**, E. Staikova, D. Loring, C. D. Esper, L. Scorr, L. Higginbotham, P. Aia, M. R. DeLong, T. Wichmann, S. A. Factor, N. AuYong, J. T. Willie, N. M. Boulis, R. E. Gross, C. Buetefisch, S. Miocinovic. Reply: Deep brain stimulation outcomes in Parkinson's disease patients with cognitive impairment: Implications and considerations. *Movement Disorders Clinical Practice*. 10(8): 1235–1236, 2023.

74. **B. B. Risk**, D. Qiu. On the reproducibility of quantitative susceptibility mapping and its potential as a clinical biomarker: A comment on Cogswell et al. *NeuroImage*. 245: 118646, 2021.

75. **B. B. Risk**, H. Zhu. Note on bias from averaging repeated measurements in heritability studies. *Proceedings of the National Academy of Sciences*. 115(2): E122, 2018.

76. **B. B. Risk**. Book review of "A Handbook of Neuroimaging Statistics". *Journal of the American Statistical Association*. 113(521): 480–485, 2018.

Invited Presentations

1. **B. B. Risk**. Motion artifacts, selection bias, and solutions to improve pediatric brain connectivity studies. Levin Lecture, Department of Biostatistics, Columbia University, October 15, 2026.

2. **B. B. Risk**. Estimating resting-state and task-based functional connectivity in autism spectrum disorder. *Connectomics, Non-Euclidean data, and Statistics: Tutorial and Hands-on,* Institute for Mathematical and Statistical Innovation, Chicago, Illinois, September 14-18, 2026.

3. **B. B. Risk**. Causal inference for hierarchical machine learning with an application to stimulant treatment impacts on brain connectivity in autism. *Statistical Methods in Imaging,* Ann Arbor, Michigan, June 1-3, 2026.

4. **B. B. Risk**. Robust Hierarchical Causal Inference for Treatment Effects on Brain Connectivity in Autism. *ENAR 2026 Spring Meeting*, Indianapolis, Indiana, March 15-18, 2026.

5. **B. B. Risk**. Improving estimates of brain connectivity in autism spectrum disorder. School of Mathematical and Statistical Sciences, Clemson University, February 25, 2026.

6. **B. B. Risk**. Improving estimates of brain connectivity in autism spectrum disorder. Department of Epidemiology and Biostatistics Seminar, University of Georgia, Athens, January 21, 2026.

7. **B. B. Risk**. Improving estimates of functional connectivity in children with autism. *NeuroConnect 2025: Advancing Brain Network Research Workshop*, Blowing Rock, North Carolina, August 13-15, 2025.

8. **B. Risk**, Z. Wang*, I. Gaynanova, A. Aravkin. Sparse independent component analysis with an application to cortical surface fMRI data in autism. *CMStatistics*, London, UK, December 14-16, 2024.

9. **B. B. Risk**. Improving estimates of brain connectivity in autism spectrum disorder. Department of Biostatistics, University of Washington. October 24, 2024.

10. **B. B. Risk**. Motion as a Causal Mediator in Studies of Functional Connectivity Alterations in Children with Autism Spectrum Disorder. *JSM 2024*, Portland, Oregon, August 3 - August 8, 2024.

11. **B. B. Risk**. Nonparametric motion adjustment in functional connectivity studies in children with autism spectrum disorder. *Statistical Methods in Imaging*, Indianapolis, IN. May 29-31, 2024.

12. **B. B. Risk**. Nonparametric motion adjustment in studies of functional connectivity alterations in autistic children. *CMStatistics*, Berlin, Germany. December 16-18, 2023.

13. **B. B. Risk**. Counteracting selection bias in functional connectivity studies of autism. *Statistical Methods in Imaging.* Minneapolis, MN. May 22-24, 2023.

14. **B. B. Risk**. Counteracting selection bias and improving statistical power in functional connectivity studies of autism. *The 8th Workshop on Biostatistics and Bioinformatics.* Georgia State, Atlanta, GA. May 5-7, 2023.

15. **B. B. Risk**. Counteracting selection bias in functional connectivity studies of autism. *ENAR 2023.* Nashville, TN. March 19-22, 2023.

16. **B. B. Risk**. Unsupervised learning in data integration studies using JIVE with Gaussian mixtures. *2022 International Symposium on Modern Data Science Application, Practice, and Theory.* New Haven, CT. November 19-20, 2022.

17. **B. B. Risk**. Unsupervised learning in data integration studies using JIVE with Gaussian mixtures. *Georgia Statistics Day.* Athens, GA. October 28, 2022.

18. **B. B. Risk**, G. Tian, J. Lah, and J. Hanfelt. Clustering Using JIVE with Gaussian Mixtures for Data Integration. *JSM 2022*. Washington DC, August 6-11, 2022.

19. **B. B. Risk**. Correcting Sampling Bias in Neuroimaging Studies using Doubly Robust Nonparametric Inference. *ICSA Canada Chapter 2022 Symposium Statistics: From Data to Knowledge*. Banff, Alberta, Canada. July 8-10, 2022.

20. **B. B. Risk**. Probabilistic joint and individual variation explained. *EcoSta 2022*. Ryukoku University, Kyoto, Japan. June 4-6, 2022.

21. **B. B. Risk**. A missing data method for deconfounding in neuroimaging studies. *ENAR 2022*, Houston, TX. March 27-30, 2022.

22. **B. B. Risk**. Data integration in neuroimaging studies. Brain Space Initiative, as part of the activities of the BSIsubspace Section, co-sponsored by the Center for Translational Research in Neuroimaging and Data Science (TReNDS) and the Data Science Initiative, IEEE Signal Processing Society. 10 November 2021.

23. **B. B. Risk**. Data integration in neuroimaging studies. Department of Biostatistics and Health Data Sciences, Indiana University School of Medicine. 5 November 2021.

24. **B. B. Risk**. A missing data method for deconfounding in neuroimaging studies. *Georgia Statistics Day*, Emory University, Atlanta, GA. 11 October 2021.

25. **B. B. Risk**. Statistical considerations for multiband resting-state fMRI studies. The ASA Statistics in Imaging Section. Invited presentation (Webinar). April 16, 2021.

26. **B. B. Risk** and I. Gaynanova. Simultaneous Non-Gaussian component analysis (SING) for data integration in neuroimaging. *ENAR 2021*, March 14-17, 2021.

27. **B. B. Risk** and H. Zhu. Heritability models for neuroimaging. *JSM 2020*, August 2-6, 2020.

28. **B. B. Risk**. Which multiband factor should you choose for your resting-state fMRI study? PennSIVE (Penn Statistics in Imaging and Visualization Endeavor) Seminar, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, March 3, 2020.

29. **B. B. Risk** and S. Kundu. Scalable Bayesian Matrix Normal Graphical Models for Brain Functional Networks. *CMStatistics 2019*, University of London, London, UK, December 14-16, 2019.

30. **B. B. Risk** and I. Gaynanova. Data integration using joint and individual non-Gaussian component analysis. *JSM 2019*, Denver, Colorado, July 27-August 1, 2019. Topic contributed session.

31. **B. B. Risk** and I. Gaynanova. Joint and Individual Non-Gaussian Component Analysis for Data Integration. *2019 ICSA Applied Statistics Symposium*, Raleigh, NC, June 9-12, 2019.

32. **B. B. Risk**. Data Integration via Joint and Individual Non-Gaussian Component Analysis. Department of Mathematics, Statistics, and Computer Science Seminar, Marquette University, WI, March 21, 2019.

33. **B. B. Risk** and I. Gaynanova. Joint and Individual Non-Gaussian Component Analysis. *CMStatistics*, Pisa, Italy, December 14-16, 2018.

34. **B. B. Risk**. Dimension Reduction, Non-Gaussian Component Analysis, and Data Integration. Department of Biostatistics Seminar, University of Rochester, NY, November 29, 2018.

35. **B. B. Risk**, M. Kociuba, and D. Rowe. Impacts of multiband acceleration factors on sensitivity and specificity. *JSM 2018*, Vancouver, Canada, July 28-August 2, 2018. Topic contributed session.

36. **B. B. Risk**, M. Kociuba, and D. Rowe. Statistical impacts of reconstruction method in simultaneous multislice acquisition of MRI. *Statistical Methods in Imaging Conference*, University of Pennsylvania, Philadelphia, PA, June 6-8, 2018.

37. **B. B. Risk**. Scalable Estimation for Genetic Components of High-Dimensional Imaging Data. *NOGGINS (Network of Greater Georgia Institutions for Neuroimaging and Statistics) 2018*, University of Georgia, April 13, 2018.

38. **B. B. Risk**. Statistical impacts of simultaneous multislice imaging and implications for experimental design in fMRI. Statistics Department Seminar, Indiana University, Bloomington. November 13, 2017.

39. Qunqun Yu, **B. B. Risk***, Kai Zhang, and J. S. Marron. *Presenting author. JIVE integration of behavioral and fMRI data. *JSM 2017*, Baltimore, Maryland, July 29-August 3, 2017.

40. **B. B. Risk**, M. Kociuba, and D. Rowe. Impacts of multiband acceleration factors on sensitivity and specificity. *23rd Annual Meeting of the Organization for Human Brain Mapping*, Vancouver, Canada, June 25-29, 2017.

41. **B. B. Risk** and H. Zhu. Genetic covariance functions and heritability in neuroimaging with an application to cortical thickness analysis. *Statistical Methods in Imaging Conference*, Pittsburgh, PA, May 31-June 2, 2017.

42. **B. B. Risk**, D. S. Matteson, and D. Ruppert. Likelihood-based non-Gaussian and Gaussian component analysis. *CMStatistics*, Seville, Spain, December 9-11, 2016.

43. **B. B. Risk**. Modeling dependence in neuroimaging data. Functional Data Seminar, North Carolina State University, September 29, 2016.

44. **B. B. Risk**. Likelihood component analysis. Statistics Department Colloquium, Texas A&M University. September 16, 2016.

45. **B. B. Risk**, D. S. Matteson, R. N. Spreng, and D. Ruppert. Spatiotemporal mixed modeling of multi-subject task fMRI via method of moments. *IISA 2016*, Corvallis, OR, U.S.A., August 18-21, 2016.

46. **B. B. Risk**, D. S. Matteson, R. N. Spreng, and D. Ruppert. Spatiotemporal mixed modeling of multi-subject task fMRI via method of moments. *JSM 2016*, Chicago, IL, U.S.A., July 30-August 4, 2016. Topic contributed session.

47. **B. B. Risk** and D. B. Rowe. Examination of artifacts from multiband imaging. *SAMSI CCNS Transitions Workshop*, Research Triangle Park, NC, U.S.A., May 4-6, 2016.

48. **B. B. Risk**, D. S. Matteson, R. N. Spreng, and D. Ruppert. Spatiotemporal mixed modeling of multi-subject task fMRI. *ENAR 2016*, Austin, TX, U.S.A., March 6-9, 2016.

49. **B. B. Risk**, D. S. Matteson, and D. Ruppert. Likelihood component analysis. *JSM 2015*, Seattle, WA, U.S.A., August 8-13, 2015. Topic contributed session.

Contributed Presentations

1. **B. B. Risk**, D. Lidstone, L. Wang, D. Benkeser, M. Nebel. Doubly robust targeted minimum loss-based estimation to address sampling bias in functional connectivity studies. *JSM 2021*, virtual, August 8-12, 2021.

2. **B. B. Risk** and H. Zhu. Large covariance estimation for spatial functional data with an application to twin studies. *Mathematical and Statistical Challenges in Neuroimaging Data Analysis*, Banff International Research Station, Alberta, CA, January 31-February 5, 2016.

3. **B. B. Risk**, D. S. Matteson, and D. Ruppert. Unsupervised dimension reduction via maximization of a non-Gaussian likelihood. *JSM 2014*, Boston, MA, U.S.A., August 2-7, 2014.

4. **B. B. Risk**, D. S. Matteson, and D. Ruppert. An evaluation of independent component analysis with an application to resting-state fMRI. *JSM 2013*, Montreal, Quebec, CA, August 3-8, 2013.

5. **B. B. Risk**. Spatial and temporal variation in the hydrology of restored wetlands: Impacts on migrating waterbirds along the South Platte River. *Wildlife & Conservation Biology Seminar Series*, University of California Berkeley. Berkeley, CA, U.S.A., September 19, 2008.

6. **B. B. Risk** and S. R. Beissinger. Predicting the effects of habitat destruction on a metapopulation of the California Black Rail in the Sierra Foothills. *American Ornithologists Union, Cooper Ornithological Society, and Society of Canadian Ornithologists 2008 Meeting*, Portland, OR, U.S.A. August 4-9, 2008.

7. **B. B. Risk** and S. R. Beissinger. Assessing the impacts of habitat loss and degradation on a metapopulation of the California Black Rail. *Bay Area Conservation Biology Symposium*, Davis, CA, February 2, 2008.

Panel Discussions

1. A. Fang (Data Scientist, Google) and **B. B. Risk**. NISS Affiliate Graduate Student Networking Event: Meeting with Alumni. November 19, 2020. Virtual meeting discussing academic and industry careers.

Selected Posters

1. **B. B. Risk**, Junjie Wu, and Deqiang Qiu. 3942. Which multiband factor should you choose for your resting-state study? *ISMRM 2019*, Montreal, QC, Canada, May 11–16, 2019.

2. **B. B. Risk**, Yuxuan Zhao, M. B. Nebel, D. S. Matteson. Group and Individual Non-Gaussian Component Analysis for Multi-Subject fMRI. *ENAR 2019*. Philadelphia, PA, March 24–27, 2019. (Invited Speed Poster.)

3. Mingrui Liang and **B. B. Risk***. *Presenting author. Time series modeling in high resolution fMRI. *Forecasting from Complexity*, Institute for Mathematics and its Applications, Minneapolis, MN, April 23–27, 2018.

4. Qunqun Yu, **B. B. Risk***, Kai Zhang, and J. S. Marron. *Presenting author. JIVE integration of behavioral and fMRI data. *19th Meeting of New Researchers in Statistics and Probability (NRC 2017)*, Baltimore, Maryland, July 27 - July 29, 2017.

5. B. Langworthy, **B. B. Risk**, K. Sellers, B. Vaughn, J. Gilmore, H. Zhu, and F. Frohlich. The effect of transcranial alternating current stimulation on alpha and gamma oscillations. *2016 Triangle Imaging Symposium*, Chapel Hill, North Carolina, March 23, 2016.

6. **B. B. Risk**, D. S. Matteson, and D. Ruppert. Comparing independent component analysis estimation methods with an application to neuroimaging of resting state functional connectivity in attention deficit and hyperactivity disorder. *ENAR 2012*, Washington, D.C., April 1–4, 2012. Poster abstract.

RESEARCH SUPPORT

Ongoing

Principal Investigator / Multiple Principal Investigator

1. Proposal/Active Project Title: Statistical approaches to improving functional connectivity estimates with an application to autism

   Status of Support: Current

   Proposal/Award Number: R01MH129855

   Name of PD/PI: **Risk, Benjamin**

   Source of Support: NIH/NIMH

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 04/2022

   Proposal/Active Project End Date: (MM/YYYY): 03/2027

   Total Anticipated Proposal/Project Amount: $3,523,863

   Person Months per budget period Devoted to the Proposal/Active Project: 1.81

   Overall Objectives: We develop statistical methods that account for issues created by head motion, and we propose a model for brain dynamics during a task. We conduct a reproducibility study to learn how the brain functions in autism spectrum disorder and develop tools that can be used by other research groups to improve our understanding of brain disorders.

2. Proposal/Active Project Title: Using ensemble learning to understand the impacts of prenatal cannabis exposure

   Status of Support: Current

   Proposal/Award Number: 5P50DA056408

   Name of PD/PI: **Risk, Benjamin**

   Source of Support: Sub from University of Colorado

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 11/2025

   Proposal/Active Project End Date: (MM/YYYY): 10/2026

   Total Anticipated Proposal/Project Amount: $52,166

   Person Months per budget period Devoted to the Proposal/Active Project: 0.12

   Overall Objectives: Use ensemble learning to understand the impacts of prenatal cannabis exposure on neurodevelopment in adolescence.

Co-Investigator

1. Proposal/Active Project Title: Automated programming for personalized deep brain stimulation in Parkinson's disease

   Status of Support: Current

   Proposal/Award Number: R01NS146703

   Name of PD/PI: Miocinovic, Svjetlana

   Source of Support: NIH/NINDS

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 07/2026

   Proposal/Active Project End Date: (MM/YYYY): 06/2031

   Total Anticipated Proposal/Project Amount: $3,804,677

   Person Months per budget period Devoted to the Proposal/Active Project: 0.6

   Overall Objectives: The goal of this Bioengineering Research Grant is to develop and validate an automated DBS programming platform for patients with PD. We hypothesize that meta-AL is the best available algorithm to efficiently optimize DBS parameters, and that DLEP and mEP are superior biomarkers to local field potential beta power for this purpose. A practical, fully automated DBS programming system does not exist – our multi-disciplinary team has the engineering and clinical expertise to achieve it.

2. Proposal/Active Project Title: The Maternal Obesity-Placenta-Brain Axis: Longitudinal MRI Assessment from Gestation to Infancy

   Status of Support: Current

   Proposal/Award Number: R01HD121683

   Name of PD/PI: Wang, Yun

   Source of Support: NIH

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 07/2026

   Proposal/Active Project End Date: (MM/YYYY): 06/2031

   Total Anticipated Proposal/Project Amount: $3,876,784

   Person Months per budget period Devoted to the Proposal/Active Project: 0.6

   Overall Objectives: Aim 1 will determine whether PPO and central adiposity reduce placental oxygenation and microcirculation using T2* and IVIM metrics. Aim 2 will investigate how PPO shapes brain structure, function, and behavior from fetal period through 12 months, assessing attention, self-regulation, and social communication. Aim 3 will examine whether placental dysfunction mediates the PPO effect on brain and behavior through longitudinal mediation models. This comprehensive approach will elucidate the PPO-placenta-brain axis, informing targeted interventions to mitigate neurodevelopmental risks associated with maternal obesity.

3. Proposal/Active Project Title: Explainable and Ethical AI for Studying Alzheimer's Disease

   Status of Support: Current

   Proposal/Award Number: 1R01AG089806-01

   Name of PD/PI: Qiu, Deqiang

   Source of Support: NIH/NIA

   Primary Place of Performance: Georgia, USA

Proposal/Active Project Start Date: (MM/YYYY): 08/2024

Proposal/Active Project End Date: (MM/YYYY): 04/2029

Total Anticipated Proposal/Project Amount: $3,656,996

Person Months per budget period Devoted to the Proposal/Active Project: 0.6

Overall Objectives: This proposal will develop and apply advanced AI models to study Alzheimer's Disease, including the effects of race, comorbidity, and social determinant of health on Alzheimer's Disease as well as identifying cerebrospinal fluid proteins that are predictive of cognitive decline.

4. Proposal/Active Project Title: Leveraging artificial intelligence to develop novel tools for studying infant brain development

   Status of Support: Current

   Proposal/Award Number: 5R00HD103912-05 / %78164 (internal)

   Name of PD/PI: Wang, Yun

   Source of Support: NIH

   Primary Place of Performance: Emory University

   Proposal/Active Project Start Date: (MM/YYYY): 04/2024

   Proposal/Active Project End Date: (MM/YYYY): 02/2027

   Total Anticipated Proposal/Project Amount: $746,997

   Person Months per budget period Devoted to the Proposal/Active Project: 0.24

   Overall Objectives: This proposal leverages artificial intelligence and large-scale datasets to delineate the growth trajectories of brain structure/function and measure their relationship with neuropsychological functions, and to predict the developmental outcomes. Results from this study will fill critical knowledge gaps of early development, advancing efforts toward early identification of developmental delays and disorders.

5. Proposal/Active Project Title: The Pallidohabenular System in Parkinsonism

   Status of Support: Current

   Proposal/Award Number: 1R01NS134941-0

   Name of PD/PI: Smith, Yoland

   Source of Support: NIH/NINDS

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 09/2023

   Proposal/Active Project End Date: (MM/YYYY): 08/2028

   Total Anticipated Proposal/Project Amount: $4,372,528

   Person Months per budget period Devoted to the Proposal/Active Project: 0.84

   Overall Objectives: This project will study, in non-human primates, the anatomical connections and parkinsonism-associated pathophysiological changes of pallidal projections to the lateral habenula, which is involved in the processing of negative valence. Results of this project will further our understanding of the pathophysiology of the pallidohabenular projection in parkinsonism, and may help us to better understand the origin of some of the psychiatric aspects of Parkinson's disease, such as depression.

6. Proposal/Active Project Title: Prognostic MRI and Blood Markers of Wound Healing in Diabetic Foot Ulcers

   Status of Support: Current

   Proposal/Award Number: 1R01DK136983-01

   Name of PD/PI: Reiter, David

   Source of Support: NIH/NIDDK

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 08/2023

   Proposal/Active Project End Date: (MM/YYYY): 06/2028

   Total Anticipated Proposal/Project Amount: $3,124,957

   Person Months per budget period Devoted to the Proposal/Active Project: 0.48

   Overall Objectives: The objective of this proposal is to establish and translate novel noninvasive imaging methods and blood markers prognostic of impaired wound healing in the setting of diabetic foot ulcers (DFU). We will benchmark the sensitivity, specificity, and repeatability of MRI-derived foot perfusion markers and systemic and local metabolic markers of poor wound healing in DFU and examine multiparametric classification models to predict wound healing outcomes in DFU patients receiving standard of care.

7. Proposal/Active Project Title: Synergistic advancements in MR brain thermometry and predictive thermal modeling towards improved understanding of human brain temperature

   Status of Support: Current

   Proposal/Award Number: 1R01NS135856-01

   Name of PD/PI: Fleischer, Candace C

   Source of Support: NIH/NINDS

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 09/2024

   Proposal/Active Project End Date: (MM/YYYY): 08/2029

   Total Anticipated Proposal/Project Amount: $3,837,883

   Person Months per budget period Devoted to the Proposal/Active Project: 0.6

   Overall Objectives: Aim 1: Develop a non-invasive highly accurate in vivo MR brain thermometry method that accounts for effects of tissue heterogeneity, hemodynamics, and susceptibility. Aim 2: Develop a 3D thermoregulatory model based on the fundamental principles of underlying biophysics, refined with inputs from in vivo MR data and morphological and physical properties of the brain, to predict and quantify brain temperature and thermal dynamics. Aim 3: Implement impaired cerebral blood flow into the biophysical model to predict brain temperature.

8. Proposal/Active Project Title: Morris K. Udall Centers of Excellence for Parkinson's Disease Research at Emory University

   Status of Support: Current

   Proposal/Award Number: 1P50NS123103-01

   Name of PD/PI: Wichmann, Thomas

   Source of Support: NIH/NINDS

   Primary Place of Performance: Georgia, USA

Proposal/Active Project Start Date: (MM/YYYY): 09/2021

Proposal/Active Project End Date: (MM/YYYY): 07/2027

Total Anticipated Proposal/Project Amount: $11,764,445

Person Months per budget period Devoted to the Proposal/Active Project: 2.4

Overall Objectives: The Morris K. Udall Parkinson's Disease Center of Excellence for Parkinson's Disease Research at Emory University is a collaborative research program that studies the pathophysiology of parkinsonism with the goal of optimizing the treatment for Parkinson's disease (PD).

9. Proposal/Active Project Title: Cortical Pathophysiology of Parkinsonism

   Status of Support: Current

   Proposal/Award Number: ASAP-020572

   Name of PD/PI: Wichmann, Thomas

   Source of Support: Michael J Fox FDTN for Parkinson's Research

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 10/2021

   Proposal/Active Project End Date: (MM/YYYY): 10/2026

   Total Anticipated Proposal/Project Amount: $6,360,536

   Person Months per budget period Devoted to the Proposal/Active Project: 1.2

   Overall Objectives: The consortium will develop and utilize cortical imaging and other techniques in monkeys and other species to study synchronized multi-neuron activities in the motor cortices in progressive parkinsonism.

10. Proposal/Active Project Title: A novel framework for quantifying metabolic brain health

    Status of Support: Current

    Proposal/Award Number: 1DP2NS127704-01

    Name of PD/PI: Fleischer, Candace C

    Source of Support: NIH/NINDS

    Primary Place of Performance: Georgia, USA

    Proposal/Active Project Start Date: (MM/YYYY): 09/2021

    Proposal/Active Project End Date: (MM/YYYY): 08/2027

    Total Anticipated Proposal/Project Amount: $1,408,500

    Person Months per budget period Devoted to the Proposal/Active Project: 1.08

    Overall Objectives: This proposal aligns with the New Innovator Program as it describes a cross-disciplinary and cross-institute approach to develop the field of metaboloradiomics.

11. Proposal/Active Project Title: Altered Central Multisensory Processing in Post-concussion Vestibular Dysfunction

    Status of Support: Current

    Proposal/Award Number: 1R01NS119683-01A1

    Name of PD/PI: Allen, Jason

    Source of Support: NIH/NINDS

    Primary Place of Performance: Georgia, USA

Proposal/Active Project Start Date: (MM/YYYY): 01/2022

Proposal/Active Project End Date: (MM/YYYY): 12/2026

Total Anticipated Proposal/Project Amount: $1,992,982

Person Months per budget period Devoted to the Proposal/Active Project: 0.6

Overall Objectives: The proposed study will fill a significant knowledge gap and advance our understanding of post-concussive vestibular dysfunction and visual vestibular multisensory processing and dysfunction, as well as define endophenotypes of patients with post-concussion vestibular dysfunction based on clinical and neuroimaging metrics that predict response to vestibular rehabilitation therapy.

12. Proposal/Active Project Title: Cerebral hemodynamic impairment in symptomatic and asymptomatic Alzheimers Disease

    Status of Support: Current

    Proposal/Award Number: 1R01AG072603-01

    Name of PD/PI: Qiu, Deqiang

    Source of Support: NIH/NIA

    Primary Place of Performance: Georgia, USA

    Proposal/Active Project Start Date: (MM/YYYY): 02/2022

    Proposal/Active Project End Date: (MM/YYYY): 01/2027

    Total Anticipated Proposal/Project Amount: $3,951,868

    Person Months per budget period Devoted to the Proposal/Active Project: 1.2

    Overall Objectives: The overarching goal of the proposed project is to study whether Alzheimer's Disease (AD) pathology directly interacts with cerebrovascular pathology in the early phases of the AD continuum, as well as the relative contributions of cerebrovascular and AD pathologies to cognitive impairments in early AD.

13. Proposal/Active Project Title: Optimizing patient-specific deep brain stimulation models using electrophysiology

    Status of Support: Current

    Proposal/Award Number: 1R01NS125143-01

    Name of PD/PI: Miocinovic, Svjetlana

    Source of Support: NIH/NINDS

    Primary Place of Performance: Georgia, USA

    Proposal/Active Project Start Date: (MM/YYYY): 01/2022

    Proposal/Active Project End Date: (MM/YYYY): 12/2026

    Total Anticipated Proposal/Project Amount: $3,171,691

    Person Months per budget period Devoted to the Proposal/Active Project: 0.6

    Overall Objectives: Deep brain stimulation (DBS) is used for treatment of Parkinson's disease and many neuropsychiatric disorders. Researchers and clinicians have used 3-dimensional computer models of patient brains (based on their MRI) to predict how far stimulation effects spread around DBS electrode with the goal of understanding which brain areas are important in DBS and to improve DBS programming. We plan to test the accuracy of different DBS models variants by comparing their predictions of neural activations to experimental evoked potential measurements and to clinical side effects in patients with Parkinson's disease.

Completed
Principal Investigator / Multiple Principal Investigator

1. Proposal/Active Project Title: Advancing Methods for Structural Connectome Acquisition and Estimation in Older Adults

   Status of Support: Completed

   Proposal/Award Number: 1R21AG066970-01

   Name of PD/PI: **Risk, Benjamin** (MPI) and Zhang, Zhengwu

   Source of Support: NIH/NIA (sub from Univ. of Rochester)

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 01/2021

   Proposal/Active Project End Date: (MM/YYYY): 04/2022

   Total Anticipated Proposal/Project Amount: $97,537.50

   Person Months per budget period Devoted to the Proposal/Active Project: 1.2

   Overall Objectives: We aim to understand how accelerated imaging impacts MRI data analysis in subjects at-risk of Alzheimer's disease (AD).

2. Proposal/Active Project Title: Improving estimates of functional connectivity in the human brain

   Status of Support: Completed

   Name of PD/PI: **Risk, Benjamin**

   Source of Support: Emory University Rollins School of Public Health Pilot Grants Awards

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 2019

   Proposal/Active Project End Date: (MM/YYYY): 2020

   Person Months per budget period Devoted to the Proposal/Active Project: 0.12 (in kind)

3. Proposal/Active Project Title: Computational models for biomarker and risk predictions in Alzheimer's Disease

   Status of Support: Completed

   Name of PD/PI: Qiu, Deqiang; Co-PI: **Risk, Benjamin**

   Source of Support: Alzheimer's Disease Research Center at Emory University. Pilot study subaward of P50AG025688

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 2019

   Proposal/Active Project End Date: (MM/YYYY): 2020

   Person Months per budget period Devoted to the Proposal/Active Project: 0.12 (in kind)

Co-Investigator

1. Proposal/Active Project Title: Psychosis-related Physiological and Neuronal Phenotypes in 22q11 Deletion Syndrome

   Status of Support: Completed

   Proposal/Award Number: 5R01MH117315-03

Name of PD/PI: Cubells, Joseph Faustino

Source of Support: NIH/NIMH

Primary Place of Performance: Georgia, USA

Proposal/Active Project Start Date: (MM/YYYY): 09/2019

Proposal/Active Project End Date: (MM/YYYY): 07/2024

Total Anticipated Proposal/Project Amount: $3,378,419

Person Months per budget period Devoted to the Proposal/Active Project: 1.2 (effort reduced to maintain total effort $\leq 100\%$)

Overall Objectives: This project will generate new knowledge regarding a genetic condition called 22q11.2 deletion syndrome that carries a very high-risk developing schizophrenia in affected individuals.

2. Proposal/Active Project Title: Development of Fast Penumbral Imaging in Acute Ischemic Stroke

   Status of Support: Completed

   Proposal/Award Number: 5R01NS083654-08

   Name of PD/PI: Sun, Zhe

   Source of Support: NIH/NINDS

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 07/2020

   Proposal/Active Project End Date: (MM/YYYY): 05/2025

   Total Anticipated Proposal/Project Amount: $2,079,049

   Person Months per budget period Devoted to the Proposal/Active Project: 0.96 (effort reduced to maintain total effort $\leq 100\%$)

   Overall Objectives: We will develop robust fast pH and DKI stroke imaging (Aim 1), establish the spatiotemporal evolution of the refined MRI in MCAO rats (Aim 2), and test tissue-clock-guided reperfusion in rats of common stroke comorbidities of age and diabetes (Aim 3).

3. Proposal/Active Project Title: High-sensitivity Immunomagnetic System for "Liquid Biopsy" of Alzheimer's Disease

   Status of Support: Completed

   Proposal/Award Number: 1R01AG067736-01A1

   Name of PD/PI: Mao, Hui

   Source of Support: NIH/NIA

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 02/2021

   Proposal/Active Project End Date: (MM/YYYY): 12/2025

   Total Anticipated Proposal/Project Amount: $2,935,120

   Person Months per budget period Devoted to the Proposal/Active Project: 0.96 (effort reduced to maintain total effort $\leq 100\%$)

   Overall Objectives: The project proposes to develop a highly sensitive immunemagnetic technology for detection and quantification of Alzheimer's disease (AD) biomarkers, i.e. amyloid-β peptides (Aβs) and microtubule tau proteins, in cerebrospinal fluid or even blood samples.

4. Proposal/Active Project Title: Improved non-invasive MR brain thermometry for therapeutic hypothermia

   Status of Support: Completed

   Proposal/Award Number: 1R21EB029622-01A1

   Name of PD/PI: Fleischer, Candace C

   Source of Support: NIH/NIBIB

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 04/2021

   Proposal/Active Project End Date: (MM/YYYY): 12/2023

   Total Anticipated Proposal/Project Amount: $624,000

   Person Months per budget period Devoted to the Proposal/Active Project: 0.6

   Overall Objectives: Our goal is to develop a new method for non-invasive brain temperature monitoring and to demonstrate the ability to measure brain-body temperature differences in cardiac arrest patients during cooling.

5. Proposal/Active Project Title: Prognostic Imaging and Blood Markers of Wound Healing Among Patients with Diabetic Foot Ulcers

   Status of Support: Completed

   Name of PD/PI: Reiter, David

   Source of Support: Augusta University/ Diabetic Complications Consortium (NIDDK)

   Primary Place of Performance: Georgia, USA

   Proposal/Active Project Start Date: (MM/YYYY): 2019

   Proposal/Active Project End Date: (MM/YYYY): 2020

   Person Months per budget period Devoted to the Proposal/Active Project: 0.12 (in kind)

Honors and Awards

- Journal of the American Statistical Association Reproducibility Award for "Sparse independent component analysis with an application to cortical surface fMRI data in autism," by Z. Wang*, I. Gaynanova, A. Aravkin, **B. B. Risk**. Presented at JSM 2025.
- Distinguished Teaching Award, Department of Biostatistics and Bioinformatics, Emory University, 2021.
- Runner-up in the student paper competition, Imaging Section of the American Statistical Association, JSM 2016.
- Presidential Scholar, Dartmouth College, 2003.
- Phi Beta Kappa, Member, 2002.

Software

1. L. Wang, I. Gaynanova, and **B. B. Risk**. singR: An R package for SImultaneous Non-Gaussian component analysis. CRAN.R-project.org/package=singR.
2. **B. B. Risk** and Hongtu Zhu. Code supporting "ACE of space: estimating genetic components of high-dimensional imaging data." github.com/BenjaminRisk/SpatialACE.



Software available at github.com/thebrisklab.

3. **B. B. Risk**, D. S. Matteson, and D. R. Ruppert. Code supporting "Linear Non-Gaussian Component Analysis via Maximum Likelihood."
   github.com/BenjaminRisk/LNGCA.
4. **B. B. Risk**, N. A. James, and D. S. Matteson. steadyICA: An R-package for independent component analysis and multivariate tests of independence using distance covariance. cran.r-project.org/web/packages/steadyICA/
5. F. Mestre, F. Canovas, **B. Risk**, R. Pita, A. Mira, and P. Beja. MetaLandSim: An R-package for landscape and range expansion simulation. cran.r-project.org/web/packages/MetaLandSim/
6. **B. B. Risk**. Code supporting "Spatiotemporal mixed modeling of multi-subject task fMRI via method of moments." github.com/BenjaminRisk/stmm
7. **B. B. Risk**. Code supporting "An evaluation of independent component analyses with an application to resting state fMRI." http://onlinelibrary.wiley.com/doi/10.1111/biom.12111/full.
8. **B. B. Risk**. Code supporting "A robust-design formulation of the incidence function model of metapopulation dynamics applied to two species of rails." www.esapubs.org/archive/ecol/E092/040/.

Mentoring

PhD Students Supervised

1. Baijia Xu. Department of Biostatistics and Bioinformatics. Current.
2. Winn Wencheng Wu. Department of Biostatistics and Bioinformatics. Current.
3. Zihang Wang. Department of Biostatistics and Bioinformatics. Completed: Summer 2026. Position after graduation: post-doc at the Wharton School of the University of Pennsylvania.
4. Ganzhong (Gavin) Tian. Department of Biostatistics and Bioinformatics. Completed: Summer 2022. Probabilistic clustering of complex biomarker data for Alzheimer's Disease. Position after graduation: Analyst for Amazon.
5. Raphiel Murden. Department of Biostatistics and Bioinformatics. Completed: Summer 2021. Topics in Data Integration Methods for Neuroimaging and Generalized Additive Mixed Models for Ambulatory Blood Pressure Curves and Psychosocial Stressors. Position after graduation: Assistant Professor in the Department of Biostatistics and Bioinformatics, Emory University.

PhD Student Committees

1. Lina Dimitrov, Department of Epidemiology. Current.

2. Qi Yu, Department of Biostatistics and Bioinformatics. Completed June 2025.

3. Delante Moore, Department of Biostatistics and Bioinformatics. Completed October 2025.

4. Jialu Ran, Department of Biostatistics and Bioinformatics. Completed July 2024.

5. Zeena Ammar, Department of Neuroscience and Behavioral Biology. Completed Summer 2023.

6. Sohail Nizam, Department of Biostatistics and Bioinformatics. Completed Spring 2023.

7. Samuel Aiyedipe, Department of Biostatistics and Bioinformatics. Completed Spring 2022.

8. Yikai Wang, Department of Biostatistics and Bioinformatics. Completed Spring 2020.

Master's Students

1. Jeffrey Gong. (Completed: Capstone, Spring 2025.) Improving Sampling Design in Studies of Parkinsonism in Monkeys.

2. Xucheng (Fred) Huang. (Completed: Master's thesis, Spring 2024.) Analysis of Simultaneous Eye-tracking and fMRI Data Collected in Children with ASD.

3. Yilu Li. (Completed: Capstone, Spring 2024.) mrbrainwashR: Correcting Biases in Neuroimaging Data Analysis with R.

4. Liangkang Wang (Completed: Master's Thesis, Spring 2023). Compensating for selection bias when detecting altered functional connectivity in autism. Position after graduation: PhD student in the Department of Biostatistics at Brown University.

5. Jinyu Wang (Completed: Capstone, Spring 2023). Flexibly modeling motion confounders in functional connectivity studies with an application to autism.

6. Sijian Fan. (Completed: Spring 2020). Improved Algorithm for Independent Component Analysis (ICA) with Relax and Split Approximation. Position after graduation: PhD student in the Department of Statistics at the University of South Carolina.

7. Lingyi Peng. (Completed: Spring 2020). Variable Selection of Neuroimaging Features in Mild Cognitive Impairment. Position after graduation: PhD student in the Department of Biostatistics at the University of Pittsburgh.

8. Liwei Wang. (Completed: Spring 2020). The impact of quality control exclusion criteria on functional connectivity in children with neurodevelopmental disorders. Position after graduation: Statistical programmer in Shanghai, China.

9. Zixi Yang. (Completed: Spring 2019). The impact of initialization in optimization of independent components in functional magnetic resonance imaging. Positions after graduation: PhD student in the Department of Biostatistics and Data Science at UT Health, the University of Texas.

10. Mingrui Liang. (Completed: Spring 2018). An exploration of time series models and their application to functional magnetic resonance imaging. Currently a PhD student in the Department of Statistics at Rice University.

Teaching

Emory University

Instructor

- BIOS 709. Generalized Linear Models (13 students, Spring 2026).
- BIOS 709. Generalized Linear Models (9 students, Spring 2025).
- BIOS 526. Modern Regression Analysis (45 students Fall 2018, 48 Fall 2019, 32 Fall 2020, 20 Fall 2021, 26 for Fall 2022, 28 Fall 2023). 3 credits.
- BIOS 780R. Research Methods in Biostatistics (5 in Spring 2018, 7 Spring 2019, 8 Spring 2020, 7 Spring 2021, 10 Spring 2022, 8 Spring 2023, 8 Spring 2024). 1 credit.
- BIOS 590/790. Seminar in Biostatistics (102 in 590 and 14 in 790 Spring 2019, 99 and 16 Spring 2020, co-instructor with 76 and 21 in Fall 2021). 1 credit.
- Guest lecturer / lab organizer for Emory Summer Institute in Biostatistics, Summer 2019. (1 day.)
- Guest lecturer in BIOS 516: Introduction to Large-Scale Biomedical Data Analysis (Fall 2019, Fall 2021). (1 2-hr lecture.)
- Guest lecturer in BIOS 760: Special Topics: Neuroimaging Statistics (Spring 2020). (1 2-hr lecture.)

Professional Service

National/International

1. Leadership roles and committees:

    - Poster judge for Georgia Statistics Day, 2026.
    - Organizing committee for Georgia Statistics Day, 2026.
    - Reviewer for the Statistical Methods in Imaging 2026 Student Paper Award.
    - Scientific Advisory Panel, Statistical Methods in Imaging Conference, 2026.
    - Program committee, JSM 2024, ENAR representative.
    - Reviewer for the Statistical Methods in Imaging 2024 Student Paper Award.
    - Reviewer for the JSM 2023 Student Paper Award for the Section on Imaging Statistics of the American Statistical Association.
    - Program Chair (2023) and Program Chair Elect (2022), Statistics in Imaging Section. Organizer of the JSM 2022 Student Paper Award.
    - Program committee, JSM 2023, Statistics in Imaging section representative.
    - Organizer of the JSM 2022 Student Paper Award for the Section on Imaging Statistics of the American Statistical Association.
    - Reviewer for the Student Paper Award, Statistical Methods in Imaging Conference 2022.
    - Program committee, ENAR 2022.
    - Local organizing committee, Statistical Methods in Imaging Conference 2021.
    - Organizer of the Student Paper Award, Statistical Methods in Imaging Conference 2020.
    - ENAR Regional Advisory Board, 2019-2021. Secretary: 2020-2021.
    - Reviewer for the 2018 David P. Byar Award for the Biometrics Section of the American Statistical Association.
    - 2016 Field of Dreams Conference, Math Alliance. *SAMSI representative and presenter*

2. Session organizer:

    - Recent advancements in statistical methods for MRI. Invited Session. *Statistical Methods in Imaging 2026*, University of Michigan, Ann Arbor, MI.

- New approaches to analyzing neuroimaging data. Invited Session. *Statistical Methods in Imaging 2023*, University of Minnesota, Minneapolis, MN.
- New approaches to analyzing neuroimaging data. Invited Session. *Statistical Methods in Imaging 2023*, Minneapolis, MN.
- Causal Inference in Neuroimaging and Radiology. Topic Contributed Papers. *JSM 2022*, Washington, D.C.
- Advanced Imaging. *Statistics in Imaging 2021.*
- Modeling with Large Covariance Matrices: Applications in Neuroimaging. *ENAR 2021.*
- Student Paper Awards Presentations, organizer and chair. *Statistical Methods in Imaging 2020.*
- Nonconvex optimization and biological applications. *ENAR 2019.*
- Analysis and Processing of Complex-valued MRI. *Statistics in Imaging 2018.*

3. Session chair:

- When machine learning and generative models meet imaging, network and point cloud data. Statistical Methods in Imaging 2024. Indianapolis, IN. May 29-31, 2024.
- Session 28: Non-Parametric Methods for Biomedical Data. ICSA Canada Chapter 2022 Symposium. Banff, Alberta, Canada, July 8-10, 2022.
- Analysis of brain imaging data using shape-restricted modeling, tensor modeling and directional network modeling. Statistical Methods in Imaging 2022, Nashville, TN.
- Session 83: Missing Data. ENAR 2022, Houston, TX.
- Session 215633: Applications in Time Series Analysis. JSM 2018, Vancouver, BC, CA.

Emory University

1. Department Representative, Rollins School of Public Health Faculty Council. Fall 2026-present.
2. Department of Biostatistics and Bioinformatics Awards committee. 2021-present.
3. Community and Diversity Committee, Rollins School of Public Health, Emory University. 2021-2023.
4. Diversity, Equity, and Inclusion Committee, Department of Biostatistics and Bioinformatics. Chair, 2021-2025. Member, 2018-2020.
5. Emory representative at the Fostering Diversity in Biostatistics Workshop, ENAR 2021, 2023.
6. Methods curriculum subcommittee, Department of Biostatistics & Bioinformatics. 2018-2020.
7. Research computing working group. Department of Biostatistics & Bioinformatics. 2017-2020.
8. Computation and Data Science Advisory Group, Rollins School of Public Health. 2018-2021.
9. PhD admissions committee, Department of Biostatistics and Bioinformatics. 2019, 2020.

10. Shepard Award committee for best Master's thesis in the Department of Biostatistics & Bioinformatics. 2018, 2022-2024.

11. Qualifying exam committee. Department of Biostatistics & Bioinformatics. 2018. 2024.

12. Emory STEM Research and Career Symposium. BIOS organizer and participant. The symposium brings together students from diverse backgrounds for networking, mentoring, and recruitment. 2018.

Referee

- Annals of Applied Statistics
- Annals of Epidemiology
- Annals of Statistics
- Biometrics
- Biometrika
- Biostatistics
- Brain and Behavior
- Canadian Journal of Statistics
- Computational Statistics and Data Analysis
- Data Science in Science
- Frontiers in Neuroscience
- Human Brain Mapping
- IEEE Transactions on Medical Imaging
- IEEE Transactions on Computational Biology and Bioinformatics
- Imaging Neuroscience
- International Conference on Machine Learning
- Journal of Alzheimer's Disease
- Journal of the American Statistical Association
- Journal of Computational and Graphical Statistics
- Journal of Machine Learning Research
- Nature
- Nature Communications
- Network Neuroscience
- NeuroImage
- Scandinavian Journal of Statistics
- Statistics and Its Interface
- Statistics in Medicine

Editorial Board

- Data Science in Science

Grant Review

- Reviewer for Analytics and Statistics in Population Research Panel B (ASPB) study section of the NIH, Summer 2026.
- Reviewer for Loan Repayment Program Special Emphasis Panel, National Institute of Child Health and Human Development, Spring 2025.
- Reviewer for Analytics and Statistics in Population Research Panel A (ASPA) study section of the NIH, Summer 2023.
- Reviewer for NSF proposal in Cognitive Neuroscience.

PROFESSIONAL EXPERIENCE

SUNY-ESF, Pinta and Santa Cruz Islands, Galápagos, Ecuador
Field Technician **Summer 2010**

American Journal Experts
Contract Editor **Fall 2009 - Spring 2010**

Bird Conservancy of the Rockies, Fort Collins, CO
Avian Ecologist **Winter - Summer 2007**
- Conducted statistical analyses of habitat use by birds.

Charles River Associates, Oakland, CA
Research Associate **Winter 2004 - Summer 2006**
- Conducted statistical analyses in antitrust and energy economics.

Resource Systems Group, White River Junction, VT
Intern **Winter - Spring 2003**

Smithsonian Migratory Bird Center, Hubbard Brook, NH
Field Technician **Summer 2000 and Summer 2002**

Cooperative Extension Unit, University of Montana, Cosanga, Ecuador
Field Technician **Spring 2001**

PROFESSIONAL MEMBERSHIPS
American Statistical Association (ASA)
Eastern North American Region of the International Biometric Society (ENAR)
International Society for Magnetic Resonance in Medicine
Organization for Human Brain Mapping

HOBBIES
Cycling, guitar, birdwatching, hiking.

CITIZENSHIP
U.S.A.