John Muschelli III

PERSONAL DATA

Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health. 615 North Wolfe Street, Baltimore, MD 21205-2179.

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EDUCATION AND TRAINING

Degrees

2012–2016 **PhD**, *Biostatistics*,
   Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.
2008–2010 **ScM**, *Biostatistics*,
   Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.
2004–2008 **BS**, *Biomathematics and Neuroscience*,
   The University of Scranton, Scranton, PA

Training Programs

2012–2016 **Epidemiology and Biostatistics of Aging (EBA) Training Program**
   Johns Hopkins University, Center on Aging and Health.

PROFESSIONAL EXPERIENCE

2016–Present **Assistant Scientist**, Department of Biostatistics, Johns Hopkins
   Bloomberg School of Public Health.
2012–2016 **Trainee**, *T32AG021334: Epidemiology and Biostatistics of Aging Training Grant*, Mentors: Dr. Michelle Carlson, Dr. Ravi Varadhan.
2009–2016 **Research Associate**, *Johns Hopkins Biostatistics Consulting Center*,
   Baltimore, MD.
2009–2014 **Data Analyst / Data Manager**, *Brain Injury Outcomes Division*,
   Baltimore, MD.
2010–2012 **Data Analyst**, *Laboratory for Neurocognitive and Imaging Research at Kennedy Krieger Institute*, Baltimore, MD.

PROFESSIONAL ACTIVITIES

Professional Memberships

American Statistical Association.
International Biometric Society.
American Heart Association.

Program Development

Session Chair, Joint Statistical Meetings (2017).
Session Chair, Eastern North Atlantic Region Meeting (2017, 2019).
Session Organizer, Joint Statistical Meetings (2017).

EDITORIAL ACTIVITIES

Peer Review Activities

- o Scientific Reports, https://www.nature.com/srep/.
- o Human Brain Mapping, https://onlinelibrary.wiley.com/journal/10970193.
- o NeuroImage, https://www.journals.elsevier.com/neuroimage.
- o Radiology: Artificial Intelligence, https://pubs.rsna.org/journal/ai.
- o Journal of Neuroimaging, https://onlinelibrary.wiley.com/journal/15526569 .
- o Transactions on Biomedical Engineering, https://tbme.embs.org/.
- o International Journal of Information Technology & Decision Making, https://www.worldscientific.com/worldscinet/ijitdm.
- o Expert Systems With Applications, https://www.journals.elsevier.com/ expert-systems-with-applications.
- o Data, https://www.mdpi.com/journal/data.

Review of Proposals

Pilot Proposals for the SPIRiT Network

HONORS AND AWARDS

2019 Research Grant, Digital Education & Learning Technology Acceleration (DELTA)
2014 Community Service Award, SOURCE (Student Outreach Resource Center)
2011 Recognition, Member of the winning team of the ADHD 200 Competition.
2014 Top Poster, *Hopkins Imaging Conference*, Baltimore, MD, Poster.

PUBLICATIONS

Books

Crainiceanu, C., Caffo, B., Muschelli, J., (Apr. 2018). Methods in Biostatistics with R: A Rigorous and Practical Treatment of Biostatistics Foundations using R. Leanpub. URL: https://leanpub.com/biostatmethods.

Journal Articles

 * denotes authors contributed equally
1. Ding, T, Cohen, A., O'Connor, E., Karim, H., Crainiceanu, A, **Muschelli, J**, Lopez, O, Klunk, W., Aizenstein, H., Krafty, R, (2020). "An improved algorithm of white matter hyperintensity detection in elderly adults". *NeuroImage: Clinical* 25, p. 102151.
2. Hansen, B. M., Ullman, N., **Muschelli, J.**, Norrving, B., Dlugash, R., Avadhani, R., Awad, I., Zuccarello, M., Ziai, W. C., Hanley, D. F., (2020). "Relationship of white matter lesions with intracerebral hemorrhage expansion and functional outcome: MISTIE II and CLEAR III". Neurocritical Care, pp. 1–9. DOI: 10.1007/s12028-020-00916-4.
3. Rothstein, J. D., Caulfield, L. E., Broaddus-Shea, E. T., **Muschelli, J.**, Gilman, R. H.,

Winch, P.J., (2020). "'The doctor said formula would help me': health sector influences on use of infant formula in peri-urban Lima, Peru". *Social Science & Medicine* 244.C.

4. Valcarcel, A. M., **Muschelli, J.**, Pham, D. L., Martin, M. L., Yushkevich, P., Brandstadter, R., Schindler, M. K., Patterson, K. R., Calabresi, P. A., Bakshi, R., Shinohara, R. T., (2020). "TAPAS: a thresholding approach for probability map automatic segmentation in multiple sclerosis". *NeuroImage: Clinical*.

5. **Muschelli, J.** (2019b). "ROC and AUC with a binary predictor: a potentially misleading metric". *Journal of Classification*, pp. 1–13.

6. **Muschelli, J.** (2019a). "Recommendations for processing head CT data". *Frontiers in Neuroinformatics* 13, p. 61. ISSN: 1662-5196. DOI: 10.3389/fninf.2019.00061. URL: https://www.frontiersin.org/article/10.3389/fninf.2019.00061.

7. Hadavand, A., **Muschelli, J.**, Leek, J., (2019). "Analysis of student behavior using the R package crsra". *Journal of Learning Analytics* 6.2, pp. 140–152.

8. Ryan, S. M., Vestal, B., Maier, L. A., Carlson, N. E., **Muschelli, J.,** (2019). "Template creation for high-resolution computed tomography scans of the lung in R software". *Academic Radiology*.

9. **Muschelli, J.**, Sweeney, E., Crainiceanu, C. M., (2018). "freesurfer: connecting the Freesurfer software with R". *F1000Research* 7.

10. **Muschelli, J**., Gherman, A., Fortin, J.-P., Avants, B., Whitcher, B., Clayden, J. D., Caffo, B. S., Crainiceanu, C. M., (2018). "Neuroconductor: an R platform for medical imaging analysis". Biostatistics, kxx068. DOI: 10.1093/biostatistics/kxx068.

11. Commowick, O., Istace, A., Kain, M., Laurent, B., Leray, F., Simon, M., Pop, S. C., Girard, P., Ameli, R., Ferré, J.-C., Kerbrat, A., Tourdias, T., Cervenansky, F., Glatard, T., Beaumont, J., Doyle, S., Forbes, F., Knight, J., Khademi, A., Mahbod, A., Wang, C., Mckinley, R., Wagner, F., **Muschelli, J.**, Sweeney, E., Roura, E., Lladó, X., Santos, M. M., Santos, W. P., Silva-Filho, A. G., Tomas-Fernandez, X., Urien, H., Bloch, I., Valverde, S., Cabezas, M., Vera-Olmos, F. J., Malpica, N., Guttmann, C., Vukusic, S., Edan, G., Dojat, M., Styner, M., Warfield, S. K., Cotton, F., Barillot, C., (2018). "Objective evaluation of multiple sclerosis lesion segmentation using a data management and processing infrastructure". *Scientific Reports*.

12. Smith, C. H., Turbitt, E., **Muschelli, J.**, Leonard, L., Lewis, K. L., Freedman, B., Muratori, M., Biesecker, B. B., (2018). "Feasibility of coping effectiveness training for caregivers of children with autism spectrum disorder: a genetic counseling intervention". *Journal of genetic counseling* 27.1, pp. 252–262.

13. Valcarcel, A., **Muschelli, J**, Crainiceanu, C, Pham, D., Calabresi, P., Bakshi, R, Shinohara, R., (2018c). "TAPAS: threshold adjustment to probability map automatic segmentations". *MULTIPLE SCLEROSIS JOURNAL*. Vol. 24, pp. 629–630.

14. Valcarcel, A. M., Linn, K. A., Vandekar, S. N., Satterthwaite, T. D., **Muschelli, J.**, Calabresi, P. A., Pham, D. L., Martin, M. L., Shinohara, R. T., (2018b). "MIMoSA: an automated method for intermodal segmentation analysis of multiple sclerosis brain lesions". *Journal of Neuroimaging*.

15. Valcarcel, A. M., Linn, K. A., Khalid, F., Vandekar, S. N., Tauhid, S., Satterthwaite, T. D., **Muschelli, J.**, Bakshi, R., Shinohara, R. T., (2018a). "MIMoSA: an approach to automatically segment T2 hyperintense and T1 hypointense lesions in multiple sclerosis". *International MICCAI Brainlesion Workshop*, pp. 47–56.

16. **Muschelli, J.**, Sweeney, E. M., Ullman, N. L., Vespa, P., Hanley, D. F., Crainiceanu, C. M., (2017). "PItcHPERFeCT: primary intracranial hemorrhage probability

estimation using random forests on CT". *NeuroImage: Clinical* 14, pp. 379 –390. ISSN: 2213-1582. DOI: http://dx.doi.org/10.1016/j.nicl.2017.02.007. URL: http://www.sciencedirect.com/science/article/pii/S2213158217300414.

17. Hanley, D. F., Lane, K., McBee, N., Ziai, W., Tuhrim, S., Lees, K. R., Dawson, J., Gandhi, D., Ullman, N., Mould, W. A., Mayo, S. W., Mendelow, A. D., Gregson, B., Butcher, K., Vespa, P., Wright, D. W., Kase, C. S., Carhuapoma, J. R., Keyl, P. M., Diener-West, M., **Muschelli, J.**, Betz, J. F., Thompson, C. B., Sugar, E. A., Yenokyan, G., Janis, S., John, S., Harnof, S., Lopez, G. A., Aldrich, E. F., Harrigan, M. R., Ansari, S., Jallo, J., Caron, J.-L., LeDoux, D., Adeoye, O., Zuccarello, M., Adams, H. P., Rosenblum, M., Thompson, R. E., Awad, I. A., (2017). "Thrombolytic removal of intraventricular haemorrhage in treatment of severe stroke: results of the randomised, multicentre, multiregion, placebo-controlled CLEAR III trial". *The Lancet* 389.10069, pp. 603–611.

18. Kickingereder, P., Neuberger, U., Bonekamp, D., Piechotta, P., Götz, M., Wick, A., Sill, M., Kratz, A., Shinohara, R., Jones, D., Radbruch, A., **Muschelli, J.**, Unterberg, A., Debus, J., Schlemmer, H.-P., Herold-Mende, C., Pfister, S., von Deimling, A., Wick, W., Capper, D., Maier-Hein, K., Bendszus, M., (2017). "Radiomic subtyping improves disease stratification beyond key molecular, clinical and standard imaging characteristics in patients with glioblastoma." *Neuro-Oncology*.

19. Maier, O., Menze, B., von der Gablentz, J., Häni, L., Heinrich, M., Liebrand, M., Winzeck, S., Basit, A., Bentley, P., Chen, L., Christiaens, D., Dutil, F., Egger, K., Feng, C., Glocker, B., Götz, M., Haeck, T., Halme, H.-L., Havaei, M., Iftekharuddin, K., Jodoin, P.-M., Kamnitsas, K., Kellner, E., Korvenoja, A., Larochelle, H., Ledig, C., Lee, J.-H., Maes, F., Mahmood, Q., Maier-Hein, K., McKinley, R., **Muschelli,J.**, Pal, C., Pei, L., Rangarajan, J., Reza, S., Robben, D., Rueckert, D., Salli, E., Suetens, P., Wang, C.-W., Wilms, M., Kirschke, J., Krämer, U., Münte, T., Schramm, P., Wiest, R., Handels, H., Reyes, M., (2017). "ISLES 2015 - a public evaluation benchmark for ischemic stroke lesion segmentation from multispectral MRI". *Medical Image Analysis* p 35.

20. Bundy, D. G., **Muschelli, J.**, Clemens, G. D., Strouse, J. J., Thompson, R. E., Casella, J. F., Miller, M. R., (2016). "Preventive care delivery to young children with sickle cell disease". *Journal of pediatric hematology/oncology* 38.4, pp. 294–300.

21. Fortin, J.-P., Sweeney, E. M., **Muschelli, J.**, Crainiceanu, C. M., Shinohara, R. T., Initiative, A. D. N., (2016). "Removing inter-subject technical variability in magnetic resonance imaging studies". *NeuroImage* 132, pp. 198–212.

22. Hanley, D. F., Thompson, R. E., **Muschelli, J.**, Rosenblum, M., McBee, N., Lane, K., Bistran-Hall, A. J., Mayo, S. W., Keyl, P., Gandhi, D., Morgan, T. C., Ullman, N., Mould, W. A., Carhuapoma, J. R., Kase, C., Ziai, W., Thompson, C. B., Yenokyan, G., Huang, E., Broaddus, W. C., Graham, R. S., Aldrich, E. F., Dodd, R., Wijman, C., Caron, J.-L., Huang, J., Camarata, P., Mendelow, A. D., Gregson, B., Janis, S., Vespa, P., Martin, N., Awad, I., Zuccarello, M., (2016). "Safety and efficacy of minimally invasive surgery plus alteplase in intracerebral haemorrhage evacuation (MISTIE): a randomised, controlled, open-label, phase 2 trial". *The Lancet Neurology* 15.12, pp. 1228–1237.

23. Kickingereder, P, Götz, M, **Muschelli, J**, Wick, A, Neuberger, U, Shinohara, R, Radbruch, A, Schlemmer, H, Wick, W, Bendszus, M, Maier-Hein, K, Bonekamp, D, (2016). "Large-scale radiomic profiling of glioblastoma identifies an imaging signature for predicting and stratifying antiangiogenic treatment response".

RöFo-Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren. Vol. 188. S 01, WISS301_1.

24. Sweeney, E. M., Shinohara, R. T., Dewey, B. E., Schindler, M. K., **Muschelli, J.**, Reich, D. S., Crainiceanu, C. M., Eloyan, A., (2016). "Relating multi-sequence longitudinal intensity profiles and clinical covariates in incident multiple sclerosis lesions". *NeuroImage: Clinical* 10, pp. 1–17.

25. **Muschelli, J.**, Ullman, N. L., Mould, W. A., Vespa, P., Hanley, D. F., Crainiceanu, C. M., (2015b). "Validated automatic brain extraction of head CT images". *NeuroImage* 114, pp. 379–385.

26. **Muschelli, J.**, Sweeney, E., Lindquist, M., Crainiceanu, C., (2015a). "fslr: connecting the FSL software with R". *R Journal* 7.1, pp. 163–175.

27. **Muschelli, J.**, Ullman, N. L., Sweeney, E. M., Eloyan, A., Martin, N., Vespa, P., Hanley, D. F., Crainiceanu, C. M., (2015c). "Quantitative intracerebral hemorrhage localization". *Stroke* 46.11, pp. 3270–3273.

28. Choe, A. S., Jones, C. K., Joel, S. E., **Muschelli, J.**, Belegu, V., Caffo, B. S., Lindquist, A., van Zijl, P. C., Pekar, J. J., (2015). "Reproducibility and temporal structure in weekly resting-state fMRI over a period of 3.5 years". *PloS one* 10.10, e0140134.

29. Webb, A. J., Ullman, N. L., Morgan, T. C., **Muschelli, J.**, Kornbluth, J., Awad, I. A., Mayo, S., Rosenblum, M., Ziai, W., Aldrich, Zuccarrello, F. M., John, S., Harnof, S., Lopez, G., Broaddus, W. C., Wijman, C., Vespa, P., Bullock, R., Haines, S. J., Cruz-Flores, S., Tuhrim, S., Hill, M. D., Narayan, R., Hanley, D. F., (2015). "Accuracy of the ABC/2 score for intracerebral hemorrhage systematic review and analysis of MISTIE, CLEAR-IVH, and CLEAR III". *Stroke* 46.9, pp. 2470–2476.

30. **Muschelli, J.**, Sweeney, E., Crainiceanu, C., (2014). "brainR: interactive 3 and 4D images of high resolution neuroimage data". *R Journal* 6.1, pp. 41–48.

31. **Muschelli, J.**, Betz, J., Varadhan, R., (2014). "Binomial regression in R". *Handbook of Statistics: Computational Statistics with R* 32, pp. 257–309.

32. **Muschelli*, J.**, Nebel*, M. B., Caffo, B. S., Barber, A. D., Pekar, J. J., Mostofsky, S. H., (2014). "Reduction of motion-related artifacts in resting state fMRI using aCompCor". *NeuroImage* 96, pp. 22–35.

33. Eloyan, A., Li, S., **Muschelli, J.**, Pekar, J. J., Mostofsky, S. H., Caffo, B. S., (2014). "Analytic programming with fMRI data: a quick-start guide for statisticians using R". *PLOS ONE* 9.2, e89470.

34. Nebel, M. B., Joel, S. E., **Muschelli, J.**, Barber, A. D., Caffo, B. S., Pekar, J. J., Mostofsky, S. H., (2014). "Disruption of functional organization within the primary motor cortex in children with autism". *Human Brain Mapping* 35.2, pp. 567–580.

35. Mould, W. A., Carhuapoma, J. R., **Muschelli, J.**, Lane, K., Morgan, T. C., McBee, N., Bistran-Hall, A. J., Ullman, N. L., Vespa, P., Martin, N. A., Awad, I., Zuccarello, M., Hanley, D. F., (2013a). "Minimally invasive surgery plus recombinant tissue-type plasminogen activator for intracerebral hemorrhage evacuation decreases perihematomal edema". *Stroke* 44.3, pp. 627–634.

36. Mould, W., Carhuapoma, J., **Muschelli, J**, Lane, K, Morgan, T., McBee, N., Bistran-Hall, A., Ullman, N., Vespa, P, Martin, N., Awad, I., Zuccarello, M., Hanley, D. F., (2013b). "MISTIE investigators: minimally invasive surgery plus recombinant tissue- type plasminogen activator for intracerebral hemorrhage evacuation decreases peri-hematomal edema". *Stroke* 44.3, pp. 627–634.

37. Bundy, D. G., **Muschelli, J.**, Clemens, G. D., Strouse, J. J., Thompson, R. E., Casella, J. F., Miller, M. R., (2012). "Ambulatory care connections of medicaid-insured

children with sickle cell disease". *Pediatric Blood & Cancer* 59.5, pp. 888–894.

38. Eloyan, A., **Muschelli, J.**, Nebel, M. B., Liu, H., Han, F., Zhao, T., Barber, A. D., Joel, S., Pekar, J. J., Mostofsky, S. H., (2012). "Automated diagnoses of attention deficit hyperactive disorder using magnetic resonance imaging". *Frontiers in Systems Neuroscience* 6, p. 6.

39. Hinson, H. E., Melnychuk, E., **Muschelli, J.**, Hanley, D. F., Awad, I. A., Ziai, W. C., (2012). "Drainage efficiency with dual versus single catheters in severe intraventricular hemorrhage". *Neurocritical Care* 16.3, pp. 399–405.

40. Jaffe, J., Melnychuk, E., **Muschelli, J.**, Ziai, W., Morgan, T., Hanley, D. F., Awad, I. A., (2012). "Ventricular catheter location and the clearance of intraventricular hemorrhage". *Neurosurgery* 70.5, pp. 1258–1264.

41. Webb, A. J., Ullman, N. L., Mann, S., **Muschelli, J.**, Awad, I. A., Hanley, D. F., (2012). "Resolution of intraventricular hemorrhage varies by ventricular region and dose of intraventricular thrombolytic the clot lysis: evaluating accelerated resolution of IVH (CLEAR IVH) program". *Stroke* 43.6, pp. 1666–1668.

42. Ziai, W. C., **Muschelli, J.**, Thompson, C. B., Keyl, P. M., Lane, K., Shao, S., Hanley, D. F., (2012). "Factors affecting clot lysis rates in patients with spontaneous intraventricular hemorrhage". *Stroke* 43.5, pp. 1234–1239.

43. Newell, D. W., Shah, M. M., Wilcox, R., Hansmann, D. R., Melnychuk, E., **Muschelli, J.**, Hanley, D. F., (2011). "Minimally invasive evacuation of spontaneous intracerebral hemorrhage using sonothrombolysis". *Journal of Neurosurgery* 115.3, pp. 592–601.

44. Niedner, M. F., Huskins, W. C., Colantuoni, E., **Muschelli, J.**, Harris, J. M., Rice, T. B., Brilli, R. J., Miller, M. R., (2011). "Epidemiology of central line-associated bloodstream infections in the pediatric intensive care unit". *Infection Control* 32.12, pp. 1200–1208.

Articles and Editorials not peer reviewed

1. Sharrock, M., Mould, W. A., Ali, H., Hildreth, M., Hanley, D. F., Muschelli, J., (2020). "3D deep neural network segmentation of intracerebral hemorrhage: development and validation for clinical trials". medRxiv (under review).

2. Leroux, A., Xu, S., Kundu, P., Muschelli, J., Smirnova, E., Chatterjee, N., Crainiceanu, C. (2020). "Quantifying the Predictive Performance of Objectively Measured Physical Activity on Mortality in the UK Biobank" (submitted).

Other

The Corresponding Author: An Academic Data Science Podcast, *John Muschelli and Stephanie Hicks*, https://soundcloud.com/the-corresponding-author, Approximately 300 listeners.

A HopStat and Jump Away. A blog about statistics and other academic data science information. https://hopstat.wordpress.com/

Software Packages

All download counts are from RStudio CRAN logs and are accurate as of April 22, 2020.

rscopus: Scopus Database API Interface, *49092*.

fslr: Wrapper Functions for FSL (FMRIB Software Library) from Functional

> MRI of the Brain (FMRIB), *32914*.

neurobase: Neuroconductor Base Package with Helper Functions for

> nifti Objects, *27353*.

brainR: Helper Functions to misc3d and rgl Packages for Brain Imaging, *25576*.

matlabr: An Interface for MATLAB using System Calls, *23256*.

diffr: Display Differences Between Two Files using Codediff Library, *20822*.

WhiteStripe: White Matter Normalization for Magnetic Resonance

> Images using WhiteStripe, *20474*.

spm12r: Wrapper Functions for SPM (Statistical Parametric Mapping) Version

> 12 from the Wellcome Trust Centre for Neuroimaging, *13162*.

kirby21.base: Example Data from the Multi-Modal MRI Reproducibility

> Resource, *12796*.

freesurfer: Wrapper Functions for Freesurfer, *12262*.

gcite: Google Citation Parser, *11917*.

gifti: Reads in Neuroimaging GIFTI Files with Geometry Information, *11909*.

papayar: View Medical Research Images using the Papaya JavaScript

> Library, *11414*.

kirby21.t1: Example T1 Structural Data from the Multi-Modal MRI Reproducibility

> Resource, *10578*.

cifti: Toolbox for Connectivity Informatics Technology Initiative

> (CIFTI) Files, *10280*.

kirby21.fmri: Example Functional Imaging Data from the Multi-Modal MRI

> Reproducibility Resource, *9632*.

mscstts: R Client for the Microsoft Cognitive Services

> Text-to-Speech REST API, *9434*.

neurohcp: Human Connectome Project Interface, *8981*.

glassdoor: Interface to Glassdoor API, *8919*.

fedreporter: Interface to Federal RePORTER API, *8141*.

stapler: Simultaneous Truth and Performance Level Estimation, *8079*.

text2speech: Text to Speech, *6077*.

leanpubr: Leanpub API Interface, *5573*.

nsrr: Interface to National Sleep Research Resource, *4547*.

neurovault: Neurovault Database API Access, *598*.

Shiny Web Applications

Do Data Analysis with Your Voice!, https://jhubiostatistics.shinyapps.io/Speak_dplyr/.

Turning Slide Decks into Videos (private request needed),
https://jhubiostatistics.shinyapps.io/presentation_to_video/.
A Sortable NIH RFA Table, https://jhubiostatistics.shinyapps.io/rfa_sort/.
Turn a Folder of Slides into a Leanpub Course,
https://jhubiostatistics.shinyapps.io/slides_to_leanpub/.
Segmentation of Intracranial Hemorrhage from CT Scans,
http://johnmuschelli.com/ich_segment_all.html.

TEACHING

Advisees

2020   **Joseph Catallini**, *ScM*, Research Advisor.
2018   **W. Andrew Mould**, *MPH*, Capstone Advisor.
    Capstone: The Effects of Perihematomal Edema on Hemorrhagic Stroke Patients and Outcomes
2017   **Lucia Rivera Lara**, *MPH*, Capstone Advisor.
    Capstone: The Impact of Blood Pressure Variability on Hemorrhage Enlargement on Patients with Acute Intracerebral Hemorrhage

Academic Advisees

2020   **Jingran Zhu**, *ScM*, Academic Advisor.
2020   **Elizabeth Du**, *MPH*, Academic Advisor.
2018   **Luqin Gan**, *ScM*, Academic Advisor.
2017   **Saqer Alkharabsheh**, *MPH*, Capstone Advisor.
2017   **Noam Finkelstein**, *ScM*, Academic Advisor.

Preliminary Oral Participation

2019   **Sarah Ryan**, *(UC Denver) PhD*.

Final Participation

2018   **Kenneth Morales**, *ScM*, Thesis Reader.
    Thesis: PrEP and Porn: Trends in Popularity of condom-less pornographic videos featuring men having sex with men

Other Advising

2018   **Alessandra Valcarcel**, *(UPenn) PhD*, Independent Study Advisor.
2018   **Sarah Ryan**, *(UC Denver) PhD*. Summer Advisor

Classroom Instruction

2014 – Present   **Co-Instructor**, *JHSPH*, Introduction to R for Public Health Researchers.
    Co-developed a one-week, 4-hour-a-day course in the Winter and Summer Institutes at Johns Hopkins with Dr. Andrew Jaffe. Developed 50% of code and slides for presentation and recorded lectures delivering slides.
2016–2017   **Co-instructor**, *JHSPH*, Advanced Data Science.
    Provides an intensive introduction to applied statistics and data analysis. Since both data analysis and methods development require substantial hands-on experience, focuses on hands-on data analysis.

Workshops and Tutorials

2020 **Instructor**, *ENAR*, R package development.
Developed and instructed a tutorial on R package development. Created of all code and slides for presentation; a 1-hour, 45 minute tutorial.

2019 **Instructor**, *SMI*, R Software Development Workshop.
Co-developed and instructed a tutorial on R package developed for 40 statisticians. Ran the workshop and delivered a 2 hour tutorial with Dr. Amanda Mejia.

2018 **Instructor**, *ENAR*, Neuroimaging Analysis within R.
Co-developed and instructed a tutorial for 20 statisticians. Created 75% of all code and slides for presentation and presented for half of the 4-hour session.

2017 **Instructor**, *ISBI*, Neuroimaging Analysis within R.
Co-developed and instructed a tutorial for 30 biomedical engineers. Created 75% of all code and slides for presentation and presented for half of the 4-hour session.

2015 **Instructor**, *ENAR*, A Tutorial for Multisequence Clinical Structural Brain MRI.
Co-developed and instructed a tutorial for 35 statisticians. Created 75% of all code and slides for presentation and presented for half of the 3-hour session.

Online Instruction

2015 **Instructor**, *Coursera*, Neurohacking with R.
Co-developed a MOOC (massive open online course) for Coursera on neuroimage processing and statistical analysis completely within R. Developed 50% of code and slides for presentation and recorded lectures delivering slides.

Classroom Instruction - Invited Guest Lecturer (JHSPH)

2019 Methods of Biostatistics
2019 Advanced Data Science I
2017 Statistical Consulting

RESEARCH GRANT PARTICIPATION

Ongoing Research Support

Creating Versatile Online Lectures with Dynamic Tools (JHU DELTA)
Dates: Aug 2019-July 2020. Principal Investigator(s): John Muschelli, PhD
Role: Principal Investigator

Data Center for Acute to Chronic Pain Biosignatures (NIH U01)
Dates: Jul 2019 – Jun 2023. Principal Investigator(s): Martin Lindquist, PhD, Tor Wager, PhD
Role: Principal Investigator

Scalable multi-mode education to increase use of ITCR tools by diverse analysts (NIH UE5)
Dates: Jul 2020 - Jun 2025. Principal Investigator(s): James Taylor PhD, Jeff Leek, PhD
Role: Co-Investigator

Statistical Methods for Multilevel Multivariate Functional Studies (NIH/NINDS R01)
Dates: June 2017– Feb 2022, Principal Investigator(s): Ciprian Crainiceanu, PhD
Role: Co-Investigator

Implementing the Genomic Data Science Analysis, Visualization, and Informatics Lab-space (AnVIL) (NIH U24)
Dates: July 2018 – June 2023. Principal Investigator(s): James Taylor PhD, Jeff Leek, PhD
Role: Co-Investigator

MISTIE III Lead Grant Cluster Application for the Clinical Coordination (NIH/NINDS U01)
Dates: Aug 2016 – July 2020. Principal Investigator(s): Dan Hanley, MD

Statistical Methods for Large and Complex Databases of Ultra-High-Dimensional (NIH R01)
Dates: Sep 2013 –July 2022. Principal Investigator(s): R. Taki Shinohara, PhD, Ciprian Crainiceanu, PhD
Role: Co-Investigator

BAHI Case Studies: Hands-On Data Science Education for Thousands of Students in Tackling Public Health Challenges (JHU Funding
Dates: Sep 2019-July 2020. Principal Investigator(s): Stephanie Hicks, PhD
Role: Co-Investigator

Statistical Methods to Improve Reproducibility and Reduce Technical Variability in Heterogeneous Multimodal Neuroimaging Studies of Alzheimer's Disease
Dates: Aug 2019 - April 2024. Principal Investigator(s): Dana Tudorascu, PhD Ciprian Crainiceanu, PhD
Role: Co-Investigator

Institute for Clinical and Translational Research (JHU Core)
Dates: Aug 2019 - April 2023. Principal Investigator(s): Karen Bandeen-Roche, PhD
Role: Consulting

Completed Support

Statistical methods for clinical trials with multivariate longitudinal outcomes (NIH R01)
Dates: 11/28/17 – 06/30/19. Principal Investigator(s): Sheng Luo, PhD
Role: Co-Investigator

Prostate Cancer Clinical Decision Support Tool - Pilot Project (ABBVIE)
Dates: 10/17/16 – 12/31/17. Principal Investigator(s): Scott Zeger, PhD
Role: Co-Investigator

Statistical Methods for Large N and P Problems (NIH/NIBIB R01)
Dates: 09/01/16 – 10/31/17. Principal Investigator(s): Brian Caffo, PhD
Role: Co-investigator

Statistical Methods for Mapping Human Brain Development (NIH R01)
Dates: 08/01/12 – 04/30/17. Principal Investigator(s): Philip Reiss, PhD, Ciprian Crainiceanu, PhD
Role: Co-investigator

ACADEMIC SERVICE

Department of Biostatistics

- Faculty Senate Representative (2018-2020)
- Co-leader, Biostatistics Structural Imaging Research Group
- Statistical Methods and Applications for Research in Technology (SMART) Working Group.
- Faculty Office Hour, drop in times for faculty questions (2017-2019).
- ScM Interviewer (2020)
- Penn Statistical Imaging and Visualization Endeavor (PennSIVE) Working Group, University of Pennsylvania

Volunteer Work

- Middle Manager, ***Thread (previously the Incentive Mentoring Program).*** Interfaced between executive-level staff and lower-level management. Organized monthly meetings, weekly progress updates and e-mails, and provided broad-scale mentorship for high-school students in the Baltimore City school district. Program title was "Grandparent", as it is a family-based, positive change model. (Thread, 2014-present)
- Technical Lead, **Cloud-based Data Science (**[https://www.clouddatascience.org/)](https://www.clouddatascience.org/). Helped create and coordinate a free, online-based learning tool with Baltimore Youth Outreach (YO!) for GED-seeking students in Baltimore City to learn Data Science and R (2019-present).
- Co-founder**, Vanguard Scholarship**, *Sun Valley High School*.
  Co-founded a scholarship for outstanding students attending my alma mater, Sun Valley High School. Interviewed students as a representative of a graduate doing science at mock inter-view day. Continually recruiting other graduates to become involved and fund raising (2015-present).
- Mock Interview Day. *Sun Valley High School*. Performed mock interviews for graduating seniors (2017).

PRESENTATIONS

Scientific Meetings

2020 **R Package Development**, Eastern North American Region (ENAR), (Online due to COVID19), Tutorial.
2019 **Neuroconductor: An R Platform for Medical Imaging Analysis**. International Chinese Statistical Association. Hangzhou, China. Talk.
      Potential Batch Effects and Biases in the UK Biobank Accelerometer Data. ENAR, Philadephia, PA, Talk.
2018 **Neuroconductor and Reproducibility: Imaging in R,** Joint Statistical Meeting (JSM), Vancouver, BC, Canada, Talk.

My First Exposure to Accelerometer Data was for 100000 People from UK
Biobank, 11th International Conference of the ERCIM WG on Computational and Methodological Statistics, Pisa, Italy, Talk

Submitting to CRAN and Continuous Integration, R Package Hackathon at Statistics in Imaging Conference, Philadelphia, PA, Talk and Hackathon Co-organizer.

Imaging Statistics in R, Statistics in Imaging Conference, Philadelphia, PA, Talk.

Neuroimaging Analysis within R, Eastern North American Region (ENAR), Atlanta, GA, Short Course.

Robust Lesion Segmentation on MRI of Patients with Multiple Sclerosis, Genentech, South San Francisco, CA, Talk.

2017 **Neuroconductor: A Framework for a Framework for Reproducible Neuroimaging Analysis in R**, ENAR, Washington, DC, Poster.

Creating Interactive Graphics, Joint Statistical Meeting (JSM), Baltimore, MD, Discussant and Organizer.

2016 **Papayar: A Better Interactive Neuroimage Plotter in R,** Joint Statistical Meeting (JSM), Chicago, IL, Talk.

Processing Neuroimaging Data in R: Capabilities, Mathematical and Statistical Challenges in Neuroimaging Data Analysis, Banff, AB, Talk.

Processing fMRI Data in R, SAMSI Challenges in Functional Connectivity Modeling and Analysis Workshop, Durham, NC, Talk.

2015 **(Non-Research) Succeeding in Undergraduate: A Message to Top Students**, Sun Valley High School, Aston, PA, Talk.

SuBGELS: Subtraction-Based Gadolinium-Enhancing Lesion Segmentation, Hopkins Imaging Conference, Baltimore, MD, Poster.

Automated Intracerebral Hemorrhage Segmentation of CT Scans, Joint Statistical Meeting (JSM), Seattle, WA, SPEED Talk and Poster.

PItcHPERFECT: Primary Intracerebral Hemorrhage Prediction Employing Regression and Features Extracted from CT, Eastern North American Region (ENAR), Miami, FL, Poster.

Quantitative Localization and Predictive Performance of Intracranial Hemorrhage, International Stroke Conference (ISC), Nashville, TN, Poster.

Validated Automatic Brain Extraction of Head CT Images, Organization for Human Brain Mapping (OHBM), Honolulu, HI, Poster.

2014 **Validated Automatic Brain Extraction of Head CT Images,** Hopkins Imaging Conference, Baltimore, MD, Talk and Poster.

Reduction of motion-related artifacts in resting state fMRI using aCompCor, Hopkins Imaging Conference, Baltimore, MD, Poster. Award: Top Poster

2013 **Visualizing Brain Imaging in Interactive 3D,** ENAR, Orlando, FL, Talk.

2012 **Resting State Preprocessing and Motion Artifacts,** Second Biennial Conference on Resting State, Madgeburg, Germany, Poster.

Effects of preprocessing on motion-induced artifacts in resting state fMRI, *Society for Neuroscience (SfN)*, New Orleans, LA, Poster.

Invited Seminars

- Neuroconductor: An R Platform for Medical Imaging Analysis, *University of Arkansas for Medical Sciences (UAMS),* Little Rock AK 2020
- Neuroconductor: A Neuroimaging Analysis Project in R, *University of Mississippi Medical Center (UMMC)*, Jackson, MS (2018).
- Computational Methods for Neuroimaging in R, Hemorrhagic Stroke and Neuroconductor. Department of Biostatistics and Computational Biology, Rochester, NY (2016)

ADDITIONAL INFORMATION

Keywords: Data Science, Biostatistics, Neuroimaging, Machine Learning