John Muschelli

Assistant Scientist

✉ *muschellij2@gmail.com*
http://johnmuschelli.com
Blog: A HopStat and Jump Away
GitHub: muschellij2

Education

2012–2016 **PhD**, *Biostatistics*,
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.
Computational Methods for Neuroimaging in R: Stroke Hemorrhage in X-ray Computed Tomography Scanning
Advisor: Ciprian Crainiceanu, PhD

2008–2010 **ScM**, *Biostatistics*,
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.
An Iterative Approach to Hemodynamic Response Function Temporal Derivatives in Statistical Parametric Mapping for Functional Neuroimaging
Advisor: Brian Caffo, PhD

2004–2008 **BS**, *Biomathematics and Neuroscience*,
The University of Scranton, Scranton, PA.
Advisors: Professor Jakub Jasinski, Professor J. Timothy Cannon

Professional Experience

2016–Present **Assistant Scientist**, *Department of Biostatistics*, Johns Hopkins Bloomberg School of Public Health, (Research-track Faculty).

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.
Collaborated on statistical projects with senior consultants.
Weekly consulting for student research projects.
Report writing and analyzing data using statistical software: R, Stata.

2009–2014 **Data Analyst / Data Manager**, *Brain Injury Outcomes Division*, Baltimore, MD.
Decreased turnaround time on data safety report (from weeks to hours) by using knitr, LaTeX, and dynamic documents.
Created a standardized database and processing pipeline for CT images.
Analyzed phase II and III trials for treatment of intracerebral hemorrhage
Data management and consultation of electronic case report form (eCRF) creation.

2010–2012 **Data Analyst**, *Laboratory for Neurocognitive and Imaging Research at Kennedy Krieger Institute*, Baltimore, MD.
Reduced manual steps in complex imaging study analysis using automation from programming.
Analysis of functional MRI (fMRI) imaging studies using Statistical Parametric Mapping.
Programming consultant: Matlab & R.

Mentorship

2018–2020 **Joseph Catallini**, *ScM*, Research Advisor.

2020 **Jingran Zhu**, *ScM*, Academic Advisor.

2020 **Elizabeth Du**, *MPH*, Academic Advisor.

2018 **Luqin Gan**, *ScM*, Academic Advisor.

2018 **Alessandra Valcarcel**, *(UPenn) PhD*, Independent Study Advisor.

2018 **Sarah Ryan**, *(UC Denver) PhD*, Summer Internship Advisor.

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

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

2017 **Saqer Alkharabsheh**, *iMPH*, Capstone Advisor.

2017 **Noam Finkelstein**, *ScM*, Academic Advisor.

Research Interests

Statistical computing, neuroimaging, machine learning, personalized medicine, image segmentation, stroke, reproducibility, dynamic reports, complex data analysis.

Teaching Experience

2014–present **Co-Instructor**, *JHSPH*, Introduction to R for Public Health Researchers.
Co-developed a one-week, 8-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.

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.

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.

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.

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.

Teaching Assistant

All teaching assistantships were in the Department of Biostatistics at the Johns Hopkins Bloomberg of Public Health.

2015-2016 **Advanced Data Science I-II (PH.140.711-712)**, *1st-2nd term*.
Instructors: Jeff Leek, PhD and Elizabeth Colantuoni, PhD

2014-2015 **Statistical Methods in Public Health IV (PH.140.624)**, *4th term*.
Instructors: James Tonascia, Ph.D and Mark Van Natta, MHS

2014-2015 **Special topics: Statistical Consulting**, *1st-3rd term*.
Instructors: Carol Thompson, MS and Elizabeth Colantuoni, PhD

2013-2014 **Methods in Biostatistics I-II (PH.140.651-652)**, *1st-2nd term*.
Instructor: Ciprian Craniceanu, PhD

2012-2013 **Methods in Biostatistics III-IV (PH.140.653-654)**, *3rd-4th term*.
Instructor: Hongkai Ji, PhD

2012-2013 **Methods in Biostatistics I-II (PH.140.651-652)**, *1st-2nd term*.
Instructor: Thomas Louis, PhD

2010-2011 **Statistical Methods in Public Health IV (PH.140.624)**, *4th term*.
Instructors: James Tonascia, PhD and Mark Van Natta, MHS

2010-2011 **Statistical Methods in Public Health I (PH.140.621)**, *1st-3rd term*.
Instructors: Marie Diener West, PhD and Karen Bandeen Roche, PhD

2009-2010 **Methods in Biostatistics I-II (PH.140.651-652)**, *1st-2nd term*.
Instructor: Brian Caffo, PhD

Working Groups

2014–Present **Biostatistics Structural Imaging Research Group**.

2014–Present **Penn Statistical Imaging and Visualization Endeavor (PennSIVE) Working Group**, *University of Pennsylvania, Department of Biostatistics and Epidemiology*.

2009–Present **Statistical Methods and Applications for Research in Technology (SMART) Working Group**, *Johns Hopkins University, Department of Biostatistics*.

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

Books

2018 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.

Peer-Reviewed Publications

* denotes authors contributed equally

2020 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.

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.

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.

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*.

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*.

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

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.

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.

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*.

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

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. eprint: /oup/backfile/content_public/journal/biostatistics/pap/10.1093_biostatistics_kxx068/1/kxx068.pdf. URL: +http://dx.doi.org/10.1093/biostatistics/kxx068.

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*.

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.

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.

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*.

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.

2017 **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.

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.

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*.

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* 35. cited By 14, pp. 250–269. DOI: 10.1016/j.media.2016.07.009. URL: https://www.scopus.com/inward/record.uri?eid=2-s2.0-84979950799&doi=10.1016%2fj.media.2016.07.009&partnerID=40&md5=15537a210adbbc102bcef75103bee7df.

2016 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.

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.

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.

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.

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.

2015 **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.

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

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.

Choe, A. S., Jones, C. K., Joel, S. E., **Muschelli, J.**, Belegu, V., Caffo, B. S., Lindquist, M. 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.

Webb, A. J., Ullman, N. L., Morgan, T. C., **Muschelli, J.**, Kornbluth, J., Awad, I. A., Mayo, S., Rosenblum, M., Ziai, W., Aldrich, Zuccarello, 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.

2014 **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.

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

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.

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.

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.

2013 Mould, W. A., Carhuapoma, J. R., **Muschelli, J.**, Lane, K., Morgan, T. C., McBee, N. A., 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.

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 perihematomal edema". *Stroke* 44.3, pp. 627–634.

2012 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.

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.

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.

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.

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.

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.

2011 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.

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.

Journal Reviewer

Scientific Reports, `https://www.nature.com/srep/`.

Human Brain Mapping, `https://onlinelibrary.wiley.com/journal/10970193`.

NeuroImage, `https://www.journals.elsevier.com/neuroimage`.

Radiology: Artificial Intelligence, `https://pubs.rsna.org/journal/ai`.

Journal of Neuroimaging, `https://onlinelibrary.wiley.com/journal/15526569`.

Transactions on Biomedical Engineering, `https://tbme.embs.org/`.

International Journal of Information Technology & Decision Making, `https://www.worldscientific.com/worldscinet/ijitdm`.

Expert Systems With Applications, `https://www.journals.elsevier.com/expert-systems-with-applications`.

Data, `https://www.mdpi.com/journal/data`.

Talks and Presentations

2020 **R Package Development**,
Eastern North American Region (ENAR), (Online due to COVID19), Tutorial.

Neuroconductor: An R Platform for Medical Imaging Analysis ,
University of Arkansas for Medical Sciences (UAMS), Little Rock, AK, Invited Seminar.

2019 **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**,
Eastern North American Region (ENAR), Washington, DC, Poster.

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

Neuroconductor: A Neuroimaging Analysis Project in R,
University of Mississippi Medical Center (UMMC), Jackson, MS, Invited Seminar.

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 **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.

Podcasts

2019– **The Corresponding Author: An Academic Data Science Podcast**, *John Muschelli and Stephanie Hicks*, https://soundcloud.com/the-corresponding-author, Approximately 200 listeners.

Software

R Packages

All download counts are from RStudio CRAN logs and are accurate as of April 23, 2020.

rscopus: Scopus Database API Interface, *49200*.

fslr: Wrapper Functions for FSL (FMRIB Software Library) from Functional MRI of the Brain (FMRIB), *32975*.

neurobase: Neuroconductor Base Package with Helper Functions for nifti Objects, *27426*.

brainR: Helper Functions to misc3d and rgl Packages for Brain Imaging, *25615*.

matlabr: An Interface for MATLAB using System Calls, *23295*.

diffr: Display Differences Between Two Files using Codediff Library, *20862*.

WhiteStripe: White Matter Normalization for Magnetic Resonance Images using WhiteStripe, *20512*.

spm12r: Wrapper Functions for SPM (Statistical Parametric Mapping) Version 12 from the Wellcome Trust Centre for Neuroimaging, *13196*.

kirby21.base: Example Data from the Multi-Modal MRI Reproducibility Resource, *12830*.

freesurfer: Wrapper Functions for Freesurfer, *12307*.

gcite: Google Citation Parser, *11959*.

gifti: Reads in Neuroimaging GIFTI Files with Geometry Information, *11958*.

papayar: View Medical Research Images using the Papaya JavaScript Library, *11438*.

kirby21.t1: Example T1 Structural Data from the Multi-Modal MRI Reproducibility Resource, *10611*.

cifti: Toolbox for Connectivity Informatics Technology Initiative (CIFTI) Files, *10316*.

kirby21.fmri: Example Functional Imaging Data from the Multi-Modal MRI Reproducibility Resource, *9664*.

mscstts: R Client for the Microsoft Cognitive Services Text-to-Speech REST API, *9501*.

neurohcp: Human Connectome Project Interface, *9017*.

glassdoor: Interface to Glassdoor API, *8953*.

fedreporter: Interface to Federal RePORTER API, *8164*.

stapler: Simultaneous Truth and Performance Level Estimation, *8115*.

text2speech: Text to Speech, *6112*.

leanpubr: Leanpub API Interface, *5599*.

nsrr: Interface to National Sleep Research Resource, *4577*.

neurovault: Neurovault Database API Access, *602*.

GitHub **drammsr: Port of Deformable Registration via Attribute Matching and Mutual-Saliency Weighting (DRAMMS) Registration to R**.

didactr: Tools for Creating Automated Courses.

flexconnr: FLEXCONN Model Wrapped in R .

extrantsr: Additional functionality and extensions to the ANTsR R package.

rcamino: R Port of Camino Software.

dcm2niir: R wrapper for dcm2nii DICOM converter.

ichseg: ICH Segmentation of CT scans.

msseg: MS Lesion Segmentation.

googleCite: Scraper for Google Citations.

processVISION: Scripts for Parsing XML from VISION database.

sri24: SRI24 Atlas: Normal Adult Brain Anatomy.

Shiny Web Applications

2019 **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/.

2016 **Segmentation of Intracranial Hemorrhage from CT Scans**,
http://johnmuschelli.com/ich_segment_all.html.

2015 **Abandoned Cars in Baltimore Finder**,
https://jmuschelli.shinyapps.io/Abandoned_Baltimore_Car.

Unofficial ENAR 2015 Itinerary Maker,
https://muschellij2.shinyapps.io/ENAR_2015.

2014 **Online DICOM TO NIfTI Converter**,
https://muschellij2.shinyapps.io/dcm2nii.

Cost of most common medical procedures at United States hospitals based on Centers for Medicare and Medicaid Services data,
https://jmuschelli.shinyapps.io/Shiny_Health_Data.

Skills

Languages Proficient: R (including Shiny), bash, Stata, MATLAB.
Beginner: SAS, Python, C++, Visual Basic, JavaScript

Markup TEX, LATEX, BibTEX, TeXShop, WinEdt, knitr, HTML, CSS

Honors and Awards

2014 **SOURCE (Student Outreach Resource Center) Community Service Award**.

2011 **Member of the winning team of the ADHD 200 Competition: a competition of develop diagnostic classification tools for ADHD diagnosis based on imaging of the brain**.

2004–2008 **Presidential Scholar (Full Tuition Scholarship)**.

2004–2008 **Dean's List**.

2008 **Alpha Sigma Nu**.

2004 **Alpha Lambda Delta**.

Additional Experience

2015 **IdEar Team Member**, *Hackathon: MedHacks 1.0*, Showed as a proof of concept that ears could be used as biometric markers in a global health framework. The target was areas with poor to no registries of people in which pictures of ears could be used to distinguish community members when other demographic information was not unique. Implemented a MATLAB implementation of an SVM to classify people based on image of ear and scale invariant feature transform (SIFT) features. In top 10 of 30 teams.

2015 **Safer Baltimore Biking Team**, *Hackathon: JHU Data Science Hakathon*, Full description and product: `http://kbroman.org/jhudashbike/`. Team used open data from Baltimore City to determine road safety as measured by accidents, hazards (potholes), and accidents. Geocoded all hazards and helped develop leaflet final product (map).

Academic Service

2017–Present **Faculty Senator**, *Johns Hopkins Bloomberg School of Public Health*.
Helped lead a discussion on scientist-track faculty and representation in the school and represented the department of Biostatistics.

2013–Present **Middle Manager**, *Thread/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.

2013–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 interview day. Continually recruiting other graduates to become involved and fund raising.

2014 **Organizer, Journal Club**, *JHSPH Department of Biostatistics*.
Scheduled and organized a club for reading and discussing statistical papers.

2013-2015 **Founder/Organizer, Writing Accountability Group**,
JHSPH Department of Biostatistics.
Founded and organized a small group (6-8) of students, where the aim is to develop weekly goals for writing and publication.

2013-2014 **Founder/Organizer, Blogging Club**,
JHSPH Department of Biostatistics.
Founded and organized a club for student blogging.

2010–2013 **Manager**,
Thread/Incentive Mentoring Program.
Title was a “Head of Household”; mentored and tutored a student from Dunbar High School, teaching coursework, life skills, support as needed.