



# John Muschelli

---

---

## Objective

To provide statistical and quantitative tools and analyses for diagnostic neuroimaging markers and diseases.

---

## Education

- 2012–Present **PhD Student**, *Johns Hopkins School of Public Health*, Baltimore, MD.  
Area of Study: Stroke CT image segmentation, Post-selection statistical inference  
Adviser: Professor Ciprian Crainiceanu
- 2008–2010 **ScM**, *Johns Hopkins School of Public Health*, Baltimore, MD.  
Area of Study: fMRI brain image data analysis  
Thesis Topic: *An Iterative Approach to Hemodynamic Response Function Temporal Derivatives in Statistical Parametric Mapping for Functional Neuroimaging*  
Adviser: Professor Brian Caffo
- 2004–2008 **BS**, *The University of Scranton*, Scranton, PA, GPA: 3.87.  
Majors: Biomathematics and Neuroscience  
Summa Cum Laude  
Advisers: Professor Jakub Jasinski, Professor J. Timothy Cannon

---

## Professional Experience

- 2009–Present **Research Associate**, *Johns Hopkins Biostatistics Center (JHBC)*, Baltimore, MD.  
Collaborated on statistical projects with senior consultants.  
Report writing and analyzing data using statistical software: R, Stata.  
Created dynamic
- 2009–Present **Data Analyst / Data Manager**, *Brain Injury Outcomes Division*, Baltimore, MD.  
Increased turnaround time on data safety report (from weeks to hours) by using knitr, LaTeX, and dynamic documents.  
Created a standardized database of CT images for analysis by developing a CT processing pipeline  
Analyzed Phase II and III Clinical Trial for Treatment of Intracerebral and Intraventricular Hemorrhage  
Dynamic reporting Tools:  $\text{\LaTeX}$  & R.  
Data management and consultation of electronic case report form (eCRF) creation
- 2010–Present **Data Analyst**, *Laboratory for Neurocognitive and Imaging Research at Kennedy Krieger Institute*, Baltimore, MD.  
Analysis of functional MRI (fMRI) imaging studies  
Programming consultant: Matlab & R.  
Participation in the ADHD 200 Competition
- 2008 **Intern**, *Analysis & Inference*, Swarthmore, PA.  
Cooperated on statistical projects and conferenced with clients about possible analysis options.  
Report writing of analyses: Stata  
Data cleaning

2007 **Research Intern**, *Dupont Stine-Haskell Laboratory*, Wilmington, DE.

Developed lab skills and techniques: cell culturing, making and sterilizing broth media, optical density readings, inoculations, quality control, cell counts, screening for fungicidal properties of compounds.

---

## Publications

- [1] David G Bundy, John Muschelli, Gwendolyn D Clemens, John J Strouse, Richard E Thompson, James F Casella, and Marlene R Miller. Ambulatory care connections of medicaid-insured children with sickle cell disease. *Pediatric Blood & Cancer*, 2012.
- [2] Ani Eloyan, Shanshan Li, John Muschelli, Jim J Pekar, Stewart H Mostofsky, and Brian S Caffo. Analytic programming with fmri data: A quick-start guide for statisticians using r. *PloS one*, 9(2):e89470, 2014.
- [3] Ani Eloyan, John Muschelli, Mary Beth Nebel, Han Liu, Fang Han, Tuo Zhao, Anita D Barber, Suresh Joel, James J Pekar, Stewart H Mostofsky, et al. Automated diagnoses of attention deficit hyperactive disorder using magnetic resonance imaging. *Frontiers in systems neuroscience*, 6, 2012.
- [4] Daniel F Hanley, M Zuccarello, K Lane, WC Broaddus, I Awad, EF Aldrich, C Wijman, P Vespa, JL Caron, J Huang, et al. Mistie phase ii results: safety, efficacy and surgical performance. In *CEREBROVASCULAR DISEASES*, volume 34, pages 4–4. KARGER ALLSCHWILERSTRASSE 10, CH-4009 BASEL, SWITZERLAND, 2012.
- [5] Holly E Hinson, Eric Melnychuk, John Muschelli, Daniel F Hanley, Issam A Awad, and Wendy C Ziai. Drainage efficiency with dual versus single catheters in severe intraventricular hemorrhage. *Neurocritical care*, 16(3):399–405, 2012.
- [6] Holly E Hinson, Eric Melnychuk, John Muschelli, Daniel F Hanley, and Wendy C Ziai. Dual intraventricular catheter use in severe intraventricular hemorrhage. In *NEUROLOGY*, volume 74, pages A129–A129. LIPPINCOTT WILLIAMS & WILKINS 530 WALNUT ST, PHILADELPHIA, PA 19106-3621 USA, 2010.
- [7] Jennifer Jaffe, Eric Melnychuk, John Muschelli, Wendy Ziai, Timothy Morgan, Daniel F Hanley, and Issam A Awad. Ventricular catheter location and the clearance of intraventricular hemorrhage. *Neurosurgery*, 70(5):1258, 2012.
- [8] W Andrew Mould, J Ricardo Carhuapoma, John Muschelli, and Daniel F Hanley. Administration of tissue plasminogen activator to patients with spontaneous ich does not lead to an increase in perihematoma edema. In *STROKE*, volume 44. LIPPINCOTT WILLIAMS & WILKINS 530 WALNUT ST, PHILADELPHIA, PA 19106-3621 USA, 2013.
- [9] W Andrew Mould, J Ricardo Carhuapoma, John Muschelli, Karen Lane, Timothy C Morgan, Nichol A McBee, Amanda J Bistran-Hall, Natalie L Ullman, Paul Vespa, Neil A Martin, et al. Minimally invasive surgery plus recombinant tissue-type plasminogen activator for intracerebral hemorrhage evacuation decreases perihematoma edema. *Stroke*, 44(3):627–634, 2013.
- [10] WA Mould, Marc Zentar, John Muschelli, JR Carhuapoma, and Daniel F Hanley. Abstract w mp85: Mri demonstrates sustained effect of early surgery on perihematoma edema. *Stroke*, 45(Suppl 1):AWMP85–AWMP85, 2014.
- [11] John Muschelli. *An Iterative Approach to Hemodynamic Response Function Temporal Derivatives in Statistical Parametric Mapping for Functional Neuroimaging*. PhD thesis, Johns Hopkins University, 2010.
- [12] John Muschelli, Joshua Betz, and Ravi Varadhan. Binomial regression in r. *Handbook of Statistics: Computational Statistics with R*, 32:257, 2014.
- [13] John Muschelli, Mary Beth Nebel, Brian S Caffo, Anita D Barber, James J Pekar, and Stewart H Mostofsky. Reduction of motion-related artifacts in resting state fmri using acompcor. *Neuroimage*, 96:22–35, 2014.

- [14] John Muschelli, Elizabeth Sweeney, and Ciprian Crainiceanu. brainr: Interactive 3 and 4d images of high resolution neuroimage data. *R Journal*, 6(1):41–48, 2014.
- [15] Mary Beth Nebel, Suresh E Joel, John Muschelli, Anita D Barber, Brian S Caffo, James J Pekar, and Stewart H Mostofsky. Disruption of functional organization within the primary motor cortex in children with autism. *Human brain mapping*, 35(2):567–580, 2014.
- [16] David W Newell, M Mohsin Shah, Robert Wilcox, Douglas R Hansmann, Erik Melnychuk, John Muschelli, and Daniel F Hanley. Minimally invasive evacuation of spontaneous intracerebral hemorrhage using sonothrombolysis. *Journal of neurosurgery*, 115(3):592, 2011.
- [17] Matthew F Niedner, W Charles Huskins, Elizabeth Colantuoni, John Muschelli, J Mitchell Harris II, Tom B Rice, Richard J Brill, and Marlene R Miller. Epidemiology of central line-associated bloodstream infections in the pediatric intensive care unit. *Epidemiology*, 32(12):1200–1208, 2011.
- [18] Natalie L Ullman, John Muschelli, Matthew Li, Timothy C Morgan, Issam A Awad, Mario Zuccarello, Karen Lane, and Daniel F Hanley. Catheter placement and surgical training in the minimally invasive surgery plus rt-pa for intracerebral hemorrhage evacuation trial. In *STROKE*, volume 44. LIPPINCOTT WILLIAMS & WILKINS 530 WALNUT ST, PHILADELPHIA, PA 19106-3621 USA, 2013.
- [19] Alastair JS Webb, Natalie L Ullman, Sarah Mann, John Muschelli, Issam A Awad, and Daniel F Hanley. 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):1666–1668, 2012.
- [20] Wendy Ziai, Saman Nekoovaght-Tak, Joshua F Betz, John Muschelli, Ryan N Fisico, Ximin Li, and Daniel F Hanley. Abstract w mp86: Improving the accuracy of the abc/2 estimation technique in spontaneous supratentorial intracerebral hemorrhage. *Stroke*, 45(Suppl 1):AWMP86–AWMP86, 2014.
- [21] Wendy C Ziai, John Muschelli, Carol B Thompson, Penelope M Keyl, Karen Lane, Shuai Shao, and Daniel F Hanley. Factors affecting clot lysis rates in patients with spontaneous intraventricular hemorrhage. *Stroke*, 43(5):1234–1239, 2012.

## Talks and Presentations

- 2014 **Validated Automatic Brain Extraction of Head CT Images**, *Hopkins Imaging Conference*, Talk and Poster, Award: Top Poster.
- 2013 **Visualizing Brain Imaging in Interactive 3D**, *ENAR*, Talk.
- 2014 **Reduction of motion-related artifacts in resting state fMRI using aCompCor**, *Hopkins Imaging Conference*, Poster, Award: Top Poster.

## Software

- R Package **fslr: Wrapper functions for FSL (FMRIB Software Library) from Functional MRI of the Brain (FMRIB).**
- R Package **WhiteStripe: Whitestripe White Matter Normalization for Magnetic Resonance Images.**
- R Package **brainR: Helper functions to misc3d and rgl packages for brain imaging.**

---

## Computer skills

<b>Scripting</b>	Proficient: R, Stata, Matlab, Beginner: SAS	<b>Markup</b>	T <sub>E</sub> X, L <sup>A</sup> T <sub>E</sub> X, B <sub>I</sub> B <sub>T</sub> E <sub>X</sub> , TeXShop, WinEdt, knitr, HTML
<b>Programming</b>	C++, Visual Basic		

---

## Honors and Awards

2007–2008	<b>Presidential Scholar (Full Tuition Scholarship).</b>
2004–2008	<b>Dean's List.</b>
2004	<b>Alpha Lambda Delta.</b>
2008	<b>Alpha Sigma Nu.</b>

---

## Academic Service

2013–Present	<b>Mentor, Grand Parent, <i>Incentive Mentoring Program/Thread.</i></b> Manage a team of mentors with weekly meetings and e-mails to .
2010–2013	<b>Mentor, Head of Household, <i>Incentive Mentoring Program/Thread.</i></b> Mentored and tutored a student from Dunbar High School, teaching coursework, life skills, support as needed.