Alessandra Valcarcel

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and Informatics (DBEI)
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Education

University of Pennsylvania, Philadelphia, PA — **May 2020** (anticipated)
Perelman School of Medicine
PhD Student, *Biostatistics*
Dissertation Advisor: Dr. Russell Shinohara

University of Pennsylvania, Philadelphia, PA — **May 2017**
Perelman School of Medicine
M.S. *Biostatistics*

University of Connecticut, Storrs, CT — **May 2015**
Cumulative GPA: 3.784/4.00
B.A. *Biology and Statistics (Honors Scholar and Magna Cum Laude)*

Universidad de Granada, Granada, Spain — **Fall 2013** (Study Abroad)

RESEARCH EXPERIENCE

Research Assistant, *(September 2016-Present)*
University of Pennsylvania DBEI
Principal Investigator: Dr. Russell Shinohara

- Exploring methods in automated white matter lesion detection in multiple sclerosis
- Developing software packages for implementation of novel algorithms in R
- Participate weekly in PennSIVE group research meetings

Lab Rotation, *(June 2016 – January 2016)*
University of Pennsylvania DBEI
Principal Investigator: Dr. Haochang Shou

- Assessed the activation of varying regions of interest in fMRI data to determine the pain network for those on placebo versus pain management medications

Lab Rotation, *(January 2016-June 2016)*
University of Pennsylvania DBEI
Principal Investigator: Dr. Russell Shinohara

- Evaluated whether the correlation structure across images of the same location, which is known to differ across tissue types, is informative for detecting lesions with increased accuracy

Lab Rotation**,** *(September 2015-January 2016)*
University of Pennsylvania DBEI
Principal Investigator: Dr. Andrea Troxel

- Conducted a multi-level simulation study to evaluate effect size and power under opt-in and opt-out consent approaches for behavioral trials
- Participated in weekly meetings for the Empower behavioral trial aimed at helping cardiac heart failure patients stay healthy after they are discharged from the hospital.

Research Investigator, *(June 2014-May 2015)*
Dordt College, Research Internship in Statistical Genetics
Principal Investigator: Dr. Nathan Tintle

- Collaborated with a team of students and faculty on NIH and NSF funded projects in post-hoc rare variant association testing after gene-based tests of association

Research Assistant, *(January 2014-May 2015)*
University of Connecticut, Department of Statistics
Principal Investigator: Dr. Ofer Harel

- Independently examined the methods of propensity scores and the effects of missing data on propensity score analysis
- Applied the various methods of propensity score analysis on HIV data collected in South Africa on an Intervention Prevention Program

Research Assistant, *(January 2013-September 2013),*
University of Connecticut, Center for Health, Intervention, and Prevention
Principal Investigator: Dr. Tania Huedo-Medina

- Conducted analyses exploring the relationship between exercise intervention on various cancer patients and the effects on anxiety and depression
- Served as a short-term statistical consultant in areas such as study design and data analysis for the Department of Allied Health students and faculty

Research Investigator**,** *(Spring 2013),*
University of Connecticut, Department of Allied Health
Principal Investigator: Dr. Tania Huedo-Medina

- Collaborated with a team of four from various academic backgrounds to conduct research exploring the factors related to childhood anxiety and obesity

PUBLICATIONS

Valcarcel, A., Linn, K., Vandekar, S., Satterthwaite, T., Calabresi, P., Pham, D., & Shinohara, R., (2018). MIMoSA: A method for inter-modal segmentation analysis. *Journal of Neuroimaging*.

Grinde, K. E., Arbet, J., Green, A., O'Connell, M., **Valcarcel, A.**, Westra, J., & Tintle, N. (2017). Illustrating, Quantifying, and Correcting for Bias in Post-hoc Analysis of Gene-Based Rare Variant Tests of Association. *Frontiers in Genetics*, *8*, 117. http://doi.org/10.3389/fgene.2017.00117

Valcarcel, A., Grinde, K., Cook, K., Green, A., & Tintle, N. (2016). A multistep approach to single nucleotide polymorphism–set analysis: an evaluation of power and type I error of gene-based tests of association after pathway-based association tests. *BMC Proceedings*, *10*(Suppl 7), 349–355. http://doi.org/10.1186/s12919-016-0055-4

Green, A., Cook, K., Grinde, K., **Valcarcel, A.**, & Tintle, N. (2016). A general method for combining different family-based rare-variant tests of association to improve power and robustness of a wide range of genetic architectures. *BMC Proceedings*, *10*(Suppl 7), 165–170. http://doi.org/10.1186/s12919-016-0024-y

MANUSCRIPTS IN PROGRESS

Valcarcel, A., Linn, K., Khalid, F., Vandekar, S., Tauhid, S., Satterthwaite, T., Muschelli, J., Bakshi, R., & Shinohara, R. (2018) A Dual Modeling Approach to Automatic Segmentation of Cerebral T2 Hyperintensities and T1 Black Holes in Multiple Sclerosis. *Submit to AJNR*.

Valcarcel, A., & Troxel, A., (2018). An evaluation of treatment effect in opt-in versus opt-out consent frameworks under a mixture of patient motivation levels. *In progress*.

ORAL PRESENTATIONS

"MIMoSA: A method for inter-modal segmentation analysis." ENAR Spring Meeting; Washington D.C. March 2017, Joint Statistics Meetings; Baltimore, MD July 2017.

"An evaluation of treatment effect in opt-in versus opt-out consent frameworks under a mixture of patient motivation levels." Joint Statistical Meetings; Chicago, Illinois; August 2017.

"Identifying and correcting for bias in post-hoc ranking strategies: an application to gene-based tests of association." University of Michigan; Ann Arbor, Michigan; July 2014.

POSTER PRESENTATIONS

"MIMoSA: A Method for Inter-Modal Segmentation Analysis of T2 Hyperintensities and T1 Black Holes in Multiple Sclerosis." European Committee for Treatment and Research in Multiple Sclerosis; Paris, France; October 2017. Americas Committee for Treatment and Research in Multiple Sclerosis; San Diego, California; February 2018.

"Estimating causal effects in incomplete observational studies using multiple imputation and propensity score analysis: A simulation study." University of Connecticut Frontiers in Undergraduate Research; Storrs, Connecticut; April 2015.

"A multi-step approach to SNP-set analysis: An evaluation of power and type I error of gene-based tests of association after pathway-based tests." Genetic Analysis Workshop 19; Vienna, Austria; August 2014.

SOFTWARE

Valcarcel, A., & Shinohara, R.T., "mimosa: A Method for Inter-Modal Segmentation Analysis" R package available on Neuroconductor and GitHub Nov 2017.

ACADEMIC HONORS AND AWARDS

- Student travel award to attend and present research at Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS), San Diego, California (*February 2018*)

- Student travel award to attend and present research at the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS), Paris, France, (*October 2017*)
- Educational Fellowship Recipient, University of Pennsylvania (*2015- 2017*)
- Undergraduate Statistics Project Competition (USPROC) Honorable Mention in the USRESP competition, Theoretical category, American Statistical Association (ASA) and The Consortium For The Advancement of Undergraduate Statistics Education (CAUSE), (*August 2015*)
- Honors Scholar in Statistics, University of Connecticut, (*May 2015*)
- Student travel award to attend and present research at Genetic Analysis Workshop 19, Vienna, Austria, *(August 2014)*

TEACHING EXPERIENCE

***Teaching Assistant**, (August 2016-January 2017, August 2017-January 2018)*
University of Pennsylvania, Introduction to Statistics for Health Policy: HPR 604
- Responsible for holding weekly office hours and participated in grading homework and exams for graduate level introductory statistics course
- Created and lectured bi-weekly lab lectures and assignments in Stata

***Library Tutor in Mathematics Center**, (2014-2015)*
University of Connecticut

Substitute Teacher*, *(2013-2015)
Hopewell Valley Regional School District

SERVICE AND LEADERSHIP

***Council for Emerging and New Statisticians (CENS)**, (May 2017-Present)*
ENAR Regional Advisory Board
- Advise RAB on how ENAR can better serve graduate students and recent graduates
- Organize a proposal for an invited session at ENAR Spring 2018 Meeting as well as plan activities for ENAR members throughout the year and at the meeting

***Admissions Student Representative**, (January 2016-Present)*
University of Pennsylvania DBEI
- Organize and chair student activities and information sessions between current and interviewees

***Recruitment Committee**, (August 2016-Present)*
University of Pennsylvania DBEI
- Collaborate with faculty regarding different recruitment strategies for potential applicants
- Present recruitment talk to various groups around Penn as well as nearby universities

***BGSA Student Representative**, (August 2016-Present)*
University of Pennsylvania Biomedical Graduate Student Association
- Participate in monthly meetings to discuss college wide activities and issues including unionization of graduate students and budgeting
- Organize monthly student activities to foster relationships among biostatistics and epidemiology graduate students

***Alpha Beta Epsilon**, (2011-2015)*
University of Connecticut

- ***Parliamentarian***: Expert in rules of order, procedures, and conduct at meetings and assemblies to maintain the pillars of academics, service and brotherhood on which the fraternity was founded
- ***Pledging Officer****:* Introduced and educated new pledging members on community service and academic involvement of the fraternity
- ***Rush Chair****:* Facilitated, organized, and promoted activities to recruit and incorporate members to the fraternity

Orientation Leader, *(August 2012, August 2013)*,
University of Connecticut, Husky Week Of Welcome

- Led orientation workshops for freshman and transfer students about study strategies and becoming involved around campus

Participant/Dancer and Morale Captain, *(December 2012-March 2015)*
Connecticut Children's Medical Center HuskyTHON Dance Marathon

- Responsible for executing various fundraisers in year round events such as canning, bake sales, solicit donations from local businesses

PROFESSIONAL AFFILIATIONS

- Eastern North American Region of the International Biometric Society
- American Statistical Association

COMPUTATIONAL EXPERTISE

- **Expertise**: R
- **Working Knowledge**: SAS, bash scripting, MATLAB, Stata
- **Applications**: LaTeX, Microsoft Office, knitr, RMarkdown, StatWeave