

Ashley Petersen

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Minneapolis, MN 55455

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Education

Ph.D. in Biostatistics

August 2016

University of Washington, Seattle, WA
Advisors: Noah Simon and Daniela Witten
Dissertation: Data-Adaptive Modeling using Convex Regression

B.A., *summa cum laude* with distinction

May 2011

Saint Olaf College, Northfield, MN
Major: Mathematics; Concentration: Statistics
Advisor: Matthew Richey

Employment

Assistant Professor

June 2017-present

Division of Biostatistics, University of Minnesota

Member

June 2017-present

Masonic Cancer Center, University of Minnesota

Postdoctoral Research Fellow

September 2016-May 2017

Statistical Learning Applied to Biostatistics
Department of Biostatistics, University of Washington
Supervised by Daniela Witten

Research Assistant

September 2013-August 2016

Statistical Learning Applied to Biostatistics
Department of Biostatistics, University of Washington
Supervised by Noah Simon and Daniela Witten

Research Assistant

September 2011-March 2016

Clinical Trials Center, Resuscitation Outcomes Consortium
Department of Biostatistics, University of Washington
Supervised by Susanne May

Statistical Genetics Research Assistant

Department of Mathematics, Hope College
Collaborated with Nathan Tintle

June 2010-August 2011**Undergraduate Research Fellow**

Center for Interdisciplinary Research, Saint Olaf College
Collaborated with Minda Oriña and Paul Roback

September 2010-May 2011**Undergraduate Research Fellow**

Center for Interdisciplinary Research, Saint Olaf College
Collaborated with Mary Walczak, Kay Smith, and Julie Legler

September 2009-May 2010**Undergraduate Research Assistant**

Midwest Cardiovascular Research Foundation
Collaborated with Michael Giudici

June 2009-August 2009**Teaching Experience****Guest Lecturer**

Statistics 284: Biostatistics, Saint Olaf College

Interim 2019**Instructor**

PubH 7430: Statistical Methods for Correlated Data, University of Minnesota

Fall 2018**Guest Lecturer**

Summer Institute in Biostatistics (SIBS), University of Minnesota

Summer 2018**Guest Lecturer**

PubH 8492: Richly Parameterized Models, University of Minnesota

Spring 2018**Teaching Assistant**

University of Washington Summer Institute in Statistics for Big Data
Unsupervised Methods for Statistical Machine Learning (2.5-day short course)
Supervised by Genevera Allen and Yufeng Liu

July 2016**Teaching Assistant**

University of Washington Summer Institute in Statistics for Big Data
Reproducible Research for Big Data (2.5-day short course)
Supervised by Keith Baggerly and Roger Peng

July 2016**Teaching Assistant**

Biostatistics 536: Categorical Data Analysis in Epidemiology, University of Washington
Supervised by Barbara McKnight

Fall 2015

Guest Lecturer

University Conjoint 510: Introductory Laboratory Based Biostatistics, University of Washington
Supervised by Lloyd Mancl

Summer 2015

Teaching Assistant

University of Washington Summer Institute in Statistics for Big Data
Reproducible Research for Big Data (2.5-day short course)
Supervised by Keith Baggerly and Roger Peng

July 2015

Teaching Assistant

Biostatistics 571: Advanced Regression Methods for Correlated Data, University of Washington
Supervised by Adam Szpiro

Winter 2014

Honors, Awards, and Scholarships

- University of Washington Biostatistics Outstanding Ph.D. Student Award 2016
- JSM Section on Nonparametric Statistics Student Paper Award 2015
- WNAR Student Paper Competition Runner-up 2014
- University of Washington Graduate School Fund for Excellence and Innovation Travel Award 2014
- University of Washington Biostatistics Donovan J. Thompson Award
for Best Combined Performance on Ph.D. Theory and Applied Qualifying Examinations 2013
- Predoctoral Training Program in Clinical Research on AIDS 2011-2013
- University of Washington Biostatistics Student Excellence Award 2011
- University of Washington Biostatistics Axio Award 2011
- Gertrude M. Cox Award Honorable Mention 2011
- Phi Beta Kappa Inductee 2011
- Robert C. Byrd Honors Scholarship 2007-2011
- Saint Olaf Buntrock Presidential Scholarship 2007-2011
- Genetic Analysis Workshop Travel Award 2010
- American Statistical Association Hands-On Statistics Gold Medal Prize 2010
- Goldwater Scholar Honorable Mention 2010
- USPROC Undergraduate Statistical Competition Honorable Mention 2009
- National Merit Scholar 2007

Publications

Kolla B, **Petersen A**, Chengappa M, Gummadi T, Ganesan C, Gaertner W, and A Blaes (2020+). "Impact of Adjuvant Chemotherapy on Outcomes in Appendiceal Cancer." Accepted for publication in *Cancer Medicine*.

Reibel Y, Flynn D, **Petersen A**, and P Flynn (2020+). "Acceptance of Dental Office Obstructive Sleep Apnea Screening among Minnesota State Fair Attendees." Accepted for publication in *Journal of Dental Hygiene*.

Tignanelli CJ, Watarai B, Fan Y, **Petersen A**, Hemmila M, Napolitano L, Jarosek S, and A Charles (2020+). "Racial Disparities at Mixed-Race and Minority Hospitals: Treatment of African American Males with High-Grade Splenic Injuries." Accepted for publication in *The American Surgeon*.

Allen S, **Petersen A**, Harrison K, Tosun N, and J Cameron (2020+). "Response to Nicotine Following Overnight Smoking Abstinence During Short-Term Progesterone Treatment in Women." Accepted for publication in *Experimental and Clinical Psychopharmacology*.

Liu P, Smith BR, Montonye ML, Kemper LJ, Leinonen-Wright K, Nelson KM, Higgins L, Guerrero CR, Markowski TW, Zhao X, **Petersen AJ**, Knopman DS, Petersen RC, and KH Ashe (2020). "A Soluble Truncated Tau Species Related to Cognitive Dysfunction is Elevated in the Brain of Cognitively Impaired Human Individuals." *Nature Scientific Reports*, 10(1): 3869.

Harrison K, **Petersen A**, Tosun N, Crist K, Allen AM, and S Allen (2020). "Effect of Exogenous Progesterone Administration on Cigarette Smoking-Related Symptomology in Oral Contraceptive Users Who Smoke." *Addictive Behaviors*, 102: 106148.

Amundson WH, Swanson EJ, **Petersen A**, Bell BJ, Hatt C, and CH Wendt (2020). "Quantification of Perinodular Emphysema in High-Risk Patients Offers No Benefit in Lung Nodule Risk-Stratification of Malignancy Potential." *Journal of Thoracic Oncology*, 35(2): 108-114.

Tignanelli CJ, Sheetz KH, **Petersen A**, Park PK, Napolitano LM, Cooke CR, and JR Cherry-Bukowiec (2020). "Utilization of ICU Nutrition Consultation is Associated with Reduced Mortality." *Journal of Parenteral and Enteral Nutrition*, 44(2): 213-219.

Smith C, Rao A, Tompach PC, **Petersen A**, Lyu D, and RA Nadeau (2019). "Factors Associated with the Mental Health and Satisfaction of Oral and Maxillofacial Surgery Residents in the United States: A Cross-Sectional Study and Analysis." *Journal of Oral and Maxillofacial Surgery*, 77(11): 2196-2204.

Flood D, **Petersen A**, Martinez B, Chary A, Austad K, and P Rohloff (2019). "Associations Between Contraception and Stunting in Guatemala: Secondary Analysis of the 2014-2015 Demographic and Health Survey." *BMJ Paediatrics Open*, 3(1): e000510.

Petersen A and D Witten (2019). "Data-Adaptive Additive Modeling." *Statistics in Medicine*, 38(4): 583-600.

Allen S, Harrison K, **Petersen A**, and J Goodson (2019). "Smoking-Related Symptomatology in Pregnant Smokers During Ad Libitum Smoking and Following Overnight Smoking Abstinence." *BMC Research Notes*, 12(1): 473.

Smith BR, Nelson KM, Kemper LJ, Leinonen-Wright K, **Petersen A**, Keene CD, and KH Ashe (2019). "A Soluble Tau Fragment Generated by Caspase-2 is Associated with Dementia in Lewy Body Disease." *Acta Neuropathologica Communications*, 7(1): 124.

Liu P, Smith BR, Huang ES, Mahesh A, Vonsattel JPG, **Petersen AJ**, Gomez-Pastor R, and KH Ashe (2019). "A Soluble Truncated Tau Species Related to Cognitive Dysfunction and Caspase-2 is Elevated in the Brain of Huntington's Disease Patients." *Acta Neuropathologica Communications*, 7(1): 111.

Baldomero AK, Siddiqui M, Lo C-Y, **Petersen A**, Pragman AA, Connett JE, Kunisaki KM, and CH Wendt (2019). "The Relationship Between Oral Health and COPD Exacerbations." *International Journal of Chronic Obstructive Pulmonary Disease*, 2019(14): 881-892.

Petersen A, Simon N, and D Witten (2018). "SCALPEL: Extracting Neurons from Calcium Imaging Data." *Annals of Applied Statistics*, 12(4): 2430-2456.

Pi C-H, Yu G, **Petersen A**, and A Hubel (2018). "Characterizing the "Sweet Spot" for the Preservation of a T-cell Line Using Osmolytes." *Nature Scientific Reports*, 8(1): 16223.

Petersen A, Witten D, and N Simon (2016). "Fused Lasso Additive Model." *Journal of Computational and Graphical Statistics*, 25(4): 1005-1025.
Selected for "Best Papers of JCGS" showcase at the 2018 Symposium on Data Science and Statistics

Rizoli S, **Petersen A**, Bulger E, Coimbra R, Kerby JD, Minei J, Morrison L, Nathens A, Schreiber M, and AL de Oliveira Manoel (2016). "Early Prediction of Outcome after Severe Traumatic Brain Injury: A Simple and Practical Model." *BMC Emergency Medicine*, 16(1): 32.

Petersen A, Simon N, and D Witten (2016). "Convex Regression with Interpretable Sharp Partitions." *Journal of Machine Learning Research*, 17(94): 1-31.

Evans CC, **Petersen A**, Meier EN, Buick J, Schreiber M, Kannas D, and M Austin (2016). "Prehospital Traumatic Cardiac Arrest: Management and Outcomes from the Resuscitation Outcomes Consortium Epistry-Trauma and PROPHET Registries." *The Journal of Trauma and Acute Care Surgery*, 81(2): 285-293.

Tan KM*, **Petersen A***, and D Witten (2014). "Classification of RNA-seq Data." Chapter 11 in Statistical Analysis of Next Generation Sequencing Data (eds. Somnath Datta and Dan Nettleton). Springer, Frontiers in Probability and the Statistical Sciences series. (* denotes equal contribution)

Petersen A, Spratt J, and NL Tintle (2013). "Incorporating Prior Knowledge to Increase the Power of Genome-Wide Association Studies." Chapter 25 in Genome-Wide Association Studies and Genomic Prediction (eds. Cedric Gondro, Julius van der Werf, and Ben Hayes). Springer, Methods in Molecular Biology series.

Petersen A, Alvarez C, DeClaire S, and NL Tintle (2013). "Assessing Methods for Assigning SNPs to Genes in Gene-Based Tests of Association Using Common Variants." *PLoS One*, 8(5): e62161.

Petersen A*, Sitarik A*, Luedtke A, Powers S, Bekmetjev A, and NL Tintle (2011). "Evaluating Methods for Combining Rare Variant Data in Pathway-Based Tests of Genetic Association." *BMC Proceedings*, 5(9): S48. (* denotes equal contribution)

Luedtke A, Powers S, **Petersen A**, Sitarik A, Bekmetjev A, and NL Tintle (2011). "Evaluating Methods for the Analysis of Rare Variants in Sequence Data." *BMC Proceedings*, 5(9): S119.

Oral Presentations

"Data-Adaptive Additive Modeling." Invited presentation at Joint Statistical Meetings. July 2019, Denver, Colorado.

"Data-Adaptive Regression Modeling in High Dimensions." Invited seminar at University of Rochester Medical Center, Department of Biostatistics and Computational Biology. April 2019, Rochester, New York.

"Using Statistics to Identify Neurons." Invited seminar at Saint Olaf College, Department of Mathematics, Statistics, and Computer Science. May 2018, Northfield, Minnesota.

"Fused Lasso Additive Model." Invited presentation at Symposium on Data Science and Statistics. May 2018, Reston, Virginia.

"Extracting Neurons from Calcium Imaging Data." Invited seminar at University of Minnesota, Department of Statistics. April 2018, Minneapolis, Minnesota.

"Flexible and Interpretable Regression in High Dimensions." Invited presentation at Eastern North American Region (ENAR) of the International Biometric Society Conference. March 2018, Atlanta, Georgia.

"Using Statistics to Identify Neurons." Invited seminar at Gustavus Adolphus College, Department of Mathematics, Computer Science, and Statistics. February 2018, Saint Peter, Minnesota.

"Flexible and Interpretable Regression in High Dimensions." Invited seminar at University of Minnesota, Division of Biostatistics. February 2018, Minneapolis, Minnesota.

"Extracting Neurons from Calcium Imaging Data." Invited presentation at Institute for Research in Statistics and Its Applications (IRSA) Neuro-Statistics Workshop. September 2017, Minneapolis, Minnesota.

"Extracting Neurons from Calcium Imaging Data." Invited presentation at Western North American Region (WNAR) of the International Biometric Society Conference. June 2017, Santa Fe, New Mexico.

"Extracting Neurons from Calcium Imaging Data." Invited seminar at University of Minnesota, Division of Biostatistics. February 2017, Minneapolis, Minnesota.

"Fused Lasso Additive Model." Contributed presentation at Joint Statistical Meetings. August 2015, Seattle, Washington.

"Fused Lasso Additive Model." Invited presentation at Eastern North American Region (ENAR) of the International Biometric Society Conference. March 2015, Miami, Florida.

"Fused Lasso Additive Model." Contributed presentation at Western North American Region (WNAR) of the International Biometric Society Conference. June 2014, Honolulu, Hawaii.

“Evaluating Methods for Combining Rare Variant Data in Pathway-Based Tests of Genetic Association.” Contributed presentation at Genetic Analysis Workshop 17. September 2010, Boston, Massachusetts.

“Analysis of Gene Set Statistic Methods Through Gene Set Simulation.” Presented to University of Michigan Department of Biostatistics. July 2010, Ann Arbor, Michigan.

“Shifting Attitudes, Stagnant Resources: The Maternal Health Context of a Rural Bangladeshi Village.” Presented to professors at Independent University Bangladesh. January 2010, Dhaka, Bangladesh.

“Investigating Vaccine Target Group Size: An Assessment of Data Quality.” Presented to World Health Organization Immunization, Vaccines, and Biologicals group. January 2009, Geneva, Switzerland.

Poster Presentations

“Constructing Multi-Protein Classifiers for Early-Stage Ovarian Cancer Screening.” Presented at Association of Clinical and Translational Statisticians Conference. July 2019, Denver, Colorado.

“Fused Lasso Additive Model.” Presented at University of Washington Biostatistics Department Retreat. September 2014, Blaine, Washington.

“Signal Detection in Networks.” Presented at University of Washington Biostatistics Department Retreat. September 2012, Leavenworth, Washington.

“The Influence of Attachment on Relationship Satisfaction and Closeness.” Presented at Saint Olaf Science Symposium and Minnesota Undergraduate Psychology Conference. April and May 2011, Northfield, Minnesota.

“Evaluating Methods for Combining Rare Variant Data in Pathway-Based Tests of Genetic Association.” Presented at Genetic Analysis Workshop 17. September 2010, Boston, Massachusetts.

“Are Saint Olaf Placement Exams Working? An Analysis of Chemistry Placement Data.” Presented at Saint Olaf Science Symposium. May 2010, Northfield, Minnesota. Presented at 24th National Conference on Undergraduate Research. April 2010, Missoula, Montana.

Advising and Mentoring

Undergraduate Honors Thesis Committee Member

- Jessica Nhan (Physiology, Spring 2018)

Master’s Project Advisor

- Ella Chrenka (Biostatistics MS, Spring 2019)
- Xuan Pu (Biostatistics MS, Summer 2019)
- Xiang He (Biostatistics MS)

Master's Project Committee Member

- Rebecca Freese (Biostatistics MS, Fall 2018)
- Yanxin Jin (Statistics MS, Spring 2019)
- Rachel Holstein (Epidemiology MPH, Spring 2019)
- Chenyu Liu (Statistics MS, Spring 2019)
- Victoria Wang (Statistics MS, Spring 2019)
- Meghana Bhimarao (Biostatistics MS, Spring 2019)
- Matt Galloway (Statistics MS, Spring 2019)
- Xing Bai (Biostatistics MS, Summer 2019)
- Chen Zhao (Statistics MS, Summer 2019)
- Sarah Sernaker (Statistics MS, Fall 2019)
- Alexia Martin (Epidemiology MPH, Fall 2019)
- Asha Sude (Dentistry MS, Spring 2020)

Doctoral Dissertation Committee Member

- Chuyu Deng (Biostatistics PhD)
- Shen Cheng (Experimental & Clinical Pharmacology PhD)
- Leah Johnson (Rehabilitation Sciences PhD)

Biostatistics Faculty Mentor

- Glenn Simmons, Jr. (UMN CTSI-Ed Pre-K Discovery Scholar, 2019-present)

Academic Advisor

- Xiang He (Biostatistics MS, 2018-present)
- Jennifer Proper (Biostatistics PhD, 2018-present)
- Solvejg Wastvedt (Biostatistics PhD, 2019-present)

Service

Masonic Cancer Center Contract Assistant Professor Search Committee, UMN Biostatistics	2019-2020
Annual Poster Session Judge, UMN CTSI	2019
Recruiting Committee, UMN Biostatistics	2018-present
Data and Safety Monitoring Council, UMN Masonic Cancer Center	2018-present
Research Day Judge, UMN School of Public Health	2018
Cancer Protocol Review Committee, UMN Masonic Cancer Center	2017-present
Student Awards Committee, UMN Biostatistics	2017-2018
Consultant, UW STATCOM	2015-2016
Board Member, Seattle Expanding Your Horizons	2015-2016
Member, Alumni Relations Committee, UW Biostatistics	2014-2016
Session Chair, Joint Statistical Meetings	2015
Member, Educational Policy and Teaching Evaluation Committee (EPTEC), UW Biostatistics	2013-2014

Journal Reviewer: *Addiction Biology; Addictive Behaviors; BMC Health Services Research; Experimental and Clinical Psychopharmacology; IEEE/ACM Transactions on Computational Biology and Bioinformatics; Journal of the American Statistical Association: Theory and Methods; Journal of Computational and Graphical Statistics; Journal of Multivariate Analysis; Journal of the Royal Statistical Society: Series C (Applied Statistics); Nature Scientific Reports; Neurons, Behavior, Data Analysis, and Theory; Nicotine and Tobacco Research; PLOS ONE; Statistics in Medicine; Women's Health Issues*

Current Professional Membership

American Statistical Association
International Biometrics Society, Eastern North American Region