

# RHONDA BACHER

September 21, 2018

Email: rbacher@ufl.edu

Phone: 352-294-5914

Website: <http://rhondabacher.github.io>

## EDUCATION

---

**University of Wisconsin-Madison** 2012 - 2017

Ph.D. in Statistics

Emphasis in Biostatistics

Thesis Advisor: Christina Kendziorski, Ph.D.

**University of Florida** 2008 - 2012

B.S in Statistics (Magna Cum Laude), B.S in Mathematics (Cum Laude)

College of Agriculture and Life Sciences Honors Scholar

Honors Thesis: "RNA-seq data: normal models and missing data"

Thesis Advisor: Lauren McIntyre, Ph.D.

## PROFESSIONAL EXPERIENCE

---

**Assistant Professor** January 2018 - present

*Department of Biostatistics*

*University of Florida*

**Postdoctoral Research Fellow** July 2017 - December 2017

*Center for Predictive Computational Phenotyping*

*University of Wisconsin-Madison*

**Bio-Data Science Trainee (NIH)** 2016 - 2017

*Department of Biostatistics and Medical Informatics, University of Wisconsin-Madison*

**Research Assistant** 2015 - 2016

*Center for Predictive Computational Phenotyping, University of Wisconsin-Madison*

*An NIH Center of Excellence for Big Data Computing established by the Big Data to Knowledge Initiative*

- Developed normalization method for single cell RNA-seq data as part of the Transcriptome-based Phenotyping Project

Mentor: Christina Kendziorski, Ph.D.

**Biostatistics Trainee (NIGMS)** 2012 - 2015

*Department of Biostatistics and Medical Informatics, University of Wisconsin-Madison*

Performed four research rotations:

- Mapping QTL for mouse growth curves, Spring 2014  
Mentor: Karl Broman, Ph.D.
- Stochastic modeling of ribosomal profiling data, Fall 2013  
Mentor: Michael Newton, Ph.D.
- Analysis of white matter lesions related to cognitive dysfunction and falls in the elderly, Spring 2013  
Mentor: Richard Chappell, Ph.D.
- Evaluation of statistical methods for multiple condition analyses in RNA-seq experiments, Fall 2012  
Mentor: Christina Kendziorski, Ph.D.

## PUBLICATIONS

---

1. **Bacher, R.** and Kendzierski, C. Design and computational analysis for single-cell RNA-sequencing experiments. *Genome Biology*. 17.1 (2016): 63.
2. **Bacher, R.\***, Chu, L.-F.\*, Leng, N., Thomson, J.A., Gasch, A., Stewart, R.M., Newton, M., and Kendzierski, C. SCnorm: robust normalization of single-cell RNA-seq data. *Nature Methods* 14.6 (2017): 584-586.
3. **Bacher, R.\*†**, Leng, N.\*, Chu, L.-F., Ni Z., Thomson, J.A., Kendzierski, C., and Stewart, R.M†. Trendy: Segmented regression approach to reveal expression dynamics in high throughput profiling data with ordered conditions. *BMC Bioinformatics*. 19.1 (2018): 380.
4. Barry, C., Schmitz, M.T., Jiang, P., Schwartz, M.P., Duffin, B.M., Swanson, S., **Bacher, R.**, Bolin, J.M, Elwell, A.L., McIntosh, B.E., Stewart, R., Thomson, J.A. Species-Specific Developmental Timing is Maintained by Pluripotent Stem Cells Ex Utero. *Developmental Biology*. 423, 101-110 (2017).
5. Fischer, B.L., **Bacher, R.**, Bendlin, B.B., Birdsill, A.C., Ly, M., Hoscheidt, S.M., Chappell, R.J., Mahoney, J.E., Gleason, C.E. An Examination of Brain Abnormalities and Mobility in Individuals with Mild Cognitive Impairment and Alzheimer’s Disease. *Frontiers in Aging Neuroscience*. 9, 86 (2017).
6. Ye, S., **Bacher, R.**, Keller, M.P., Attie, A.D., and Kendzierski, C. Statistical Methods for Latent Class Quantitative Trait Loci Mapping. *Genetics*. 206: 1309-1317 (2017).
7. Gasch, A.P., Yu, B., Hose, J., Escalante, L., Place, M., **Bacher, R.**, Kanbar, J., Ciobanu, D., Sandor, L., Grigoriyev, I.V., Kendzierski, C., Quake, S., McClean, M. Single-cell RNA-seq reveals intrinsic and extrinsic regulatory heterogeneity in yeast responding to stress. *PLoS biology* 15.12: e2004050 (2017).
8. Vermillion, K.L., **Bacher, R.**, Tannenbaum, A.P., Swanson, S., Jiang, P., Chu, L.F., Stewart, R.M., Thomson, J.A., Vereide, D.T. Spatial patterns of gene expression are unveiled in the chick primitive streak by ordering single-cell transcriptomes. *Developmental Biology*. DOI: 10.1016/j.ydbio.2018.04.007, (2018).
9. Keller, M.P., Simecek, P., Schueler, K.L., Rabaglia, M.E., Stapleton, D.S., Broman, A.T., Gatti, D.M. Vincent, M., Allen, S., **Bacher, R.**, Kendzierski, K., Broman, K.W., Yandell, B.S., Churchill, G.A., Attie, A.D. Genetic drivers of pancreatic islet function. *Genetics*. genetics-300864, (2018).

Key: \* indicates co-first authors; † indicates co-corresponding authors.

## SOFTWARE

---

1. SCnorm: An R-package to normalize single-cell RNA-seq data (developed by **Rhonda Bacher**). Available at: <https://bioconductor.org/packages/devel/bioc/html/SCnorm.html>
2. Trendy: An R-package that can be used to perform breakpoint analysis on microarray or RNA-seq expression data with ordered conditions (co-developed by **Rhonda Bacher**). Available at: <https://github.com/rhondabacher/Trendy>
3. Trendy R/Shiny: An R/Shiny application that allows users to interactively explore results from the Trendy package and extract gene patterns of interest (developed by **Rhonda Bacher**). Available at: <https://github.com/rhondabacher/Trendy>

## AWARDS AND HONORS

---

Selected for the NIH Data Science Innovation Lab (NIH BD2K) <i>Only 30 total applicants were selected by committee</i>	2018
Outstanding poster award <i>SAGES (Symposium on Advances in Genomics, Epidemiology and Statistics)</i>	2017
Travel grant award	2015

*iBRIGHT (Integrative Biostatistics Research for Imaging, Genomics, & High-throughput Technologies in Precision Medicine) Conference*

Travel grant award <i>8th International Purdue Symposium on Statistics, to attend session "Interactions Between Omics and Statistics: Analyzing High Dimensional Data"</i>	2012
Travel grant award <i>Department of Statistics, University of Florida, to attend the 53rd Drosophila Research Conference in Chicago, IL</i>	2012
Outstanding poster award <i>University of Florida Annual Microbiology and Cell Science Undergraduate Research Symposium</i>	2012
Mu Sigma Rho Honor Society, University of Florida	2012
Phi Beta Kappa Honor Society, University of Florida	2012
Anderson Scholar with Distinction, University of Florida	2010
Florida Academic Scholars Award, Florida Bright Futures Scholarship Program, State of Florida	2008 - 2012
Bob McCord Scholarship Foundation Award, Key West High School	2008 - 2010
Academic Excellence Award, Key West High School	2008

#### **JOURNAL REFEREE**

---

Genome Biology, Nature Methods, Nature Communications, Genome Research, PLOS Computational Biology, Bioinformatics, Journal of the American Statistical Association

#### **INVITED CONFERENCE PRESENTATIONS**

---

International Biometric Society Eastern North American Region (ENAR) Annual Meeting Invited talk, Philadelphia, PA	March 2018
International Conference on Advances in Interdisciplinary Statistics and Combinatorics Invited talk, Greensboro, NC	October 2018
Southern Regional Council on Statistics Conference Invited talk, Virginia Beach, VA	June 2018
International Indian Statistical Association Invited talk, Gainesville, FL	May 2018
International Chinese Statistical Association - Symposium on Single Cell Sequencing Invited talk, Chicago, IL	June 2017

#### **INVITED PRESENTATIONS**

---

Department of Physiology and Functional Genomics, University of Florida Invited talk, Gainesville, FL	August 2018
Genentech Invited talk, San Francisco, CA	August 2018
Department of Statistics, University of Florida Invited talk, Gainesville, FL	April 2018

#### **CONTRIBUTED PRESENTATIONS**

---

Joint Statistical Meetings Contributed talk (Invited to contribute), Vancouver, BC, Canada	August 2018
International Biometric Society Eastern North American Region (ENAR) Annual Meeting Contributed talk, Atlanta, GA	March 2018
Symposium on Advances in Genomics, Epidemiology, and Statistics Annual Meeting Contributed poster, Philadelphia, PA	June 2017
International Biometric Society Eastern North American Region (ENAR) Annual Meeting Contributed poster, Austin, TX	March 2016
Program in Quantitative Genomics (PQG) Conference Contributed poster, Boston, MA	November 2015
Integrative Biostatistics Research for Imaging, Genomics, & High-throughput Technologies in Precision Medicine (iBRIGHT) Conference Contributed poster, Houston, TX	October 2015
International Biometric Society Eastern North American Region (ENAR) Annual Meeting Contributed poster, Miami, FL	March 2015

## PROFESSIONAL SOCIETY MEMBERSHIPS

---

International Biometric Society (ENAR), American Statistical Association (ASA)

## TEACHING

---

Instructor, Department of Biostatistics University of Florida • <i>PHC 6937 - Genetic Data Analysis</i>	Spring 2018
Teaching Assistant, Department of Biostatistics and Medical Informatics University of Wisconsin-Madison • <i>STAT 877 - Statistical Methods for Molecular Biology</i>	Spring 2017
Tutor, Department of Biostatistics and Medical Informatics University of Wisconsin-Madison • <i>STAT 609 - Mathematical Statistics I</i> • <i>STAT 849 - Theory and Application of Regression and Analysis of Variance I</i> • <i>Qualifying Exam</i>	Fall 2015 - Summer 2016
Private Tutor, University of Wisconsin-Madison • <i>STAT 309 - Mathematical Statistics I (undergraduate)</i> • <i>STAT 310 - Mathematical Statistics II (undergraduate)</i> • <i>STAT 371 - Introductory Applied Statistics for the Life Sciences</i> • <i>STAT 571 - Statistical Methods for Bioscience I</i>	Fall 2014 - Spring 2016

## SERVICE

---

Chair, Seminar Committee <i>Department of Biostatistics</i>	May 2018 - present
Chair, Council for Emerging and New Statisticians <i>Standing committee of twelve members of ENAR's Regional Advisory Board</i>	May 2017 - 2018
Member, Council for Emerging and New Statisticians <i>Standing committee of twelve members of ENAR's Regional Advisory Board</i>	May 2015 - May 2017

Session Chair, ENAR <i>Annual Meeting, Austin, TX</i>	Spring 2016
Organizer, Weekly Student Seminar <i>Department of Statistics, University of Wisconsin-Madison</i>	Spring 2015
Member, Statistics Social Committee <i>Department of Statistics, University of Wisconsin-Madison</i>	Fall 2014 - Spring 2015
Organizer, Weekly Statistical Genetics Student Reading Group <i>Department of Biostatistics, University of Wisconsin-Madison</i>	Fall 2014
Cofounder, Statistics Club <i>University of Florida</i>	Fall 2011 - Spring 2012

**GRANT SUPPORT**

---

P01AI042288 (Atkinson) NIH/NIAID Immune Function and the Progression to Type 1 Diabetes The purpose of this research study is to learn more about the genetics and immune function of blood cells, and viruses in insulin dependent diabetes. Role: Co-Investigator for Core B	06/30/2018 - 05/31/19	2.42 cal months
2P30AG028740 (Pahor) NIH/NIA Claude D. Pepper Older Americans Independence Center (OAIC) The mission of the University of Florida Older Americans Independence Center (OAIC) is twofold: 1) to optimize older persons physical performance and mobility through interdisciplinary approaches; and 2) to train new investigators in aging and disability research while developing their leadership qualities. Our goal is to enhance late-life health and independence, with a special focus on mobility. Role: Co-Investigator	04/01/2018 - 03/31/22	.24 cal months
Award (Bacher, Hendricks, Lopez) The Jayne Koskinas Ted Giovanis Foundation Role: Principle Investigator (multi-PI with Audrey Hendricks and Javier Lopez)		08/15/2018 - 08/14/19