

# PEDRO L. BALDONI

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Department of Biostatistics, University of North Carolina at Chapel Hill  
135 Dauer Dr, Chapel Hill, NC 27599

## EDUCATION

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### **Ph.D. Candidate, Biostatistics**

*2014 - present*

Department of Biostatistics

University of North Carolina at Chapel Hill, USA

Advisors: Dr. Naim U. Rashid, Dr. Joseph G. Ibrahim

Dissertation Committee: Dr. Michael I. Love, Dr. Yun Li, Dr. Douglas Phanstiel

Research area: Epigenomics, mixed models, mixture regression, deep learning.

Expected graduation: July 2020

### **M.S., Statistics**

*2014*

Department of Statistics

University of Campinas, Brazil

Advisor: Dr. Hildete P. Pinheiro

International exchange program: Aarhus University, Denmark (August/2013 - February/2014)

Link to thesis: <http://repositorio.unicamp.br/jspui/handle/REPOSIP/307180>

### **B.S., Statistics**

*2011*

Department of Statistics

University of Campinas, Brazil

## PROFESSIONAL POSITIONS

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### **Graduate Research Assistant**

*2015 - 2019*

University of North Carolina at Chapel Hill

Collaborative Studies Coordinating Center

Hispanic Community Health Study/Study of Latinos (HCHS/SOL)

Supervisors: Dr. Jianwen Cai, Dr. Daniela Sotres-Alvarez

Center for AIDS Research (CFAR)

Supervisor: Dr. Michael G. Hudgens

### **Statistician**

*2012*

CPqD Foundation, Campinas, Brazil

## PROFESSIONAL ACTIVITIES

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### **Professional Memberships**

- American Statistical Association (ASA), 2018 - present
- Eastern North American Region (ENAR), 2017 - present

## Program Development

- Session Chair, Eastern North American Region (ENAR), 2019. Topic: Replicability in Big Data Precision Medicine.

## HONORS, AWARDS, SCHOLARSHIPS

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- University Cancer Research Fund Award - Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill (2019-2020)
- Max Halperin Award (Excellence in graduate studies) - Department of Biostatistics, University of North Carolina at Chapel Hill (2016)
- Science Without Borders (Full Ph.D. program) - CAPES, Brazil (2014-2018)
- International Exchange Program (Aarhus University, Denmark) - Santander Bank (2013-2014)
- CAPES Scholarship (Full MS program) - University of Campinas, Brazil (2012-2014)

## PEER-REVIEWED PUBLICATIONS

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1. **Baldoni, P. L.**, Rashid, N. U., & Ibrahim, J. G. (2019). Improved Detection of Epigenomic Marks With Mixed Effects Hidden Markov Models. *Biometrics*, 75 (4): 140113. <https://doi.org/10.1111/biom.13083>
2. Mollan, K. R., Trumble, I. M., Reifeis, S. A., Ferrer, O., Bay, C. P., **Baldoni, P. L.**, & Hudgens, M. G. (2019). Precise and Accurate Power of the Rank-Sum Test for a Continuous Outcome. *Journal of Biopharmaceutical Statistics (in press)*. <https://arxiv.org/abs/1901.04597>
3. Trumble, I. M., Allmon, A. G., Archin, N. M., Rigdon, J., Francis, O., **Baldoni, P. L.**, & Hudgens, M. G. (2017). SLDAssay: a software package and web tool for analyzing limiting dilution assays. *Journal of immunological methods*, 450, 10-16., 450, pp.10-16. <https://doi.org/10.1016/j.jim.2017.07.004>
4. Lee, S. K., Zhou, S., **Baldoni, P. L.**, Spielvogel, E., Archin, N. M., Hudgens, M. G., ... & Swanstrom, R. (2017). Quantification of the latent HIV-1 reservoir using ultra deep sequencing and primer ID in a viral outgrowth assay. *Journal of acquired immune deficiency syndromes (1999)*, 74(2), 221. <https://doi.org/10.1097/QAI.0000000000001187>
5. Clutton, G., Xu, Y., **Baldoni, P. L.**, Mollan, K. R., Kirchherr, J., Newhard, W., ... & Archin, N. (2016). The differential short-and long-term effects of HIV-1 latency-reversing agents on T cell function. *Scientific reports*, 6, 30749., 6. <https://doi.org/10.1038/srep30749>

## SUBMITTED MANUSCRIPTS

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1. **Baldoni, P. L.**, Rashid, N.U., & Ibrahim, J.G.. Efficient Detection and Classification of Epigenomic Changes Under Multiple Conditions. *Journal of the American Statistical Association (under review)*. <https://www.biorxiv.org/content/10.1101/864124v1>
2. Elfassy T., Zeki Al Hazzouri A., Cai J., **Baldoni P. L.**, Llabre M., Rundek T., Raij L., Lash J., Talavera G. A., Wasserthiel-Smoller S., Daviglius M., Booth J. N. III, Castaneda

S., Garcia M., & Schneiderman N.. Incidence of hypertension among US Hispanic/Latinos: the Hispanic Community Health Study/Study of Latinos, 2008-2017. 2019. *Journal of the American Heart Association (revise and resubmit)*

## WORKING MANUSCRIPTS

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1. **Baldoni, P. L.**, Rashid, N.U., & Ibrahim, J.G.. Single-cell ChIP- and ATAC-seq Modeling via Deep Learning Variational Autoencoder.
2. **Baldoni, P. L.**, Sotres-Alvarez, D., Lumley, T., & Shaw, P.A.. On the use of Regression Calibration in a Complex Survey Design with Application to the Hispanic Community Health Study/Study of Latinos. *To be submitted to the American Journal of Epidemiology*.
3. Cai, J., Zeng, D., Butera, N.M., **Baldoni, P. L.**, Maitra, P., & Dong, L.. Comparisons of Statistical Methods for Handling Attrition in Longitudinal Studies with Complex Survey Sampling.
4. Liese, A.D., Kaplan, R., Qi, Q., Thrasher, J.F., Sutherland, M.W., Lee, D.J., Thyagarajan, B., Talavera, G.A., **Baldoni, P. L.**, & Cai, J.. Effects of smoking and smoking cessation on incidence of diabetes in Hispanic/Latino populations in the US: Results from the Hispanic Community Health Study/Study of Latinos(HCHS/SOL).
5. Kaplan, R., Franceschini, N., Perez-Stable, E.J., Saccone, N.L., Peralta, C.A., Perreira, K.M., Daviglius, M., Lash, J.P., Gellman, M.D., Lee, D.J., Strizich, G.M., **Baldoni, P.L.**, Cai, J., & Talavera, G.A.. Association between smoking intensity and target organ damage over six years' follow-up among U.S. Hispanics/Latinos from diverse backgrounds: The Hispanic Community Health Study/Study of Latinos (HCHS/SOL)

## PUBLICLY AVAILABLE SOFTWARE

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1. **mixNBHMM**: detection and classification of differential enrichment regions from ChIP-seq experiments under multiple conditions <https://github.com/plbaldoni/mixNBHMM>
2. **ZIMHMM**: detection of broad enrichment regions from multiple ChIP-seq experimental replicates via a zero inflated mixed effects hidden Markov model <https://github.com/plbaldoni/ZIMHMM>

## PRESENTATIONS

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### Scientific Meetings (Contributed)

- Efficient Detection and Classification of Epigenomic Changes Under Multiple Conditions, *Eastern North American Region (ENAR)*, March, 2020.
- Efficient Detection and Classification of Epigenomic Changes Under Multiple Conditions, *Joint Statistical Meetings (JSM)*, August, 2020.
- Detection and Classification of Changes in Protein-DNA Binding Activity With Applications in Diffuse ChIP-seq Data, *Joint Statistical Meetings (JSM)*, July, 2019.
- Integrative HMM With Mixture Model for Differential Pattern Detection of Broad Epigenomic Marks, *Eastern North American Region (ENAR)*, March, 2019.
- Improved Detection of Epigenomic Marks With Mixed Effects Hidden Markov Models, *Eastern North American Region (ENAR)*, March, 2018.

- A Statistical Method for the Analysis of Multiple ChIP-seq Datasets, *Joint Statistical Meetings (JSM)*, July, 2017.
- A Statistical Method for the Analysis of Multiple ChIP-seq Datasets, *Eastern North American Region (ENAR)*, March, 2017.

### **Invited Talks**

- Pinello Laboratory Meetings, *Massachusetts General Hospital*, March, 2020.
- Laboratory for Statistical and Translational Genomics, *University of Pennsylvania*, January, 2020.

### **Other Meetings and Events**

- Computational Medicine Research Meetings, *School of Medicine, University of North Carolina at Chapel Hill*, March, 2020.
- On the use of Regression Calibration in a Complex Survey Design with Application to the Hispanic Community Health Study/Study of Latinos, *Collaborative Studies Coordinating Center, University of North Carolina at Chapel Hill*, November, 2019.
- Statistical Strategies for the Analysis of Diet-Disease Models that Correct for Error-Prone Exposures, *Collaborative Studies Coordinating Center, University of North Carolina at Chapel Hill*, May, 2010.
- Calculating and Comparing Age Standardized Cumulative Incidence of Hypertension across Hispanic/Latino Background Groups, *Collaborative Studies Coordinating Center, University of North Carolina at Chapel Hill*, April, 2019.
- Statistical methods for HIV-1 reservoir estimation in viral outgrowth assays, *Center for AIDS Research (CFAR), UNC Gillings School of Public Health*, June, 2016.

## **TEACHING EXPERIENCE**

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### **Recitation Lecturer**

Department of Biostatistics, The University of North Carolina at Chapel Hill  
 BIOS 545 - Principles of Experimental Analysis (2016, Undergraduate level class)

### **Teaching Assistant**

Department of Biostatistics, The University of North Carolina at Chapel Hill  
 BIOS 680 - Introductory Survivorship Analysis (2018, MS level class)  
 BIOS 735 - Introduction to Statistical Computing (2019, 2020, PhD level class)

Department of Statistics, University of Campinas, Brazil  
 ME607 - Time Series (2013, Undergraduate level class)

## **SKILLS AND SERVICE**

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- Computing skills: proficient in R, C++, and SAS.
- Languages: Portuguese (native speaker), English, and Italian.
- Student body representative in the Department of Statistics, University of Campinas, Brazil, 2013