

# Julia Wrobel

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CV compiled on 2021-12-26

<b>ACADEMIC APPOINTMENTS</b>	<b>Department of Biostatistics &amp; Informatics</b> Colorado School of Public Health	
	Assistant Professor (Tenure Track)	Aug 2019 – Present
<b>EDUCATION</b>	<b>Columbia University Mailman School of Public Health</b> , New York, NY, USA	
	PhD in Biostatistics	Sep 2015 – Jun 2019
	• Dissertation title: Functional data analytics for wearable device and neuroscience data	
	• Advisor: Jeff Goldsmith	
	Master of Science (M.S.) in Biostatistics	Sep 2013 – May 2015
	• Practicum: Associations and Patterns in Ambulatory Blood Pressure	
	• Advisor: Jeff Goldsmith	
<b>HONORS &amp; AWARDS</b>	<b>Swarthmore College</b> , Swarthmore, Pennsylvania, USA	
	Bachelor of Arts (B.A.) in Chemistry	Sep 2006 – May 2010
	ASA Biometrics Section JSM Travel Award	Jul 2018
	ENAR Distinguished Student Paper Award	Mar 2018
	NESS IBM Student Research Award Finalist	Mar 2018
	WSDS 2017 Conference Travel Award	Oct 2017
	Women in Statistics and Data Science conference in La Jolla, California	
	Gertrude M. Cox Scholarship for Women in Statistics	Jul 2017
	Summer Institute in Statistics for Big Data Travel Scholarship	Jul 2017
	University of Washington Department of Biostatistics	
	Certificate of Distinction, Columbia Department of Biostatistics	May 2015
	For outstanding research by a Master's student	
	Sigma Xi Scientific Research Society	May 2010
<b>PRIOR WORK EXPERIENCE</b>	<b>Department of Biostatistics</b> , Columbia University	
	Research Assistant	Jun 2014 – Present
	• Supervisor: Jeff Goldsmith	
	• Research areas: Functional data, neuroimaging, variational inference, accelerometers, interactive graphics	
	<b>Department of Biostatistics</b> , Columbia University	
	Research Assistant	Feb 2016 – Oct 2017
	• Supervisor: Sara Lopez-Pintado	
	• Research areas: Multivariate band depth for functional data, imaging statistics, nonparametric hypothesis tests	
	<b>Data Science and AI Research</b> , AT&T Labs	
	Summer Intern - Statistical Research Group	May 2018 – Aug 2018
<b>PROFESSIONAL ORGANIZATIONS &amp; SERVICE</b>	• Supervisor: Senior Inventive Scientist Emily Dodwell	
	• Curve clustering and predictive modeling for addressable advertising delivery data	
	<b>Statistical Analysis Center for Clinical Trials</b> , Columbia University	
	Data Analyst & SAS Programmer	May 2014 – Aug 2015
	<b>Department of Immunology and Rheumatology</b> , Children's Hospital of Philadelphia	
	Immunology Research Scientist	Apr 2011 – Jul 2013
	<b>EDITORIAL SERVICE</b>	
	<b>Associate Editor for Reproducibility</b> ,	
	Journal of the American Statistical Association	Apr 2021 – Present

**Referee:** Annals of Applied Statistics, Applied Mathematical Modeling, Biometrics, Biostatistics, Canadian Journal of Statistics, Computational Statistics and Data Science, f1000Research, Electronic Journal of Statistics, Journal of the American Statistical Association, Journal of Computational and Graphical Statistics, Stat, Statistics and Computing, Statistics in Medicine, Statistical Methods in Medical Research, PLOS ONE

#### MEMBERSHIPS

ASA, ENAR, WNAR

#### DEPARTMENTAL AND UNIVERSITY COMMITTEES

Director, Health analytics and data science certificate program	Sep 2019 – Present
Organizer, Biostatistics MS/PhD program student visit day	Mar 2020 – Present
Member, MS qualifying exam committee	Apr 2021 – Present
Member, PhD qualifying exam committee	Apr 2020 – Apr 2021
Member, Inference curriculum task force	Sep 2019 – Dec 2019

#### NATIONAL AND INTERNATIONAL SERVICE

Social Media co-Chair, ENAR Council for Emerging and New Statisticians (CENS)	Jul 2021 – Present
Member, ENAR Council for Emerging and New Statisticians	Apr 2020 – Present
Reviewer, ASA Statistics in Imaging student paper competition	Dec 2020
Member, CMStatistics Functional Data Analysis specialized team	Feb 2020 – Present

#### PUBLICATIONS

##### PEER REVIEWED ARTICLES

**bold text** indicates graduate student under my supervision

- J Wrobel, J Silvasstar, R Peterson, K Sumbundu, A Kelley, D Stephens, SC Rushing, and S Bull, “Patterns of User Engagement in the BRAVE Study”, *JMIR Formative Research*, *In Press*, Dec 2021.
- **B Steinhart**, KR Jordan, J Bapat, MD Post, LJ Brubaker, BG Bitler, and J Wrobel, “The spatial context of tumor-infiltrating immune cells associates with improved ovarian cancer survival”, *Molecular Cancer Research*, vol. 19, no. 12, pp. 1973–1979, Oct 2021.
- A Brooks-Russell, T Brown, K Friedman, J Schwartz, KA Ryall, E Amioka, G Dooley, GS Wang, J Wrobel, **B Steinhart**, G Milavetz and MJ Kosnett, “Simulated Driving Performance among Daily and Occasional Cannabis Users”, vol. 160, pp. 106326, Sep 2022.
- SC Rushing, A Kelley, S Bull, D Stephens, J Wrobel, J Silvasstar, R Peterson, C Begay, TG Dog, C McCray, DL Brown, M Thomas, C Caughlan, M Singer, P Smith, and K Sumbundu\*. “Efficacy and Impact of an mHealth Intervention to promote Mental Wellness for American Indian and Alaska Native Teens and Young Adults: A Randomized Controlled Trial of the BRAVE Study”, *JMIR Mental Health*, vol. 8, no. 9, pp. e26158, Aug 2021.
- EI McDonnell, V Zipunnikov, J Schrack, J Goldsmith, and J Wrobel, “Registration of 24-hour accelerometric rest-activity profiles and its application to human chronotypes”, *Biological Rhythm Research*, pp. 1–21, May 2021.
- A Bauer and J Wrobel, “registr 2.0: Incomplete Curve Registration for Exponential Family Functional Data”, *Journal of Open Source Software*, vol. 6, no. 61, pp. 2964, May 2021.
- AM Johnson, JM Boland, J Wrobel, EK Klezcko, MW Evans, K Hopp, L Heasley, ET Clambey, K Jordan, RA Nemenoff, and EL Schenk, “Cancer cell-specific MHCII expression as a determinant of the immune infiltrate organization and function in the non-small cell lung cancer tumor microenvironment”, *Journal of Thoracic Oncology*, May 2021.
- J Wrobel, J Muschelli, and A Leroux, “Diurnal Physical Activity Patterns across Ages in a Large UK Based Cohort: The UK Biobank Study”, *Sensors*, vol. 21, no. 4, pp. 1545, Jan 2021.

- [J Wrobel](#), ML Martin, R Bakshi, PA Calabresi, M Elliot, D Roalf, RC Gur, RE Gur, RG Henry, G Nair, J Oh, N Papinutto, D Pelletier, DS Reich, WD Rooney, TD Satterthwaite, W Stern, K Prabhakaran, NL Sicotte, RT Shinohara, and J Goldsmith, “Intensity warping for multisite MRI harmonization”, *Neuroimage*, vol. 223, pp. 117242, Dec 2020.
- MI Becker, DJ Calame, [J Wrobel](#), and AL Person. “Online control of reach accuracy in mice”, *Journal of Neurophysiology*, Nov 2020.
- [J Wrobel](#), V Zipunnikov, J Schrack, and J Goldsmith, “Registration for exponential family functional data”, *Biometrics*, vol. 75, no. 1, pp. 48–57, Mar 2019.
- [J Wrobel](#), “registr: Registration for exponential family functional data”, *Journal of Open Source Software*, vol. 3, no. 22, pp. 557 Feb 2018.
- S Lopez–Pintado and [J Wrobel](#), “Robust non-parametric tests for imaging data based on data depth”, *Stat*, vol. 6, no. 1, pp. 405–419, Oct 2017.
- [J Wrobel](#), SY Park, AM Staicu, J Goldsmith, “Interactive graphics for functional data analyses”, *Stat*, vol. 5, no. 1, pp. 108–118, Feb 2016 **Selected as an exemplar paper of Stat**, showcased at the 2017 Joint Statistical Meetings.
- JH Kim, J Santaella-Tenorio, C. Mauro, [J Wrobel](#), M Cerdâ, KM Keyes, D Hasin, SS Martins, and G Li. “State medical marijuana laws and the prevalence of opioids detected among fatally injured drivers?”, *American Journal of Public Health*, vol. 106, no. 11, pp. 2032–2037, Aug 2016.
- S Canna, [J Wrobel](#), N Chu, PA Kreiger, M Paessler, EM Behrens, “Interferon- $\gamma$  mediates anemia but is dispensable for fulminant toll-like receptor 9–induced macrophage activation syndrome and hemophagocytosis,” *Arthritis and Rheumatism*, vol. 65 (7), pp. 1764–1775, Jul 2013.

#### CURRENTLY UNDER REVIEW

- CR Harris, ET McKinley, JT Roland, Q Liu, MJ Shrubsole, K Lau, RJ Coffey, [J Wrobel](#), and S Vandekar “Quantifying and correcting slide-to-slide variation in multiplexed immunofluorescence images”, vol. 0, no. 0, pp. 0–0, Jan 2022.
- S Seal, [J Wrobel](#), AM Johnson, RA Nemenoff, EL Schenk, BG Bitler, KR Jordan, and D Ghosh, “On Clustering for Cell Phenotyping in Multiplex Immunohistochemistry (mIHC) and Multiplexed Ion Beam Imaging (MIBI) Data”, vol. 0, no. 0, pp. 0–0, Jan 2022.
- T Vu, [J Wrobel](#), BG Bitler, EL Schenk, KR Jordan, and D Ghosh, “SPF: A Spatial and Functional Data Analytic Approach to cell Imaging data”, vol. 0, no. 0, pp. 0–0, Jan 2022.
- S Seal, T Vu, T Ghosh, [J Wrobel](#), and D Ghosh, “DenVar: Density-based Variation analysis of multiplex imaging data”, vol. 0, no. 0, pp. 0–0, Jan 2022.
- **S Bothwell**, A Kaizer, R Peterson, B Steinhart, L Wayland, K Bing, D Ostendorf, V Catenacci, and [J Wrobel](#), “Shape-Based Clustering of Daily Weigh-In Trajectories using Dynamic Time Warping”, vol. 0, no. 0, pp. 0–0, Jan 2022.

#### SOFTWARE

- J Goldsmith, F Scheipl, L Huang, [J Wrobel](#), J Gellar, J Harezlak, M McLean, B Swihart, L Xiao, C Crainiceanu, and P Reiss, “refund: Regression with Functional Data,” *R package available on CRAN*, version 0.1-17, May 2018. Over 3000 downloads per month.
  - author: “mfpcas.sc()”: multilevel FPCA by smoothed covariance”
  - contributor: version 0.1-15 to present
  - maintainer: version 0.1-16 to present
- [J Wrobel](#), EI McDonnell, A Bauer, and J Goldsmith, “registr: Registration for exponential family functional data,” *R package available on CRAN and GitHub* Nov 2017.
- [J Wrobel](#) and J Goldsmith, “refund.shiny: interactive graphics for functional data analysis,” *R package available on CRAN* Sep 2015. Downloaded over 17,000 times as of 12/02/2020.
- [J Wrobel](#) and S Lopez–Pintado, “depthTests: Nonparametric hypothesis tests based on multivariate band depth,” *R package available on GitHub* Sep 2017.

## PRESENTATIONS INVITED TALKS

- J Wrobel, “Challenges and advances in multiplex imaging,” *2021 JSM*, Washington DC, USA, Aug 2021.
- J Wrobel, “Challenges and advances in multiplex imaging,” *Department of Biostatistics PENNSIVE Statistical Imaging Group, University of Pennsylvania*, Seminar, Mar 2021.
- J Wrobel, “Registration for wearable device data with application to circadian rhythm chronotype discovery,” *Department of Biostatistics, Epidemiology, and Informatics, University of Pennsylvania*, Virtual Department Seminar, Feb 2021.
- J Wrobel, “Challenges in multiplex imaging,” *2021 CMStatistics*, Virtual Conference, Dec 2021.
- J Wrobel, “Registration for wearable device data with application to circadian rhythm chronotype discovery,” *Department of Biostatistics, Vanderbilt University*, Jun 2021.
- J Wrobel, “Intensity warping for multisite MRI harmonization,” *2021 Statistical Methods in Imaging*, Virtual Conference, May 2021.
- J Wrobel, “Online control of reach accuracy and functional data models for dynamic movement,” *2020 CMStatistics*, Virtual Conference, Dec 2020.
- J Wrobel, “Registration for wearable device data with application to circadian rhythm chronotype discovery,” *Department of Biostatistics, Johns Hopkins University*, Virtual Department Seminar, Sep 2020.
- J Wrobel, “Registration for wearable device data with application to circadian rhythm chronotype discovery,” *Department of Epidemiology and Biostatistics, University of California San Francisco*, Virtual Seminar, Aug 2020.
- J Wrobel, “Physical activity patterns across ages in the NHANES data,” *2020 JSM*, Philadelphia, PA, USA, Aug 2020.
- J Wrobel, B Bitler, C Rickert, and K Jordan, “Multiplexed Ion Beam Imaging (MIBI) analysis of the ovarian tumor microenvironment,” *Department of Immunology and Microbiology, CU Anschutz School of Medicine*, Virtual Seminar, Jul 2020.
- J Wrobel, “Modeling kinematic behavior using functional linear first-order differential equations,” *2020 ENAR*, Nashville, TN, USA, Mar 2020.
- J Wrobel, “Circadian rhythms revealed by accelerometers,” *Use of Wearable and Implantable Devices in Health Research*, Banff International Research Station, Alberta, Canada, Feb 2020.
- J Wrobel, “Intensity warping for multisite MRI harmonization,” *2019 CMStatistics*, London, UK, Dec 2019.
- J Wrobel, “Identifying circadian chronotypes using accelerometers,” *2018 CMStatistics*, Pisa, Italy, Dec 2018.
- J Wrobel, “Modeling the effects of high-dimensional covariates on 3D kinematics,” *2018 PEPS Workshop on advances in functional data analysis*, Rennes, Brittany, France, Oct 2018.
- J Wrobel, “Registration for exponential family functional data,” *2018 JSM*, Vancouver, Canada, Aug 2018.
- J Wrobel, “Clustering and Modeling Addressable Advertising Impression Curves,” *AT&T Labs Intern Research Showcase*, New York, NY, USA, Jul 2018.
- J Wrobel, “Introduction to Shiny using NBA Data,” *RLadies NYC, hosted at NBA NYC*, New York, NY, USA, May 2018.
- J Wrobel, “Registration for exponential family functional data,” *2017 CMStatistics*, London, UK, Dec 2017.
- J Wrobel, “Identifying patterns in physical activity,” *2017 AT&T Labs Graduate Student Symposium*, New York, NY, USA, Dec 2017.
- J Wrobel, “Registration for binary functional data,” *2017 ICSA Applied Statistics Symposium*, Chicago, IL, USA, Jun 2017.

## CONTRIBUTED TALKS

- J Wrobel, “Registration for exponential family functional data,” *2017 Joint Statistical Meetings*, Baltimore, MD, USA, Jul 2017.
- J Wrobel, “Interactive graphics for functional data analyses,” *2016 Joint Statistical Meetings*, Chicago, IL, USA, Aug 2016.

## POSTERS

- J Wrobel, “Can early intervention save money in addressable advertising?,” *2018 AT&T Labs Intern Poster Session*, Bedminster, NJ, USA, Jul 2018.
- J Wrobel, “Removing scanner variability from structural MRIs,” *2018 Statistical Methods in Imaging (SMI) Conference*, Philadelphia, PA, USA, Jun 2018.
- J Wrobel, “Communicating results of functional data analyses with interactive graphics,” *2017 Women in Statistics and Data Science (WSDS) Conference*, La Jolla, California, USA, Oct 2017.
- J Wrobel, “Can we use statistics to compare pictures? An application to brain imaging data,” *2016 Women in Science at Columbia (WISC) Symposium*, New York, NY, USA, Apr 2016.
- J Wrobel, “Associations and Patterns in Ambulatory Blood Pressure,” *Columbia University Department of Biostatistics 75th Anniversary Gala*, New York, NY, USA, Apr 2015.

## LEADERSHIP

### **Biostatistics Graduate Student Research Working Group**, Columbia University

Founder and Organizer

Dec 2015 – Jun 2019

- Monthly student seminar series to facilitate research collaborations and hone presentation skills

### **Columbia Biostatistics Computing Club**, Columbia University

Founder and Co-Organizer

Dec 2016 – Jun 2018

- Lead tutorials on computational methods often encountered in biostatistics research
- Built CBCC website using GitHub pages

### **Biostatistics Student Cohort**, Columbia University

Doctoral Student Leader

Aug 2015 – Jun 2019

## TEACHING

### **Full Courses**

Biostatistical Methods II, CU Anschutz Department of Biostatistics & Informatics      Spring 2021

### **Guest Lectures**

- “Introduction to web scraping”, R for Data Science course taught by Dr. Debashis Ghosh, Colorado School of Public Health, November 2019
- “Introduction to web APIs”, R for Data Science course taught by Dr. Debashis Ghosh, Colorado School of Public Health, November 2019
- Nonparametric hypothesis testing, Biostatistics Methods I course taught by Dr. Alex Kaizer, Colorado School of Public Health, October 2019
- Gibbs sampling and the Metropolis-Hasting algorithm, Advanced Data Analysis course taught by Dr. Nichole Carlson, Colorado School of Public Health, September 2019
- “Introduction to Bayesian regression”, Longitudinal Data Analysis course taught by Dr. Elizabeth Sweeney, Columbia University Mailman School of Public Health, November 2018
- “Building Shiny apps with flexdashboard”, Data Science I course taught by Dr. Jeff Goldsmith, Columbia University Mailman School of Public Health, October 2017

### **Teaching Assistantships**

Longitudinal Data Analysis, Columbia University Department of Biostatistics (Lead TA)      Fall 2018

Statistical Inference, Columbia University Department of Biostatistics (Lead TA)      Spring 2018

Data Science I, Columbia University Department of Biostatistics (Lead TA)      Fall 2017

Categorical Data Analysis, Columbia University Department of Biostatistics (Lead TA)      Spring 2017

Categorical Data Analysis, Columbia University Department of Biostatistics      Fall 2016

Statistical Inference, Columbia University Department of Biostatistics      Spring 2016

Randomized Clinical Trials II, Columbia University Department of Biostatistics      Fall 2015

Organic Chemistry I, Swarthmore College Department of Chemistry      Sep 2008 – May 2010

**ADVISING****PhD Thesis Advising**

- Samantha Bothwell (Biostatistics), 2021-Present

**Master's Thesis Advising**

- Shelby Smith (MS in Biostatistics), joint with Mary Sammel 2021-Present
- Savannah Mierau (MS in Biostatistics), joint with Alex Kaizer 2021-Present
- Benjamin Steinhart (MS in Biostatistics) 2020-Present
- Samantha Bothwell (MS in Biostatistics), 2019-2021

**Doctoral Examination and Defense Committees**

- Yanran Wang, Department of Biostatistics and Informatics, Expected graduation 2023
- Alex Jensen, Department of Biostatistics and Informatics, Expected graduation 2022
- Connor McCullough, Department of Bioengineering, Expected graduation 2022

**GRANT  
SUPPORT****PRESENT SUPPORT**

Network Analysis of the Ovarian Tumor Microenvironment

Apr 2020 – Mar 2021

- CCTSI Translational Methods Biostatistics/Bioinformatics Pilot Grant
- Role: PI

Multiplexed single-cell imaging in pediatric lupus nephritis

Oct 2020 – Sep 2023

- Lupus Research Alliance Lupus Innovation Award (PI: Hsieh)
- Role: Co-Investigator