

# ALEXANDER DOMBOWSKY

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## APPOINTMENTS

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### Gladstone Institutes

Bioinformatics Fellow

- Advisor: Barbara Engelhardt

San Francisco, CA, USA

*Aug. 2025 - Present*

## EDUCATION

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### Duke University

Doctor of Philosophy – Statistical Science

- Advisors: David B. Dunson and Amy H. Herring
- Dissertation: *Bayesian Inference for Discrete Structures*

Durham, NC, USA

*Aug. 2020 - May 2025*

### McGill University

Master of Science – Mathematics and Statistics

- Advisor: Russell Steele
- Thesis: *Assessing the Quality of Posterior Samples from No-U-Turn Hamiltonian Monte Carlo*

Montreal, QC, Canada

*Sept. 2019 - July 2020*

### McGill University

Bachelor of Science – Mathematics

Montreal, QC, Canada

*Sept. 2015 - May 2019*

## PUBLICATIONS

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**Dombowsky, A.**, Dunson, D. B., Madut, D. B., Rubach, M. P., & Herring, A. H. (2025). Bayesian Learning of Clinically Meaningful Sepsis Phenotypes in Northern Tanzania. Accepted. *The Annals of Applied Statistics*. arXiv:2405.01746.

**Dombowsky, A.** & Dunson, D. B. (2025). Product Centered Dirichlet Processes for Bayesian Multi-view Clustering. *Journal of the Royal Statistical Society, Series B*. In press. arXiv:2312.05365.

**Dombowsky, A.**, & Dunson, D. B. (2024). Bayesian Clustering via Fusing of Localized Densities. *Journal of the American Statistical Association: Theory and Methods*. In press. arXiv:2304.00074.

## SUBMITTED PAPERS

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Madut, D. B., **Dombowsky, A.** [& 16 others]. (2025) Derivation of Clinical Sepsis Subtypes in Northern Tanzania Using Bayesian Probabilistic Clustering of Clinical Data.

## PAPERS IN PREPARATION

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**Dombowsky, A.** & Dunson, D. B. (2025+). Hierarchical Directed Dirichlet Networks for Discrete Graphical Modeling.

Meng, J., **Dombowsky, A.**, & Dunson, D. B. (2025+). Kernel Robust Bayesian Clustering in High Dimensions.

## RESEARCH PROJECTS

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### Sepsis Characterization in Kilimanjaro (SICK) Study

*Aug. 2021 - Present*

- Led development of statistical methodology for deriving clinical patient clusters
- Contributed to integration of clinical and RNAseq clusterings

### Merck & Co., Inc., BARDS Academic Collaboration

*Sept. 2023 - Aug. 2025*

- Led creation of Bayesian multiview clustering methods

**Office of Naval Research (ONR) Grant (Awarded, Prof. Dunson PI)** *Feb. - April 2024*

- Wrote objectives, project schedule & milestones, and management approach
- Proposed and implemented multiple novel statistical methods

## INVITED TALKS

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International Society of Bayesian Analysis (ISBA) 2024 World Meeting Venice, Italy  
 • “Recent Advances in Bayesian Clustering for Complex Data” *July 2024*

## CONTRIBUTED TALKS

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14th International Conference on Bayesian Nonparametrics Los Angeles, CA, USA  
 • “Hierarchical Directed Dirichlet Networks for Discrete Graphical Modeling” *June 2025*

Joint Statistical Meetings (JSM) 2024 Portland, OR, USA  
 • “Product Centered Dirichlet Processes for Dependent Clustering” *Aug. 2024*

Bayesian Young Statisticians Meeting (BAYSM) 2023 Online  
 • “Bayesian Clustering via Fusing of Localized Densities” *Nov. 2023*

Advances in Interdisciplinary Statistics and Combinatorics (AISC) 2022 Greensboro, NC, USA  
 • “Bayesian Multi-Study Clustering of Sepsis Patients” *Oct. 2022*

## POSTER PRESENTATIONS

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Duke StatSci Research Alumni Symposium Durham, NC, USA  
 • “Hierarchical Directed Dirichlet Networks for Discrete Graphical Modeling” *Oct. 2024*

Bayesian Young Statisticians Meeting (BAYSM) 2024 Venice, Italy  
 • “Bayesian Learning of Clinically Meaningful Sepsis Phenotypes in Northern Tanzania” *June 2024*

International Society of Bayesian Analysis (ISBA) 2022 World Meeting Montreal, QC, Canada  
 • “Bayesian Multi-Study Clustering of Sepsis Patients” *June 2022*

## TEACHING EXPERIENCE

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Teaching Assistant at Duke University *Jan. 2021 - Dec. 2024*  
 • STA 490/690: Analysis of Time-to-Event Data (Instructor: Yue Jiang)  
   – Held office hours; graded homeworks, projects, and exams  
 • STA 831: Probability & Statistical Models (Instructor: Mike West)  
   – Held office hours; graded exams  
 • STA 470S: Introduction to Statistical Consulting (Instructor: Edwin Iversen)  
   – Held weekly progress updates with students; graded written reports  
 • STA 360: Bayesian Methods and Modern Statistics (Instructor: Simon Mak)  
   – Held office hours; prepared and graded exams; organized homework graders; advised final projects

Teaching Assistant at McGill University *Sept. 2019 - Dec. 2019*  
 • MATH 203: Principles of Statistics 1 (Instructors: Abbas Khalili and David Wolfson)  
   – Held office hours; organized homework graders; gave weekly lab lecture; graded exams

## HONORS AND AWARDS

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Myra and William Waldo Boone Fellowship for Canadian Graduate Students	<i>2023 - 2025</i>
ASA-SBSS Student Paper Competition	<i>Aug. 2024</i>
ISBA World Meeting Travel Award	<i>2022, 2024</i>
BAYSM 2023 Best Long Talk Award	<i>Nov. 2023</i>

## PROFESSIONAL SERVICES AND ACTIVITIES

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**Reviewer:** Journal of the American Statistical Association (JASA), Electronic Journal of Statistics (EJS), Biometrika

**Member:** ISBA, j-ISBA, the ASA (Biometrics & SBSS), and the IBS (ENAR)

**Organizer:** 2023-2025 PRIME and ACES Reading Groups

- PRIME group: Bayesian methods for modeling environmental exposures (15 members)
  - Hosted meetings; obtained speakers; led discussion
- ACES group: novel MCMC methods, collaboration with Mathematics department (24 members)
  - Hosted meetings; obtained speakers; organized schedule

**Session chair:** BAYSM 2024–“Bayesian Methods for Environmental and Health Data”

## SOFTWARE

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Languages: R (Advanced), RCPP (Advanced), Python (Proficient), Git (Proficient), C++ (Proficient), Cluster computing via SLURM (Proficient)

Packages: foldcluster