Mathieu **Bray**

Principal Statistician · Research Statistics · GlaxoSmithKline

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Experience

Professional Experience

GlaxoSmithKline
Collegeville, PA, USA

Principal Statistician, Research Statistics - Pharmaceutical R&D
2019 - Present

- Collaborate with top laboratory and clinical scientists to provide statistical support for pre-clinical projects.
- Design experiments, analyze data, and visualize and interpret results for projects that range from small studies with single endpoints to high-dimensional genomic data.
- Create and maintain interactive applications for internal use, on efforts ranging from randomization to visualization of genomic data.

Academic Experience

University of Michigan
Ann Arbor, MI, USA

Graduate Student Research Assistant - Kidney Epidemiology and Cost Center
2012 - Present

- Investigated new optimization strategies in kidney paired donation, under the supervision of Peter X-K. Song & Jack (John D.) Kalbfleisch as part of the Kidney-Paired Donation Simulation Group.
- Programmed simulations of optimization procedures and analyzed results, leading to publications in clinical and statistical journals.
- Collaborated with the Alliance for Paired Donation to develop custom graphical user interface for optimization and management of kidney paired donation programs.

McGill University Health Centre
Montreal, QC, Canada

endMS Summer Student - Neuroepidemiology Research Unit
2011

- Investigated patterns in general practitioner preferences in managing care for multiple sclerosis patients, under the supervision of Christina Wolfson.
- Presented findings at a multiple sclerosis research forum and published results in a clincial journal.

McGill University
Montreal, QC, Canada

Biostatistics Summer Intern - Dept. of Epid., Biostat. & Occ. Health
2010

- Selected for the inaugural cohort of Undergraduate Summer Internships (Biostatistics), under supervision of Erica E. M. Moodie.
- Prepared a literature review on the relation between family responsibilities and gender to the productivity and career satisfaction of medical faculty, and assisted with the release of a software package for optimal dynamic treatment regimes.

Consulting

University of Michigan NCAA Div-I Men's Ice Hockey
Ann Arbor, MI, USA

Volunteer Student Statistical Consultant
2015 - 2018

- Provided statistical consultation and analysis for the University of Michigan men's hockey team, under the supervision of Evan Hall.
- Collected and managed data via season-long video tracking, analyzed results from season simulations, and visualized historical NCAA team-level trends.

Education

University of Michigan
Ann Arbor, MI, USA

Ph.D. in Biostatistics - CGPA: 4.00/4.00 *2012 - 2019*

- **Dissertation:** Advances in Methods, Algorithms and Software for Optimization and Simulation of Kidney Paired Donation Programs
- **Advisor:** Peter X-K. Song
- Degree Conferred - May 2019

McGill University
Montreal, QC, Canada

B.Sc. Joint Honours in Statistics and Computer Science - CGPA: 3.83/4.00 *2009 - 2012*

- Distinction - Top 25% of graduating class
- First Class Honours - CGPA above 3.5
- Dean's Honour List - 2010-2011 & 2009-2010

Committees

BFF5 - Fifth Bayesian, Fiducial & Frequentist Conference
Ann Arbor, MI, USA

Member, Organizing Committee *2017 - 2018*

- Member of the organizing committee for the Fifth Bayesian, Fiducial and Frequentist (BFF5) Conference (May 6-9, 2018).
- Coordinated with speakers and other guests, including drafting and sending speaker invitations, maintained the conference website, and organized committee meetings.

MSSISS - Michigan Student Symposium for Interdisciplinary Statistical Sciences
Ann Arbor, MI, USA

Biostatistics Representative, Organizing Committee *2014 - 2015*

- Organized, advertised and hosted MSSISS 2015 (March 20, 2015).
- Selected student speakers, judged the student oral presentation competition, coordinated with the keynote speaker, and helped select the keynote speaker for the following year's event.

Distinctions

	Postgraduate Scholarship (Master's) PGS M NSERC	*2012-2013*
Declined	**Alexander Graham Bell Canada Graduate Scholarship (Master's) CGS M** NSERC	*2012-2013*
Declined	**Bourse de Maitrise (Master's Scholarship) B1** FQRNT	*2012-2013*
	endMS Summer Studentship Award Multiple Sclerosis Society of Canada	*2011*
	Sir Edward Beatty Memorial Scholarship McGill University	*2011-2012*
	J.W. McConnell Scholarship McGill University	*2009-2010*

Skills

Courses

- Theoretical Statistics (Probability & Distribution Theory, Biostatistical Inference, Large Sample Theory)
- Applied Statistics (Linear Regression, Generalized Linear Models, Linear Mixed Models, Analysis of Repeated Measures, Longitudinal Analysis, Categorical Data Analysis, Stochastic Processes, Survival Analysis)
- Modern Statistical Computing (Statistical Optimization, Penalized Regression, Advanced Bayesian Computation)
- Data Mining & Machine Learning (Dimension Reduction, Classification, Clustering, Graphical Models)

Technical Expertise

- Extensive experience with R (including application development using Shiny), C++ (including GUI programming with Qt)
- Moderate experience with C, Java, MATLAB, Python, SAS, SQL (including mySQL) & Tableau
- Familiarity with MapReduce framework (e.g. Hadoop, Pig, Spark) in controlled settings

Languages

- English (written and oral)
- Français (écrit et verbal)

Grants

DiDi Chuxing

Co-Investigator *2018-2019*

- Wearable Devices to Monitor Driver's Adverse Health Conditions and Operational Safety (18-PAF08362)

National Institutes of Health

Co-Investigator *2016-2020*

- Optimization and Simulation of Kidney Paired Donation Programs - Renewal (R01-DK093513-05)

Presentations

Oral Presentations

JSM – Online Non-Negative Tensor Decomposition with Application to Kidney Paired Donation *Vancouver, BC, Canada* *2018*

MSSISS – Online Non-Negative Tensor Decomposition with Application to Kidney Paired Donation *Ann Arbor, MI, USA* *2018*

ENAR – Assessing the Benefits of Multiple Incompatible Donors in Kidney Paired Donation *Washington D.C., USA* *2017*

MSSISS – Incorporating Candidates with Multiple Associated Incompatible Donors in Kidney Paired Donation *Ann Arbor, MI, USA* *2016*

endMS Rounds – General Practitioner Preferences in Managing Care for Multiple Sclerosis Patients *Montreal, QC, Canada* *2011*

Poster Presentations

ATC – Interactive Software for Simulation and Management of a Kidney Paired Donation Program *Seattle, WA, USA* *2018*

ATC – Gains from Joining Kidney Paired Donation with Several Incompatible Donors *Seattle, WA, USA* *2018*

ATC – A Visualization Software Platform for Managing a Kidney Paired Donation Program *Boston, MA, USA* *2016*

ENAR – Incorporating Candidates with Multiple Associated Incompatible Donors in Kidney Paired Donation *Austin, TX, USA* *2016*

MSSISS – Incorporating Uncertainties and Contingencies in a Paired Donation Program *Ann Arbor, MI, USA* *2014*

ASN Kidney Week – Incorporating Uncertainties and Contingencies in a Paired Donation Program *Atlanta, GA, USA* *2013*

Publications

Journal Articles

Bray M, Wang W, Rees MA, Song PXK, Leichtman AB, Ashby VB, and Kalbfleisch JD (2019). KPDGUI: An Interactive Application for Optimization and Management of a Virtual Kidney Paired Donation Program. Computers in Biology and Medicine (Online) DOI: 10.1016/j.compbiomed.2019.03.013

Wang W, Bray M, Song PXK, and Kalbfleisch JD (2019). An Efficient Algorithm to Enumerate Sets with Fallbacks in a Kidney Paired Donation Program. Operations Research for Health Care 20(1): 45–55. DOI: 10.1016/j.orhc.2018.10.002

Bray M, Wang W, Song PXK, and Kalbfleisch JD (2018). Valuing Sets of Potential Transplants in a Kidney Paired Donation Network. Statistics in Biosciences 10(1): 255–79. DOI: 10.1007/s12561-018-9214-7

Ashby VB, Leichtman AB, Rees MA, Song PXK, Bray M, Wang W, and Kalbfleisch JD (2017). A Kidney Graft Survival Calculator that Accounts for Mismatches in Age, Sex, HLA, and Body Size. Clinical Journal of the American Society of Nephrology 12(7): 1148–60. DOI: `10.2215/CJN.09330916`

Wang W, Bray M, Song PXK, and Kalbfleisch JD (2017). A Look-Ahead Strategy for Non-Directed Donors in Kidney Paired Donation. Statistics in Biosciences 9(2): 453–69. DOI: `10.1007/s12561-016-9155-y`

Bray M, Wolfson C, Moore F, Zhu B, and Uniat J (2016). General Practitioner Preferences in Managing Care of Multiple Sclerosis Patients. Canadian Journal of Neurological Sciences 43(1): 142–8. DOI: `10.1017/cjn.2015.239`

Bray M, Wang W, Song PXK, Leichtman AB, Rees MA, Ashby VB, Eikstadt R, Goulding A, and Kalbfleisch JD (2015). Planning for Uncertainty and Fallbacks Can Increase the Number of Transplants in a Kidney Paired Donation Program. American Journal of Transplantation 15(10): 2636–45. DOI: `10.1111/ajt.13413`

INVITED COMMENTARY

Bray M and Song PXK (2016). Commentary on "Statistical Modelling of Citation Exchange Between Statistics Journals" by Varin C, Cattelan M, and Firth D. Journal of the Royal Statistical Society: Series A (Statistics in Society) 179(1): 1–63. DOI: `10.1111/rssa.12124`