

JOELLE MBATCHOU, Ph.D.

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CAREER OBJECTIVE

To be a part of a challenging, collaborative, and innovative work environment where I can make valuable contributions and continuously improve my knowledge and skills.

EDUCATION

University of Chicago, Department of Statistics, Chicago IL Jun 2019

Ph.D. Statistics

Dissertation Title: Assessments of Significance for Genetic Association Analysis in Structured Samples

Department of Education GAANN Fellowship Recipient

Relevant Coursework: Applied Linear Statistical Methods, Generalized Linear Models, Applied Longitudinal Data Analysis, Data Mining, Applied Survival Analysis, Mathematical Statistics, Design/Analysis of Experiments, Statistical Genetics, Distribution Theory, Stochastic Processes, Sample Surveys

DePaul University, Chicago IL Jun 2011

Bachelor of Science in Biology (conc. Cell & Molecular Biology) & Mathematical Sciences (conc. Statistics)

Summa Cum Laude

RESEARCH EXPERIENCE

University of Chicago, Department of Statistics, Chicago IL Oct 2013 – Jun 2019

Graduate Student with Dr. Mary Sara McPeck

- Developed a fast method, *JASPER*, to assess significance for a general class of association tests, including tests for high dimensional phenotypes
- Created a software in C/C++ to assess the performance of *JASPER* and applied it to the analysis of gene regulation, which involved networks of up to 250 genes and a total of about 180,000 genetic markers
- Designed a permutation-based testing procedure, *BRASS*, for analyzing binary phenotypes that adjusts for sample correlation
- Built a software in C/C++ to evaluate *BRASS* through simulation studies

DePaul University, Chicago IL Jan 2010 – Jun 2011

Research Assistant with Dr. Windsor Aguirre's Lab

- Developed AFLP markers to study genetic differentiation of Ecuadorian fishes

Harvard Medical School, Boston MA Jun 2010 – Aug 2010

Summer Research Assistant with Dr. Ulrike Eggert's Lab

- Used FRET technique and small molecules to analyze the Rho pathway during cytokinesis

TEACHING & LEADERSHIP EXPERIENCE

University of Chicago, Department of Statistics, Chicago IL

Statistical Consultant, Team Leader

Sep 2013 – Sep 2016

- Led a team of graduate students to tackle projects proposed by members of the university community (graduate students/postdocs/faculty)
- Guided the client in formulating research objectives, and proposed appropriate statistical methods (e.g. linear mixed models, generalized linear models, kriging, regression trees)
- Implemented the methods and presented the results to an audience of graduate students and researchers

Teaching Assistant

Jun 2011 – Jun 2019

- Assisted in undergraduate courses: Statistical Methods and Applications, Statistical Models/Methods, Applied Regression Analysis and Analysis of Categorical Data
- Created introductory material for R and STATA through weekly computer sessions
- Organized weekly office hours where students expanded their understanding of course materials

Statistics Collaborative Learning Team Leader

Oct 2016 – Mar 2017

- Facilitated the design of a new program based on collaborative learning
- Created workshop exercises and implemented them in weekly workshops where students worked in groups

Course Instructor

Mar 2014 – Jun 2014

- Taught an introductory course on statistical methods (STAT 234: Statistical Models/Methods)
- Designed course materials and delivered bi-weekly lectures to a class of 36 students
- Assisted students in office hours with learning statistical concepts as well as R programming skills

SKILLS

Computing: Proficient in R, C, LaTeX | Intermediate in C++, Python, STATA, Microsoft Office & Tableau

Languages: Fluent in French (native) and English, Spanish (Intermediate) and beginner in Japanese and Korean

PRESENTATIONS

- A Generalized Permutation Testing Method for Binary Trait Association in Structured Samples, The American Society of Human Genetics Annual Meeting, October 2017
- Retrospective Genetic Association Testing with Binary Traits in Structured Samples Using a MCMC-based Approach, Women in Statistics and Data Science Conference, October 2017
- Genetic Association Analysis of Binary Traits in Structured Samples, Eastern North American Region Spring Meeting, March 2017

PUBLICATIONS

- [1] **Mbatchou, J.**, Abney, M., and McPeck, M. S. Permutation methods for assessing significance in binary trait association mapping with structured samples. *bioRxiv*, page 451377, 2019.
- [2] Jiang, D., **Mbatchou, J.**, and McPeck, M. S. Retrospective Association Analysis of Binary Traits: Overcoming Some Limitations of the Additive Polygenic Model. *Human Heredity*, 80(4):187–195, 2016.
- [3] Nelsen, M. P., Lücking, R., **Mbatchou, J. S.**, Andrew, C. J., Spielmann, A. A., and Lumbsch, H. T. New insights into relationships of lichen-forming Dothideomycetes. *Fungal Diversity*, 51(1):155–162, 2011.
- [4] Kharas, G. B., Hanawa, E., Hill, B. L., Flynn, K. T., Husain, H., **Mbatchou, J.**, Paik, W., Peters, A. L., Miguel, Y. S., Pacilli, M., and Others. Novel Copolymers of 4-Fluorostyrene. 8. Some Ring-Trisubstituted 2-Phenyl-1, 1-dicyanoethylenes. *Journal of Macromolecular Science, Part A*, 48(5):327–331, 2011.
- [5] Nelsen, M. P., Lücking, R., Plata, E. R., and **Mbatchou, J. S.** Heiomasia, a new genus in the lichen-forming family Graphidaceae (Ascomycota: Lecanoromycetes: Ostropales) with disjunct distribution in Southeastern North America and Southeast Asia. *The Bryologist*, 113(4):742–751, 2010.
- [6] Schoch, C. L., Crous, P. W., Groenewald, J. Z., Boehm, E. W., Burgess, T. I., de Gruyter, J., de Hoog, G. S., Dixon, L. J., Grube, M., Gueidan, C., Harada, Y., Hatakeyama, S., Hirayama, K., Hosoya, T., Huhndorf, S. M., Hyde, K. D., Jones, E. B., Kohlmeyer, J., Kruys, Å., Li, Y. M., Lücking, R., Lumbsch, H. T., Marvanová, L., **Mbatchou, J. S.**, McVay, A. H., Miller, A. N., Mugambi, G. K., Muggia, L., Nelsen, M. P., Nelson, P., Owensby, C. A., Phillips, A. J., Phongpaichit, S., Pointing, S. B., Pujade-Renaud, V., Raja, H. A., Plata, E. R., Robbertse, B., Ruibal, C., Sakayaroj, J., Sano, T., Selbmann, L., Shearer, C. A., Shirouzu, T., Slippers, B., Suetrong, S., Tanaka, K., Volkmann-Kohlmeyer, B., Wingfield, M. J., Wood, A. R., Woudenberg, J. H., Yonezawa, H., Zhang, Y., and Spatafora, J. W. A class-wide phylogenetic assessment of Dothideomycetes. *Studies in Mycology*, 64:1–15, 2009.
- [7] Nelsen, M. P., Lücking, R., Grube, M., **Mbatchou, J. S.**, Muggia, L., Plata, E. R., and Lumbsch, H. T. Unravelling the phylogenetic relationships of lichenised fungi in Dothideomyceta. *Studies in Mycology*, 64:135–144, 2009.