Yann Ilboudo

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LinkedIn: http://www.linkedin.com/in/yannilboudo
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EDUCATION

Doctor of Philosophy (Ph.D) in Bioinformatics 01/2018 – 10/2023
University of Montreal, Montreal, QC, Canada

Master of Science (M.Sc.) in Bioinformatics 01/2015 – 03/2017
University of Montreal, Montreal, QC, Canada

Bachelor of Science (B.Sc.) in Bioengineering 09/2007 – 05/2011
Binghamton University, State University of New York, USA

CORE SKILLS

Software: Python • R • Regenie • PLINK • METAL • bcftools • Nextflow • RVTESTS • RAREMETALS • Slurm • Bash • AWK • Git • Linux • LaTeX • R/Markdown • Bioconductor • Mathematica • High Performance Computing • Microsoft suite

Human genetics datasets: AllofUS Research • TopMed • UKBioBank, SARDNiA • INTERVAL • OMG • CSSCD • GENMOD • dbGaP • CLSA

Research cloud computing: DNAnexus, Terra

Languages
• French (Native proficiency in reading and writing)
• English (Native proficiency in reading and writing)
• Italian (Full professional proficiency in reading and writing)
• Spanish (Elementary proficiency in reading and writing)

PROFESSIONAL EXPERIENCES & PROJECTS

Research associate 06/2022–Present
Lady Davis Institute, Montreal, QC, Canada
•Developed computational pipelines for genome-wide associations and mendelian randomization studies
•Supervises Ph.D. students and interns on various computational omics (proteomics, metabolomics, transcriptomics) projects
•Assist academic and industry collaborators to execute research studies
•Reviews manuscripts
•Hosts weekly lab meetings and monthly journal club
•Participate in the lab's recruitment efforts (interviews, CV reviews)
•Awarded computational storage grant from the Digital Research Alliance of Canada Compute Canada estimated to be worth $70,000
•Provide support for managing ~1000Tb of data

Research assistant in Bioinformatics 03/2017–01/2019
Montreal Heart Institute, Montreal, QC, Canada
Metabolomics projects
• Implemented a mendelian randomization analysis pipeline in *Python* to identify the causal role of metabolites in sickle cell disease patients
• Performed clustering analysis with *WGCNA*, developed a wrapper in *R* to facilitate the analysis
• Developed a *Python* script to efficiently parse the *XML* Human Metabolome Database (HMDB) in order to perform metabolite annotation
• Wrote projects results and methods in R Markdown

Genomics projects
• Developed a pipeline to perform genome-wide association (GWAS) studies for multiple phenotypes outputting tables, and figures
• Performed whole exome sequencing quality control and analysis with *GATK* and *VEP*
• Developed a *Python* script to integrate and harmonize results from GWAS, with those from gene expression (RNA-Seq), and genome editing (CRISPR)

SCHOLARSHIPS & AWARDS

MERITE scholarship by faculty of Medicine at the University of Montreal. 09/2020 – 09/2022
• Awarded by the department of medicine based on a yearly competition to the most deserving students based on a rigorous evaluation from university professors
• $60,000 CAD over 3 years

LEADERSHIP & VOLUNTEERING

Variant Effect Seminar Series committee member 07/2022 - Present
•Organizing monthly virtual seminar series on variant effects
•Perform analytics analyses to optimize the number of people attending seminar
•Assist with outreach efforts (Twitter, Instagram, podcast)

Trained Bioinformatics Summer Intern
Montreal Heart Institute 05/2019 – 08/2019
• Designed a bioinformatics project for an undergraduate student
• Provided guidance on acquiring skills in R programing, metabolomics data quality control, and imputation
• Reviewed final report

SELECTED PUBLICATIONS AND PREPRINTS

Y Ilboudo, Yoshiji S, Lu T, Butler-Laporte G, Zhou S, Richards JB. Vitamin D, Cognition, and Alzheimer's Disease: Observational and Two-Sample Mendelian Randomization Studies (2024).J Alzheimers Dis

T Sasako, **Y Ilboudo**, K Liang, Y Chen, S Yoshiji, JB Richards
The influence of trinucleotide repeats in the androgen receptor gene on androgen-related traits and diseases.(2024). J Clin Endocrinol Metab

G Butler-Laporte, Y Farjoun, T Nakanishi, T Lu, E Abner, Y Chen, M Hultström, A Metspalu, L Milani, R Mägi, M Nelis, G Hudjashov, Estonian Biobank Research Team, S Yoshiji, **Y Ilboudo**, K YH Liang, C Su, J DS Willet, T Esko, S Zhou, V Forgetta, D Taliun, J Richards. HLA allele-calling using multi-ancestry whole-exome sequencing from the UK Biobank identifies 129 novel associations in 11 autoimmune diseases (2023). Communications Biology

S Yoshiji , T Lu, G Butler-Laporte, J Carrasco-Zanini-Sanchez , Y Chen, Liang K, Willett J, Su C, Wang S, Adra D, **Y Ilboudo** , T Sasako, V Forgetta, Y Farjoun, H Zeberg, S Zhou, M Hultstrom, N Wareham, V Mooser, N Timpson, C Langenberg, J Richards. COL6A3-derived endotrophin mediates the effect of obesity on coronary artery disease: an integrative proteogenomics analysis (2024). Nature Genetics

C Baron, S Cherkaoui, S Therrien-Laperriere, **Y Ilboudo**, R Poujol, P Mehanna, ME Garrett, MJ Telen, A Ashley-Koch, P Bartolucci, J Rioux, G Lettre, C Des Rosiers, M Ruiz, J Hussin (2023). Gene-metabolite annotation with shortest reactional distance enhances metabolite genome-wide association studies results. iScience

AV Mikhaylova, CP McHugh, LM Polfus, LM Raffield, MP Boorgula, TW Blackwell, JA Brody, J Broome, N Chami, […] **Y Ilboudo**[…] Mathias RA; NHLBI Trans-Omics for Precision Medicine (TOPMed) Consortium, AP Reiner, PL Auer (2021). Whole-genome sequencing in diverse subjects identifies genetic correlates of leukocyte traits: The NHLBI TOPMed program. Am J Hum Genet

DH Vandorpe, BE Shmukler, **Y Ilboudo**, S Bhasin, B Thomas, A Rivera, JG Wohlgemuth, JS Dlott, LM Snyder, C Sieff, M Bhasin, G Lettre, C Brugnara, SL Alper (2021). A Grammastola spatulata mechanotoxin-4 (GsMTx4)-sensitive cation channel mediates increased cation permeability in human hereditary spherocytosis of multiple genetic etiologies. Hematologica

T Pincez, SSK Lee, **Y Ilboudo**, MH Preuss, AL Pham Hung d'Alexandry d'Orengiani, P Bartolucci, F Galacteros, P Joly, DE Bauer, R Loos, RC Lindsley, G Lettre (2021). Clonal hematopoiesis in sickle cell disease. Blood

Y Ilboudo, ME Garrett, P Bartolucci, C Brugnara, C Clish, JN Hirschhorn, F Galactéros, A Ashley-Koch, M Telen, G Lettre (2020) Potential causal role of L-glutamine in sickle cell disease painful crises: a Mendelian randomization analysis. Blood Cells Mol Disease 86:102504

Y Ilboudo, P Bartolucci, ME Garrett, A Ashley-Koch, M Telen, C Brugnara, F Galactéros, G Lettre (2018) A common functional PIEZO1 deletion allele associates with red blood cell density in sickle cell disease patients. American Journal of Hematology E362-E365

Y Ilboudo, P Bartolucci, A Rivera, JC Sedzro, M Beaudoin, M Trudel, SL Alper, C Brugnara, F Galacteros, G Lettre (2017) Genome-wide association study of erythrocyte density in sickle cell disease patients. Blood Cells Mol Disease 65:60-65.

MC Canver, S Lessard, L Pinello, Y Wu, **Y Ilboudo**, EN Stern, A Needleman, F Galactéros, C Brugnara, A Kutlar, C McKenzie, M Reid, DD Chen, PP Das, AM Cole, J Zheng, Y Nakamura, G Yuan, G Lettre, DE Bauer, SH Orkin (2017) Variant-aware saturating mutagenesis using multiple Cas9 nucleases identifies regulatory elements at trait-associated loci. Nature Genetics 49(4):625-634.

SCIENTIFIC PRESENTATIONS

Y Ilboudo, M Garret, P Bartolucci, F Galactéros A Ashley-Koch, Telen M, G Lettre. (poster presentation) Causal role of L-glutamine and 3-ureidopropionate in sickle cell disease complications: A Mendelian randomization analysis. **American Society of Human Genetics Annual Meeting**, Houston, TX, USA, October 2019

Y Ilboudo, M Garret, A Ashley-Koch, Telen M, G Lettre (poster presentation) Metabolite signatures of organ dysfunction in sickle cell disease patients. **RECOMB/ISCB Conference on Regulatory and Systems Genomics**, New York City, NY, USA, December 2018

Y Ilboudo, M Garret, A Ashley-Koch, Telen M, G Lettre (poster presentation) Metabolite signatures of organ dysfunction in sickle cell disease patients, **12e journées génétiques du Réseau de médecine génétique appliquée (RMGA)**, Montreal, Canada, April 2018

Y Ilboudo, M Garret, A Ashley-Koch, Telen M, G Lettre (oral presentation) Metabolomics in Sickle Cell Disease: Searching for severity biomarkers. **Montreal Heart Institute Genetics and Functional Genomics Meeting**, Montreal, Canada, January 2018

Y Ilboudo, C Sidore, F Cucca, G Lettre (poster presentation) Trans-ethnic meta-analysis of fetal hemoglobin genome-wide association results identifies common variants at the KLF1 locus**. American Society of Human Genetics Annual Meeting**, Orlando, FL, USA, October 2017

Y Ilboudo, C Sidore, F Cucca, G Lettre (oral presentation) The discovery of genetic loci associated with fetal hemoglobin levels in sickle cell disease patients through epigenomic prioritization. **Journée de la Recherche - Institut de Cardiologie de Montréal**, Montreal, Canada, June 2017

Y Ilboudo, P Bartolucci, SL Alper, C Brugnara, F Galacteros, G Lettre (oral presentation) The importance of red blood cells hydration in sickle cell disease patients. **Seminaire Institut de Cardiologie de Montréal**, Montreal, Canada, November 2016

Y Ilboudo, P Bartolucci, F Galactéros, S Alper, C Brugnara, G Lettre (poster presentation) The genetics of dense red blood cells in sickle disease

patients. **American Society of Human Genetics Annual Meeting**, Vancouver, Canada, October 2016