

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

- Awarded computational storage grant from the Digital Research Alliance of Canada Compute Canada estimated to be worth \$70,000
- Supervises 4 Ph.D. students and an intern on various computational omics projects
- Provide support for managing ~1000Tb of data
- Developed computational pipelines for genome-wide associations and mendelian randomization studies
- 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)

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 per 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 programming, metabolomics data quality control, and imputation
- Reviewed final report

SELECTED PUBLICATIONS AND PREPRINTS

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

Y Ilboudo, Y Chen, S Yoshiji, T Sasako, J B Richards. GLP1 Influence on cognition and Alzheimer's disease (2023). In preparation.

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 (2023). Preprint

Y Ilboudo, Yoshiji S, Lu T, Butler-Laporte G, Zhou S, Richards JB (2023) Vitamin D and the preclinical Alzheimer cognitive composite cognition (PACC) score: a two-sample mendelian randomization study. Preprint

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

SCIENTIFIC PRESENTATIONS

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.

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