



Mickaël CANOUIL

Biostatistician, Ph.D.

*The best thing about being a statistician is that you get to
play in everyone's backyard
– John Tukey*

Experience

- Jan. 2016 – **Head of the Biostatistic Team (Institut Pasteur de Lille)**, CNRS UMR8199 - Present *Integrated Genomics and Metabolic Diseases Modeling*, Lille, Activities: Genome-wide association studies, experimental design, -omics data analysis, methodological developments, consortium work package lead analyst, team management.
Headed by Pr. P. Froguel.
- Sept. 2012 – **Biostatistician (CNRS)**, CNRS UMR8199 - *Integrated Genomics and Metabolic Diseases Modeling*, Lille, Activities: Genome-wide association studies, experimental design, -omics data analysis, methodological developments.
Dec. 2015
Headed by Pr. P. Froguel.
- Nov. 2011 – **Biostatistician**, *The French Institute of Science and Technology for Transport, Development and Networks (IFSTTAR)* - UMRESTTE - UMR T 9405, Bron, Activities: Analysis of a mobility and accident study in secondary-school pupils.
Dec. 2011
Supervised by Dr. M. Haddak.
- Jan. 2011 – **Biostatistician (Internship)**, *Hospices Civiles de Lyon - Biostatistics Unit* - CNRS
Jun. 2011 UMR5558, Lyon, Activities: Development of a non-parametric (on time) clustering algorithm for longitudinal data.
Supervised by Pr. R. Ecochard et Dr. C. Genolini.
- Mar. 2010 – **Biostatistician (Internship)**, *Laboratory of Biometry and Evolutionary Biology (LBBE)* - CNRS UMR5558, Lyon, Activities: Mathematical modelling of nosocomial rotavirus infections in pediatric ward.
Jun. 2010
Supervised by Dr. C. Kribs-Zaleta.

Main Activities In The Last Job Position

- Data Analysis** I've been analysing omics (SNP, CpG, expression, metabolites, etc.) data within numerous projects related to metabolic diseases, such as Type 2 Diabetes. These projects involve collaborations with national and international consortia like CKDgen, CHARGE, IMIDIA, DIRECT or more recently RHAPSODY. My contribution covers Genome-Wide Association Studies (GWAS), differential methylation/expression analyses, metabolomics analyses, rare variants analyses (clustering approach), disease progression modelling, genetic epidemiology and meta-analyses.
- Team Management** I've been managing a team of three junior statisticians. My role is to provide guidance regarding choices of statistical methodologies for analysing the data and code optimisation for implementing these methodologies in large scale omics data.
- Research** My main research interests are **mixed models**, more recently extended to joint models. **Joint model**, especially the **joint likelihood approach** implemented in the R package JM was studied in the context of Type 2 Diabetes incidence and fasting glucose progression (associated by diagnosis definition) using SNPs as biomarkers of interest [?].

Education

- Oct. 2014 – Sept. 2017 **Doctor of Philosophy (Ph.D.) in BioStatistics**, *University of Lille 2*, Lille, "Development and Application of Statistical Methods for Multi-Omics Studies in Type 2 Diabetes: Beyond the Genome-Wide Association Studies Era".
Supervised by Pr. P. Froguel and Dr. G. Rocheleau
- Sept. 2009 – Jul. 2011 **Master's Degree in Biostatistics, Bioinformatics and Genomics**, *University Claude Bernard Lyon 1*, Lyon, Specialised in Biostatistics.
- Sept. 2006 – Jul. 2009 **Bachelor's Degree in Biology**, *University Claude Bernard Lyon 1*, Lyon, Specialised in Mathematics and Informatics for Biology.

Computer Skills

- Basic** C/C++, SQL, NoSQL
- Intermediate** JULIA, LUA, PERL, PYTHON, SAS
- Advanced** R (Shiny, Rmarkdown, S4, etc.), HTML, CSS, LATEX, MARKDOWN
- Environment** DOCKER, UNIX, WINDOWS

Languages

- French** Native
- English** Fluent / Full Professional Proficiency
- Spanish** Elementary proficiency

Awards

- 2015 **Funding Allocation SFD-Lilly**, *French speaking Diabetes Society (SFD)*, Bordeaux, Detection of new genomic variants associated with fasting blood glucose and incidence of type 2 diabetes simultaneously.

R Packages

- clere **R package implementing the CLERE methodology.**
Loïc Yengo, Julien Jacques, Christophe Biernacki and Mickaël Canouil (2014)
<https://cran.r-project.org/package=clere>
- snpEnrichment **R package implementing a method for calculating an enrichment statistic of a set of SNP within a GWA signal using minor allele frequency and linkage disequilibrium.**
Mickaël Canouil and Loïc Yengo (2013)
<https://cran.r-project.org/package=snpEnrichment>
- NACHO **NACHO: NanoString Quality Control Dashboard.**
Mickaël Canouil, Gerard Bouland and Roderick Slieker (2019)
<https://cran.r-project.org/package=NACHO>
- CARoT **Centralised and Automated RepOrting Tools.**
Mickaël Canouil, Mathilde Boissel and Lijiao Ning (2019)
<https://github.com/mcanouil/CARoT>

Communications

Oral Presentations

- **Julia for Intensive Scientific Computing** (*half-day workshop available on GitHub, in French*)
Mickaël Canouil
“Journées nationales du DEveloppement logiciel” - JDEV, Bordeaux, France (2015)
- **Longitudinal Genetic Modelling: Revisiting Associations of SNPs Associated with Blood Fasting Glucose in Normoglycemic Individuals**
Mickaël Canouil, Ghislain Rocheleau, Loïc Yengo and Philippe Froguel
Statistical Methods for Post Genomic Data - SMPGD, Lille, France (2016)
- **R and Databases** (*two-days training available on GitHub, in French*)
Mickaël Canouil
URFIST - University of Bordeaux, Bordeaux, France (2018)
- **Jointly Modelling SNPs with Survival & Longitudinal Trait?** (*available on GitHub, in French*)
Mickaël Canouil
Thematic Day “Statistic & Genomic” of the “Réseau Interdisciplinaire autour de la Statistique” - RIS, Paris, France (2018)

Poster Presentations

- **Application of Joint Models in Genetic Association Studies**
Ghislain Rocheleau, Mickaël Canouil, Loïc Yengo and Philippe Froguel
International Genetic Epidemiology Society - IGES, Baltimore, United-States (2015)
- **Single Nucleotide Polymorphisms Associated With Fasting Blood Glucose Trajectory And Type 2 Diabetes Incidence: A Joint Modelling Approach**
Mickaël Canouil, Philippe Froguel and Ghislain Rocheleau
International Genetic Epidemiology Society - IGES, Toronto, Canada (2016)
- **Single Nucleotide Polymorphisms Associated With Fasting Blood Glucose Trajectory And Type 2 Diabetes Incidence: A Joint Modelling Approach**
Mickaël Canouil, Philippe Froguel and Ghislain Rocheleau
4th Symposium European Genomic Institute for Diabetes (E.g.i.d), Lille, France (2016)
- **“Variants Génétiques Associés à la Trajectoire de la Glycémie à Jeun et à l'Incidence du**

Diabète de Type 2: Une Approche par Modèle Joint” (CA-075)

Mickaël Canouil, Philippe Froguel and Ghislain Rocheleau

Annual Congress of “Société Francophone du Diabète” (SFD), Lille, France (2017)

Publications

As co-first author in the following articles:

- [?]
- [?]
- [?]
- [?]

Note: authors' lists have been shortened with "et al." and thus, might not contain my lastname.

Interests

- Movies / TV-Shows / Japanese Animation
- Data visualisation ("IMDbRating" on GitHub)
- Board games
- Hiking
- Archery
- A little bit of reading (fantastic novels, e.g., Robin Hobb)
- Escape games