

Hector Roux de Bézieux

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Education

Ph.D in Biostatistics

University of California, Berkeley, USA

Dissertation adviser: Sandrine Dudoit, GPA 4.0

2017 - 2021 (expected)

Degree Emphasis in Computational Biology

- Conceived and implemented machine-learning methods and software for genomic data analyses. Publications include:
 1. **Roux de Bézieux, H.**, Street, K. ... Dudoit, S. (2020). [Improving replicability in single-cell RNA-Seq cell type discovery with Dune](#). *BioRxiv*
 2. Van den Berge, K., **Roux de Bézieux, H.**, ... Dudoit, S., Clement, L. (2020). [Trajectory-based differential expression analysis for single-cell sequencing data](#). *Nature Communications*, 11(1), 1201.
- Collaborated with applied biology teams to design experiments and analyze genomic data, including on:
 1. Brann, D. H., ... **Roux de Bézieux, H.**, ... (2020). [Non-neuronal expression of SARS-CoV-2 entry genes in the olfactory system suggests mechanisms underlying COVID-19-associated anosmia](#). *Science Advances*, eabc5801.
 2. Yao, Z., Liu, ... **Roux de Bézieux, H.**, ... (2020). [An integrated transcriptomic and epigenomic atlas of mouse primary motor cortex cell types](#). *BioRxiv*

Master of Science in Biology & Bioengineering

École polytechnique and UC Berkeley

Fung Institute Fellowship, Outstanding Investment Award, GPA 3.86

2015 - 2017

- Designed and conducted experiments for bacteriophage discovery in the context of antibiotic-resistant bacteria in a year-long project with *SmartPhage*, a UC Berkeley-based start-up.

Bachelor of Science in Mathematics & Physics

École polytechnique, France

Received with rank 1/4,500 at the national entry exam, GPA 3.94

2011-2015

Experience

Pendulum Therapeutics

San Francisco, USA

Computational Biologist

June 2018 - Ongoing

- Analyzed clinical trial data and designed future clinical trial:
Roux de Bézieux, H., ... Perraudeau, F (2021) [A Pilot Medical Food Study using a Smartphone Application with Continuous Glucose Monitoring Sensors](#) *JMIR Form Res*
- Developed computational methods for the analysis of metagenomic datasets: **Roux de Bézieux, H.**, ... Jacob, L. (2020). [Finding All Significant Closed Connected Subgraphs](#). *Machine Learning in Computational Biology (MLCB)*

Institut Jacques Monod, Cellular Adhesion and Mechanism Lab

Paris, France

Research Intern, Benoit Ladoux and René-Marc Mège's team

March–July 2016

- Designed and conducted *in vivo* experiments on protein-protein interactions.

PSA Peugeot Citroën

Shanghai, China

Intern, Strategic Partnership Department

June–August 2015

French Army, Elite Mountain Troop

France

2nd Lieutenant

September 2013– April 2014

- Led a group of 8 professional soldiers during a NATO exercise in great Northern Norway.

Related skills.....

- **Programming:** Python, Bash (Intermediate), Latex (Expert)
Author of several open-source R packages, with over 5,000 downloads since 2020 on Bioconductor
- **Language:** English (fluent), French (native), German (intermediate)

Interests.....

First Aid Certification by the Red Cross: 2011, 2015 **Rowing:** 6 years at national level

Triathlon: 1000 miles annually, Ironman 70.3 (Santa Cruz, 2019)

Publications

- **Roux de Bézieux, H.,...**, Perraudeau, F (2021) [A Pilot Medical Food Study using a Smartphone Application with Continuous Glucose Monitoring Sensors](#) *JMIR Form Res*
- **Roux de Bézieux, H.,...** Jacob, L. (2020). [Finding All Significant Closed Connected Subgraphs](#). *Machine Learning in Computational Biology (MLCB)*
- Brann, D. H., ... **Roux de Bézieux, H.,...** (2020). [Non-neuronal expression of SARS-CoV-2 entry genes in the olfactory system suggests mechanisms underlying COVID-19-associated anosmia](#). *Science Advances*, eabc5801.
- Adkins, R. S., ... **Roux de Bézieux, H.,...** (2020). [A multimodal cell census and atlas of the mammalian primary motor cortex](#). *BioRxiv*.
- **Roux de Bézieux, H.,** Street, K. ... Dudoit, S. (2020). [Improving replicability in single-cell RNA-Seq cell type discovery with Dune](#). *BioRxiv*
- Yao, Z., Liu, ... **Roux de Bézieux, H.,...** (2020). [An integrated transcriptomic and epigenomic atlas of mouse primary motor cortex cell types](#). *BioRxiv*
- Van den Berge, K., **Roux de Bézieux, H.,** ... Dudoit, S., Clement, L. (2020). [Trajectory-based differential expression analysis for single-cell sequencing data](#). *Nature Communications*, 11(1), 1201.
- Croizat, G., Kehren, A., **Roux de Bézieux, H.,** Barakat, A. (2018). Influence of pulsatile blood flow on allometry of aortic wall shear stress. *arXiv*

Talks

European Bioconductor Meeting 2020

90mn workshop

Trajectory inference across conditions: differential expression and differential progression.

Europe (Virtual)

December 2020

BioC 2020

60mn workshop

Trajectory inference across conditions: differential expression and differential progression.

USA (Virtual)

July 2020

JBIMS Data Sciences Workshop

15mn Talk

Bacterial and metagenome GWAS

Berkeley, California

February 2020

Statistics and Genomics Seminar

1h talk

Trajectory inference, Differential Expression and clustering along developmental trajectories in single cell RNA-Sequencing.

Berkeley, California

May 2019

Berkeley Stem Cell Center Retreat

15mn talk

Unlocking the power of continuity in single cell RNA-Seq - Differential gene Expression along developmental trajectories.

Monterey, California

May 2019

FAST-BIG: Workshop on High-dimensional statistics

30mn talk

Beyond DBGWAS: exploring assembly graphs in an efficient manner

INRIA, Paris

March 2019