

# 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)

- 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* (In press)
- 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

2<sup>nd</sup> 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), R, Latex (Expert)
- **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 (In press)*
- **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