

Research

- 2016-2019 **PhD in Systems Biology: Erythroid differentiation *in vitro* under the lens of mathematical modelling**, *Laboratory of Biology and Modelling of the Cell (ENS Lyon) & Inria team Dracula*, Lyon, France.
Realized under the supervision of Dr. Olivier Gandrillon (ENS Lyon) & Dr. Fabien Crauste (Univ. Bordeaux).
Defended on December 13th 2019.
- february-june 2016 **5-months internship: Mathematical modelling of the *in vitro* erythroid differentiation**, *Laboratory of Biology and Modelling of the Cell (ENS Lyon) & Inria team Dracula*, Lyon, France.
Under the supervision of Dr. Olivier Gandrillon (ENS Lyon) & Dr. Fabien Crauste (Univ. Lyon & Inria team Dracula).
- february-may 2015 **4-months internship in ecology: Are model selection criteria reliable when making predictions with imperfect models? A foodweb example**, *Laboratory of Engineering for Complex Systems (IRSTEA)*, Clermont-Ferrand, France.
Under the supervision of Dr. Franck Jabot (IRSTEA).
- september-december 2014 **4-months internship in genetics: Modeling the genetics of the *Drosophila* dorsal closure**, *Laboratory of Biology and Modelling of the Cell (ENS Lyon)*, Lyon, France.
Under the supervision of Dr. Stéphane Vincent (ENS Lyon) & Dr. Vincent Calvez (ENS Lyon).
- february-may 2014 **4-months internship in plant development: On the integration of several modules of the plants shoot apical meristem**, *The Sainsbury Laboratory*, Cambridge, U. K.
Under the supervision of Dr. Jérémy Gruel & Pr. Henrik Jönsson.
- june-july 2013 **2-months internship in evolution: Gene duplication and divergence within the BCL-2 family: the case of Bid and BCL-Rambo/BCL-2L13**, *Pôle Rhône-Alpes de Bioinformatique (PRABI)*, Villeurbanne, France.
Under the supervision of Abdel Ouacheria & Vincent Navratil.

Teaching

- 2016-2019 **Tutoring and lecturing**, *Department of Biology, ENS de Lyon*, France.
≈ 70h of teaching per year, including non-exhaustively:
- Tutorials in statistics (3rd year of Biology Bachelor's Degree)
 - Tutorials and practicals in mathematical modelling for biologists (3rd year of Biology Bachelor's Degree)
 - Practical in bioinformatics (3rd year of Biology Bachelor's Degree)
 - Practical in mathematical modelling (Master 1 and Master 2 of Biology)
 - Tutorial in scientific communication (3rd year of Biology Bachelor's Degree)
 - Lecture on the systems biology of cell decision making (3rd year of Biology Bachelor's Degree)

Education

- 2015-2016 **Master2 in Computer Science, major in Complex Systems Modeling**, *ENS Lyon & Institut Rhonalpin des Systèmes Complexes*, Lyon, France.
- 2013-2015 **Master of Sciences in BioSciences**, *École Normale Supérieure de Lyon*, Lyon, France.
- 2012-2013 **Bachelor of Sciences in BioSciences**, *École Normale Supérieure de Lyon*, Lyon, France.
- 2009-2012 **Classes préparatoires BCPST**, *Lycée Chateaubriand*, Rennes, France.
Post-secondary preparatory classes providing balanced background in all fields of science, for competitive entrance exam to the leading institutions of higher education. Majors : Biology, Chemistry, Physics, Mathematics, Geology

Publications and preprints

- 2021 Duchesne, R., A. Guillemin, O. Gandrillon, and F. Crauste (2021). "Practical Identifiability in the Frame of Nonlinear Mixed Effects Models: the Example of the in vitro Erythropoiesis". In: *bioRxiv*. DOI: 10.1101/2021.03.01.433388.
- 2019 Duchesne, R., A. Guillemin, F. Crauste, and O. Gandrillon (2019). "Calibration, Selection and Identifiability Analysis of a Mathematical Model of the in vitro Erythropoiesis in Normal and Perturbed Contexts". In: *In Silico Biology* 13.1-2, pp. 55–69. DOI: 10.3233/ISB-190471.
- 2019 Guillemin, A., R. Duchesne, F. Crauste, S. Gonin-Giraud, and O. Gandrillon (2019). "Drugs modulating stochastic gene expression affect the erythroid differentiation process". In: *PLOS ONE* 14.11, e0225166. DOI: 10.1371/journal.pone.0225166.

References

- Dr Olivier Gandrillon (PhD supervisor): olivier.gandrillon@ens-lyon.fr (+334 72 72 80 52)
- Dr Fabien Crauste (PhD supervisor): fabien.crauste@math.cnrs.fr
- Pr Arezki Boudaoud (In charge of the modelling courses in the department of Biology at ENS Lyon until 2020): arezki.boudaoud@polytechnique.edu

Supervision

- january-may 2018 Rana Houry, M1 internship, co-supervised with Olivier Gandrillon.
"The existence of two different sub-states of cells within a population of Chronic Myeloid Leukemia."

Conferences, schools, talks and posters

- june 2019 Poster at the PAGE meeting: Ppopulation Approach Group Europe (Stockholm, Sweden).
- april 2019 Poster at CompSysBio spring school: Advanced lecture course on Computational Systems Biology (Aussois, France).
- october 2018 Poster at the ICSB conference: International Conference on Systems Biology (Lyon, France).
- july 2018 Poster at the ECMTB conference: European Conference on Mathematical and Theoretical Biology (Lisbon, Portugal).
- june 2018 Poster at the $\{MB\}^2$ conference: Mathematical Biology and Modelling days of Besançon (Besançon, France).
- october 2017 Seminar in the SGD team: Statistics in Great Dimension for Genomics (Laboratoire de Biométrie et de Biologie Évolutive, Lyon, France).
- november 2014 Poster at the LyonSysBio conference (Lyon, France).

Miscellaneous

- Programing skills Python (advanced), Unix (advanced), \LaTeX (advanced), R, C/C++
- Languages French (native), English (fluent)

Extracurricular Activities

- 2016-now Sousaphonist in various brassbands, including the ENS student marching band, the BrassBand de Lyon Junior, and the wanna-be planetary success Bêrk (soundcloud.com/berk_band).
- 2016-2017 Organizing committee of the interENS culturelles, a yearly festival gathering the students of the 4 ENS around cultural projects. Attendance: \approx 650.
- 2014-2015 Secretary of the ENS student organization ConférENS, whose role is to help students organizing conferences, seminars, roundtables, etc., inside the ENS.
- 2013-2017 Managing team of the ENS student lounge, which is a self-managed, 24/7, student bar that keeps working miraculously, given the level of irresponsibility of its customers (responsibilities included: contact with the suppliers, reserve management, customer advising, and a massive amount of cleaning up).