# Déborah Boyenval

## Postdoctoral Fellow

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## Academic Background

- Jan. 2024 **Postdoctoral Fellow**, Influence of aging on hematopoietic cell differentiation: from Jan. 2025 single-cell data to eXplicative formal models, Laboratoire Bordelais de Recherche en Informatique (Bordeaux, France). with Loïc Paulevé
- Oct. 2018 **PhD in Computer Science**, Formal modelling of cyclic biological behaviours Dec. 2022 with checkpoints: the cell cycle regulation, Laboratoire d'Informatique Signaux et Systèmes de Sophia Antipolis, Institut de Biologie de Valrose, Université Côte d'Azur, Fondation Université Côte d'Azur Ph.D thesis award 2024. Supervised by Gilles Bernot, Jean-Paul Comet and Franck Delaunay
  - Jan.-Jun. Master 2 Internship, Mathematical modeling of sex-specific chronotoxicity of an 2018 anticancer drug: the irinotecan, INSERM U935 Villejuif, Team Chronotherapy and Cancer
    Supervised by Annabelle Ballesta
  - Fev.-Jun. Master 1 Internship, Study and qualitative modelling of a pathway for the 2017 synchronisation of peripheral circadian clocks by the suprachiasmatic nucleus, Laboratoire d'Informatique Signaux et Systèmes de Sophia Antipolis, Institut de Biologie de Valrose, Université Côte d'Azur Supervised by Gilles Bernot, Jean-Paul Comet and Franck Delaunay
- 2016 2018 Master in Life Sciences, Université Côte d'Azur, Major in Biology, Informatics and Mathematics (BIM), Université Côte d'Azur
  - Jun. 2016 **Bachelor Internship**, Study of the reciprocal link between the nervous system and Jul. 2016 the immune system, Institut de Pharmacologie Moléculaire et Cellulaire, Université Côte d'Azur Supervised by Pr. Nicolas Glaichenhaus and Franck Ceppo
- 2013 2016 Bachelor in Life Sciences, Université Côte d'Azur, Specialization in Biology, Informatics and Mathematics (BIM) in the 3rd year, Université Côte d'Azur

## Teaching

- Oct. 2021 **Part-time ATER**, Université Côte d'Azur Sept. 2022
- 2018 2021 **Teaching Assistant**, 1st and 2nd year BSc, MSc, Web Introduction and Application, System and Network Administration, Database Theory and SQL, Imperative Programming and Python, Algorithms for Biology, Université Côte d'Azur

### **Publications**

**Publications** 

2022 Sex and Circadian Timing Modulate Oxaliplatin Hematological and Hematopoietic Toxicities, Dulong Sandrine, Souza Lucas, Machowiak Jean, Peuteman Benoit, Duvallet Gaelle, Boyenval Déborah, Roth Elise, Asgarova Afag, Chang Yunhua, Li Xiao-Mei, Foudi Adlen, and Ballesta Annabelle, Pharmaceutics, vol. 14, pp. 2465, Nov. 2022

Proceedings

- 2024 BoNesis: a Python-based declarative environment for the verification, reprogramming, and synthesis of Most Permissive Boolean networks, Stéphanie Chevalier, Déborah Boyenval, Gustavo Magaña-Lopez, Théo Roncalli, Athénaïs Vaginay, Loïc Paulevé, 18th International Conference on Computational Methods in Systems Biology (CMSB 2024), June, 2024
- 2020 What is a cell cycle checkpoint? The ToTemBioNet answer, Boyenval Déborah, Bernot Gilles, Collavizza Hélène, and Comet Jean-Paul, 18th International Conference on Computational Methods in Systems Biology (CMSB 2020), Sep, 2020

#### Oral Communications

#### Talks

- September Formal modeling of biological cyclic behavior with checkpoints: the case of the cell cycle with CTL Model-checking, Women In Machine Learning and Data Science, UPMC Paris VI
- March 2022 A discrete modelling study devoted to the formalization and verification of mammalian cell cycle checkpoints, Lifeware Public Seminar, Inria Saclay
  - November Mammalian cell cycle: formalizing phases, GT-Bioss Annual Day, Lyon 2021
  - June 2021 Logical modelling in biology through the case study of the cell cycle and its checkpoints, Public Seminar of the Institute of Biology of Valrose, Nice
  - November Study of cell cycle checkpoints: specification and verification, GT-BIOSS 2020 Mensual Seminars, Remote
  - September What is a cell cycle checkpoint, The TotemBioNet answer, CMSB 2020, 2020 Remote
  - April 2021 From phase characterization toward observable properties verification,
    Public PhD Seminar, NeuroMod Institute, Sophia Antipolis
    Poster Sessions
  - July 2021 **JOBIM 2021**, Logical and incremental formalization of cell cycle checkpoints, Remote
  - November Modelife Annual Meeting, Introduction of Priorities in Biological Regulatory 2019 Networks, Frejus France
  - June 2019 Summer School Formal Modeling of Biological Regulatory Networks, A discrete cell cycle model, From phase characterization toward observable properties verification, Porquerolles

## Modeling skills

- Formal Design of biological regulatory network, CTL model-checking, Hoare logic, Prolog,
- modeling René Thomas' formalism, Synthesis of boolean networks, Answer-Set Programming
- ODE system Parameter estimation (CMAES), Sensitivity Analysis, Circadian data analysis
  - Statistics Trajectory inference, RNA velocity analysis, Application on hematopoetic systems
    - Omics Analysis of multimodal omics data (sc-RNA-seq and CITE-seq)
- Biological Cancer biology, Cell cycle regulation, Circadian system, PK-PD of certain anti-background cancer drugs

## Programming skills

Programmation Python, Prolog, R, Matlab, Java, SQL, HTML3/CSS5/PHP/Javascript/Ajax, Shell, LaTeX, Git

Tools Moodle (Creation of online teaching materials), PyMol

Biological Protein DataBank, Genome browsers (Ensembl, UCSC), Uniprot, Prosite, Reactome, Databases CollectTRI

Associative

2018-2019 **Fablab manager**,  $UCA\ Valrose\ campus$ , Support for 3D printing projects (Ultimaker)

2019 – 2021 Treasurer of ADAMS-DS4H (Association of Doctoral And Master's Students of DS4H), Search for financial partnerships, organisation of academic events (CV and poster workshops) and federative events (integration party and sports events)

Languages

Native French, Fluent English