

Jérémy BERTHELET

French nationality, born on 17/08/1990 in Châtelleraut
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Education and Professional Background

2005-2008

Lycée Paul Cézanne – Aix en Provence
Scientific Baccalaureate, with highest honours

2012-2013

Aix Marseille I University – Provence
Bachelor's degree in Biochemistry and Biopharmaceutical Chemistry, Specialization in Chemistry of Life, with high honours, Class Valedictorian (1/12)

June – July 2013

Voluntary Internship at CNRS Joseph Aiguier – Marseille, Bioenergetics and Protein Engineering Unit (UMR 7281), Biophysics of Metalloproteins team

Supervisor: Prof. F. Biaso

Study of an iron-cobalt metal center protein using Electron Paramagnetic Resonance

2013-2014

Paris Diderot University - Paris 7

Master 1 in Biochemistry, Therapeutic Targets and Cells (BC2T), with high honours, Class Valedictorian (1/31)

July – August 2014

Voluntary Internship at Institut Pasteur – Paris, Structural Biology Department, Structural Microbiology Unit

Supervisor: Prof. C. Mayer

Crystallographic study of the ATPase domain of Mycobacterium Tuberculosis gyrase B

2014-2015

Paris Diderot University - Paris 7

Master 2 BC2T, Specialization in Biomolecules and Therapeutics, Molecular, Cellular, and Functional Biochemistry of Proteins

Class Valedictorian (1/7), with highest honours

January-February 2015

Pasteur Institute Protein Biochemistry Course, Paris

Class Valedictorian (1/15), with highest honours

2015-2019

Ph.D. in Molecular Biology

Effects of Benzene Reactive Metabolites and an Oncogenic Mutation on SetD2, a Histone Methyltransferase

Doctoral Grant “Air and Cancer” IDF Region, Full-time, Fixed-term contract (September 2015 – July 2019)

Functional and Adaptive Biology Unit, CNRS UMR 8251, Molecular and Cellular Responses to Xenobiotics team, Paris Diderot University

Supervisor: Prof. F. Rodrigues-Lima

2019-2021

Temporary Teaching and Research Associate

Study of Host-Pathogen Interactions (*Theileria Annulata*) Using Epigenetic Inhibitors

University of Paris Contract, Full-time, Fixed-term contract (September 2019 – August 2021)

Epigenetics and Cell Fate Unit, CNRS UMR 7216, Cellular Phenotype Plasticity team,
University of Paris

Supervisor: Prof. J. B. Weitzman

2021-2023

Postdoctoral Researcher

Role of ESCRT III Protein Lysine Methylation in Cytokinesis and Cancer

Labex Who Am I?, Full-time, Fixed-term contract (September 2021 – August 2023)

Epigenetics and Cell Fate Unit, CNRS UMR 7216, Cellular Phenotype Plasticity team,
University of Paris

Supervisor: Dr. S. Medjkane

Since 2023

Postdoctoral Researcher

Study of the Influence of *Theileria Annulata* Secretome on the Bovine Epigenome

ARN TheraEPI, Full-time, Fixed-term contract

Epigenetics and Cell Fate Unit, CNRS UMR 7216, Cellular Phenotype Plasticity team,
University of Paris

Supervisor: Prof. J. B. Weitzman

November 2024

Research Mission

Study of the Influence of KIF14 Methylation on Its Motility and Processivity on Microtubules

Biotechnology Institute, Czech Academy of Sciences, BIOCEV, Czech Republic

Collaborator: Zdeněk Lánský

Teaching and Supervision

2015-2018: Teaching Assistant at Université Paris Diderot, UFR Sciences du Vivant.

Conducted tutorials and practical sessions in probability and statistics, 64 hours per year.

Also involved in mentoring students at the L2/M1 level.

2018-2024: Supervised multiple students at various levels:

- April 2018: Mentored an L1 student (Nawelle Id Hammou) for one week in the lab, introducing techniques such as protein purification, western blotting, and enzymatic activity assays.
- May-July 2018: Supervised an M1 student (Etienne Lebrun) for two months in a voluntary internship, covering techniques in protein purification, enzymology, crystallography, molecular and cellular biology.
- March-April 2021: Mentored an L3 student (Nhu Tien Vu) as part of an optional module in bioinformatics, guiding them in protein purification and western blotting.
- July 2023: Supervised a high school student (Benjamin Levi) for a voluntary personal interest internship, teaching molecular biology, microscopy, and western blotting.

- June 2024: Supervised a high school sophomore (Clara Liang) for a mandatory internship, introducing fundamental molecular biology techniques.
- November 2024 - July 2025: Co-supervision of an M1 student (Megan Roussely) in an alternating six-month internship, focusing on protein purification, crystallogenesis, and cellular biology.
- January 2025 - July 2025: Co-supervision of an M2 student (Steve Odette) in a six-month research internship, covering biochemical and molecular biology techniques.

2019-2023: Temporary Teaching and Research Associate at Université de Paris, responsible for practical courses in probability and applied statistics in biology, mathematical modeling, and technical modules for the Magistère program (150 hours per year, L1/L2/L3/M1 levels).

December 2024 & January 2025: Guest lecturer for the European Master's in Genetics program, delivering a course on the influence of epigenetics in host-parasite interactions and serving as a jury member for the bibliographic module.

Scientific Outreach Activities

November 2023 : Declics Ambassador at Lycée La Rochefoucauld.

- Participated in an outreach event aimed at promoting careers in fundamental research among high school students.

May 2024: Organizer of Pint of Science Paris – DIM Bioconvergence for Health.

- Managed scientific outreach, coordinated speaker schedules, and organized three conference evenings to bring science to the public.

September 2024: Careers Workshop at Université Paris Cité, Alumni Representative.

- Shared personal experiences regarding research career paths, discussing opportunities before and after completing a Ph.D.

December 2024: Alumni Day for the Master BMC Program, Alumni Representative.

- Discussed about the profession of a researcher and teacher, career prospects after a Ph.D., and presented ongoing postdoctoral projects in a roundtable discussion.

May 2025: Organizer of Pint of Science Paris – Université Paris Cité.

- Coordinated event logistics, managed schedules, and facilitated scientific outreach over three evenings of conferences.

Communications

2017, EB ASBMB, Chicago, Poster

The human H3K36 histone methyltransferase SETD2 as a molecular target of benzoquinone, the hematotoxic metabolite of benzene.

2018, EB ASBMB, San Diego, Poster

The H3K36 histone methyltransferase SETD2 as a target of leukemogenic chemicals: molecular and cellular studies.

2019, Young Researcher Meeting, Paris, Oral (2nd prix)

Effects of an oncogenic mutation on the functions of SETD2, a tumor suppressor histone methyltransferase

2021, Internal seminar of the Unit (UMR 7216), Paris, Oral

Activity and inhibition of lysine methyltransferases

2021, Labex Who Am I? annual meeting, Verneuil d'Avre et d'Iton, Poster

Role of ESCRT III methylation in cytokinesis and breast cancer.

2022, Internal seminar of the Unit (UMR 7216), Paris, Oral

Role of ESCRTIII protein methylation in breast carcinogenesis

2022, Symposium "Methylation signaling: Beyond histones and chromatin", Paris, Poster

In vitro engineering of methylated proteins, a tool to assess the impact of ESCRT-III lysine methylation

2023, External seminar of the campus Grand Moulin (joined IJM, BFA, EDC), Oral

Role of non-histone methylation in the fine tuning of cytokinesis

2024, Internal seminar of the Unit (UMR 7216), Paris, Oral

Cellular and molecular impact of KIF14 methylation

2024, UFR Sciences du Vivant scientific day, Paris, Poster (1^{er} prix)

Molecular and cellular consequences of SMYD2-mediated KIF14 methylation

2024, Epigenetic and Cell Fate retreat (15 years of the institute), Paris, Poster

Parasite protein secretion takes the reins of bovine gene expression

2024, Labex Who Am I? annual meeting, Paris, Poster

Parasite protein secretion takes the reins of bovine gene expression

Publications

1. Duval R, Bui LC, [Berthelet J](#), Dairou J, Mathieu C, Guidez F, Dupret JM, Cools J, Chomienne C & Rodrigues-Lima F.
A RP-UFLC Assay for Protein Tyrosine Phosphatase: Focus on Protein Tyrosine Phosphatase Non-Receptor Type 2 (PTPN2). *Scientific Reports* (2015), 5:10750. DOI : 10.1038/srep10750
2. Duval R, Fritsch L, Bui LC, [Berthelet J](#), Guidez F, Mathieu C, Dupret JM, Chomienne C, Ait-Si-Ali S & Rodrigues-Lima F.
An acetyltransferase assay for CBP based on RP-UFLC of fluorescent histone H3 peptides. *Anal Biochem* (2015), 486:35-7. DOI: 10.1016/j.ab.2015.06.024.
3. Xu X, Mathieu C, [Berthelet J](#), Duval R, Bui LC, Busi F, Dupret JM & Rodrigues-Lima F.
Human Arylamine N-Acetyltransferase 1 Is Inhibited by the Dithiocarbamate Pesticide Thiram. *Mol Pharmacol* (2017), 92(3):358-365. DOI: 10.1124/mol.117.108662.

4. Sirri-Roussel V, Grob A, [Berthelet J](#), Jourdan N, & Roussel P.
Sirtuin 7 promotes 45S pre-rRNA cleavage at site 2 and determines the processing pathway. *J Cell Sci.* (2019), 132(17). DOI: 10.1242/jcs.228601
5. Nian Q, [Berthelet J](#), Zhang W, Bui LC, Liu R, Xu X, Duval R, Leger T, Chomienne C, Guidez F, Busi F, Dupret JM & Rodrigues-Lima F.
T-cell protein tyrosine phosphatase (TCPTP) is irreversibly inhibited by étoposide-quinone, a reactive metabolite of the chemotherapy drug étoposide. *Mol Pharmacol* (2019), 96(2):297-306. DOI: 10.1124/mol.119.116319
6. Duval R, Bui LC, Mathieu C, Nian Q, [Berthelet J](#), Xu X, Haddad I, Vinh J, Dupret JM, Busi F, Guidez F, Chomienne C & Rodrigues-Lima F.
Catalytic inhibition of the tyrosine phosphatase PTPN2 and altered STAT1 signaling by benzoquinone, a leukemogenic metabolite of benzene. *J Biological Chemistry* (2019), 294(33):12483-12494. DOI: 10.1074/jbc.ra119.008666
7. Villares M, [Berthelet J](#), & Weitzman JB.
The clever strategies used by intracellular parasites to hijack host gene expression (review). *Seminars in Immunopathology* (2020), 42(2), 215–226. DOI: 10.1007/s00281-020-00779-z
8. Xu X*, Zhang W*, [Berthelet J](#), Liu R, Michail C, Chaffotte AF, Dupret JM & Rodrigues-Lima F.
From transglutaminases (TGs) to arylamine N-acetyltransferases (NATs): Insight into the role of a spatially conserved aromatic amino acid position in the active site of these two families of enzymes. *Biochemical and Biophysical Research Communications* (2020), 525(2), 308–312. DOI: 10.1016/j.bbrc.2020.02.082
9. Parlato M*, Nian Q*, Charbit-Henrion F, Ruemmele FM, Rodrigues-Lima F, Cerf-Bensussan N; Immunobiota Study Group ([Berthelet J](#)).
Loss-of-Function Mutation in PTPN2 Causes Aberrant Activation of JAK Signaling Via STAT and Very Early Onset Intestinal Inflammation. *Gastroenterology* (2020), 159(5):1968-1971.e4. DOI: 10.1053/j.gastro.2020.07.040
10. Zhang W, [Berthelet J](#), Michail C, Bui LC, Gou P, Liu R, Duval R, Renault J, Dupret JM, Guidez F, Chomienne C, Rodrigues Lima F.
Human CREBBP acetyltransferase is impaired by etoposide quinone, an oxidative and leukemogenic metabolite of the anticancer drug étoposide through modification of redox-sensitive zinc-finger cysteine residues. *Free Radic Biol Med.* (2021), 162:27-37. DOI: 10.1016/j.freeradbiomed.2020.11.027
11. Cheeseman K*, Jannot G*, Lourenço N*, Villares M*, [Berthelet J](#), Calegari-Silva T, Hamroune J, Letourneur F, Rodrigues-Lima F, Weitzman JB.
Dynamic methylation of histone H3K18 in differentiating Theileria parasites. *Nat Commun.* (2021), 12(1):3221. DOI: 10.1038/s41467-021-23477-2
12. [Berthelet J](#), Michail C, Bui LC, Le Coadou L, Sirri V, Wang L, Dulphy N, Dupret JM, Chomienne C, Guider F, Rodrigues-Lima F.
The benzene hematotoxic and reactive metabolite 1,4-benzoquinone impairs the activity of the histone methyltransferase SETD2 and causes aberrant H3K36 trimethylation (H3K36me3). *Mol Pharmacol* (2021), 100(3):283-294. DOI: 10.1124/molpharm.121.000303

13. Nian Q*, [Berthelet J*](#), Parlato M, Mechaly AE, Liu R, Dupret JM, Cerf-Bensussan N, Haouz A, Rodrigues Lima F.
Structural characterization of a pathogenic mutant of human protein tyrosine phosphatase PTPN2 (Cys216Gly) that causes very early onset autoimmune enteropathy. *Protein Sci.* (2021), 31(2):538-544. DOI: 10.1002/pro.4246
14. Charbit-Henrion F, Goguyer-Deschaumes R, Borensztajn K, Mirande M, [Berthelet J](#), Rodrigues-Lima F, Khiat A, Frémond ML, Bader-Meunier B, Rodari MM, Seabra L, Rice GI, Legendre M, Drummond D, Berteloot L, Roux CJ, Boddaert N, Drabent P, Molina TJ, Lacaille F, Kossorotoff M, Cerf-Bensussan N, Parlato M, Hadchouel A.
Systemic inflammatory syndrome in children with FARSA deficiency. *Clin. Genet.* (2022), 101(5-6):552-558. DOI: 10.1111/cge.14120
15. Sirri V, [Berthelet J](#), Brookes O, Roussel P.
Naphthoquinone-induced arylation inhibits Sirtuin 7 activity. *J Cell Sci.* (2022), 135(8):jcs259207. DOI: 10.1242/jcs.259207
16. Duclaux-Loras R, Lebreton C, [Berthelet J](#), Charbit-Henrion F, Nicolle O, Revenu de Courtils C, Waich S, Valovka T, Khiat A, Rabant M, Racine C, Guerrera IC, Baptista J, Mahe MM, Hess MW, Durel B, Lefort N, Banal C, Parisot M, Talbotec C, Lacaille F, Ecochard-Dugelay E, Demir AM, Vogel GF, Faivre L, Rodrigues A, Fowler D, Janecke AR, Müller T, Huber LA, Rodrigues-Lima F, Ruemmele FM, Uhlig HH, Del Bene F, Michaux G, Cerf-Bensussan N, Parlato M.
UNC45A deficiency causes microvillus inclusion disease-like phenotype by impairing myosin VB-dependent apical trafficking. *J Clin Invest.* (2022), 132(10):e154997. DOI: 10.1172/JCI154997
17. Liu R, Mathieu C, [Berthelet J](#), Zhang W, Dupret JM, Rodrigues Lima F.
Human Protein Tyrosine Phosphatase 1B (PTP1B): From Structure to Clinical Inhibitor Perspectives. *Int J Mol Sci.* (2022), 23(13):7027. DOI: 10.3390/ijms23137027
18. Liu R, Sun Y, [Berthelet J](#), Bui LC, Xu X, Viguier M, Dupret JM, Deshayes F, Rodrigues Lima F.
Biochemical, Enzymatic, and Computational Characterization of Recurrent Somatic Mutations of the Human Protein Tyrosine Phosphatase PTP1B in Primary Mediastinal B Cell Lymphoma. *Int J Mol Sci.* (2022), 23(13):7060. doi: 10.3390/ijms23137060
19. Liu R, Zhang W, Gou P, [Berthelet J](#), Nian Q, Chevreux G, Legros V, Moroy G, Bui LC, Wang L, Dupret JM, Deshayes F, Rodrigues Lima F.
Cisplatin causes covalent inhibition of protein-tyrosine phosphatase 1B (PTP1B) through reaction with its active site cysteine: Molecular, cellular and in vivo mice studies. *Biomed Pharmacother.* (2022), 153:113372. doi: 10.1016/j.biopha.2022.113372
20. Gregoricchio S, Polit L, Esposito M, [Berthelet J](#), Delestré L, Evanno E, Diop M, Gallais I, Aleth H, Poplineau M, Zwart W, Rosenbauer F, Rodrigues-Lima F, Duprez E, Boeva V, Guillouf C.
HDAC1 and PRC2 mediate combinatorial control in SPI1/PU.1-dependent gene repression in murine erythroleukaemia. *Nucleic Acids Res.* (2022), 50(14):7938-7958. doi: 10.1093/nar/gkac613

21. Villares M*, Lourenço N*, Berthelet J*, Lamotte S, Regad L, Medjkane S, Prina E, Rodrigues-Lima F, Späth GF, Weitzman JB. **Trifloxystrobin blocks the growth of Theileria parasites and is a promising drug to treat Buparvaquone resistance.** *Commun Biol.* (2022), 5(1):1253. doi: 10.1038/s42003-022-03981-x
22. de Thonel A, Ahlskog JK, Daupin K, Dubreuil V, Berthelet J, Chaput C, Pires G, Leonetti C, Abane R, Barris LC, Leray I, Aalto AL, Naceri S, Cordonnier M, Benasolo C, Sanial M, Duchateau A, Vihervaara A, Puustinen MC, Miozzo F, Fergelot P, Lebigot É, Verloes A, Gressens P, Lacombe D, Gobbo J, Garrido C, Westerheide SD, David L, Petitjean M, Taboureau O, Rodrigues-Lima F, Passemard S, Sabéran-Djoneidi D, Nguyen L, Lancaster M, Sistonen L, Mezger V.
CBP-HSF2 structural and functional interplay in Rubinstein-Taybi neurodevelopmental disorder. *Nat Commun.* (2022), 13(1):7002. doi: 10.1038/s41467-022-34476-2.
23. Montalban E, Walle R, Castel J, Ansoult A, Hassouna R, Foppen E, Fang X, Hutelin Z, Mickus S, Perszyk E, Petitbon A, Berthelet J, Rodrigues-Lima F, Cebrian-Serrano A, Gangarossa G, Martin C, Trifilieff P, Bosch-Bouju C, Small DM, Luquet S.
The addiction-susceptibility TaqIA/Ankyrin repeat and kinase domain containing 1 kinase (ANKK1) controls reward and metabolism through dopamine receptor type 2 (D2R)-expressing neurons. *Biol Psychiatry.* (2023), S0006-3223(23)00084-7. doi: 10.1016/j.biopsych.2023.02.010
24. Schator D, Mondino S, Berthelet J, Di Silvestre C, Ben Assaya M, Rusniok C, Rodrigues-Lima F, Wehenkel A, Buchrieser C, Rolando M.
Legionella para-effectors target chromatin and promote bacterial replication. *Nat Commun.* (2023), 14(1):2154. doi: 10.1038/s41467-023-37885-z.
25. Delbès AS, Quiñones M, Gobet C, Castel J, Denis RGP, Berthelet J, Weger BD, Challet E, Charpagne A, Metairon S, Piccand J, Kraus M, Rohde BH, Bial J, Wilson EM, Vedin LL, Minniti ME, Pedrelli M, Parini P, Gachon F, Luquet S.
Mice with humanized livers reveal the role of hepatocyte clocks in rhythmic behavior. *Sci Adv.* (2023), 9(20):eadf2982. doi: 10.1126/sciadv.adf2982.
26. Le Coadou L, Berthelet J, Mechaly AE, Michail C, Bui LC, Dairou J, Haouz A, Dupret JM, Rodrigues Lima F.
Structural and enzymatic evidence for the methylation of the ACK1 tyrosine kinase by the histone lysine methyltransferase SETD2. *Biochem Biophys Res Commun.* (2023), 695:149400. doi: 10.1016/j.bbrc.2023.149400.
27. Villares M, Lourenco N, Ktorza I, Berthelet J, Panagiotou A, Richard A, Amo A, Zoziy Y, Medjkane S, Valente S, Fioravanti R, Durieu C, Ligniere L, Chevreux G, Weitzman JB
Theileria parasites sequester host eIF5A to escape elimination by host-mediated autophagy. *Nat Commun.* (2024), 15(1):2235. doi: 10.1038/s41467-024-45022-7.
28. Richard A*, Berthelet J*, Judith D, Advedissian T, Espadas J, Jannot G, Amo A, Loew D, Lombard B, Casanova A, Reynoird N, Roux A, Berlioz C, Echard A, Weitzman JB, Medjkane S
Methylation of ESCRT-III components regulates the timing of cytokinetic abscission. *Nat Commun.* (2024), 15(1):4023. doi: 10.1038/s41467-024-47717-3.

29. Jeanpierre M, Cognard J, Tusseau M, Riller Q, Bui LC, Berthelet J, Laurent A, Crickx E, Parlato M, Stolzenberg MC, Suarez F, Leverger G, Aladjidi N, Collardeau-Frachon S, Pietrement C, Malphettes M, Froissart A, Bole-Feysot C, Cagnard N, Rodrigues Lima F, Walzer T, Rieux-Laucat F, Belot A, Mathieu AL.
Haploinsufficiency in PTPN2 leads to early-onset systemic autoimmunity from Evans syndrome to lupus. *J Exp Med.* (2024), 221(9):e20232337. doi:
10.1084/jem.20232337.
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