



TO MAGNIFICA RETTRICE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE: 7130

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Oncologia ed Emato-Oncologia** dell'Università degli Studi di Milano.

Scientist- in - charge: Prof. Costanzo Vincenzo

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Romain
Name	Charton

PRESENT OCCUPATION

Appointment	Structure
Postdoctoral fellow	IFOM ETS - The AIRC Institute of Molecular Oncology, Milan, Italy

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree			
PhD	PhD in Microbiology	University of Sherbrooke (Sherbrooke, Quebec, Canada)	2016
Master	Master Integrative Cellular Biology	University Joseph Fourier (Grenoble, France)	2009
Other	EMBL-EBI resources in practice: interpreting the effects of genetic variants on protein structure and function	Online EMBL-EBI training	2024
Other	Advanced training in Python	Internal formation provided by Institute of Human Genetic, (Montpellier, France)	2022
Other	Advanced training in r	Internal formation provided by Institute of Human Genetic, (Montpellier, France)	2022
Other	Design and conduct of experimental procedures on aquatic models	CNRS formation (Marseille, France)	2022



Other	Intermediate training in r	Internal formation provided by Institute of Human Genetic, (Montpellier, France)	2022
Other	Intermediate training in Python	Internal formation provided by Institute of Human Genetic, (Montpellier, France)	2022
Other	Basic training in r	Internal formation provided by Institute of Human Genetic, (Montpellier, France)	2022
Other	Basic training in Python	Internal formation provided by Institute of Human Genetic, (Montpellier, France)	2022

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City

FOREIGN LANGUAGES

Languages	level of knowledge
French	Native (Dialang test: C2)
English	Working proficiency (Dialang test: C2)
German	Basic proficiency (Dialang test: A2)

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2014	Dean's Honour, Faculty of Medicine and Health sciences, University of Sherbrooke, Sherbrooke, Quebec, Canada.
2012	Selected project by the Bavarian-Quebec cooperation, Government of Quebec, Minister for international Relations, Minister responsible for the Francophonie, Minister responsible for the Estrie region.
2010	Institutional Grant (4000\$) from the Faculty of Medicine and Health sciences, University of Sherbrooke, Sherbrooke, Quebec, Canada.



TRAINING OR RESEARCH ACTIVITY

1. Senior postdoctoral researcher (01/03/2024 – present)

As a postdoctoral researcher in the team “DNA Metabolism” at IFOM ETS - The AIRC Institute of Molecular Oncology, Milan, Italy, my research focuses on the role of DNA methylation in the positioning of DNA replication origins and its impact on genome stability. As a first goal, I wish to measure the global impact of DNA methylation turnover on DNA replication firing and genome stability. To this purpose, I am using several Human cell lines mutants for factors critical in DNA methylation turnover. Then, I wish to decipher the relationship of DNMTs and Tet proteins with DNA repair mechanism. To do so, I am taking advantage of the strength of xenopus eggs extracts, an *in vitro* system.

During this period, I have been involved in the supervision of an undergraduate student working on the development of a new *in silico* screening and conducted bioinformatics analysis on methylome data for another PhD student’s project.

2. Freelance bioinformatician (03/01/2023 – 15/12/2023)

From January 2023 to December 2023, I started my company of Freelance bioinformatic analysis. I was providing genomic bioinformatics analysis for public research teams. Depending on the needs, I performed both basic and advanced bioinformatic analysis. Additionally, I contributed to experimental design, data management, and developing custom pipelines required for analysis. I was also actively involved in the critical interpretation of the obtained results and the preparation of comprehensive reports.

3. Postdoctoral researcher (16/08/2017 – 31/12/2022)

As a postdoctoral researcher “Replication and Genome Dynamics” team at the Institute of Human Genetics (IGH), National Centre for Scientific Research (CNRS), Montpellier, France, I led two projects focused on DNA replication origins with specific chromatin states. The first project examined open chromatin during early developmental stages in xenopus, while the second investigated repressed chromatin in the inactivated X chromosome. In both studies, I aimed to challenge the hypothesis of the transcriptional directed replication origins setup. I used basic fundamental biomolecular techniques and the Short Nascent Strand purification (SNS) coupled to NGS, a genome-wide approach for characterizing DNA replication origins. The manuscript describing the activation of DNA replication origins during early development is currently under review.

For a colleague’s project, I developed a novel approach to perform single-stranded SNS analysis, enabling the orientation of the replication fork progression. I also contributed to another project, funded by Génethon, focused on the development of non-viral vector backbone for gene therapies. Additionally, I collaborated to complete a project examining the influence of Polycomb proteins on DNA replication initiation (Prorok *et al.*, 2023).

Along with my laboratory work, I trained myself in NGS and bioinformatics analysis. I gained proficiency in Bash, R, and Python scripting, and attended training courses provided by the CNRS and IGH to enhance my skill set.

During this postdoctoral position, I initiated several collaborations in France and Germany, involving FISH techniques, DNA combing experiments, and advanced bioinformatics analyses.

In addition to my professional responsibilities, I played a role in creating the common gardens at IGH, serving as the woodcraft manager.



4. Part-time lecturer (26/01/2021 – 10/03/2021)

As a part-time lecturer at the Faculty of Pharmacology of Montpellier, I assisted a senior lecturer in teaching cellular biology techniques during spring 2021. I supervised several groups of second-year students through two experimental exercises: (1) performing cell culture and observation using optical microscopy, and (2) analysing cell fragmentation via Western Blotting. My primary responsibilities included demonstrating the fundamental techniques, answering student's questions, and guiding them in writing their scientific reports.

5. Postdoctoral trainee (01/09/2016 – 31/07/2017)

During this postdoctoral internship in the Chromatin and DNA repair team at the Department of Microbiology and Infectious Disease, Faculty of Medicine and Health Sciences, University of Sherbrooke, Sherbrooke, Canada, I used tools developed during my PhD to characterize the *in vivo* assembly of the Nucleotide Excision Repair (NER), a crucial DNA repair pathway. A better understanding of *in vivo* NER assembly is essential for addressing cisplatin resistance in many cancer types.

I secured a grant from the "Quebec-Bavaria Cooperation" for Alexia Muguet, enabling her to receive training in Germany on critical techniques for her project.

I also served as the corresponding representative for our team in the "Mitacs" program, which provides internships for foreign medical students seeking research laboratory experience. My responsibilities included drafting project proposal for students and coordinating with the Mitacs program manager.

6. PhD student (04/01/2010 – 31/08/2016)

I obtained my PhD from the Department of Microbiology and Infectious Disease, where I was extensively trained in both fundamental biology and advanced research techniques as a member of the Chromatin and DNA Repair team.

Initially, I completed a project begun by the previous PhD student, which focused on the transcriptional arrest of RNA polymerase I upon UVC irradiation. Then, I started my research project investigating the regulation of chromatin in rRNA genes during the cell cycle. To acquire a crucial technique needed for both projects, my supervisor and I established a technological transfer with a German research group, funded by the Bavarian-Quebec cooperation. This successful technological transfer led to the development of a novel technical approach (Griesenbeck *et al.*, 2012) and was recognized with an award from the Quebec Minister of International Relations. Both studies were published (Tremblay *et al.*, 2014 and Charton *et al.*, 2019) and served as the foundation of new research projects (Paillé *et al.*, 2019 and 2021).

During my PhD, I fully supervised summer students and PhD students.

I also contributed significantly to other aspects of the research group, including participating in the hiring process of three PhD students by screening candidates, conducting the interview, and assisting selected candidates with administrative procedures. Moreover, I managed the research group website of the research group (www.conconilab.ca) for three years.

In recognition of my scientific and academic contributions, I was honoured with the Dean's Award.



7. Master mandatory Internship (02/01/2009 – 31/07/2009)

I completed the internship in the laboratory of chromatin and epigenetic, at the Institute for Applied Bioscience, Grenoble, France. During this internship, my initial project involved setting up protocols and procedures for a genome editing approach using lentivirus in a Biosafety level 3 environment. I then applied this new tool to analyse the function of the N-terminal domain of CENPA, an H3 histone variant critical for kinetochores formation at the centromere during mitosis, in Hela cells. This research was presented in a poster session in 2011 (Goutte-Gattat *et al.*, 2011).

8. Master's degree mandatory Internship (01/04/2008 – 31/07/2008)

I completed this internship at the Laboratory of Biochemistry and Biophysics of Integrated Systems, Atomic Energy Commission, Grenoble, France. During this period, I continued the work started in my previous internship, focusing on the functional characterization of the mitochondrial protein ATAD3a and ATAD3b. The data generated during this project contributed to two publications (Hubstenberger *et al.*, 2010 and Li *et al.*, 2013).

9. Free internship (01/06/2007 – 31/07/2007)

At the end of my Bachelor's program, I took the opportunity to undertake an internship at the laboratory of Biochemistry and Biophysics of Integrated Systems. During this internship, I initiated a biomolecular characterization of the mitochondrial protein ATAD3a in yeast.

10. Technical degree mandatory Internship (01/04/2005 – 30/06/2005)

At the end of my technical degree, I completed an internship at the Laboratory of Cellular Biology, Pasteur Institute and the Faculty of Pharmacy of Lille, Lille, France. My project focused on measuring SPAP expression and stability in various organs of mice treated with different drugs from the fibrate family.

PROJECT ACTIVITY

Year	Project

PATENTS

Patent

CONGRESSES AND SEMINARS

Date	Title	Place
2024	Genome organization and site-specific DNA	DNA replication and replication stress - From



	replication origins permits rapid S phase during early development (Oral presentation)	fundamental mechanism to cancer (Montpellier, France)
2022	Landscape of DNA replication origins during early development (Oral presentation)	DNA replication and replicative stress meeting (Montpellier, France)
2018	Repair of rRNA genes during G1 arrest (poster presentation)	Replicative Stress and Cancer Meeting, Institut Universitaire du Cancer (Toulouse, France)
2015	Chromatin structure of rRNA genes in G1 arrested cells (Oral presentation)	Asilomar Chromatin, Chromosomes and Epigenetics Conference (Pacific Grove, California, USA)
2015	Lésions de l'ADN, Réparation et Agents chimio-thérapeutiques : Effet de l'hydroxyurée sur la chromatine des gènes ARNr (Oral presentation)	3e edition of the research day of the department of Microbiology and infectious disease (Faculty of medicine, University of Sherbrooke, Sherbrooke, Quebec, Canada)
2014	Conformation et transcription des gènes ribosomiaux au cours de la phase G1 et de la transition G1/S (Oral presentation)	Opening symposium of the interdisciplinary conferences on cancer (Faculty of medicine, University of Sherbrooke, Sherbrooke, Quebec, Canada)
2014	Conformation et transcription des gènes ribosomiaux au cours de la phase G1 et de la transition G1/S (poster presentation)	Research day 13th edition (University of Sherbrooke, Sherbrooke, Quebec, Canada)
2012	Chromatin of the rDNA regulation during cell cycle in Yeast (Oral presentation)	Department of Biochemistry III (University of Regensburg, Regensburg, Germany)
2012	The proportion of non-nucleosomal vs. nucleosomal rRNA genes change in yeast cells arrested at the G1/S phase of the cell cycle by hydroxyurea (poster presentation)	The 55th Annual Conference of the Canadian Society for Molecular Biosciences (Whistler, British Columbia, Canada)
2011	Investigating functions of CENPA N-tail in mitosis (poster presentation)	EMBO meeting (Heidelberg, Germany)

PUBLICATIONS

Books
Chromatin Endogenous Cleavage and Psoralen Crosslinking to Analyse rRNA Gene Chromatin in vivo. <i>Methods Mol. Biol.</i> 809, 291-301. 2012. Griesenbeck J, Wittner M, Charton R , Conconi A.

Articles in reviews
Full usage of DNA replication origins permits rapid S phase during early development. <i>Nature Communications</i> , in review. Charton R , Stanojic S, Prorok P, Cazaux B, Rivals E, Sterkers Y, Méchali M.
Loss of Ezh2 function remodels the DNA replication initiation landscape. <i>Cell Reports</i> 42 (4). 2023. Prorok P, Forouzanfar F, Murugarren N, Peiffer I, Charton R , Akerman I, Méchali M.



The Efficiency of Global Genome- Nucleotide Excision Repair is Linked to the Fraction of Open rRNA Gene Chromatin, in Yeast. <i>Photochemistry and Photobiology</i> 98 (3), 696-706. 2021. Paillé A, Charton R , Dholandre Q, Conconi A.
Analyses of rRNA gene chromatin in cell cycle arrested <i>Saccharomyces cerevisiae</i> cells. <i>Data in Brief</i> 25:104083. 2019. Paillé A, Charton R , Muguet A, Griesenbeck J, Smerdon MJ, Conconi A.
In yeast cells arrested at the early S-phase by hydroxyurea, rRNA gene promoters and chromatin are poised for transcription while rRNA synthesis is compromised. <i>Mutation Research/Fundamental and Molecular Mechanisms of Mutagenesis</i> 815:20-29. 2019. Charton R , Griesenbeck J, Smerdon MJ, Conconi A.
RNA polymerase-I dependent transcription-coupled nucleotide excision repair of UV induced DNA lesions at transcription termination sites, in <i>Saccharomyces cerevisiae</i> . <i>Photochemistry and Photobiology</i> 93(1):363-374. 2016. Peyresaubes F, Zeledon Orellana JC, Guintini L, Charton R , Muguet A, Conconi A.
Repair of UV induced DNA lesions in ribosomal gene chromatin and the role of « Odd » RNA polymerases (I and III). <i>DNA Repair</i> 36, 49-58. 2015. Charton R , Guintini L, Peyresaubes F, Conconi A.
Nucleosome positioning, nucleotide excision repair and photoreactivation in <i>Saccharomyces cerevisiae</i> . <i>DNA Repair</i> 36, 98-104. 2015. Guintini L, Charton R , Peyresaubes F, Thoma F, Conconi A.
UV light-induced DNA lesions cause dissociation of yeast RNA polymerases-I and establishment of a specialized chromatin structure at rRNA genes. <i>Nucl. Acids Res.</i> 42(1):380-95. 2014. Tremblay M, Charton R (co-first author), Wittner M, Levasseur G, Griesenbeck J, Conconi A.
Expression analysis of ATAD3 isoforms in rodent and human cell lines and tissues. <i>Gene</i> . 535 (1):60-9. 2014. Li S, Lamarche F, Charton R , Delphin C, Gires O, Hubstenberger A, Schlattner U, Rousseau D.
Topological analysis of ATAD3A insertion in purified human mitochondria. <i>J. Bioenerg. Biomembr.</i> 42, 143-50. 2010. Hubstenberger A, Merle N, Charton R , Brandolin G, Rousseau D.

Congress proceedings
Hydroxyurea arrested yeast cell-grow greatly affects transcription and chromatin structure of rRNA genes. <i>Biochemistry and Cell Biology</i> . NRC Research Press. 2017. Charton R , Griesenbeck J, Smerdon M, Conconi A.

OTHER INFORMATION

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

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sensitive data should not be included. This template is realized to satisfy the need of publication without personal and sensitive data.

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Place and date: Milan, 13/01/2025