

Alexandre POULHAZAN, Ph.D.

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RESEARCH EXPERIENCE

- 04/2024-present ○ **Postdoctoral fellow, McGill University, M Harrington lab** (Montreal, Canada)
Molecular description of velvet worm slime, mussel byssus and plant matrices
- 01/2023-03/2024 ○ **Postdoctoral fellow, Stanford University, L Cegelski lab** (Stanford, California, USA)
Elucidation of bacteria biofilm composition, architecture and hydrogels using ssNMR
- 06/2022-12/2022 ○ **Research agent, Université du Québec à Montréal, I Marcotte lab** (Montréal, Canada)
In vivo ssNMR to study the microalgae cell wall/lipids and velvet worm slime
- 10/2017-06/2022 ○ **Biochemistry PhD project, Université du Québec à Montréal (UQÀM)** (Montréal, Canada)
Supervisors: Pr Isabelle Marcotte & Dr Dror E. Warschawski
In vivo ssNMR to study the microalga *C. reinhardtii* cells and its potential added values
- 03/2020-09/2020 ○ **Louisiana State University (LSU)** (Baton Rouge, Louisiana, USA) **(6 months)**
Supervisor: Dr Tuo Wang
Use of high field solid-state NMR and DNP to resolve algae cell-wall glycan architecture
- 11/2016-06/2017 ○ **Bio21 Institute, University of Melbourne** (Melbourne, Australia) **(6 months)**
Supervisors: Pr Frances Separovic & Dr Marc-Antoine Sani
Circular dichroism, dye release and ssNMR to study antimicrobial peptides (AMPs)
- 06/2016-08/2016 ○ **IBPC (CNRS, UMR 7099, Paris, France) & UQÀM** (Montréal, Canada) **(3 months)**
Supervisors: Dr Dror E. Warschawski, Pr Isabelle Marcotte & Dr Francesca Zito
²H ssNMR and confocal microscopy to study microalga lipid production and incorporation

EDUCATION

- 10/2017-06/2022 ○ **Université du Québec à Montréal (UQÀM)** (Montréal, Canada)
Biochemistry PhD candidate (overall average 4.3/4.3)
- 09/2014-06/2017 ○ **AgroParisTech - Université Pierre et Marie Curie – Pasteur Institute** (Paris, France)
Triple degree: Engineer in food sciences - Master in Structural and functional proteomics - Technician in protein biochemistry, graduated with High Honors

SCHOLARSHIPS AND AWARDS (selected among 25)

- 2024 ○ **6th CRBS Conference** – Best postdoc poster presentation award
- 2023 ○ **2nd Global NMR Twitter Conference** – Best presentation award
- 2022 ○ **Université du Québec à Montréal** – Best thesis award
- 2021 ○ **International ENC conference** – Rit chey award
- 2019 ○ **Fonds de recherche du Quebec -Nature et technologies (FRQNT)** – International internship program
Fonds de recherche du Quebec -Nature et technologies (FRQNT) – PhD scholarship

RELEVANT SKILLS

- Languages** ○ English (C1 level) French (mother tongue) Spanish (school level)
- Illustration & modelling** ○ Illustrator, Inkscape, OriginPro, Prisme, Office Packages, Pymol, VMD
- Programming languages** ○ C++, Python, Matlab, R, Arduino, COMSOL
- NMR softwares** ○ Topspin, Mestrenova, CcpNMR, ShiftX, VnmrJ

TEACHING EXPERIENCE

- 2025-present ○ **Outreach agent**– McGill Institute for Advanced Material (MIAM, McGill University)
- 2024-2025 ○ **Presenter for Highschool and CEGEP student** – McGill Hot Science, Cool Talks program
- 2020-2021 ○ **Trainer to use Illustrator for scientific figures** – PROTEO research network
- 2018-2022 ○ **Teaching assistant-course BMC 9011** – Experimental meth. in biochem, master/PhD degree
- 2018-2020 ○ **Teaching assistant-course CHI 2171** – Chromatographic methods, bachelor degree

CONTRIBUTIONS

Publications (peer-reviewed, selected among 14)

- 2024 1. M Rivard , **A Poulhazan** , M Renner-Rao , E Duthoo , P Flammang , F Jehle , D Jackson, M J Harrington : *Histidine-rich coiled-coils promote zinc-dependent self-assembly and curing of porous mussel glues*, Nat. Commun., *in press*.
- 2023 2. **A Poulhazan**, AA Arnold, F Mentink-Vigier, A Muszyński, P Azadi, A Halim, SY Vakhrushev, HJ Joshi, T Wang, DE Warschawski, I Marcotte : *Molecular-Level Architecture of Chlamydomonas reinhardtii's Glycoprotein-Rich Cell Wall*, Nat. Commun., 15:986.
- 2021 3. **A Poulhazan***, A Baer*, G Daliaho, F Mentink-Vigier, AA Arnold, D Browne, L Hering, S Archer-Hartmann, LE Pepi, P Azadi, S Schmidt, G Mayer, I Marcotte, MJ Harrington: *Peculiar Phosphate Modifications of Velvet Worm Slime Revealed by Advanced Nuclear Magnetic Resonance and Mass Spectrometry*, J. Am. Chem. Soc., 145(38):20749-54.
4. N Ghassemi*, **A Poulhazan***, F Deligey, I Marcotte, T Wang: *Solid-State NMR Investigations of Extracellular Matrices and Cell Walls of Algae, Bacteria, Fungi, and Plant*, Chem. Rev., 122(10):10036-86.
5. **A Poulhazan**, AA Arnold, DE Warschawski, I Marcotte: *Identification and Quantification of Glycans in Whole Cells: Architecture of Microalgal Polysaccharides Described by Solid-State NMR*, J.

Oral Presentations (selected among 21)

- 2023 1. **A Poulhazan**, L Cegelski "Identification of a newly uncovered biofilm-associated bacterial polysaccharide combining DART-MS, HILIC-MS, and NMR methods", 13th SUMS-RAS Pitch Competition, Stanford, USA, 09 Oct.
2. **A Poulhazan**, AA Arnold, DE Warschawski, I Marcotte "In situ solid-state NMR approaches to characterize algal polysaccharides", (invited) IVAN meeting (64th ENC), Pacific Grove, USA, 15 Apr.
- 2022 3. **A Poulhazan**, AA Arnold, DE Warschawski, T Wang, I Marcotte "High-Field and DNP Solid-State NMR to Probe Whole Algae Cells Glycan Composition and Cell-Wall Glycoprotein Architecture", 63rd ENC conference, Orlando, USA, 24-29 Apr.
- 2021 4. **A Poulhazan**, AA Arnold, DE Warschawski, T Wang, I Marcotte "High Field and DNP Solid-State NMR to Probe the Overall Glycan Composition and Glycoprotein Cell-Wall Architecture of Algal Cells", Online Pacificchem, 16-21 Dec.

Poster presentations (selected among 21)

- 2024 1. **A Poulhazan**, A Baer, G Daliaho, F Mentink-Vigier, AA Arnold, I Marcotte, MJ Harrington "The velvet worm slime : a deadly insect trap made of unique phosphonated glycoproteins", 6th CRBS conference, Montreal, Canada, 4 Nov.
- 2023 2. **A Poulhazan**, W Thongsomboon, L Cegelski "Discovery and Characterization of Natural Modified Polysaccharides in Bacteria Biofilms Using ssNMR", 64th ENC conference, Pacific Grove, USA, 31 March.
- 2019 3. **A Poulhazan**, AA Arnold, DE Warschawski, I Marcotte "Using in Cell 2D ¹³C-¹³C Solid-State NMR as a Biophysical Tool to Characterize Cell-Wall and Starch from the Microalga *C. Reinhardtii*", EuroIsmar, Berlin, Germany, 25-30 Aug.
- 2018 4. **A Poulhazan**, AA Arnold, J-P Bourgouin, DE Warschawski, I Marcotte "Solid-State NMR Study of the Microalga *Chlamydomonas Reinhardtii* and its Constituents", 13th Annual European Magnetic Resonance Meeting (Euromar), Nantes, France, 3-4 July.

OTHER RELEVANT EXPERIENCE

- 2020-2021 Scientific reporter/advisor (COVID 19) - Communauté de commune du haut pays bigouden
- 2019-2020 Faculty of science board, student representative - Université du Québec à Montréal
- 2018-2020 Volunteer work – Let's Talk Science/ExpoScience and judge for Sanofi Biogenius science fair