

Biology Seminar



Western
UNIVERSITY · CANADA

12:30 - 1:30 pm
Friday, February 10, 2023
via Zoom



Isabel Desgagné-Penix

Professor

Department of Chemistry, Biochemistry and Physics

Université du Québec à Trois-Rivières

Trois-Rivières, QC, CANADA

Metabolism of alkaloids in Amaryllidaceae plants

Isabel Desgagné-Penix is a professor in the Department of Chemistry, Biochemistry and Physics at the University of Québec at Trois-Rivières (UQTR) in Canada. Her research aims at elucidating the biosynthetic pathways of selected medicinal molecules (specialized metabolites) in plants and developing alternative sources to produce these molecules. Amaryllidaceae alkaloids (AAs) are a group of plant specialized metabolites comprising an estimated of 650 identified structures. Galanthamine is the only AA used commercially for treatment of the symptoms of Alzheimer's disease but is produced in variable/low quantities in plants. Although there are obvious interests in engineering AA production for crop improvement and development of pharmaceuticals, the lack of information on AA biosynthetic pathways and their regulation makes this task very challenging. Indeed, metabolic engineering efforts to either improve AA content or provide alternative sources of alkaloids ultimately rely on the isolation and characterization of the genes involved. Systems biology-based approaches have facilitated the discovery of biosynthetic genes involved in AA pathways through the integration of multiple *omics* (e.g. transcriptomic, proteomic and metabolomic) datasets. The identification and characterization of such genes and enzymes will be presented which enabled the development of alternative production platform using microalgae for the production of AA precursors.

