

The Chancellor of Ghent University has the honour of inviting you to attend the public defense of the doctoral dissertation of

Eng. Brecht Delmoitié

Title of the doctoral dissertation:

Cheese whey permeate as a feedstock for microbial protein: from process development to techno-economic and environmental assessment

The public defence will take place on Tuesday 2 December 2025 at 17:00 in the Auditorium E2 at Campus Coupure, Coupure Links 653, 9000 Gent

There will be a contiguous reception to which you are heartily invited. Please confirm your attendance before November 17th 2025 to by filling this [form](#) or by mailing to Brecht.delmoitie@ugent.be

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Abstract of the doctoral research

Global protein demand is increasing, but animal protein production remains resource-intensive and environmentally damaging. Microbial protein offers a more sustainable alternative because it can be produced without agricultural land and can convert low-value industrial side streams into valuable biomass.

This dissertation examines how cheese whey permeate—a low-value dairy by-product—can be upgraded into microbial protein through either direct lactose utilization or a two-step process with lactic acid fermentation as intermediate process. Cheese whey permeate can be efficiently fermented into lactic acid under non-sterile conditions and that using lactic acid as an intermediate improves biomass and protein yields, compared to lactose. Techno-economic and environmental assessments indicate that the two-step process is both cheaper and has a lower environmental footprint, especially when implemented close to dairy producers to avoid transport costs. Moreover, resource efficiency can be improved by recycling nitrogen-rich side streams, such as heat-treatment centrate produced during nucleic acid reduction, which reduces the need for external nitrogen sources. Overall, cheese whey permeate can be efficiently converted into microbial protein following appropriate process optimisation.

Brief Curriculum Vitae

Brecht Delmoitié (°Aalst, 06/09/1995) holds a Master of Science in Biochemical Engineering Technology (2020) from Ghent University. After which he obtained a pre-doctoral Strategic Basic Research Fellowship from the Research Foundation Flanders (FWO) to start her PhD at the Center for Microbial Ecology and Technology (CMET) at Ghent University. During his doctoral work, Brecht (co-)authored four scientific papers submitted to international peer-reviewed journals and present his research at several international conferences, including RRB 2023, and ESBES 2024. He also guided two bachelor students, and one master student in completing their thesis projects. He was an organizing member of the Capture Sustainability's team, where he helped improve sustainability in the lab. Brecht will continue her career as a R&D project engineer at Impetus (Belgium)