SCIENCES & BIOENGINEERING SCIENCES

The Research Group
Industrial Microbiology and Food Biotechnology

has the honor to invite you to the public defence of the PhD thesis of

ir. Dries Bongaerts

to obtain the degree of Doctor of Bioengineering Sciences

Title of the PhD thesis:

Lambic beer production: impact of traditional wheat varieties and maturation, and identification of inoculation sources

Supervisors:
Prof. dr. Stefan Weckx (VUB)
Prof. dr. ir. Luc De Vuyst (VUB)

The defence will take place on
Thursday, February 12, 2026 at 5 p.m.

VUB Etterbeek campus, Pleinlaan 2, Elsene,
In auditorium D0.08

Members of the jury

Prof. dr. Dominique Maes (VUB, chair)
Prof. dr. Joske Ruytinx (VUB)
Prof. dr. ir. Wim De Malsche (VUB)
Prof. dr. ir. Jessika De Clippeleer (UGent)
Dr. Gert De Rouck (KU Leuven)

Curriculum vitae

Dries Bongaerts obtained his Master of Science in Bioengineering Sciences degree, specialization Chemistry and Bioprocess Technology, in 2018, and his Master of Science in Management degree, in 2019, both at the Vrije Universiteit Brussel (VUB). Afterward, he started his PhD research in the Research Group of Industrial Microbiology and Food Biotechnology (IMDO) of the VUB, under the supervision of Prof. dr. ir. Luc De Vuyst and Prof. dr. Stefan Weckx, with financial support from the Research Council of the VUB and the KMO Portefeuille (in collaboration with a lambic beer brewery). He is co-author of six scientific papers in peer-reviewed journals, among which three as first author.

Abstract of the PhD research

Belgian lambic beers are beers from a spontaneous origin, made in Brussels and the Southwest area of Brussels, with roots tracing back to the 16th century. The lambic beer production process that lambic beer brewers use is still similar to the traditional lambic beer process, which is characterized by several unique features, such as the use of unmalted wheat in addition to malted barley, an open metal coolship to cool down the boiled wort, and horizontal wooden barrels for the fermentation and maturation process that takes up to three years. Whereas the lambic beer production process is still similar to the one used centuries ago, the ingredients used by lambic brewers have changed over time. Nowadays, lambic brewers buy modern wheat varieties available on the global market, whereas before, they used wheat landraces provided by local farmers. This PhD study investigated multiple aspects of the traditional lambic beer production process, with a special focus on the impact of using old wheat landraces.

This revealed that not the raw materials but the spontaneous inoculation and process conditions are the most important factors on the outcome of the lambic beer production process, at both the microbiological and biochemical level. Concerning the spontaneous inoculation, the wooden barrels used for the fermentation and maturation process of these lambic beers and the house microbiota, reflected in the air samples from the brewery room and the brewery surfaces, such as the walls and ceiling, were identified as most important inoculation sources. Finally, the research showed that the flavor of lambic beers can still change during their refermentation and maturation process in glass bottles, mainly because of a continuation of the *Brettanomyces* yeast metabolism.