FACULTY OF
BIOSCIENCE ENGINEERING

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

ir. Florence Van Herreweghen

Title of the doctoral dissertation:

Impact of mucin and mucin degrading Akkermansia muciniphila on gut microbial ecology and markers for gut health.

The public defence will take place on Friday June 22nd at 17:00 in the Academieraadzaal (Hall of the Academic Board), room A 0.030 at Campus Coupure, Coupure 653, 9000 Ghent.

There will be a contiguous reception to which you are heartily invited.
Please confirm your attendance before June 18th to: Florence.vanherreweghen@ugent.be

Dissertation supervisors

Prof. dr. ir. Tom VAN DE WIELE
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Board of examiners

Prof. dr. ir. Frank DEVLIEGHERE
Chairman
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Prof. dr. ir. Clara BELZER
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Wageningen University, The Netherlands

Prof. dr. ir. John VAN CAMP
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Faculty of Bioscience Engineering,
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Prof. dr. ir. Debby LAUKENS
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Faculty of Medicine and Health, Ghent University, Belgium

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Abstract of the doctoral research:

Akkermansia muciniphila is generally present at high abundances (1-4%) in the gut microbiota of the healthy human population. Furthermore, studies linking changes in the gut microbiota composition to human health status have reported an inverse correlation between *Akkermansia muciniphila* and disorders such as IBD, obesity and diabetes. A key characteristic of *A. muciniphila* is its mucin degradation capacity, which leads to the production of acetate and propionate and may be part of cross-feeding networks resulting in butyrate production. *A. muciniphila* has been positioned as a health biomarker and is currently explored as a therapeutic agent for obesity or as a new generation probiotic. The aim of this PhD research was to gain more insight into the role of *A. muciniphila* in host glycan degradation and the importance of this niche for the microbial ecosystem and for gut health. Several *in vitro* models were used during this PhD reserach: the Simulator of the Human Intestinal Microbial Ecosystem (SHIME) system to study *A. muciniphila* and host glycans in different complex microbial communities, a fed-batch system with a synthetic microbial community to examine bacterial interactions in different nutritional environments and a co-culture cell model with epithelial cells and macrophages to study the effect of *A. muciniphila* and host glycan treated communities on epithelial barrier function and pro-or anti-inflammatory responses.

Brief Curriculum Vitae

Florence Van Herreweghen graduated with distinction as Master of Science in Bioscience Engineering, Cell and Gene Biotechnology, at Ghent University. She started her PhD as IWT-fellow at the Center for Microbial Ecology and Technology (CMET) in 2014. Her research focused on the colon bacterium *Akkermansia muciniphila*, its behavior in the complex microbial ecosystem of the colon and the role of mucins to influence *A. muciniphila* behavior.
During her PhD Florence Van Herreweghen successfully guided five students during their graduation research project and she was responsible for the practical exercises of the course Host-Microbe interactions. Florence presented her research on several national and international symposia and won a price for one of her oral presentations. She is author and co-author of several scientific articles published in international peer reviewed journals.