

INVITATION PUBLIC DEFENSE

From mare to model: reconstructing equine
placental and endometrial biology

Margo Verstraete

October 13th 2026

PROMOTORS

Em. Prof. Dr. Peter Daels
Faculty of Veterinary Medicine, UGent

Prof. Dr. Ward De Spiegelaere
Faculty of Veterinary Medicine, UGent

Prof. Dr. Pouya Dini
School of Veterinary Medicine, UC Davis

Curriculum Vitae

Margo Verstraete graduated as a Doctor of Veterinary Medicine from Ghent University in 2020, after which she started her PhD in equine reproduction at the Faculty of Veterinary Medicine. Her PhD research was conducted under the supervision of Prof. Peter Daels and Prof. Ward De Spiegelaere at Ghent University and Prof. Pouya Dini at the University of California, Davis, as part of a close collaboration between both institutions. Her research focuses on the equine placenta and endometrium, combining transcriptomic approaches with advanced in vitro models to better understand their cellular and molecular biology. During her PhD, she developed equine endometrial and placental organoid models. Her research reflects a broader interest in bridging fundamental reproductive biology with innovative models that can help answer clinically relevant questions in the horse. Her work has been presented at several international conferences and has resulted in multiple scientific publications.

Where?

The defense will take place on **Tuesday, October 13, at 17.00h**

Brouwerij De Halve Maan
Walplein 26 – 8000 Brugge
Room: brouwerszaal

The public defense will be followed by a reception at the same venue.

How to attend?

If you would like to attend the public defense and reception, please register by **October 1st** by emailing margo.verstraete@ugent.be

Members of the Jury

Prof. Dr. Catharina De Schauwer (chairman)
Faculty of Veterinary Medicine, UGent

Prof. Dr. Bert Devriendt
Faculty of Veterinary Medicine, UGent

Prof. Dr. Pieter Cornillie
Faculty of Veterinary Medicine, UGent

Em. Prof. Dr. Richard Ducatelle
Faculty of Veterinary Medicine, UGent

Prof. Dr. Olivier De Wever
Faculty of Medicine and Health Sciences, UGent

Prof. Dr. Katrien De Clercq
Faculty of Medicine, KU Leuven

Summary

The placenta and endometrium are essential to reproduction. Together, they create and support the environment in which pregnancy is established and maintained. Despite their importance, many aspects of their biology remain poorly understood in the horse. Studying these tissues is challenging, particularly during pregnancy.

This dissertation approached these challenges from two complementary perspectives. First, gene expression was studied to better understand the healthy equine placenta, from differences between placental regions to cellular composition of the placenta. These studies revealed that the placenta is remarkably similar across different anatomical regions, while its cellular composition and molecular functions change substantially as pregnancy progresses. Together, these findings establish a detailed picture of the healthy equine placenta that can serve as a foundation for better understanding what changes when pregnancy is compromised.

The second part of this dissertation focused on bringing reproductive tissues into the laboratory through the development of organoids. These three-dimensional structures are grown from cells obtained from the placenta or endometrium and reproduce important characteristics of the tissues from which they originate. Equine placental and endometrial organoids were established and extensively characterized, demonstrating that they retain key structural, molecular, and functional properties of their original tissues. At the same time, organoids represent simplified systems that do not capture the full cellular complexity found in the mare.

By combining detailed characterization of reproductive tissues in the horse with the development of new laboratory models, this dissertation provides both new biological insight and new tools to study equine reproduction. Rather than replacing studies in the animal, these models provide a complementary approach that allows biological processes to be investigated under controlled conditions. Ultimately, they offer opportunities to investigate placental and endometrial function and disease in ways that are difficult to study directly in the mare.

