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VRIJE UNIVERSITEIT BRUSSEL

PhD in Medical Sciences
2019-2020

INVITATION to the Public defence of

Shari MACKENS

To obtain the academic degree of **'DOCTOR OF MEDICAL SCIENCES'**

HYPES AND HOPES FOR ENDOMETRIAL RECEPTIVITY IN ART.

The defence will take place on Tuesday, 15th September 2020 at 5 p.m.

and will be organised online

via Zoom meeting, accessible through the following link:

https://gf.vub.ac.be/redirects/PhD_defense_Shari_Mackens.php

and in Auditorium Vanden Driessche

ADMITTANCE to the auditorium will only be granted upon presentation of the personal invitation from the PhD candidate.

Summary of the dissertation

Human embryo implantation, the current rate-limiting step in ART, depends on three essential elements: a competent embryo, a receptive endometrium and an adequate synchronization between both. To this extent, the overarching research question of this thesis was whether endometrial receptivity can be optimized or predicted.

Follicular-phase endometrial scratching during ovarian stimulation followed by a fresh embryo transfer did not increase the clinical pregnancy rate in a truncated randomised study and may be harmful as a higher clinical miscarriage rate was observed. A biomolecular study nested within this trial did not reveal significant differential gene expression in relation to the clinical outcome using transcriptome analysis of the whole-tissue endometrium, while the secretome profile of isolated, cultured and *in-vitro* decidualized endometrial stromal cells varied significantly between patients who had a live birth compared to those with an implantation failure.

Genital tract microbiota research pointed out that ovarian stimulation significantly influenced the cervical microbiota composition and diversity. Furthermore, a DNA extraction protocol designed for low-biomass samples allowed to increase intra-uterine microbiota profiles quality.

A randomised study in high-responders demonstrated that the freeze-all strategy did not harm the pregnancy rates in comparison with a fresh embryo transfer with an intensified luteal phase support, while it decreased the patient's risk to develop moderate-to-severe ovarian hyperstimulation syndrome.

With regard to the frozen embryo transfer, retrospective data showed the late-proliferative phase serum estradiol level not to be useful to guide clinical decision-making in artificial cycles, while a randomized study in natural cycles demonstrated the spontaneous and triggered ovulation approach to perform comparably.

Curriculum Vitae

Shari Mackens was born on July 8th 1987, in Dendermonde (Belgium). She finished high school (Koninklijk Atheneum, Asse, Belgium) in 2005 and graduated as a Medical Doctor from the Vrije Univerisiteit Brussel (VUB, Belgium) in 2012, summa cum laude and winner of the Nedeljkovitch price. Afterwards, she started working at the Centre for Reproductive Medicine at the University Hospital Brussels [Universitair Ziekenhuis (UZ) Brussel, Belgium] as a PhD student. From 2012 until 2017, she performed basic science research on endometrial receptivity and human embryo implantation at the Department of Reproduction and Immunology (REIM) of the VUB. During these 5 years, she was funded by the Research Foundation – Flanders (FWO). As of 2017 she follows the specialty training programme in Obstetrics and Gynaecology at the VUB full-time and worked at the Centre Hospitalier de Wallonie Picarde (Tournai, Belgium) and at the University Hospital Brugmann (Brussels, Belgium). At present, she is completing her residency which finishes in December 2020, while being associated as a research fellow to the Centre for Reproductive Medicine at UZ Brussel. She has co-authored eighteen publications relevant to the thesis topic in peer-reviewed journals (five of which as first author) and performed more than 40 oral and poster presentations at national and international scientific meetings. She lives together with her partner, Tim Doudelet, and their two children, Noan (°2014) and Mila (°2016).