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PhD in Medical Sciences
2015-2016

INVITATION to the Public defence of

Katrien FAES

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

Translation of fertility preservation techniques to the clinic

Wednesday 11 May 2016

Auditorium **Brouwer**, 17:00
Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

How to reach the campus Jette:

<http://www.vub.ac.be/english/infoabout/campuses>



Vrije Universiteit Brussel

Summary of the dissertation

Prepubertal boys suffering from cancer are also at risk of losing spermatogonial stem cells due to the anticancer treatment. Since the spermatogenic process has not started, they do not have the option to store a semen sample before onset of the treatment and therefore their fertility later on in life is threatened. As fertility is important for a patient's well-being, research is performed to overcome this possible infertility. Hence, testicular biopsies are taken and cryopreserved until fertility restoration techniques become available. Currently, two fertility restoration techniques are being developed: spermatogonial stem cell transplantation (SSCT) and testicular tissue grafting.

At this moment, testicular tissue cryopreservation is only being performed in a few hospitals worldwide. Therefore, transport or short-term preservation of the tissue is required to guarantee the best tissue quality. In the first part of this thesis, four parameters influencing the short-term preservation were investigated. We concluded that adult testicular tissue can be preserved in large tissue fragments for 3 days in DMEM/F12 at 4°C without affecting the viability, tissue morphology, Sertoli cell integrity, number of spermatogonia or apoptotic cells.

Before SSCT can be implemented in the clinic, translation of this technique towards a human application needed to be addressed. Hence, in the second part of this thesis we explored the possibility of injecting a cell suspension in human cadaver testes and searched for a feasible injection technique for clinical implementation. In conclusion we can state that it is possible to infuse a cell suspension into the human cadaver testis and that the use of an infusion pump is a good step towards a clinical application of SSCT.

Curriculum Vitae

Katrien Faes was born on the 18th of October 1984 and studied Latin-Maths-Sciences at the Sint-Norbertusinstituut in Duffel. After obtaining the degree of Master in Biomedical Sciences in 2006 at the Vrije Universiteit Brussel, she joined Galapagos as an associate scientist in the ADMET group. Two years later, she took on the challenge of working abroad for Takeda Cambridge Limited and started up the ADME group there.

As she still had a lot of interest in the fertility preservation research performed by the BITE lab where she performed her Master thesis, she started her PhD in 2011. During this PhD she focussed on the short-term preservation of human testicular tissue and the translation of the SSCT towards a clinical application. This work was presented at several (inter)national meetings and resulted in two peer-reviewed articles. Katrien is preparing two additional papers and is co-author of two submitted papers.

She is married and mother of one son.