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Denmark

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Gynecological Endocrinology and Reproductive Medicine
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Research Laboratory on Human Reproduction, Hôpital Erasme
Université Libre de Bruxelles

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Centre for reproductive Medicine
Vrije Universiteit Brussel/UZ Brussel

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Vrije Universiteit Brussel

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Research Group Reproduction and Genetics
Vrije Universiteit Brussel

Prof. dr. Ellen Anckaert, Promoter

Follicle Biology Research Laboratory
Vrije Universiteit Brussel

Prof. dr. Johan Smitz, Promoter

Follicle Biology Research Laboratory
Vrije Universiteit Brussel



PhD in Medical Sciences
2019-2020

INVITATION to the Public defence of

Tom ADRIAENSSENS

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

Molecular evaluation of oocyte competence.

Thursday, 6 February 2020 at 5 p.m.

In Auditorium 1
Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussels

How to reach the campus Jette:

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

Summary of the dissertation

Although infertility treatment has progressed a lot over the last 40 years, ART treatments are still only accessible for a happy few. In most countries, the financial pressure and the invasive nature of the ART treatments makes doctors continuing to transfer 2 (or 3) embryos. Using morphological criteria, the embryologist is currently unable to recognize with high certainty which embryo will develop into a healthy child.

In Belgium the mean number of fresh cycles needed per patient to reach a live birth was 1.79 ± 1.09 (SD) (Data from the Belgian Registry 2009-2011). The downside of the single embryo transfer (SET) policy is that the couples have individually to spend more money and time than with double or triple embryo transfer to reach a pregnancy. Despite reimbursement, there is a 23.7% drop out rate after the first fresh stimulation cycle, and a 46.9% abandonment after the fifth stimulation. These figures illustrate the substantial physical and emotional burden of current ART methods to the patient.

A method that could allow the embryologist to make a more accurate choice of which single embryo to replace into the uterus has as yet to emerge from the multiple technical proposals studied over the last years.

Within the follicle Biology Research Team, Tom Adriaenssens has been focusing on explorative DNA microarray studies on cumulus cells and on the subsequent validation studies by quantitative QPCR based method that could be routinely used to provide a relative "quality" ranking to oocytes.

From the proof of principle study, which is the crown on several years of research, the results of the non-invasive 'Corona Test' are extremely encouraging and incite additional molecular research to provide an enhanced treatment outcome in varied groups of infertile patients under ICSI treatment. The non-invasive analysis of oocyte quality could better streamline the embryology work in the ART Centers, reduce the total cost of treatment for social security and reduce the burden of treatment for infertile couples.

Curriculum Vitae

Tom Adriaenssens was born on April 27th 1973, in Aalst. He first graduated as a Bachelor in Biochemistry and Biotechnology from the Hogeschool C.T.L. in Gent in 1998.

He then studied Biomedical Sciences at the Vrije Universiteit Brussel where he graduated with great distinction in 1998. The title of his master thesis was "The analysis of the dihydrolipoamide dehydrogenase binding protein (E3BP) in pyruvate dehydrogenase complex deficient patients". This was completed during his internship at the Center for Medical Genetics, UZBrussel under the supervision of Prof. W. Lissens and Prof. Dr. L. De Meirleir.

Since December 1999 he is working at the Follicle Biology research laboratory (FOBI) led by Prof. Dr. J. Smitz and Prof. Dr. E. Anckaert. At FOBI he performed research using in vitro culture systems for mouse follicles, in vitro human primary granulosa cell cultures and human oocytes and cumulus. His focus was on gene expression analysis and oocyte competence but he also contributed to several other studies of the lab. He supervised over the many years several national and international master and PhD theses.

He is author and co-author of 25 peer-reviewed articles in international journals in the field of reproductive medicine and presented his work on several occasions in international congresses.

He functioned as associated editor of Human Reproduction (2013-2017), the leading journal in Reproduction, and has contributed to cumulus cell gene expression work in context of Phase 2 and 3 trials led by pharmaceutical companies.