Board of examiners

Prof. Ali Mojallal MD, PhD
Co-Chair of the Department of Plastic Surgery
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Prof. Dr. Jan Vranckx
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Prof. Dr. Jan Lamote
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University Hospital Brussels - Free University Brussels (VUB)

Prof. Dr. Jacques De Grève, Chair
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University Hospital Brussels - Free University Brussels (VUB)

Prof. Dr. Moustapha Hamdi, Promotor
Head of the Plastic Surgery Dept.
University Hospital Brussels - Free University Brussels (VUB)

Prof. Wayne Morrison, Co-Promotor
Department of Surgery, Professorial Associate
University of Melbourne, Director O'Brien Institute (Australia)

Geneeskunde & Farmacie

GF

PhD in Medical Sciences
2014-2015

INVITATION to the Public defence of

Heidi DEBELS

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

Guiding growth of autologous cells towards large volume vascularized adipose tissue for soft tissue reconstruction.

Wednesday 10 JUNE 2015
Auditorium **Vanden Driessche**, 15:00
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

Regenerative therapies aim to repair or replace damaged tissues. Clinical applications may vary from organ replacement, to limb regeneration or soft tissue reconstruction. In growing 3-dimensional tissue constructs, access to a nourishing vascular network is essential for cells to survive. The aim of my research is to generate adipose tissue in vivo by using an acellular scaffold to support cell growth.

To date, there is no ideal fat generating scaffold available. Matrigel has excellent results, but due to its derivation from a mouse tumor, it can not be used in human clinical settings. Adipogel, a novel gel containing growth factors and polymers, was developed as an alternative for potential human use. It is made of fat tissue that is treated so all cells are removed and only extracellular matrix remains. Adipogel was seen to induce spontaneous fat growth when inserted in the body. Most likely, stem cells residing in adjacent tissues are driven to the gel to form new tissue.
First, Adipogel was tested for its properties to reconstruct the subdermal fat layer. This has clinical applications in for example wound healing. Then, it was used to help fabricate a fat flap in vivo. This was achieved by adding a bloodvessel loop to run through the gel and by protecting this unit from shear and pressure by a chamber. With this novel technology for tissue generation, a fat flap pedicled on the femoral vessels could be generated in vivo, offering perspectives for larger reconstructive surgery such as breast reconstruction. With this technology, hope rises for a variety of novel patient-tailored therapies in soft tissue repair.

Curriculum Vitae

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Date of birth : 22 December 1982 | Place of birth : Kortrijk, Belgium | Nationality: Belgian

EDUCATION
Medical School, Ghent University (Ghent, Belgium) 2000 – 2007

WORKING EXPERIENCE
Residency Plastic Surgery, University Hospital Brussels (Jette, Belgium) Aug 2013-July 2015
Microsurgery and Research Fellowship, O'Brien Institute (Melbourne, Australia) Aug 2011-July 2013
Residency Hand Surgery, AZ Groeninge Kortrijk (Kortrijk, Belgium) Feb 2011-July 2011
Residence General Surgery, University Hospital Ghent (Gent, Belgium) Aug 2010-Jan 2011
Residency General Surgery, AZ Maria Middelares Ghent (Gent, Belgium) Aug 2007-July 2010

RESEARCH PUBLICATIONS
Author of various international publications
Reviewer for several international research journals

RECENT PRIZES
Young Investigator Award, Royal Belgian Society of Surgery, 15 May 2014, Spa, Belgium
2nd Prize Young Investigator Award, European Tissue Repair Society, 23 Oct 2013, Reims, France