

## **Promotoren**

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**Prof. Dr. Jean-Pierre Hachem**

**Prof. Dr. Diane Roseeuw**

Dermatologie UZ Brussel

Vrije Universiteit Brussel

## **Leden van de examencommissie**

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**Prof. Dr. Matthias Schmuth**

Department of Dermatology  
Innsbruck Medical University, Austria

**Prof. Dr. Yves Poumay**

Cell and Tissue Laboratory  
Université de Namur

**Prof. Dr. Marjan Garmyn**

Dermatologie UZ Leuven  
Katholieke Universiteit Leuven

**Prof. Dr. Brigitte Velkeniers**

Interne Geneeskunde-Endocrinologie UZ Brussel  
Vrije Universiteit Brussel

**Prof. Dr. Miriam Marichal**

Anatomopathologie UZ Brussel  
Vrije Universiteit Brussel

**Prof. Dr. Kristien De Paepe**

Toxicologie, Dermato-cosmetologie en  
Farmacognosie (FAFY)  
Vrije Universiteit Brussel

**Prof. Dr. Kris Thielemans, voorzitter**

Immunologie-Fysiologie (IMFY/FYSP)  
Vrije Universiteit Brussel



Vrije Universiteit Brussel

FACULTEIT GENEESKUNDE EN FARMACIE

**Doctoraat in de Medische Wetenschappen**

Academiejaar 2010-2011

## **UITNODIGING**

Voor de openbare verdediging van het  
doctoraatsproefschrift van

**Truus ROELANDT**

vrijdag 29 oktober 2010

U wordt vriendelijk uitgenodigd op de openbare verdediging van het proefschrift van

## **Truus ROELANDT**

**'From secretion to desquamation: the pathway between stratum granulosum and stratum corneum keratinocytes'**

Op **vrijdag 29 oktober 2010** om **17 uur** in auditorium **P. Brouwer** van de Faculteit Geneeskunde & Farmacie Laarbeeklaan 103, 1090 Brussel

## **Situering van het proefschrift**

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The skin barrier research has been initiated in our department 10 years ago. The continuous search for keys of evidence that permits to link epidermal biology to epidermal structure and function has been the goal of our research group ever since. The barrier function of the skin resides in the stratum corneum, formed by the secretion of lamellar bodies (LB) and the terminal differentiation of stratum granulosum (SG) keratinocytes. This work brings new insights to explain the pathophysiological mechanisms involved in the formation of the epidermal barrier. More specifically we investigated the role of 1) serine protease (SP)/protease-activated receptor-2 (PAR-2) signaling, 2) lipid rafts/caveolae and caveolin-1, and 3) the actin cytoskeleton. Acute barrier abrogation accelerates the secretion of intercellular lipids and the formation of new corneocytes. We found that PAR-2 is responsible for the activation of the kinase cascade inducing F/G-actin rearrangements and cytoskeletal remodeling, resulting in the arrest of LB secretion and the induction of the transition of SG cells into corneocytes. In parallel, the secretion of LB in the cytosol of the SG cells is initiated, allowing the insertion of caveolin-1 into the apical plasma membrane and caveolae formation. This phenomenon that occurs following barrier abrogation is important to serve as a "brake" in LB secretion, the induction of terminal differentiation and the arrest of proliferation. These findings have potential clinical and therapeutic implications in several skin disorders characterized by deficient LB secretion and abnormal differentiation.

## **Curriculum Vitae**

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Truus Roelandt was born on September 16th 1979 in Antwerp. She graduated at the Sint-Maarten Scholencampus Beveren in Economics-mathematics in 1996. In 2004 she finished her medical studies with great distinction at the Vrije Universiteit Brussel. She started her residency in Dermatology and Venereology in the department in question of the Universitair Ziekenhuis Brussel, led by Prof. Dr. Diane Roseeuw. During the second year of dermatology training she initiated skin barrier research under the guidance of Prof. Dr. Jean-Pierre Hachem. During this period she performed a research fellowship at the University of California San Francisco (USA) in the Dermatology Research Department of Prof. Dr. Peter M. Elias. During her training she continued her research and this resulted in the publication of several manuscripts, including 4 co-author articles and 4 first author articles in high ranked dermatological journals. Truus Roelandt is currently working in the Department of Dermatology and Venereology of the Universitair Ziekenhuis Brussel combining both clinical activities and research.