

## **Promotoren**

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### **Prof. Karin Vanderkerken**

Hematologie en Immunologie (HEIM)  
Vrije Universiteit Brussel

### **Prof. Ivan Van Riet**

Hematologie en Immunologie (HEIM)  
Vrije Universiteit Brussel

## **Leden van de examencommissie**

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### **Prof. Peter Croucher**

Department of Human Metabolism  
Academic Unit of Bone Biology  
University of Sheffield Medical School  
United Kingdom

### **Prof. Fritz Offner**

Department of Stem Cell Biology and Therapy of  
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### **Dr. Ann Van De Velde**

Department of Hematology, University Hospital  
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### **Dr. Jo Van Ginderachter**

Department of Molecular and Cellular Interactions  
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### **Prof. Leo Van Grunsven**

Department of Cell Biology  
Vrije Universiteit Brussel

### **Prof. Jacques De Grève, voorzitter**

Department of Medical and Molecular Oncology  
Vrije Universiteit Brussel



Vrije Universiteit Brussel

FACULTEIT GENEESKUNDE EN FARMACIE

## **Doctoraat in de Medische Wetenschappen**

Academiejaar 2009-2010

## **UITNODIGING**

Voor de openbare verdediging van het  
doctoraatsproefschrift van

**EIke DE BRUYNE**

donderdag 28 januari 2010

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

**Elke DE BRUYNE**

**' Role of endothelial cells in bone marrow microenvironment-induced modulation of the gene expression of multiple myeloma cells'**

Op **donderdag 28 januari 2010** om **17 uur** in auditorium **R. Vanden Driessche** van de Faculteit Geneeskunde & Farmacie, Laarbeeklaan 103, 1090 Brussel

## **Situering van het proefschrift**

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Multiple myeloma (MM) is a plasma cell (PC) malignancy hallmarked by uncontrolled accumulation of monoclonal PCs within the bone marrow (BM). The BM microenvironment provides a sanctuary for the MM cells to survive, proliferate and evade drug-induced cell death due to intimate, reciprocal interactions between the MM cells and the surrounding cells. Based on our enhanced understanding of the pivotal role of this intimate reciprocal relationship in MM carcinogenesis, numerous new molecular targets were identified and novel therapies, including thalidomide, bortezomib and lenalidomide, were derived. Although the introduction of these drugs resulted in a significant improvement in the overall survival, patients inevitably relapse, underscoring the urgent need for new potential targets. BM endothelial cells (BMEC) are one of the surrounding cell types actively involved in MM disease progression. In short, BMEC are involved in the homing of the MM cells, angiogenesis, osteoclastogenesis and induce survival and drug resistance of the tumor cells. In this work we investigated the BMEC induced modulation of the gene expression of the MM cells in an attempt to find new molecular targets. We found that BMEC are actively involved in MM progression by regulating expression of the tetraspanins CD9 and CD53 and the pro-apoptotic molecule Bim in MM cells and this either through direct cell contact and/or the secretion of soluble factors. These data provide new molecular targets and furthermore support the rationale for using therapeutic agents in MM that directly target BMEC in combination with both conventional and novel therapies.

## **Curriculum Vitae**

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Elke De Bruyne was born in 1981 in Asse. Already in childhood, her interest was sparked for science and research. In 1999 she began her studies in biomedical sciences at the Vrije Universiteit Brussel. In her last year, she prepared a master thesis on the role of TIMP-2 in multiple myeloma progression at the department of Hematology and Immunology and obtained her diploma with greatest distinction in 2003. Dr. Els Van Valckenborgh trained her in the basics of cellular and molecular biology, which more and more gained her interest. She began her doctorate in the same lab on a OZR-VUB scholarship, supervised by Prof. Ben Van Camp and Prof. Karin Vanderkerken. Several international collaborations proved to be fruitful. Her work resulted in several publications and awards, among which the award of the Belgian Hematology Society for best poster presentation. Recently, she was the laureate of the Catherina Weekers Fund 2009 granted by the Koning Boudewijn Stichting.