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Vrije Universiteit Brussel

FACULTEIT GENEESKUNDE EN FARMACIE

Doctoraat in de Medische Wetenschappen

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UITNODIGING

Voor de openbare verdediging van het
doctoraatsproefschrift van

Xiangwei XIAO

maandag 6 juni 2011

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

Xiangwei XIAO

'Beta cell regeneration and normoglycemia restoration in diabetic mice through myeloid cell-driven angiogenesis'

Op **maandag 6 juni** om **17 uur** in auditorium
P. Brouwer van de
Faculteit Geneeskunde & Farmacie
Laarbeeklaan 103, 1090 Brussel

Situering van het proefschrift

Bone marrow transplantation has been reported to alleviate toxin-induced diabetes in mice. Nevertheless, the underlying mechanism is still unclear. In the present study, we demonstrate that a genetically labeled, monoclonal hematopoietic stem cell line (seRM26 cells), grafted into the pancreas of diabetic mice, induces beta cell proliferation and activation of a pancreatic endocrine progenitor cell marker, Neurogenin-3 (Ngn3), resulting in a reproducible, complete and permanent recovery from the hyperglycemic state. The injected cells do not differentiate to beta cells or their progenitors but stimulate the recruitment and retention of angiocompetent myeloid cells in a VEGF-A/SDF-1-dependent manner. Specific inhibition of either angiogenesis or inflammation revealed that inflammatory neovascularization is a pivotal process for endocrine progenitor activation and beta cell proliferation. Local administration of VEGF-A recapitulates the regenerative process in up to half of the number of diabetic mice. However, transplantation of the inflammatory cells, isolated from the regenerating pancreas, failed to do so, suggesting that recruited inflammatory cells are necessary but not sufficient to induce a full regenerative process. Our finding opens perspectives towards a treatment for diabetes by isogeneic bone marrow transplantation and/or induction of neovascularization in the injured pancreas.

Curriculum Vitae

Xiangwei Xiao was born in Tianjin, China, in 1972. In June 1997, he obtained his MD at the Tianjin Medical University. From 1997 to 2001, he worked as a (chief) urologist in the 2nd hospital of Tianjin Medical University. At the end of 2001, he moved to Brussels and became a scientist at the Diabetes Research Center (DRC) of Vrije Universiteit Brussel. Under the guidance of Prof. Dr. Harry Heimberg, Xiangwei obtained his master degree of science in Medical and Pharmaceutical Research in 2003 after which he started his doctoral thesis on pancreas endocrine cell regeneration.