Promotors

Prof. D. Pipeleers
Diabetes Research Center/MEBO
Vrije Universiteit Brussel

Prof. Z. Ling
Diabetes Research Center/MEBO
Vrije Universiteit Brussel

Leden van de examencommissie

Prof. A. Lernmark
Dept of Medicine
University of Washington, Seattle, USA

Prof. P. Gilon
Unité d’Endocrinologie et Métabolisme
Faculté de Médecine
Université Catholique de Louvain, Brussels

Prof. C. De Block
Afdeling Diabetologie, UZ-Antwerpen
Universiteit Antwerpen

Prof. F. Schuit
Afdeling Biochemie
Katholieke Universiteit Leuven

Prof. E. Peters
Farmacologie/FARC
Vrije Universiteit Brussel

Prof. B. Van der Auwera
Diabetes Research Center/MBIO
Vrije Universiteit Brussel

Prof. C. Van Schravendijk (voorzitter)
Diabetes Research Center/MEBO
Vrije Universiteit Brussel

Doctoraat Medische Wetenschappen
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UITNODIGING
Voor de openbare verdediging van het
doctoraatsproefschrift van

Chen WANG

14 juni 2006
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in auditorium P. Brouwer van de
Faculteit Geneeskunde & Farmacie,
Laarbeeklaan 103, 1090 Brussel

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

Chen WANG

‘GABA, an extracellular marker for nutrient metabolism in pancreatic beta cells’

Preparation of a therapeutic beta cell graft requires the availability of adequate quality control. Processes of cell death can be associated with depletion and/or discharge of cell specific substances which can then be picked up and measured through assaying these compounds. Gamma aminobutyric acid (GABA) is synthesized and released by pancreatic beta cells with a higher turnover rate and a smaller intracellular fraction. We have investigated potential use of GABA as a marker for the functional beta cell mass. This work has resulted in the following three sets of conclusions: 1) Beta cells were the major source of GABA formation in pancreatic tissue. Cellular and medium GABA rapidly and markedly declined within 24h following beta cell exposure to cytotoxic agents whereas the insulin content remained unchanged. 2) Nutrients influence GABA release through changes in substrate availability. Glutamine causes a dose-dependent increase in GABA release while glucose metabolism decreased GABA release through activation of GABA-T. 3) GABA release was increased by cAMP generators through activation of protein kinase A. This effect could not be blocked by GABA-T inhibitor, but inhibited by GAD inhibitor. These observations indicate that extracellular GABA levels are a sensitive marker for the presence of living beta cells and for their metabolic activities, in particular their nutrient-driven functional state. Acute and chronic changes in GABA release can be used to assess the effects of glucose and cyclic AMP on nutrient metabolism in beta cells.

Curriculum Vitae

Chen WANG comes from China. She graduated from Medical School of Xi’an Jiaotong University. After working as a medical doctor specializing in Endocrinology in the First Hospital of Xi’an Jiaotong University in China for 9 years, she went to Brussels in Belgium in 2000 to pursue diabetes research. Since then, she has been working and studying in the Diabetes Research Center under supervision of Profs. D. Pipeleers and Z. Ling. In 2002 she obtained the Master’s degree in Medical and Pharmaceutical Research.