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

Inge Roman

'The search for the interactome of the membrane protein VDAC: from epitopes to mitochondrial physiology'

Op woensdag **5 juli 2006** om **17u00**
in auditorium P. Brouwer van de Faculteit Geneeskunde & Farmacie, Laarbeeklaan 103, 1090 Brussel

Situering van het proefschrift

Mitochondria are the energy generating organelles of the eukaryotic cell. They are delimited by 2 membranes. Their outer membrane contain very large channels through which metabolites can pass in and out in a controlled way. These channels – the Voltage Dependent Anion Channel or VDAC – play also important roles in programmed cell death, steroidogenesis and can function as anchoring points to the mitochondria.
Already numerous proteins are reported to interact with VDAC but often these studies were indirect and/or showed contradictive result. In this work a more systematic approach was used to define the largest set of potential VDAC interacting proteins, this is the VDAC interactome.
A novel methodology was developed. It involved screening an expression library of cellular proteins for interaction with the membrane protein in its native form. A key aspect of this method is based on non-steady state kinetics. This methodology is generally applicable for any protein and could thus be used by other research groups and pharmaceutical companies.
With this methodology a large set of putative VDAC interacting partners was found. One of these proteins was cytochrome c oxidase, an enzyme of the respiratory chain complex, located in the inner membrane of the mitochondria. The binding between this protein and VDAC was never reported before and further analyses revealed that the interaction was also functional. Altogether these results support a novel contact site between the two mitochondrial membranes.
From all the remaining identified proteins the exact sequence of the epitopes – the portion actually interacting with the VDAC target – could be obtained. This is important information for drug design and could lead to more specific pharmaceuticals and therapies. This work also will contribute to the further understanding of mitochondrial physiology.

Curriculum Vitae

Inge Roman was born in 1976 in Ghent. She obtained her Bachelor of Physical therapy and motor rehabilitation at the `Universiteit Gent`. More interested in exact science, she changed direction and obtained her Master of Biochemistry in 1999. She completed her Master thesis entitled `Influence of the over-expression of Epstein-Barr virus Nuclear Antigen-1 (EBNA-1) on Epstein-Barr virus-vectors` in the laboratory of Prof. G. Haegeman, Ghent. Determined to pursue research, she became assistant at the `Vrije Universiteit Brussel` in the laboratory of Prof. Dr. Martin Zizi. There she worked on the mitochondrial membrane protein VDAC and searched for the interactome of the channel protein.
The methodology developed during her work is part of European and USA patent applications entitled: Method for screening and selecting ligands. Her work resulted in three publications in peer-reviewed journals with two more articles in preparation. She was invited to present her data in a platform session at the Biophysical Society Annual Meeting in Baltimore, and she obtained the First Place Organon Poster Prize at a conference in Edinburgh.
She also participated, as a graduate student, in the organisation of the University as a board member of `Vrije Universiteit Brussel`, a board member of the Faculty of Medicine and Pharmacy and a member of the Research Advisory Committee.