Center for NanoBiotechnology
Universität für Bodenkultur Wien
University of Natural Resources and Applied Life Sciences, Vienna

Open PhD Position

in the course of the FWF research project

" Unravelling S-layer nanoglycobiology of the periodontal pathogen *Tannerella forsythia* – A novel opportunity for drug development "

Short summary of project:

Tannerella forsythia (Tf) is a Gram-negative, filamentous oral anaerobe that has been identified as a crucial periodontal pathogen. Periodontitis is one of the most common inflammatory diseases amongst the adult population, and, in its chronic form, it is the principal cause of tooth loss. Consequently, there is a great biomedical interest in understanding the bacteria-host cross-talk that forms the basis of health, disease, and healing. To determine microbial pathogenesis of *Tf* infection, the virulence factors will have to be identified and characterized. Preliminary studies indicate that the outermost crystalline surface layer (S-layer) of *Tf* is a potential virulence factor. We want to investigate this aspect in the light of the recent finding that the S-layer of *Tf* is glycosylated. It is known that glycosylated surface molecules may play pivotal roles in mediation of bacterial diseases. Above that, biomedical research over the past years has shown that especially carbohydrates possess an enormous potential as lead structures for drug discovery.

Research goals include determination of the fine structure and composition of the *Tf* S-layer glycoprotein lattice, identification of the anchoring mechanism of the *Tf* S-layer to the cell wall, in-depth analysis of the S-layer glycoprotein(s) as well as of the biosynthetic machinery underlying S-layer glycosylation, and performance of cell culture studies on the contribution of S-layer glycosylation to the *Tf* virulence potential.

These studies may reveal novel pathogenic strategies in Gram-negative organisms, which, in the future, may constitute new targets for interfering with the pathogen's ability to establish infection in periodontal disease.

Requirements:

The candidate must hold a MSc degree and should have a sound background in microbiology, biochemistry and molecular biology. Practical experience in the field of glycobiology and in cell culture work is of advantage but not mandatory.
The highly motivated candidate should be an excellent team player with the ability to work independently in an interdisciplinary environment (see CNB homepage: http://www.nano.boku.ac.at/znb.html).

We offer:

Motivating scientific environment, cutting edge research in nanoglycobiology with a link to biomedical relevance, weekly seminars, participation in workshops and international conferences, funding opportunity according to the guidelines of FWF (http://www.fwf.ac.at/de/projects/einzelprojekte.html).

Time schedule:

Start: February 2008; duration: 3 years

Applicants:

Please e-mail your application with motivation, full CV and references along with contact addresses to:

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