



**DOCTORAL RESEARCH POSITION AT THE FACULTY OF BIOSCIENCE ENGINEERING,
GHENT UNIVERSITY**

Development of real-time and high-content microscopy methods for quantifying stress response under ageing-related pathological vs. normal conditions

Topic. Cells exposed to biophysical stress conditions exhibit a variety of intracellular alterations such as changes of ion concentrations, complexation and aggregation of proteins or morphological deformations. Ageing as well as many ageing-related diseases are characterized by a hypersensitive or malfunctioning stress response. In order to obtain a systems view of ageing-related cellular stress response, a systematic analysis of cells is required, which can be obtained by means of automated microscopic acquisition and image analysis; an approach referred to as high content cytometry (HC). Screening cell populations for their phenotypical response to perturbation (e.g. by candidate pharmaceuticals) is gaining importance in the medical field. However, most of the available HC applications are limited to screening fixed cells or living cells growing under steady-state conditions. Given the pivotal role of time in coordination of the stress response in living biological systems, it is of fundamental interest to study individual cells during (physical or chemical) perturbation, i.e. in fluxo. Hence, the aim of this project is to devise methods for studying (sub-) cellular dynamics under varying environmental conditions in real-time and on a large scale. To this end, an interdisciplinary mixture of techniques will be called upon, such as molecular biotechnology (development and use of genetically encoded marker proteins), microfluidics (lab-on-a-chip devices) and advanced light microscopy.

Tasks. The successful applicant will perform research in the context of the project outlined above. At the end of this 4 year doctoral research, a Ph.D. thesis must be written to obtain the degree of Doctor in Applied Biological Sciences.

Who can apply. The position is open to highly motivated candidates with a strong interest in interdisciplinary research at the border of several fields: cell biology, medicine and biophotonics. Eligible candidates must have a master degree (or equivalent) in pharmacy, biotechnology, bioscience engineering or (bio)physics.

When. The Ph.D. position is open from October 2010.

Further information. Contact Dr. Winnok De Vos (+32(0)9/264.59.71 - winnok.devos@UGent.be); Prof. Dr. Erik Manders (+31-(0)20-525 6225 - manders@uva.nl). Additional information about our research group can be found on our website: <http://molecularbiotechnology.ugent.be>.

Context. The PhD project will be carried out at the Bio-imaging and Cytometry Unit, department of Molecular Biotechnology. The Bio-imaging and Cytometry unit also hosts the Light Microscopy Division (LiMiD). This PhD project is part of the research lines set forth by the Centre for Nano- and Biophotonics and will be carried out in collaboration with the Biophotonic Imaging Group, Laboratory of General Biochemistry and Physical Pharmacy.