

PhD position in super-resolution fluorescence microscopy: *"Driving image quality to the max."*

Location: The Netherlands Cancer Institute, LCAM and University of Amsterdam
Function type: PhD student
Scientific fields: Biophysics, biochemistry, cell biology
Education: Master degree
Salary and working hours are conform the CAO ziekenhuizen and netto comparable to those of the other positions

"Nanoscopy: From sharp images to molecular interaction"

The STW-Perspectief programme: "Nanoscopy: From sharp images to molecular interaction" is a large national programme on the development of super-resolution microscopy or "nanoscopy" and its applications in biomedical sciences. In the last decade new technologies has been developed that enable achieving resolutions down to 10-50 nm (in contrast of the limited resolution (~250 nm) in classical microscopy). This is a spectacular development, however, the potential of nanoscopy is much higher; it will allow the direct observation of the molecular machines that make up the cell and enable extraction of functional data such as molecular interactions and dynamics. It is our ambition to lift existing nanoscopy techniques to a level than enables extraction of information on biomolecular action and interaction in intact cells.

To achieve this, we will tackle various aspects of experimental nanoscopy in seven projects, all with the same ultimate goal: adding nanoscopy integrally to the toolbox for biomedical research. We have assembled a strong, interdisciplinary and enthusiastic team of scientists from seven Dutch universities, each with broad experience in advanced microscopy. Seven companies are committed to this program and are enthusiastic to work together with this consortium towards our common goal. This collaboration between scientific and commercial partners will result in high impact scientific papers, new hardware, software, new fluorescent molecules and methodology. For this programme we search for 12 enthusiastic and talented PhD students and post-doctoral fellows who would like to contribute to the next step in advanced microscopy: "biomedical nanoscopy"

Research group

The van Leeuwenhoek Centre for Advanced Microscopy (LCAM) in Amsterdam is an expertise centre in the field of advanced light microscopy for biomedical and life-science applications. The centre is embedded in three research institutes in the Amsterdam area: the Academic Medical Centre and the Faculty of Science (FNWI) of the University of Amsterdam and the Netherlands Cancer Institute in Amsterdam. The LCAM is an expertise centre that hosts researchers from the Amsterdam area, but also from the rest of the Netherlands and abroad, and helps them with professional expertise and advanced microscopy equipment. LCAM organized international microscopy courses and, as a third goal, focuses on the development of new technology and methods in the field of advanced light microscopy and their applications in biomedical research.

The Netherlands Cancer Institute-Antoni van Leeuwenhoek Hospital (NKI-AVL) is the only dedicated cancer center in The Netherlands and fulfills an important role as a national and international center of scientific and clinical expertise, development and training. The **Cell Biophysics group** headed by Dr Kees Jalink (<http://www.nki.nl/Research/Faculty+and+Research/Divisions/Cell+Biology+I/Jalink.htm>) is in the department of Cell Biology. Our group develops and applies advanced imaging techniques to elucidate fundamental cell biological mechanisms, including cell adhesion, migration and invasion. Reflecting the multi-disciplinary nature of this project, guidance is provided jointly by prof Manders and dr Jalink, and frequent stays at the nearby Manders lab will be part of this project. The group of prof Erik Manders, housed at the **Faculty of Science of the University of Amsterdam**, focuses on the development of new technology to strongly reduce phototoxicity during live-cell imaging which allows unbiased observation of the dynamic architecture of living cells. <http://www.science.uva.nl/research/mc/>

Job description

In the context of this project, a state-of-the-art Leica super resolution (SR-GSD) setup will be placed in the LCAM-Jalink lab. Two PhD students will work together closely to optimize and test various aspects of sample preparation, mounting and image acquisition and analysis.

"Driving image quality to the max." One student, with an interest in biophysics and image analysis, is to optimize and test all aspects of image acquisition on the SR-GSD. This includes implementation and optimization of innovative labeling strategies, and development of hardware necessary for that. In collaboration with industrial partners, we will seek to achieve exceptional stability of instrument and preparation. Image analysis will include development of algorithms for correction of e.g. chromatic aberrations in multi-color datasets.

Requirements

The candidate will need a keen interest in biophysics, optics and instrumentation. Familiarity with computer programming and image analysis are a pre. The candidates must have an interest in microscopy and in cell biology. Analytical skills, good command of written and spoken English and the ability to work in a team as well as independently are also essential.

Conditions of employment

The full-time appointment will be on a temporary basis for a maximum period of four years (18 months plus a further 30 months after a positive evaluation) and should lead to a dissertation (PhD thesis). An educational plan will be drafted that includes attendance of courses and (international) meetings. The PhD student is also expected to assist in teaching of undergraduates. Salary and working hours are conform the CAO ziekenhuizen. Netto, these are comparable to those of the other positions.

Application and Information

more information about this position, please contact Dr. Kees Jalink, phone: +31-20-512 1933, e-mail: k.jalink@nki.nl or Prof. Dr. Erik Manders, phone +31-20-5256225 e-mail manders@uva.nl

The closing date for this application is **September 7, 2011**.