

PhD: Self-organization in a minimal experimental system for cell polarity

Engels -- Faculty/department Applied Sciences

Level Master degree

Maximum employment 38 hours per week (1 FTE)

Duration of contract 4 years

Salary scale €2062 to €2638

Applied Sciences

The Faculty of Applied Sciences is the largest faculty of TU Delft, with around 550 scientists, a support staff of 250 and 1,800 students. The faculty conducts fundamental, application-oriented research and offers scientific education at the bachelor, master and doctoral levels. The faculty is active in the fields of Life and Health Science & Technology, Nanoscience, Chemical Engineering, Radiation Science & Technology, and Applied Physics.

A new Department of Bionanoscience has been established at TU Delft, dedicated to research at the interface between nanoscience, synthetic biology, and cell biology. It studies single cells in all their complexity down to the molecular level, from both fundamental scientific and application points of view. The new department operates as part of the Kavli Institute of Nanoscience at the Faculty of Applied Sciences and aims at a leading international position.

Job description

How cells establish polarity is one of the big open questions in cell biology, and a model for self-organization of protein networks. Most (quantitative cell biological studies) agree about the proteins involved, however they strongly disagree about how the interactions between these proteins lead to polarity establishment. As part of a small team you will work with a minimal in vitro system for polarity establishment, which consists of the minimal set of proteins which reconstitute localisation and activation of a polarity protein (Cdc42) to a single site on an internal membrane of an artificial compartment (a liposome). With this systems, combined with quantitative fluorescence microscopy you will (1) achieve a mechanistic understanding of the role of different key components for polarization, (2) characterize if, and if so how, the interactions of those components lead to the formation of a single site of activated Cdc42 on an artificial liposome membrane, (3) combine your mechanistic insights from in vitro experiments with mathematical modelling to describe polarity establishment in vivo.

Requirements

We are looking for an experimentalist who is eager to combine biophysics with microscopy and data analysis and has a keen interest in biological questions. We are a highly collaborative research group that likes to work on challenging and ambitious problems, that typically combine experiments with computational work. We expect the candidate to have an independent and well-organized work style, to be communicative, and to contribute to our open, interactive, and social lab culture. Applicants are invited to submit an email including cover letter, CV with publication list, and names/email addresses of 3 or more references, to Liedewij Laan (l.laan@tudelft.nl).

www.tudelft.nl/laanlab

Conditions of employment

TU Delft offers an attractive benefits package, including a flexible work week, free high-speed Internet access from home (with a contract of two years or longer), and the option of assembling a customised compensation and benefits package. Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities. Delft University of Technology strives to increase the number of women in higher academic positions; women are therefore especially encouraged to apply.

As a PhD candidate you will be enrolled in the TU Delft Graduate School. TU Delft Graduate School provides an inspiring research environment; an excellent team of supervisors, academic staff and a mentor; and a Doctoral Education Programme aimed at developing your transferable, discipline-related and research skills. Please visit www.phd.tudelft.nl for more information.

Information and application

For more information about this position, please contact Dr. ir. Liedewij Laan, phone: +31 (0)15-2782856 , e-mail: l.laan@tudelft.nl. To apply, please e-mail a detailed CV, a letter of application and references by August 12th.