

PhD position: “Modeling and design of transport through the Nuclear Pore Complex”, University of Groningen, The Netherlands.

Description: The nuclear pore complex (NPC) is a large protein complex that is embedded in the membrane surrounding the nucleus and transports hundreds of proteins and nucleic acids per second. Despite its important biological role, the mechanism of selective transport of the NPC is not yet understood. In a collaborative program of the Zernike Institute for Advanced Materials at the University of Groningen we aim at a better description of the mechanism of transport by combining experimental and modelling approaches.

In this PhD project a multiscale computational method will be developed to gain insight into the fundamental mechanisms of selective transport. The goal of the modeling is two-fold, (i) to explore the validity of existing theories, and (ii) to design artificial pores that have specific transport features. Both aspects will be carried out in close collaboration with the Molecular Dynamics group and with the experimental groups in the project, in order to build, calibrate and verify the model, and to guide experiments.

Requirements: Candidates should hold an MSc in (applied) physics, biophysics, materials science, mechanical engineering, or related. In any case, the candidate should have a strong background in computational modelling. Experience in finite element methods is not required but will be beneficial.

Conditions: The position comes with full funding for four years (subject to satisfactory progress) amounting to approximately 1550 euro (net income) per month.

Applications: For further information and applications contact Prof.dr.ir. Patrick Onck (p.r.onck@rug.nl) or Prof.dr.ir. Erik van der Giessen. See also <http://micromechanics.phys.rug.nl/>

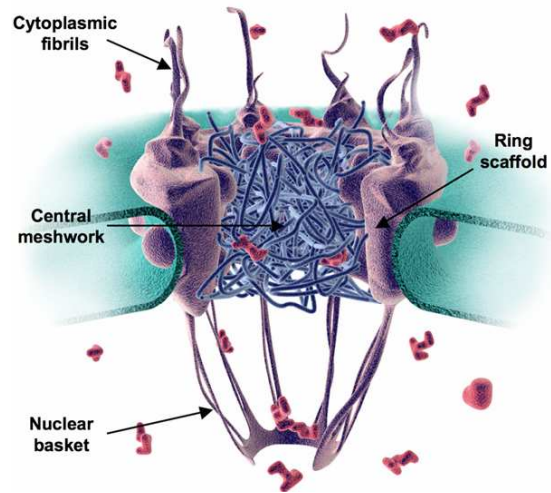


Figure 1. Schematic of the central region of the nuclear pore complex consisting of a low-density cloud of natively unfolded FG-nups (Patel et al. (2007) Cell 129, 83-96).