

# PhD-student in Astrocyte Biology

A PhD student position is available in the research group of Dr. Elly Hol 'Astrocyte Biology & Neurodegeneration' at the Netherlands Institute for Neuroscience (NIN) in Amsterdam.

The [NIN](#) carries out fundamental neuroscience research with special emphasis on the brain and the visual system. The research focuses on development, plasticity and ageing and it is linked to clinical research questions.

## Description of the project:

The [main aim of the Hol lab](#) is to understand the molecular and functional changes in reactive astrocytes and to study the regenerative potential of the astrocytic stem cells in neurodegeneration.

The goal of the current project is to determine the ***molecular and cellular responses of astrocytes and neural stem cells to mechanical force***. Many cellular reactions are controlled or mediated by mechanical forces. Cells probe the mechanical properties of their environment and subsequently transduce this information accurately into a specific molecular response: mechanical cues can determine the fate of stem cells, modulate the function of entire tissues and play a key role in various pathologies. Cells also alter their motility and metabolic functions depending on the mechanics of their surroundings.

The main question is how modulation of the intermediate filament cytoskeleton affects neural cell stiffness and force-transduction. The main objectives of this project are to (i) develop an optimal 2D substrate and 3D matrix that enable neural cells to adhere while also allowing biomechanical interventions; (ii) elucidate molecular pathways that are regulated by a 2D-mechanical force and/or the stiffness of a 3D-matrix, and (iii) determine how modulation of the intermediate filament cytoskeleton affects cell stiffness and force-transduction.

The study is performed in a multidisciplinary team within a larger scientific program: see [www.mechanobiology.nl](http://www.mechanobiology.nl).

## Requirements:

We are looking for an excellent and highly motivated candidate with an MSc degree in cell biology with an interest in physics or an MSc degree in physics with a solid background in cell biology. The ideal candidate has excellent communication and social skills and a strong affinity to neural stem cell biology and glia biology. Profound knowledge and practical skills in standard cellular and molecular laboratory techniques, such as cell culture, PCR, cloning, immunohistochemistry, in situ hybridization and (confocal) microscopy are required, experience with live cell imaging, microarray techniques or deep sequencing is preferred. The candidate will be required to operate within the multi-disciplinary mechanobiology consortium and actively participate and foster collaborations.

## Appointment:

This position involves a full-time (38 hrs/week) temporary appointment for 4 years

**To apply**, please send your application letter, CV and two letters of recommendation before 1 April 2010 to Dr. Elly Hol, NIN, Meibergdreef 47, 1105 BA Amsterdam; e-mail: [e.hol@nin.knaw.nl](mailto:e.hol@nin.knaw.nl).