

Postdocs Innovative Microscopy to probe the Biophysics of DNA replication

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Developing and building a microscope and using it in single-molecule studies of DNA replication. This could be your next challenge!

Job description

We are looking to hire two outstanding experimentalists for this exciting NWO-funded collaborative project at the interface of innovative microscopy and biophysics that has as its goals to develop and build a novel microscope and to use it in single-molecule studies of DNA replication.

What are you going to do?

In this fully-funded 3-year project, you and your team member will:

- be embedded in a communicative interdisciplinary team that is formed by a collaboration between two research groups at TU Delft;
- build on our experience with optical design and single-molecule instrumentation to design and build a novel microscope combining imaging and force spectroscopy (magnetic tweezers);
- develop/apply simulations and data analysis routines to predict and verify instrument functionality;
- acquire skills in protein purification and sample preparation for single-molecule biophysics studies;
- develop an interdisciplinary skillset by using the novel microscope and the prepared proteins to study DNA replication;
- have the opportunity to obtain teaching experience and improve your leadership skills while guiding students.

About the project

Advances in biological understanding come through a combination of novel physical and biological techniques. Here, you will take on the exciting challenge of developing novel high-throughput biophysical instrumentation and using it to study the dynamics of DNA replication. One of the positions will be more focused on the building and testing of instrumentation, whilst the other will be more focused on biological sample preparation (e.g., protein purification) and experimentation to study the activity of eukaryotic replisome at the single-molecule level, but overall, you will work together as a team. Together, you will test the novel instrumentation, verify samples using biochemical and biophysical technologies, interact with collaborators abroad, analyze datasets using

biophysical modeling, and publish high-quality scientific papers to advance this exciting field.

Requirements

For this innovative, interdisciplinary, and NWO-funded 3-year project, we are looking for two enthusiastic postdocs, with:

- a completed Ph.D. degree in (bio)physics, quantitative microscopy, interdisciplinary nanosciences, biochemistry, or related areas;
- practical experience in the above areas and single-molecule experiments and analysis are desired;
- a strong motivation to develop either a quantitative microscopy skillset (optics and microscopy, advanced data analysis and pattern recognition) or a biochemistry/biophysics skillset (protein biochemistry and protein biophysics, single-molecule kinetics), and interest in interdisciplinary research;
- an independent, well-organized, and reliable work style together with an ability and interest in working in a small team;
- good interpersonal communication skills and a strong interest in the broader field of biophysics, thereby contributing to our interactive lab culture.

We look for friendly and driven colleagues of all kinds to enrich our team. We would like to welcome the new postdocs as soon as possible in 2023.

Conditions of employment

Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities (salary indication: € 3.703 - € 4.670 per month gross). The TU Delft offers a customisable compensation package, a discount on health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged.

For international applicants we offer the [Coming to Delft Service and Partner Career Advice](#) to assist you with your relocation. An International Children's Centre offers childcare and there is an international primary school.

TU Delft (Delft University of Technology)

Delft University of Technology is built on strong foundations. As creators of the world-famous Dutch waterworks and pioneers in biotech, TU Delft is a top international university combining science, engineering and design. It delivers world class results in education, research and innovation to address challenges in the areas of energy, climate, mobility, health and digital society. For generations, our engineers have proven to be entrepreneurial problem-solvers, both in business and in a social context.

At TU Delft we embrace diversity as one of our core [values](#) and we actively [engage](#) to be a university where you feel at home and can flourish. We value different perspectives and qualities. We believe this makes our work more innovative, the TU Delft community more vibrant and the world more just. Together, we imagine, invent and create solutions

using technology to have a positive impact on a global scale. That is why we invite you to apply. Your application will receive fair consideration.

Challenge. Change. Impact!

Faculty Mechanical, Maritime and Materials Engineering

The Faculty of 3mE carries out pioneering research, leading to new fundamental insights and challenging applications in the field of mechanical engineering. From large-scale energy storage, medical instruments, control technology and robotics to smart materials, nanoscale structures and autonomous ships. The foundations and results of this research are reflected in outstanding, contemporary education, inspiring students and PhD candidates to become socially engaged and responsible engineers and scientists. The faculty of 3mE is a dynamic and innovative faculty with an international scope and high-tech lab facilities. Research and education focus on the design, manufacture, application and modification of products, materials, processes and mechanical devices, contributing to the development and growth of a sustainable society, as well as prosperity and welfare.

Click [here](#) to go to the website of the Faculty of Mechanical, Maritime and Materials Engineering. Do you want to experience working at our faculty? These [videos](#) will introduce you to some of our researchers and their work.

Additional information

For more information about this vacancy, please contact Dr. Carlas Smith, phone: +31 (0)15-278 2411, e-mail: C.S.Smith@tudelft.nl; or Prof. Nynke Dekker, phone: +31 (0)15-278 3219, e-mail: N.H.Dekker@tudelft.nl.

Who are we?

[The Carlas Smith Lab](#), internationally recognized for the development of next-generation imaging systems, is located within the Department of Delft Center for Systems and Control (DCSC) at the TU Delft. The lab develops next-generation imaging systems by synergistically combining novel hardware and information processing algorithms to achieve unprecedented performance. Here at the convergence of artificial intelligence, optics, mechatronics, and electronics, our diverse and interdisciplinary team at DCSC comprises passionate students and postdocs who strive to transcend the boundaries of imaging and actuation technologies by making the invisible visible.

[The Nynke Dekker Lab](#) is a highly successful single-molecule biophysics research lab within the Department of Bionanoscience at the TU Delft. The lab focuses its studies on understanding DNA and RNA replication from a quantitative perspective both in vitro and in vivo. The lab employs state-of-the-art biophysical techniques (e.g. advanced single-molecule fluorescence, optical and magnetic tweezers) together with in-house molecular biology and biochemistry. Studying the dynamics of DNA and RNA replication at the single-molecule level requires broad and integrated expertise; as such, we employ outstanding international scientists trained in biophysics, biochemistry, and cell

biology who work together enthusiastically as a multidisciplinary team. You will be part of this group and will interact actively with current members.

Application procedure

Are you interested in this vacancy? Please apply via the application button and upload:

- a motivated cover letter of application.
- a detailed CV;
- names and contact information of 3 references.

Applications will be evaluated on a first-come, first-served basis, with the final deadline for applications being 28 February 2023.

For information about the application procedure, please contact Irina Bruckner, HR Advisor, application-3me@tudelft.nl.

Please note:

- A pre-employment screening can be part of the selection procedure.
- You can apply online. We will not process applications sent by email and/or post.
- Acquisition in response to this vacancy is not appreciated.

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