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New appointments, grants, prizes, and other news.

- Greg Stephens (VU) is elected a Fellow of the American Physical Society. It is a prestigious recognition by their peers of the outstanding contributions he has made to physics.
- Tineke Lenstra (NKI) is one of the 24 newest members of the EMBO Young Investigator Programme¹.
- Aurélie Carlier (UM) is elected as chair of the Dutch Society of Biomaterials and Tissue Engineering.
- Marthe Walvoort (RUG) has received an ERC Starting Grant for her project 'Sweet adhesins: Probing bacterial glycoproteins with novel tools to inspire future antibacterial strategies'.
- The Semrau lab (LEI) has moved to NYSCF, the New York Stem Cell Foundation, They are looking for collaborations with many excellent colleagues and there is an open Postdoc position available. [link](#)

Vacancies

- Vacancy in the lab of Rifka Vlijm at the RUG for a PhD position on high-throughput STED super-resolution microscopy of dividing cells [link](#).
- Vacancies in the labs of Wouter Roos and Rifka Vlijm at the RUG for two PhD positions in molecular biophysics of coronaviruses, using high speed atomic force microscopy (HS-AFM) (Roos lab), or stimulated emission depletion (STED) microscopy (Vlijm lab) [link](#) or send an email [Wouter Roos](#) or [Rifka Vlijm](#).
- Vacancy at the molecular biophysics group of the RUG for a research technician or technical physicist (hbo/BSc or MSc) [link](#)
- Multiple Postdoc and PhD positions on cell division in the Gijssje Koenderink and Cees Dekker labs, [BaSyC](#) initiative. [link](#)
- Postdoc position on In super-resolution imaging of membrane receptors biomarkers in the Lorenzo Albertazzi lab, TU/e. [link](#)
- PhD positions on structural biology of the neuronal synapse in the Dimphna Meijer lab, TUD
- PhD positions on biophysics in the Chirmin Joo lab, TUD. [link](#)
- A 2-year Postdoctoral Researcher position on 3D nanoscopy to study physical principles of DNA repair is available in a collaborative project between the Grubmayer Lab (TUD) and the Kanaar lab (EMC).
- Several PhD and Postdoc positions available in the Dulin Lab (VU) to work at the interface of physics and biology using both experimental approaches. [link](#)
- PhD positions available on replication stress, cell fate decisions and cancer in the Replifate consortium. [link](#)

¹ <https://www.embo.org/press-releases/embo-welcomes-24-young-investigators/>

Events, meetings, and workshops

What	When	Where	More information
Community Meeting Chemistry of Life	8 December 2022	NWO Utrecht	https://www.nwo.nl/en/chemistry-life-day-ResearchCommunity-CL@nwo.nl
2023 Annual Biophysical Society Meeting	18 – 22 February 2023	San Diego	https://www.biophysics.org/2023meeting#/
workshop on "Engineering Life"	13 - 24 March 2023	Technical University of Munich	https://www.munich-iapbp.de/engineering-life
Organoid Meeting	31 March 2023	AMOLF, Amsterdam	
NWO Physics 2023	4 and 5 April 2023	Veldhoven	https://www.nwo.nl/en/meetings/physics-veldhoven
Symposium on structural proteomics	24 and 25 April 2023	Gasthuis Leeuwenbergh, Utrecht	https://ssp2022.com/
EMBL Conference Chromatin and epigenetics	15 - 18 May 2023	EMBL Heidelberg and Virtual	https://www.embl.org/about/info/course-and-conference-office/events/chr23-01/
NWO Biophysics	9 and 10 October 2023	Veldhoven	https://www.nwobiophysics.nl/

New colleagues

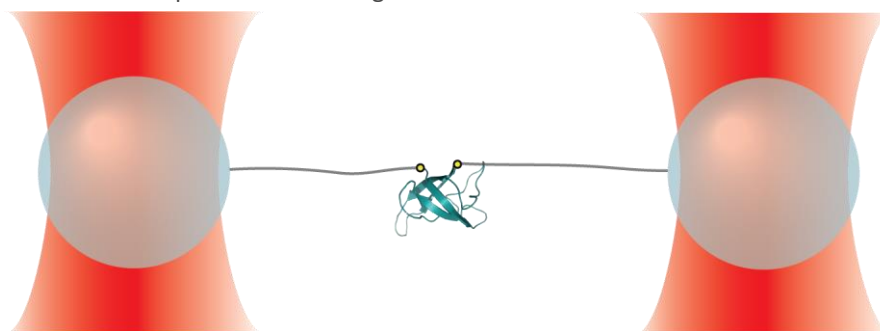
Kasia Tych (RUG)

I'm happy to have this opportunity to introduce myself to the Dutch Biophysics community! Since I started my lab during the pandemic, I have not had as many opportunities to meet my fellow Dutch biophysicists as I would have liked, so here I am. A bit of information about me, before I launch into the science: I was born in Poland, grew up, studied and did my first postdoc in the United Kingdom before moving to Germany with a HFSP cross-disciplinary fellowship, finally moving to the Netherlands to start a Rosalind Franklin Fellowship and Assistant Professorship at the University of Groningen, enabling me to fulfil my dream of starting my own independent research group.

The focus of the KT lab is the characterisation of functionally-relevant kinetics of biological macromolecules using single-molecule techniques.



We use both the optical tweezers and mass photometry to obtain information about how proteins move and interact and therefore learn about how they function. While structural biology provides us with spectacular snapshots of protein structures and protein complexes, they don't tell us much about the timescales of the motions that they undergo as part of their function or about the molecular-level details of transient interactions. In short – my team and I torture proteins for a living.



In addition to this, we are very interested in method development to enable us to measure and characterise membrane proteins in action in real-time, which provides us with a great and very exciting technical challenge.

I'm also active in supporting women in science and in promoting biophysics. You can follow our lab on twitter @BiophysK

Daan Vorselen (WUR)

I'm fascinated by complex dynamic cellular behavior and especially regulation thereof by mechanical cues. In my lab, I specifically aim to reveal how immune cells use physical forces to recognize and kill their prey. To do so, we develop new tools to measure cellular forces and modulate the physical surroundings of cells, in combination with cellular perturbations and quantitative microscopy.

I come from a background in molecular biophysics: during my PhD, with profs. Gijs Wuite and Wouter Roos, I used atomic force microscopy to determine the physical properties of synthetic and biological nanoscale vesicles.

I switched to cellular biophysics when I started my postdoc in the lab of Prof. Julie Theriot. At that time, I was intrigued by the observation that phagocytosis, the uptake of large particles by (immune) cells, was dependent on the stiffness of the prey. This seemed unusually interesting for two reasons. Firstly, the molecular mechanisms by which macrophages sense target stiffness are completely unknown, and hence, it has the potential to reveal fundamental new mechanobiology. Secondly, revealing this mechanism has clear clinical relevance. For example, cancer cells are reported to be softer than healthy tissue cells, raising the possibility that cancer cells exploit their softness to avoid immune recognition. I developed a technology in which we use deformable hydrogel beads with which we can measure force exertion patterns throughout the cell-target interface during phagocytosis. This tool revealed unexpected aspects of phagocytosis, and can be broadly applied for studying force exertion in a variety of cellular processes.



Now, in Wageningen, I focus on revealing the molecular mechanisms of rigidity sensing by macrophages, and on bringing cellular force measurements to the native cellular environment using zebrafish model systems. Moreover, being in an immunology department will give me the opportunity to expand our investigations on mechanical regulation to a variety of different immune cell types & processes.

Ambassador of the Biophysical Society

Introducing our Dutch representative of the Biophysical Society: Kasia Tych



Ambassadors will serve as the Society's main point of contact in their country or region, develop content (blog posts, newsletter articles) about scientific or political developments in their areas for membership, and represent and promote the Society at area meetings and events. Ambassadors should expect to be advocates for biophysics and seek, whenever possible, opportunities to advocate for and promote our field to local scientists and policymakers.

"I have been an informal mentor to a number of peers and people who are at earlier career stages within STEM subject areas, in particular in biophysics. I believe that through peer groups and mentoring, people gain confidence and learn from the experiences of others, which is an important factor in reducing the isolation and stress that is commonly associated with academic jobs. This, in turn, may reduce the leakiness of the so-called 'leaky pipeline', through which many women and under-represented minorities drop out from pursuing careers in biophysics and STEM in general.

Being a BPS ambassador provides me with an excellent platform for raising awareness of how we can make biophysics more diverse and inclusive. The BPS network has connected me to like-minded individuals who share this goal, and enables me to share my ideas and to bring initiatives that have been successful in other parts of the world to the Netherlands. As an experienced blogger and writer, I have a well-established social media following for the promotion of biophysics and I make good use of this for further science advocacy as a BPS ambassador."

NWO Biophysics

The Advisory Committee Physics of Life enjoyed hosting you during the group leader meeting at NWO Biophysics 2022. In 2023, we will again organize a group leader meeting. The NWO Biophysics programme committee has been renewed and the people stated below are partaking in this committee for 2023. On behalf of NWO Marjolein Bulk is the project leader. Suggestions and ideas can be shared with the programme committee and/or with biophysics@nwo.nl. More information: www.nwobiophysics.nl



Name	Affiliation	
Rifka Vlijm (chair)	RUG	Representative Advisory Committee Physics of Life
Marianne Bauer	TUD	
Alessandra Cambi	RUMC	Representative DSCB + representative Advisory Committee Physics of Life
David Dulin	VU	
Ben Giepmans	UMCG	Representative NVvM
Louise Jawerth	LEI	
Tim Marcus	VUMC	Representative BioPM
Markus Weingarth	UU	
Pieter Rein ten Wolde	AMOLF	

Granted projects NWO

OC-XS²

Designing Immunological Assays with Colourful Liquid Crystal Droplets

Dr. S.R. (Siddharth) Deshpande (Wageningen University & Research)

While liquid crystals are used extensively for displays, their fast and clear optical responses make them excellent candidates as biosensors for detecting toxins and diseases. This upcoming research has started looking into the ability of liquid crystals to sense different types of biomolecules, but detecting specific biomarkers remains a challenge. In this project, we will use chiral liquid crystals, materials that exhibit environment-dependent colour response, and microfluidics to design microscopic biosensor droplets. By harnessing their sensitivity to antigen-antibody interactions, reflected in the colour changes in the visible range, we aim to detect disease-causing agents in a novel manner.

Stiffness of cancer tissue impacts efficacy of immune therapies: 3D-printing meets T-cells

Dr. M. (Mahdiyeh) Nouri Goushki (Delft university of technology)

T-cell therapy, which deals with engineering immune (T-)cells to attack cancer cells, has shown great promises in treating blood cancers. T-cell therapy, however, has only been modestly successful for treating solid-tumors originating from either soft (e.g., breast) or hard (e.g., bone) tissues. This is because the mechanical properties of cancer tissues affect T-cells' numbers and function, which is generally neglected in contemporary research regarding T-cell therapy. Here, I will engineer 3D-printed (micro)scaffolds with relevant mechanical and morphological properties as patient breast or bone tissues and address how such properties exactly affect T-cell proliferation and responses.

Dead or alive – investigating the possibility that hallmarks of disease arise after death

Dr. T. (Tessa) Sinnige (Utrecht University)

Diseases such as Alzheimer's and Parkinson's are characterised by the presence of dense protein deposits in the brain. Efforts to develop cures based on preventing or reversing protein deposition have failed thus far. In humans, protein deposits can only be studied upon brain dissection after the patient's death. The researchers will use the transparent worm *C. elegans* as an animal model to visualise protein deposition over time in live animals. They will investigate whether protein deposits might form shortly after the time of death. This would greatly change our understanding of the disease mechanisms and the approach towards treatment.

Shining light on growth and survival decisions in bacteria

Dr. J.H. (Johan) van Heerden (Free University Amsterdam)

Strikingly, a single molecule, named ppGpp, orchestrates decisions on growth and survival across bacterial species. Deciphering how this molecule encodes information in real-time and in living cells is currently impossible. Here we develop a biosensor based on fluorescence for direct measurements of this molecule in living bacteria. This sensor will allow us to "see" how ppGpp steers growth and survival decisions in individual cells. Importantly, it will make possible novel avenues to study the survival strategies of bacteria when confronted with growth-inhibiting challenges, such as antibiotics.

² <https://www.nwo.nl/en/news/twenty-six-groundbreaking-research-projects-awarded-open-competition-domain-science-xs>

OC-M³

Viral or not viral, that is the question

Dr. David Dulin (VU)

The cells of our body are equipped with a defensive arsenal against microbial infection. Part of this arsenal is the detection and signalling of double-stranded RNA (dsRNA), a hallmark of RNA virus infection, to induce the production of small antiviral molecules. A protein called MDA5 has a key role here: it specifically detects and binds to dsRNA to signal to the cell the infection. This proposal will use cutting edge biophysics technologies to reveal the mechanism by which MDA5 interrogates RNA to protect us against viral infection.

The Great Escape of tuberculosis

Dr. Nicole van der Wel & Dr. Coen Kuijl (AUMC/AUMC)

Tuberculosis is the deadliest bacterial infectious diseases worldwide. The bacterium infects exactly those immune cells that try to eliminate it. Crucial for a successful infection is the escape from the degradative compartment in these immune cells. Here researchers will develop a new method (MyCo-TrAP), to coat tuberculosis bacteria with the proteins that help the bacterium to escape. Thereby, they will better understand the mechanism of immune recognition and escape of tuberculosis. Once successful, the method has the potential to aid in the development of vaccine strategies for TBC but also bladder cancer and viral infections.

Novel microscopy to catch molecular motors on the move

Dr. ir. Carlas Smith & prof. dr. Nynke Dekker (TUD/TUD)

We will design and build a novel high-throughput single-molecule instrument that enables insight into the composition and dynamics of molecular motors on DNA molecules at high spatiotemporal resolution. The instrument design benefits results from a synergetic combination between novel hardware and information processing tools specifically tailored to maintain simplicity and effectivity. We will employ the instrument to obtain novel insights into how the composition and motion of our DNA copying machinery are orchestrated in space and time. Multiple other applications of the instrument can also be foreseen.

Do you have a news flash or research highlight interesting for the Dutch PoL community?

Contact: Dr. Naomi Chrispijn, secretary of the advisory committee for the Physics of Life research community
+31 (0)70 349 4063, ResearchCommunity-PoL@nwo.nl

³ <https://www.nwo.nl/en/news/twenty-two-innovative-research-projects-launched-through-open-competition-domain-science-m-programme>