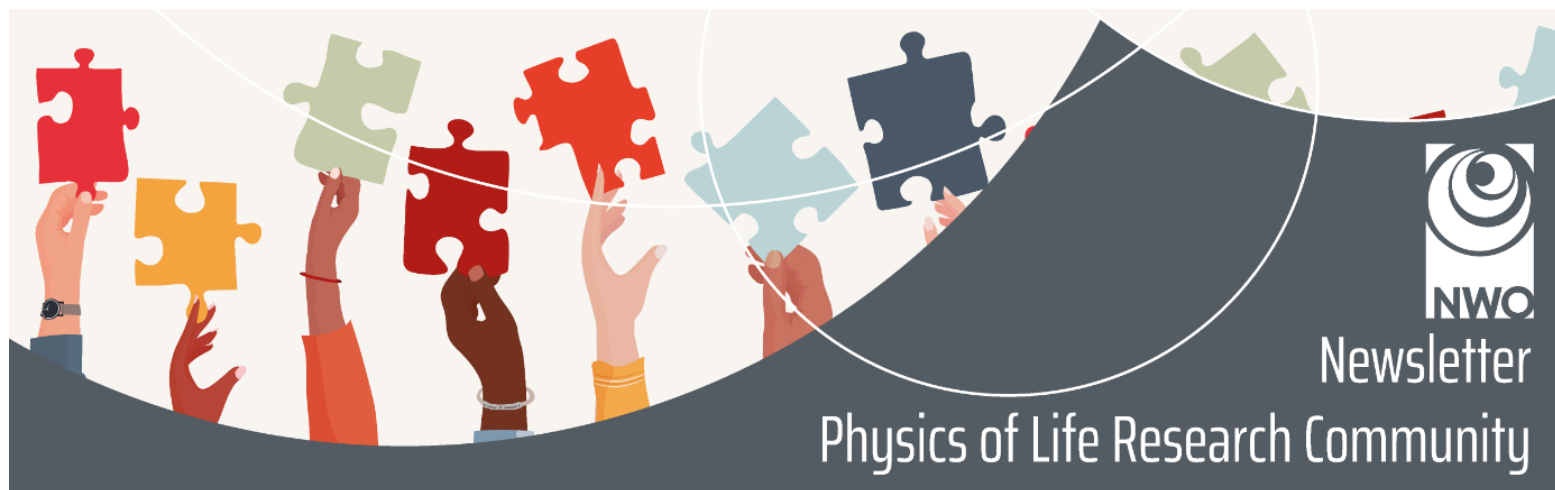




Newsletter [Physics of Life Research Community](#)

3 March 2023

Please find below the latest newsletter of the [NWO Physics of Life Research Community](#). It contains information about new colleagues in the field, the advisory committee, relevant meetings, calls, and it lists granted projects related to our field. Are you a new member and do you want to introduce yourself or one of your colleagues in the upcoming newsletter or want to share your vacancies with the field? Submit your contribution by sending an email to ResearchCommunity-PoL@nwo.nl. If you have any suggestions to strengthen the community you can always contact us. Do you have a news flash or research highlight interesting for the Dutch PoL community that you would like to add to the PoL newsletter? Send us [an email](#).

Best regards,
on behalf of the PoL advisory committee*,
Greg Stephens (VU) and Naomi Chrispijn (NWO, Dutch Research Council)

* [NWO Advisory committee Physics of Life](#):



Alessandra Cambi	RUMC
Greg Stephens (chair)	VU
Kristina Ganzinger	AMOLF
Lukas Kapitein	UU
Mattijs de Groot	LUMICKS
Nicholas Kurniawan	TU/e
Peter Peters	MU
Rifka Vlijm	RUG
Sonja Schmid	WUR

Browse through our Physics of Life open registry and make sure you are included



Are you curious whom make up the Dutch Physics of Life Research Community? Browse through our new and open registry [here](#). You can search for specific key words and you might come across future collaborators. To be included in this registry, please fill in your data [here](#). To be as inclusive as possible and to enhance the visibility of the Dutch Physics of Life Research Community we need your contribution.

New appointments, grants, prizes, and other news

- The Physica Prize 2023 has been awarded to [Nynke Dekker](#), professor single molecule nanoscale biophysics at the Kavli Institute of Nanoscience at Delft University of Technology. She has invented and developed innovative physical methods within molecular biology, which she applies to current and relevant issues in biology and medicine. Her research takes place at the interfaces of physics, chemistry and biology. [Read more >](#)
- [Kristina Ganzinger](#) (physics of cellular interactions, AMOLF) has been appointed as a new member of the The Young Academy. During their five-year membership, members will champion projects focusing on science policy, interdisciplinarity, internationalisation, and the relationship between science and society. [Read more >](#)

- NWO launches call on early detection of osteoarthritis by KIC and Dutch Arthritis Society. [Read more >](#)
- Do you want to organise a workshop (mono- or multidisciplinary)? Lorentz Center workshops are meetings where researchers meet to discuss and work together on scientific developments, ideas and plans in an open and interactive atmosphere. Submit your proposal by 30 May 2023 and apply for in-kind support and a refund budget. [Read more >](#)
- Are you interested in using [MOSBRI](#), [Instruct-ERIC](#) and/or [iNEXT-Discovery](#) for your research? Apply for individual or integrated access to the three infrastructures. Applicants must submit a short research proposal selecting sample preparation, biophysics or structural biology services from the online catalogue of the three infrastructures, each proposal including one or more services from any of the catalogues. MOSBRI provides free of charge trans-national access to researchers from academia and industry to molecular-scale biophysics instrumentation and expertise, aimed at studying biological systems at an intermediate level between atomic-resolution structural descriptions and cellular-scale observations, at 13 top class European biophysical laboratories across Europe. Deadline 30 March. [Read more >](#)
- NWO and The Young Academy (DJA) have joined forces to investigate the challenges researchers face in setting up and conducting inter- and transdisciplinary projects. To this end, we would like to invite you to share your experiences by filling out a questionnaire. [Read more >](#)
- Are you doing research in the prevention of new zoonotic pathogen outbreaks and pandemic preparedness as it impacts human health? Submit your research application for funding to Cooperation Indonesia-The Netherlands: Resilient healthcare systems for pathogen outbreak preparedness. [Read more >](#)

New colleagues

Every newsletter new colleagues in the field of Physics of Life are invited to introduce themselves to the community. Do you want to introduce yourself? Contact us via [email](#).

Ioana Illie (UvA)

Current focus

In 2022, I joined the van 't Hoff Institute for Molecular Sciences at the University of Amsterdam as Assistant Professor. In my group, we combine the know-how and expertise in coarse-graining and method development with in-depth structural modeling and analysis to design novel bio-inspired materials with responsive and tunable properties to provide solutions to biomedical and technological problems.

In particular, we rely on rational design, multiscale simulations and machine learning to:

- Understand and control the aggregation mechanisms of polypeptides and their response to the biological environment;
- Design peptide-based therapeutics for neurodegenerative diseases;
- Develop smart drug delivery platforms that respond to environmental changes.



Scientific background

Early in my training as a physical engineer, I became intrigued by the role of theory in understanding fundamental biological processes. During my MSc in Computational Physics, I became fascinated by the power of computer simulations to study, understand and predict the behavior of biomolecular systems. This magic duo has driven me to join the group of Prof. Wim Briels and Prof. Wouter den Otter and dedicate my PhD research efforts to the design and development coarse-grained protein models and novel simulation algorithms to investigate protein aggregation (University of Twente, NL). Wanting to understand the microscopic origin of aggregate formation and the chemical properties of potential inhibitory agents, I took the biochemical route and switched focus towards higher resolution models during my postdoctoral experiences with Prof. Nico van der Vegt (Technical University Darmstadt, DE) and Prof. Amedeo Caflisch (University of Zurich, CH).

Other activities

I try to also put my MBA to good use in my role as Vicepresident of the Assistant Professor Network Netherlands (ap-net.nl), a national network and lobbying organization to empower Assistant Professors in the Netherlands. Through APNet, we provide a platform for UDs to voice their concerns on national and international decisions that impact them directly. Furthermore, we organize events to address common challenges of UDs and to inform on the recent developments in the Dutch scientific landscape.

Felix Hol (RUMC)

Hi! I am very happy to (re-)introduce myself to the Dutch biophysics community. As a biophysicist I am fascinated by the biology of populations and behavior of individuals: How do community-level phenomena emerge from the actions of individuals? How do species interactions shape behavior? I address such questions in the context of mosquito-borne diseases at the Radboud University Medical Center.



After a MSc. in 'Physics of life' at VU Amsterdam, I received a PhD in Biophysics (cum laude) from Delft University of Technology using microfabrication to study spatial aspects of bacterial cooperation, colonization, and competition working with Cees Dekker and Juan Keymer. After defending my PhD, I did a short postdoc joint between the labs of George Whitesides (Harvard University) and Cees Dekker (Delft) exploring the use of paper microfluidics in experiments and diagnostics. Next, I changed my focus to mosquitoes and moved to Stanford University to work with Manu Prakash on several problems related to mosquito ecology and viral evolution. As a Rubicon fellow and later as a BWF CASI fellow, I developed several tools to monitor mosquito populations in the field. In 2019, I moved to Paris as a Marie Curie fellow at Institut Pasteur collaborating with Louis Lambrechts, and a long-term fellow leading a research team at the Center for Research and Interdisciplinarity. After being recruited by the CNRS, I became a permanent researcher at Institut Pasteur where I studied the effects of virus infections on mosquito behavior.

Supported by a Hypatia fellowship and an NWO Vidi grant I joined the Radboud University Medical Center in the fall of 2022 to set up a vector biology research group. At RUMC we develop new technologies to study mosquito biology and leverage these tools to understand the internal and external drivers of mosquito behaviors that are relevant to pathogen transmission. As a fierce believer in the democratization of science, I am passionate about the development of affordable and open-source hard- and software.

Events, meetings, and workshops

What	When	Where
workshop on "Engineering Life"	13 - 24 March 2023	Technical University of Munich
Organoid Meeting	31 March 2023	AMOLF, Amsterdam
NWO Physics 2023	4 and 5 April 2023	Veldhoven
Symposium on structural proteomics	24 and 25 April 2023	Gasthuis Leeuwenbergh, Utrecht
DSCB "Cell migration"	12 May 2023	Trippenhuis, Amsterdam
EMBL Conference Chromatin and epigenetics	15 - 18 May 2023	EMBL Heidelberg and Virtual
NWO Life	23 - 24 May 2023	Egmond aan Zee
FYSICA 2023	26 May 2023	Aula Congrescentrum, Delft
22nd International European Light Microscopy Initiative Meeting	6-9 June 2023	Noordwijkerhout
Time Resolved Vibrational Spectroscopy 2023 Conference	11-16 June 2023	Trippenhuis Amsterdam
NWO Biophysics	9 and 10 October 2023	Veldhoven

Are you organising a meeting of interest for the POL community and would you like to have it included in this list? Send us [an email](#).

Annual Biophysical Society Meeting 2023 - San Diego 18-22 February

With over 5000 attending scientists and sessions running from 8.15am until 9pm, the Biophysical Society meeting is an incredible conference for exploring the cutting edge of developments in all aspects of biophysics in the short space of 5 days. It's difficult to choose specific scientific highlights from so many, but it's clear that major developments in the fields of structural biology are drawing large amounts of interest, as well as increasingly impressive simulation techniques (molecular dynamics, QM/MM, coarse-graining techniques), and elegant single-molecule methods ranging from nanopore-based measurements, through fluorescence microscopy in its various forms, to single-molecule force spectroscopy methods. I was particularly impressed by

developments such as fluorescence-based electrophysiology (Mark Wallace, King's College London), even faster high-speed AFM microscopy (Simon Scheuring, Weill Cornell Medicine, New York) and beautiful work combining optical tweezers with fluorescence to study membrane shaping proteins (Raya Sorkin, Tel Aviv University, Tel Aviv).

There were several other aspects of the meeting that should also be mentioned. I found it important that the meeting highlighted the work of scholars from under-represented minorities in the Just-B (Justice for Underrepresented Scholars Training in Biophysics) poster session, and the Black in Biophysics platform. I also think we can learn a lot from what was discussed in the symposium "Opportunities for Change: Setting standards to Address Harassment in Science" where it was highlighted that a huge number of people in academia experience bullying, harassment, and inappropriate conduct in the workplace and that in addition to causing considerable damage to individuals, this drives many talented scientists out of academia. Since people don't do their best work in toxic and stressful environments, Institutions should provide a safe workplace. The connection between working in a toxic environment and high rates of scientific misconduct was also highlighted. In the discussion of how to motivate Universities to stamp out bullying and harassment, existing frameworks were mentioned that the Netherlands could take inspiration from, including the Athena Swan charter in the United Kingdom, SAGE in Australia and SEA Change in the USA.

Mark the date for next year's meeting: 10-14 February in Philadelphia.

Written by: Kasia Tych (RUG)
Dutch ambassador of the Biophysical Society

Speakers NWO Biophysics announced

The annual conference on physics of life, NWO Biophysics, proudly presents its keynote and plenary speakers. The conference will take place on 9 & 10 October 2023 at NH Koningshof, Veldhoven. Please visit [the website](#) for information on the keynote and plenary speakers and to stay up to date for the deadline dates. [Read more>](#)



Projects granted by NWO



The projects listed are the projects granted by NWO that have a connection with Physics of Life. Please follow the links for full granting information.

Perspectief

[Read more >](#)

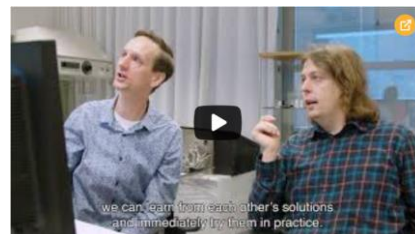
3D Nanoscale Imaging (3DNI): Imaging at the smallest scales

Consortium lead: Sjoerd Stallinga

Developing new pharmaceuticals, understanding how cancer cells respond to chemotherapy, or building ever more powerful computer chips – all this, and more, requires imaging at the smallest possible scales. The 3DNI programme develops technology for super-fast 3D imaging of atoms, molecules, and cells. To achieve this goal, the researchers engineer novel light and electron microscopy technology. Combining these with computer algorithms and artificial intelligence unveils details smaller than the wavelength used for microscopy.

Participating knowledge institutes: ErasmusMC, TU Delft, UMCG, UMC Utrecht, Utrecht University, VU Amsterdam

Companies: ASM Pacific, Carl Zeiss, Confocal.nl, Delmic, LUMICKS, Oxford Nanoimaging, Technolution [Read more >](#)



Large-Scale Research Infrastructures – for Roadmap Consortia

[Read more >](#)

DYNAMIC: The Dutch National 14 Tesla MRI Initiative in Medical Science

Main applicant: prof. dr. D.G. Norris; Radboud University

The Dutch National 14Tesla Initiative in Medical Science will establish the first MRI system at this field strength in the world. It will provide a national and international resource that will help cement the leading position of the Netherlands in ultra-high field imaging techniques and their application in Medicine and Neuroscience. The additional sensitivity afforded by the system

combined with the improved ability to discern metabolite signals will offer scientists a powerful instrument for better characterization of a range of diseases and new insights into the workings of the brain.

Co-applicants: Prof.Dr. Serge Dumoulin (Spinoza Centre for Neuroimaging), Prof. Dr. Elia Formisano (MU), Prof. Dr. Rainer Goebel (MU), Dr. Rick Helmich (RadboudUMC, RU) Dr. Anja van der Kolk (RadboudUMC), Prof. Dr. Dennis Klomp (UMCU) Prof. Dr. A. Nederveen (AMC), Dr. Natalia Petridou (UMCU), Prof. Dr. Tom Scheenen (RadboudUMC, Erwin L Hahn Institute), Prof.Dr. Andrew Webb (LUMC)

hDMT INFRA StemCells: Innovative Stem Cell Technology Infrastructure for human organ and disease models

Main applicant: prof. dr. C.L. Mummery; LUMC

Human stem cells can be used to create models that mimic the human body, allowing an understanding of healthy tissue physiology and disease mechanisms. The two types of stem cells individually have strengths but also shortcomings that could be overcome by their combination to provide unprecedented human organ and disease models, which has not been done before. hDMT INFRA StemCells will establish a national infrastructure that provides support services to the research community to enable the combination of these two stem cell types, thereby facilitating and stimulating the development and use of human stem cell-based organ and disease models.

Co-applicants: prof. dr. J.M. Beekman (UMCU), prof. dr. M.C. de Vries (LUMC), dr. K.R. Jongsma (UMCU), prof. dr. O. Kranenburg (UMCU), prof. dr. J. Gribnau (EMC), dr. ir. B.J. van Meer (LUMC), prof. dr. ir. B.P.F. Lelieveldt (LUMC), prof. dr. N. Geijsen (LUMC), prof. dr. Z. Sebestyen (UMCU)

NL-Biolmaging-AM: An advanced multi-center microscopy infrastructure for the Netherlands

Main applicant: prof. dr. E.A.J. Reits; AUMC

Recent advances in microscopy have strongly enhanced the ability to identify and manipulate processes in living cells, organoids, and small animal models. NL-Biolmaging-AM will develop and integrate state-of-the-art microscopy technologies and services to allow access for all Dutch scientists to revolutionize fundamental insights in the building blocks of life, enable scientific breakthroughs, and advance applications towards society to overcoming life-threatening diseases, including cancer and metabolic, cardiovascular, and neurodegenerative disorders.

Co-applicants: dr. ing. J Hoogeboom (TUD), prof. dr. A Houtsmuller (EMC), prof. dr. L Kapitein (UU), dr. K Wolstencroft (LEI), dr. R Beijersbergen (NKI), prof. dr. J Klumperman (UMCU), prof. dr. J van Rheenen (NKI), prof. dr. P Friedl (RUMC), dr. JW Borst (WUR), prof. dr. M van Zandvoort (MUMC), dr. A Rios (PMC), dr. B Giepmans (UMCG), prof. dr. Th Gadella (UvA), dr. S Le Dévédec (LEI), prof. dr. M Groot (VU), prof. dr. B Rieger (TUD), dr. L Voortman (LUMC), prof. dr. K Jalink (NKI).

Open Competition M

[Read more >](#)

Chasing vehicles down cellular highways

Dr. Christoffer Aberg (RUG)

Peering down the microscope at a human cell reveals a world of tumultuous activity, with objects moving back and forth with no discernible purpose. How does the cell manage to get anything to the right place amidst this chaos? Towards answering this question, researchers will follow how cargo is transported within the cell using microscopy and analyse the motion using an analogy with the motion within glass. This research will help us understand how the cell transport system works, including that hijacked by viruses.

Syncytin-assisted membrane fusion

Prof.dr. Albert Guskov & Prof.dr. Dirk Slotboom (RUG/RUG)

The visualization of membrane fusion triggered by pairs of membrane embedded receptors and special proteins evolutionary hijacked from the viruses will help not only to better understand this fundamental process (this is a key process during the placenta formation) but will also provide us with the clues to develop inhibitors for the cases when this process is used fraudulently by other viruses to enter the cell.

The other corona: protector against faulty cell division

Prof.dr. Geert Kops (Hubrecht)

All cells have the same genetic material, which is necessary for a healthy body. During cell division, for example in a developing embryo or in our tissues, this material in the form of chromosomes is copied and distributed equally. But sometimes things go wrong, resulting in cancer or developmental disorders. In this project, we study a

Stronger together: how glutamate receptors cooperate at the nanoscale to shape synaptic transmission in the brain

Dr. Harold MacGillavry (UU)

The transfer of information between nerve cells in the brain takes place at specific connections: synapses. At synapses, different types of neurotransmitter receptors are responsible for the efficient transfer of signals. Disruptions in these receptor systems often lead to the development of

chromosomal structure, the fibrous corona, that helps protect against such errors. This corona is therefore important for healthy cell division. Our research will elucidate whether defects in the corona can cause errors in chromosome distribution.

Mechanism and regulation of DUB activity in BRCA1-A

Prof. dr. Titia Sixma (NKI)

Here we study the mechanism of deubiquitination by the BRCA1-A complex, in order to understand its specificity and regulation. This will give insight in the activity of this complicated tumor suppressor complex and deliver novel tools to study its role in the correct processing of DNA double strand breaks and replication stress.

neurological disorders. Nevertheless, how neurotransmitter receptors collaborate to process information in the brain is poorly understood. In this project, the researchers will use advanced microscopy techniques and electrophysiological recordings to study how neurotransmitter receptor cooperate to process and store information in the brain.

Mapping photosynthetic light harvesting and light acclimation in three dimensions

Dr. Emilie Wientjes (WUR)

Revealing photosynthetic regulation at the nanoscale - Plants and algae use light energy to convert carbon dioxide and water into sugars. The light is harvested in a heavily folded membrane, called the thylakoid, that sits inside the chloroplast. What the 3D structure of the thylakoid membrane is and how this structure can change under the influence of light is thus far hard to visualize. The researchers will develop a new method to reveal how plants and algae adapt their photosynthetic light-harvesting machinery to regulate and optimize photosynthesis under various light conditions.

Rubicon

[Read more >](#)

Uncovering the biophysical principles that govern the interaction between cells and antimicrobial peptides

Dr. A. Fragasso, Delft University of Technology -> United States -> Stanford University -> 24 months

The future of global healthcare is threatened by the rising antibiotic resistance. Antimicrobial peptides bear potential as promising alternatives to standard antibiotics. The researcher will focus on understanding what makes these peptides so effective at killing bacteria and engineer novel synthetic peptides with even better antimicrobial properties.

Unravelling key mechanisms of nuclear pore complex biogenesis

Dr. E.F.E. Kuiper, University of Groningen -> United States -> Yale University -> 24 months

The nuclear pore complex is the gateway to our DNA and crucial for cellular health. It is one of the largest complexes in the cell, but how does the cell make sure that it is correctly assembled? This research aims to elucidate quality control checkpoints in nuclear pore complex biogenesis.

Division from cooperation

Dr. K. K. Nakashima, Stratingh Institute, University of Groningen -> France -> Institut de Science et d'Ingénierie Supramoléculaires, Université de Strasbourg -> 24 months

Cells undergo growth and division cycles to achieve replication, a pillar of life. Scientists cannot explain how primitive cells could divide, even though it is clear they succeeded. This project combines the chemical power of coacervates with the biophysics of vesicles to test a hypothesis of a primitive division mechanism.

Vici

[Read more >](#)

Bridging the gap: How proteins rule cell junctions and cell junctions rule proteins

Dr. ir. B.J.C. Janssen, Utrecht University

Orchestration of long-range gene regulation by cohesin and transcription factors

Dr. E. de Wit, Netherlands Cancer Institute

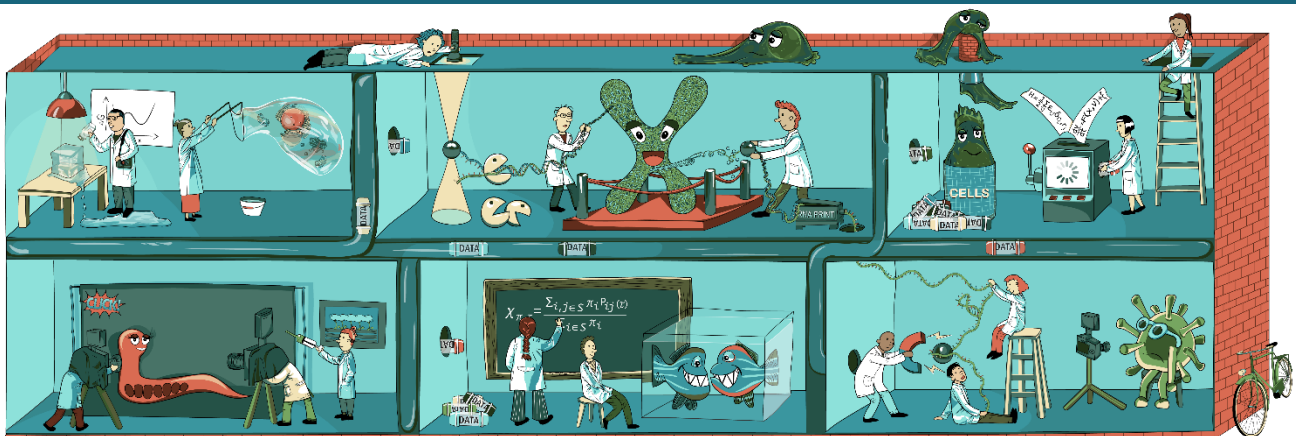
Proteins determine the distance between cells in tissues and this distance simultaneously influences proteins on the cell surface. This feedback has a role in the development and function of tissues, as well as in diseases such as cancer and neurological disorders. For instance, in the nervous system the speed of the axonal action potential is determined by the cell-cell distance and the differentiation of cells depends on an increasing cell-cell distance. The researchers will visualise at atomic level how proteins determine these distances and how these distances influence tissue function.

In our bodies genes need to be activated at the right time and the right place. Many of these genes are activated by pieces of DNA that are located far away in the genome. The folding of our genome plays an important role in the correct regulation of these genes. We will investigate which factors are important in this process. This will lead to a better understanding how genes are regulated during embryonal development and what happens in developmental disorders.

Vacancies

- Two vacancies for tenure-track group leaders, one in [Multicellular Systems](#) and one in Genome Regulation/[Structural Biology](#) Basel, Switzerland [Read more >](#)
- Multiple PhD and postdoc positions available in the lab of Cees Dekker (TUD). Key words include, but are not restricted to nanopores, protein dynamics, synthetic cells, microfluidics, chromosome biophysics, molecular motors, zero mode waveguides, single molecule optical visualization. [Read more >](#)
- Two Postdoc position available in the lab of Joris Sprakel (WUR) in collaboration with Dolf Weijers. Topic: 1) mechanical control of in-vitro plant cell culture and 2) cytoskeletal mechanosensing by the plant actin interactome. More information via [email](#).
- Assistant or Associate Professor Proteomics & Tumor Immunology in the [Biomolecular Mass Spectrometry and Proteomics](#) group Utrecht University. [Read more >](#)
- PhD position available at the Van Amerongen Lab (University of Amsterdam) on Developmental Signaling in Gastruloids [Read more >](#)

Check this out



Elizaveta Loseva and Aniruddha Mitra from the Peterman Lab (VU Amsterdam) made this beautiful artwork representing the research ongoing in the Physics of Living Systems section. The picture illustrates the research groups of Prof. dr. ir. Gijs Wuite, Prof. dr. ir. Erwin Peterman, Dr. Chase Broedersz, Dr. ir. Iddo Heller, Dr. Greg Stephens, and Dr. David Dulin.

More information: <https://vu.nl/en/about-vu/more-about/physics-of-living-systems>



Contact

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 Do you have a news flash or research highlight interesting for the Dutch PoL community that you would like to add to the PoL newsletter? Send us an email.
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