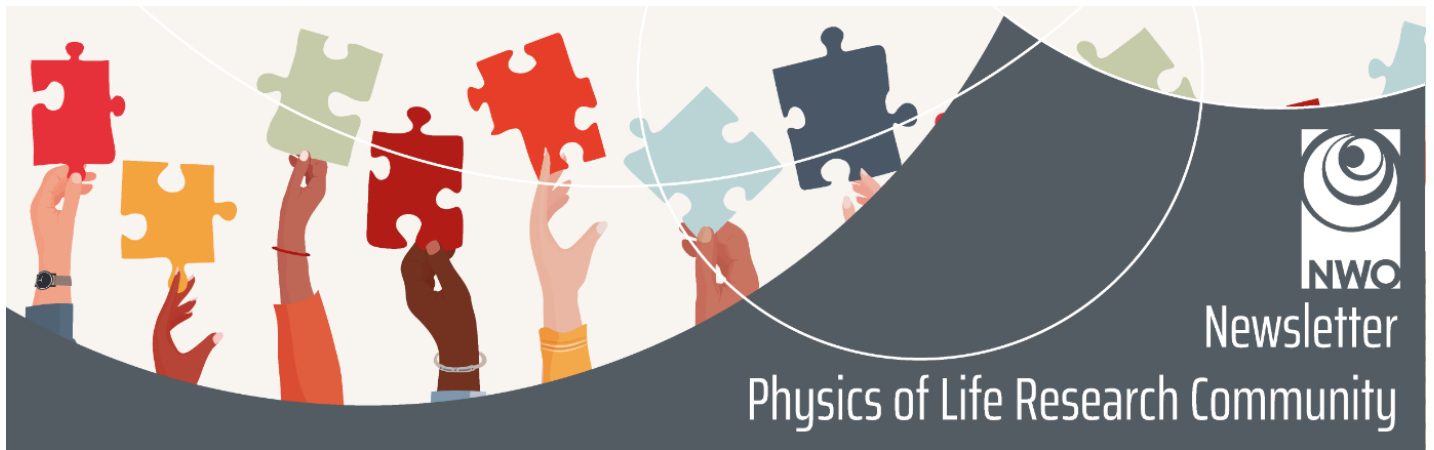




Newsletter Physics of Life Research Community

13 December 2024

Dear registered members of the research community physics of life,

Please find below our Q4 newsletter of 2024. It contains information on the upcoming events and includes some relevant updates on research policy. We are eager to hear about any suggestions you may have, and we look forward to meeting you at our assemblies.

Please spread the word about our community with all your POL colleagues! They will receive future newsletters and event invitations by registering, without any obligations, following this link:

<https://www.nwo.nl/en/register-for-research-community-for-physics>

Content of this newsletter:

- News from the research community
- Community meetings
- Physics of life calendar
- Projects granted by NWO
- Bio sketches by Erika Tsingos (UU) and Antoine Khalil (UMCU)

Best regards,

on behalf of the research community committee POL,

Kristina Ganzinger (AMOLF) and Naomi Chrispijn (NWO, Dutch Research Council)



NWO Physics of Life advisory committee:

Chair: Dr. Kristina Ganzinger (AMOLF)

Vice-chair: Dr. Greg Stephens (VU)

Prof. Alessandra Cambi (RUMC)

Dr. Johannes Hohlbein (WUR)

Dr. Kristin Größmayer (TUD)

Prof. Lukas Kapitein (UU)

Dr. Mattijs de Groot (LUMICKS)

Dr. Nicholas Kurniawan (TU/e)

Prof. Remus Dame (LEI)

Dr. Rifka Vlijm (RUG)

Secretary: Dr. Naomi Chrispijn (NWO)

Website: www.nwobiophysics.nl/pol



Dr Naomi Chrispijn-Steenbeek
Programme officer

+31 (0)70 349 4063
+31 (0)6 1274 5856

n.chrispijn@nwo.nl
ResearchCommunity-PoL@nwo.nl

Team
NWO Domain Science

New appointments, grants, prizes, and other news

- Gijsje Koenderink received an APS Fellowship, Division of Soft Matter. Such a fellowship is a great honor, recognizing excellence in physics and exceptional service to the physics community. She received this for fundamental contributions to the understanding of the material properties of the active soft matter systems that support and shape biological cells and tissues. [Read more >](#)
- Bert Poolman (RUG) and Petra Schwille (Max Planck) received an ERC Synergy grant for their project MetaDivide: Metabolism-driven division of minimal celllike systems. [Read more >](#)
- Early next year, NWO will open five new calls for proposals within the Mission main line of the NWO-KIC programme. These calls are characterised by funding for impact-driven research by consortia of knowledge institutions, companies and civil society organisations. [Read more >](#)
- All Calls for proposals published from 2 September 2024 onwards will be subject to modified grant regulations. The main changes in the new adjusted Grant Rules are the application of the state aid rules and the new Co-funding rules. [Read more>](#)
- Since August 2024, all NWO-funded research projects have been receiving a unique identifier. Researchers are requested to include this number in their outputs such as publications, preprints, data and software. It is a globally unique identifier that helps to identify funded projects and automatically link the research outputs that result from them. [Read more >](#)
- NWO is making one and a half million euros available for science communication projects that aim to strengthen the connection between science and society. Professionals from knowledge institutions, museums and other public research organisations can submit a proposal in this new round of the science communication call of the Dutch Research Agenda (NWA). [Read more >](#)
- Liesbeth Janssen (TU/e) receives an Athena Award. The Athena Award celebrates exceptional female researchers who serve as role models, demonstrating that a successful career in science is attainable. Winners of this award actively support other women following in their footsteps. [Read more >](#)
- Hanneke Gelderblom (TU/e) has won the Minerva Prize 2024. The Minerva Prize is intended for young, promising female or non-binary physicists in the Netherlands, who excel in a field of physics, experimental and/or theoretical. The prize is a joint initiative of the Netherlands' Physical Society (NNV) and the Dutch Physics Council (DPC). [Read more >](#)
- ERC Starting grants for **Aurélie Carlier (MU)** for the project 'New methodologies for automated modeling of the dynamic behavior of large biological networks', **Kristin Grußmayer (TUD)** 'Deciphering Neurodegenerative Disease with fast 3D imaging & functional nanoscopy', and **Agathe Chaigne (UU)** 'Roles of cytoplasmic bridges in cell-cell cohesion and communication'.
- ERC Consolidator grants for multiple Dutch researchers including **Dierck Hillmann (VU)** for the project 'Functional Microscopy of Individual Neurons in the Living Human Retina'; **Carlos Mota (MU)** 'Nurturing Environment - BioPrinting Human Renal Organ Networks', **Sergii Pud (UT)** 'Actuation spectroscopy as a new label-free tool to study protein properties in real time', **Evan Spruijt (RU)** 'Coacervate-Controlled Membrane Remodelling and Connecting of Synthetic Cells', **Miao-Ping Chien (EMC)** 'Dissecting chromosomal instability in gastric cancer and its role in immunoediting using advanced functional and multiplexed single cell sequencing technologies', **Liedewij Laan (TUD)** 'Evolutionary robustness of cell polarity during molecular diversification.', and **Tineke Lenstra (NKI)** 'Single-molecule visualization of transcription dynamics to understand regulatory mechanisms of cofactors',
- 20 January 2025 the annual Strategic Evening at NWO Physics will take place, which is designed to strengthen the connections between NWO and the physics community, as well as the community among themselves, and to foster a discussion about a topic relevant to the Dutch physics community. This year's topic is the proposal assessment procedure. [Read more >](#) Prior to the dinner new PIs are invited by the Dutch Physics Council to join an informal afternoon which aims to help you to familiarise yourself with various aspects of the Dutch research landscape. And moreover, you can be part of building the network of and for the next generation of physicists. [Read more >](#)

- Are you interested in joining the NWO Physics programme committee 2026 and putting physics of life in the spotlight? The committee 2025 can be found [here](#). There is the possibility for candidacy for the 2026 committee on behalf of the physics of life research community. Please inform us [via e-mail](#) before 13 January if you are interested.

The annual Physics of life group leader meeting at NWO Biophysics



During NWO Biophysics, the physics of life (PoL) research community committee has organised its yearly assembly for group leaders. Kristina Ganzinger (chair PoL research community committee) shared some highlight since October 2023 and other relevant information for the PoL community. This included the Weave pilot in the OC ENW M instrument and the PoL seminar series. Then, new PIs got the opportunity to introduce themselves and NWO shared with you [the call regarding volunteers to help community building within the building blocks of life field](#). After that, two topics were discussed in subgroups by all participants of the assembly.

We, the research community committee, we can give unsolicited advice to the Round Table Physics, which in turn can forward it to the NWO Domain Science (ENW). During the meeting we received a plethora of suggestions on the evidence-based CV (EBCV) and the assessment procedure, and would like to thank all of you who take part in the lively discussion. Note that there are aspects we can give input on, but especially when it comes to funding levels, our influence is very limited to none. Below, we will give you a summary of the discussions.

Evidence based CV

In the 2023 rounds, NWO induced the EBCV to the talent line application format. The idea is to allow broader definition of impact and success, which also considers open science, team science, outreach etc., and that the presentation focuses more on quality and originality, and less on quantity. While the concept behind the introduction is widely supported within the Science domain (ENW), there are concerns that the implementation needs to be improved. For example, there are concerns that the very open format results in confusion among the applicants what constitutes a 'good' EBCV.

Several advantages, disadvantages, improvements, and questions were raised during the discussion on the EBCV. Some people indicated that working with an EBCV creates the opportunity to be more flexible and allows applicants to justify their chosen output and thereby motivate what is important or new. However, also several concerns regarding differences between disciplines and how to judge CVs from different disciplines were raised. Questions were also raised on how NWO will evaluate whether the EBCV is a success. Here, analysis of historical data was suggested as an option.

The research community committee POL shares the concern that the format might be a bit too free to present your CV, as applicants have difficulties determining what to include. Having access to good examples from colleagues might help with generating a level playing field for the applicants. The suggestions for templates include variants with different foci, e.g. on outreach, teaching or research. The research community committee POL underlines the importance of good instructions for and guidance of the reviewers and the assessment committee members.

At NWO, a working group EBCV was installed, with representatives of each discipline. We, as research community committee, will forward the input from the POL field to the physics representative within this working group. The ambitions of this working group include providing input for recommended formats of the academic profile and analysing the evaluations from the 2023 Talent Programme rounds. When more information on this ongoing process can be shared, we will include this in our newsletter.

Proposal assessment

The assessment procedure of NWO consists of many steps and in most funding instruments, assessment committees are installed to evaluate the proposal, reviews, rebuttals and in some cases an interview. Some participants of the group leader session have joined such assessment committees and shared their experiences. Overall, this was regarded to be a lot of work,

but many POL community members find this acceptable. Suggestions were made regarding the length of the (pre-)proposal and motivational texts applicants receive after the rejection of their proposal. In addition, the lack of grades within the external reviews is (still) not broadly supported by the field, and in specific by those that should do the assessment. Given the wide variety in discipline and geography, the mentality can differ quite a bit, which affects the tone of the review, independent from the quality of the proposal. The members of the assessment committee are supposed to base their evaluation on the reviews and the rebuttal. Bringing in new arguments, that cannot be rebutted by the applicant, is therefore not allowed. Even though there is understanding for the process, it can feel frustrating for committee members if their opinion differs from those of the reviewers.

The possibility of a lottery during the proposal assessment was also discussed and the comments varied a lot. This topic will be discussed more in-depth during the [strategic evening for PIs in Veldhoven during NWO Physics](#).

Overall, we received both well-known and new comments regarding the EBCV and the proposal assessment procedure. We appreciate your contribution to these discussions and will draw on your suggestions when we can give input to NWO when they continue to develop the procedures.

Recap of the NWO Physics of Life seminar series and the PI lunch with Patricia Bassereau

We organized another seminar within the NWO Physics of Life seminar series. This time we gathered at the KNAW Trippenhuis in Amsterdam. Before the seminar about 25 PIs had lunch together and the opportunity to network. Overall, 50 people attended the seminar.



We had talks by Patricia Bassereau (Institute Curie), Felix Hol (RUMC), and by PhD students/PDs Sander, Federico and Josiah from the Henkes lab, Koenderink lab, and Kapitein lab.

Patricia's keynote lecture about cellular protrusions illustrated how simple questions can lead to fascinating discoveries. It is far from obvious how tunneling nanotubes (TNT), that connect cells, can reach a length of up to 40 microns, while typical cellular actin protrusion reaches only 5 microns. Combining micropatterning, optical tweezers, and microscopy they could identify actin's role in initiating the TNT, but what mechanism generates these long stable tunnels remains an interesting open question.

Felix gave a fascinating talk about the physics of mosquito biology. By employing and developing cutting-edge technology Felix's group quantitatively tackles common questions related to mosquitos. Why do mosquitos bite some people more often than others? He described his groups approaches on deciphering the microbiome composition on your skin as attractants for mosquitoes as well as top-down investigations for how attractive ~500 visitors of the Lowland festival are to mosquitos, depending on their behaviours such as wearing sunscreen or using drugs.

Suggestions for future events can be shared with the organization and with the research community committee. If you're having a guest speaker or a collaborator coming over who would be willing to give a talk for a broader audience, please let us know, so we can explore the options to combine it. Do you have a PhD/PD who is working on a project that the rest of the community should definitely hear about in this setting, feel free to contact the organizers and they will see whether they see a fit with the rest of the program or one of the future editions.

We were very happy that Marianne Bauer (TUD), Siddharth Deshpande (WUR) and Florian Berger (UU) volunteered to be involved in the organisation of this seminar. After being involved in the organisation of 3 editions Siddharth will resign and Ioana Ilie (UvA) will take over. The research community committee thanks all 3 organisers for their efforts!



Help your fellow biophysicists to be aware of the interesting conferences available.

Submit information on conferences, symposia, colloquiums etc. via <https://nwobiophysics.nl/calendar>

The picture is a screenshot of the longlist of calendar items listed on our website.

Single Molecule Biophysics (SMB) Conference (Colorado, USA)	5 - 10 January 2025	The meeting highlights recent progress in the field of single molecule biophysics on both its experimental and theoretical frontiers.
Biophysical Society 69th Annual Meeting (LA, USA)	15 - 19 February 2025	The BPS annual meetings are the largest annual gathering of biophysicists around the world.
Workshop on Computer Simulation and Theory of Macromolecules (Hünfeld, DE)	7- 8 March 2025	Workshop to discuss recent advances in theory and application of biomolecular simulations.
Physics Of Living Matter (Harrogate, UK)	24-27 March 2025	Physics of Life 2025 is large-scale biennial conference representing the wide diversity of the UK biological physics community. Organised jointly by PoLNet3, IOP Biological Physics, the British Biophysical Society, Physics of Living Matter and Physics meets Biology, this in-person meeting will project the excitement of science at the interface between physics and biology.
The Biophysics of Motile Cilia - from Structure to Function (Bad Honnef, DE)	30 March - 3 April 2025	The aim of this seminar is to bring together scientists from different disciplines to address the physical, biological, and clinical aspects of motile cilia.
Structural and functional asymmetry of plasma membranes Faraday Discussion (London, UK)	23 - 25 April 2025	The Faraday Discussions are unique international discussion meetings that address current and emerging topics at the forefront of the physical sciences.
Innovative Imaging for 3D Cell Biology (Utrecht)	17 - 18 June 2025	Conference hosted by the NWO Gravitation project IMAGINE! together with NL-Biolmaging and 3D-NI. Highlights include lectures by the esteemed Scientific Advisory Board of IMAGINE!
15th European Biophysics Congress (Rome, IT)	30 June - 4 July 2025	European Biophysics Congress

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.

Take off

[Read more >](#)

LightUp – a pill-sized capsule endoscope for the early detection of esophageal cancer

prof. dr. J.F. de Boer (VU) Each year, 600,000 people are diagnosed with esophageal cancer and 75% die within 5 years after their diagnosis. Screening with conventional endoscopy is offered to people with Barrett's esophagus, a disease with a higher cancer risk, but it misses 25% of early cancer and is expensive. We developed the LightUp, a pill-sized imaging device that patients will be able to swallow. A nurse pulls the capsule up by a string and an AI algorithm will give a diagnosis. LightUp combines a technique that makes cancer tissue light up with high-resolution imaging. LightUp will detect at least 27% more early cancer.

Vidi

[Read more >](#)

DNActuate: fundamentals of DNA nano-motions for molecular diagnostics

Dr. Sabina Caneva (TUD)

DNA and proteins are fantastic examples of molecular machines. Researchers will develop a new biophysical platform to image and control the dynamics and mechanics of biomolecular processes at the single-molecule level. Combining ultra-flat, biocompatible 2D material surfaces with DNA nanotechnology, they will use fluorescence microscopy techniques to study how molecules move, interact and function. They will use the fundamental knowledge gained to develop new biosensors capable of detecting circulating tumour DNA. This will enable regular monitoring of cancer progression.

How do cells copy the instructions on how to read their DNA?

Dr. Francesca Mattioli (Hubrecht)

Our DNA is packaged to instruct how, where and when its information is read. Every day our cells make a copy of their DNA and its packaging system before they divide. This ensures that their daughter cells accurately inherit the DNA information and its reading instructions. This is crucial to keep our tissues young and healthy. This research project will study how DNA and its packaging are duplicated, to identify new mechanisms to be targeted for fighting disease and aging.

Open Competition M

[Read more >](#)

Does molecular clutter cause trouble during aging?

Dr Tessa Sinnige & Dr Arnold Boersma (UU)

Living cells are densely packed with large molecules such as proteins and DNA. As molecules are fighting for space inside the cell, they may accidentally clump together. Clumping of proteins is associated with diseases such as Alzheimer's and Huntington's, but also occurs during regular aging. In this project, the researchers will measure the packing of molecules inside a small worm that is often used as a model organism in biology. They will investigate whether cells of the worm become more crowded as the animal gets older, and whether this indeed causes protein clumping.

Open Competition XS

[Read more >](#)

Discovering cancer cell plasticity modulators

dr. M.M.K. Hansen (RU)

Cancer is one of the leading causes of death worldwide and resistance to anticancer treatment is the major cause for relapses in patients. Preceding permanent resistance, cancer cells can transiently enter a drug tolerant state that facilitates the subsequent emergence of resistance. Importantly, this drug tolerant state is not permanent—i.e., is reversible—a phenomenon termed plasticity. If and how we can target this plasticity still remains unclear. Here, we propose to identify plasticity modulators that can prevent drug tolerance from emerging. If successful, the discovery of plasticity modulators could open up highly-sought possibilities for preventing resistance.

Novel single-protein tool for developing antibacterial nanomedicines

dr. S. Pud (UT)

Bacteria create tiny protein spheres where they can isolate different chemical reactions from the rest of the cell. We want to hijack these protein spheres and use them as containers for delivery of drugs because they can be produced in large quantities and easily loaded with drug 'cargo'. The only challenge is opening the spheres to release the drug in the right place. This is where our project comes in. We will build a special tool to study and optimize the release of cargo at the level of single protein nanocages.

Bio sketches

This publication is a combined publication with the mini-profiles of the Tych lab blog: <https://www.ktsinglemolecule.com/blog>
Do you want to introduce yourself? Contact us via [email](#). We aim to put every newsletter two PIs in the spotlight.

Erika Tsingos (UU)



Job title: Assistant Professor

Subject area: Theoretical biology. My group develops mathematical and computational models to answer fundamental questions in animal development.

How did you get into science? The words "science" and "research" made it into my vocabulary via a video game: Civilization II. In this game being ahead in science was crucial to win. I distinctly remember being mystified by a technology in the game called "Genetic Engineering". My dad explained it was when scientists changed the DNA of bacteria, and I thought that was insanely cool.

My dad's an amateur astronomer. He'd waste no opportunity to talk about the stars and planets or subatomic particles. But his knowledge did not go far into biology, so this discipline maintained a level of mystique that I was drawn to. During my studies, I gravitated to interdisciplinary research and mathematical biology.

Where else have you worked/studied?

For my studies I moved from Italy to Germany. I studied at Heidelberg University for my bachelor's and master's degree, and also did my PhD there. Then I moved to the Netherlands for a postdoc at Leiden University. I started my own group at Utrecht University in 2023.

What are your hobbies/what do you do for fun?

I play video games - including newer iterations of the Civilization series. Another hobby carried over from my teenage years is a fascination for the Japanese language. I regularly read manga and watch anime.

During my PhD I developed a passion for birds. Every weekend I admire the local bird population with my binoculars.

Could you share some tips and tricks for someone thinking about pursuing a career in science in academia?

My number one advice is to choose your mentors well. Foremost you want someone that supports you through good and bad times, allowing you to flourish as a person and researcher.

Who are your scientific role models?

Generally, I look to my colleagues and emulate the things I admire about them.

What does your working area (desk, office) look like and what does it say about you?

I keep an unusual amount of neatly folded paper towels around. I put them under my coffee mug and my water bottle to prevent stains. I also use them to snack without touching food directly as a symbolic act of hygiene.

I keep several post-its, each dedicated to one project, with reminders and to-do lists. They reflect my ideal self: Organized and on top of things. A nearby messy stack of loose scribbled paper reminds me that I am way more chaotic in reality.

Antoine Khalil (UMCU)

Job title: Assistant professor and group leader at the Center for Molecular Medicine (CMM), UMC Utrecht

Subject area: Cancer biology, with a focus on how cancer cells move and spread in our body.

How did you get into science? By chance. At 18, I was lost between arts (music/theatre) and science (chemistry/biology). Growing up in Lebanon, a career in the arts wasn't financially sustainable, so I followed my parents' advice and pursued a bachelor's in Biology at Notre Dame University (Lebanon). It wasn't an intentional choice, but everything changed during my first Cell Biology course taught by Dr. Doris Jaalook. Her passion was contagious; I just found myself immersed in the complex microscopic world of cancer cells.

Where else have you worked/studied?

American University of Beirut (Lebanon): Master's studies and lab instructor. For my PhD, I studied at University of Würzburg (Germany) and Radboud University Nijmegen (Netherlands). I then did my postdoc at CMM, UMC Utrecht (Netherlands).

What are your hobbies/what do you do for fun?

Basketball and music. I am part of a Lebanese indie/folk duo with Jan Hendrik Venhuizen, the first master's student whom I supervised during my PhD in Nijmegen.



Tips and tricks for someone thinking about pursuing a career in science in academia:

Find a research question that truly excites you; passion will sustain you through challenges.

Take your time to select the research group for your PhD studies. Meet in person more than once and talk to current and past members to understand the group environment. Being in a positive and supportive setting is essential to doing good science while enjoying research. The PhD experience will shape your perspective about science and influence your career.

Scientific research does not always feel rewarding; technically-failed experiments and unexpected outcomes are part of the scientific journey. Allow yourself to feel disappointed, but then accept it and genuinely shift your focus to what you can learn from the failed experiment. The earlier you learn to manage how experimental outcomes affect your mood, the more you can focus on the science behind experimental data.

Who are your scientific role models? I would choose the scientists with whom I spent significant time: Dr. Peter Friedl (PhD supervisor) and Dr. Johan de Rooij (postdoc supervisor). Beyond the scientific content, I admire their approach and critical attitude to science, each in his own way.

What does your working area look like? Papers, notes and sketches of cells and experiments. I share space with 3–4 empty coffee cups.

What does it say about you? Organized chaos.



Contact

Dr. Naomi Chrispijn-Steenbeek, secretary of the research community (committee) Physics of Life

NWO Utrecht, Winthontlaan 2, 3526 KV Utrecht

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.

Email: ResearchCommunity-PoL@nwo.nl

Website: nwobiophysics.nl/pol

T: +31 (0)70 349 4063

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