Dresden University of Technology

Biomolecular condensates have emerged as a new paradigm to understand biological functions in living cells. Dresden has pioneered research in the field of biomolecular condensates and developed into its vibrant center. The newly DFG-funded Research Training Group “Biomolecular Condensates: From Physics to Biological Functions” (RTG 3120) at TUD Dresden University of Technology offers an exciting interdisciplinary research environment at the interface of physics and biology. Our goal is to understand biological function and the role of condensates in disease by applying physical principles such as phase transitions and collective phenomena to the study of biomolecular condensates.

TUD, as a University of Excellence, is one of the leading and most dynamic research institutions in the country. For TUD, diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.
As part of the **Research Training Group RTG 3120** at the **Excellence Cluster Physics of Life (PoL)**, the **Chair of Spatiotemporal Organization of Subcellular Structures (Prof. Dr. Jan Brugués)** is looking for a highly motivated and talented

Research Associate / PhD student (m/f/x)

(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting **April 1, 2026,** subject to the availability of resources, the position is initially limited until March 31, 2030 with an additional year being possible depending upon circumstances, need, and availability of funding. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG). The position comprises 65% of the full-time weekly hours. The position offers the chance to obtain further academic qualification (usually PhD).

Project Title and Description: Emergent properties of chromatin (in collaboration with the Schiessel group)
During the cell cycle, chromatin undergoes dramatic changes on its material properties that are functionally key. In metaphase, chromatin needs to be stiff to sustain microtubule segregating forces during cell division. As the cell cycle progresses to interphase, chromatin decondenses and becomes loose to enable key processes such as transcription, DNA damage repair, replication, and the establishment and maintenance of epigenetic marks. These properties are actively regulated by molecular processes such as DNA-protein co-condensation and loop extrusion. In this project we aim to understand how emergent properties of chromatin arise from such processes, how are regulated during the cell cycle and how they may play a role in functional processes such as the maintenance of epigenetic marks or transcription. The Schiessel group has used their expertise in computer simulations on small model chromosomes to demonstrate that polymer-assisted condensates are capable of maintaining the epigenetic state through 40 generations, thus reaching the Hayflick limit. The Brugués group uses their expertise in single molecule approaches and cell free extracts to test these ideas by using optical tweezers where a full chromosome and single DNA strands can be held in place and stretched in the cytoplasm from Xenopus egg extracts, a system in which replication can be induced. The successful candidate will address the following questions:

- Can we visualize experimentally condensates forming along stretched chromosomes?
- What happens to the number and sizes of condensates as one increases the tension and how does it depend on the epigenetic sequence written along the string of nucleosomes?
- How do chromatin material properties are established during the cell cycle?

Requirements: We aim at attracting the best talent and expect the following:

- an outstanding university degree (Master or equivalent) in physics, biophysics, biology, biochemistry or a related discipline
- experience with in vitro reconstitution systems is a plus
- ability to work in an international team is essential
- inter- and multidisciplinary thinking, high motivation; an integrative and cooperative personality with excellent communication and social skills
- fluency in oral and written English

We offer:

- a stimulating, world leading research environment on biomolecular condensates embedded in a focused, interdisciplinary structured training program and close mentoring
- access to advanced research infrastructure and shared core facilities
- a vibrant and collaborative scientific community in Dresden and internationally

The successful candidate will be embedded in the DFG Research Program RTG3120 on Biomolecular Condensates (https://dresdencondensates.org). Each PhD project is part of an interdisciplinary framework that includes shared training activities, and supervision by an interdisciplinary thesis advisory committee. In addition, the successful candidate will be immersed in a very rich scientific environment at the Center for Molecular and Cellular Bioengineering (CMCB), part of the Technische Universität Dresden encompassing the B CUBE Center for Molecular Bioengineering (B CUBE), the Biotechnology Center (BIOTEC), and the Center for Regenerative Therapies (CRTD). The CMCB is closely linked and within walking distance of the German Center for Neurodegenerative Diseases (DZNE), the Medical Theoretical Center (MTZ), the Carl Gustav Carus University Clinic and the Max-Planck-Institute for Molecular Cell Biology and Genetics (MPI-CBG). The research on campus is highly interdisciplinary and addresses topics spanning cell biology, genomics, biophysics, tissue engineering, bioinformatics, and regeneration. We combine these approaches to bridge the gap between fundamental research and clinical therapies.

More information about our research group can be found here: https://physics-of-life.tu-dresden.de/team/pol-groups/brugues.

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Please submit your detailed application by March 20, 2026 (stamped arrival date of the university central mail service or the time stamp on the email server of TUD applies) with the usual documents combined to one PDF (CV, cover letter describing both their research experience and research interests, list of relevant academic achievements or publications, university degree certificates and transcripts and contact information for at least two letters of recommendations) via
https://bildungsportal.sachsen.de/umfragen/limesurvey/index.php/945428?lang=en.

Alternatively, you can download and fill in the PDF application (https://dresdencondensates.org/appl/) to send it with the necessary documents via the TUD SecureMail Portal https://securemail.tu-dresden.de as a single PDF file to rtg3120@tu-dresden.de.

The applicant is responsible for requesting the reference or recommendation letter from the referee. Letters should be sent by a referee directly via the TUD SecureMail Portal https://securemail.tu-dresden.de by sending it as a single pdf file to **rtg3120@tu-dresden.de** before the deadline.

In exceptional cases where electronic submission is not possible, applications can be submitted through surface mail to

TU Dresden, Chair of Theory of Polymers at Interfaces, Prof. Jens-Uwe Sommer, Helmholtzstr. 10, 01069 Dresden, Germany

Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

TUD is a founding partner in the DRESDEN-concept alliance.

DRESDEN concept