

EXCELLENCE NEWSLETTER

8th June 2020

TUD 2028 – SYNERGY AND BEYOND

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EXCELLENCE AND RESEARCH CLUSTER

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Dear Readers,

For months now, the corona virus has been shaping our daily life and work. TU Dresden is also tackling new challenges on all levels with great commitment. An overview of all activities in research, teaching and transfer to society can be found on our new [news website](#).

The latest issue contains many contributions from our excellence and research clusters, thus clearly demonstrating that successful research cannot be stopped despite the corona crisis. As a result, new initiatives are emerging, such as the merger of numerous genome researchers into the German COVID-19 OMICS Initiative (DeCOI).

In addition, we would like to draw your attention to our [New Alumni Guide](#), since the continued development of the TUD Alumni Programme is an important component of the Excellence Application. Especially captivating is the interview with Marlene Odenbach, Director of Strategy and Communication, about excellence and the image of TU Dresden starting on page 30.

Current information about the effects of COVID-19 (Coronavirus SARS-CoV-2) on teaching, research and administration at TU Dresden as well as the steps towards reopening the university and resuming normal operation can be found on the following page: <https://tu-dresden.de/corona>.

The editorial team of the Excellence Newsletter can still be contacted by email: exzellenz@tu-dresden.de. We look forward to your questions, suggestions and comments. You are also welcome to recommend our Excellence Newsletter, which can be [subscribed to with just a few clicks](#).

Internationalisation Prize 2020

The "Internationalisation Prize" will be awarded in 2020 **for commitment to the welcome culture** at TU Dresden.



Our welcome culture aims to establish a cosmopolitan and international campus. This is based to a large extent on voluntary work and personal commitment. The prize is intended to promote and make these successful and exemplary activities and projects visible, thus strengthening our welcome culture. **Applications can be submitted until 15th July 2020.**

GA goes digital

Developing skills, planning the next career step or motivating your team? All valid reasons to continue your education even in these turbulent times. This is why the **Graduate Academy (GA)** is offering its entire qualification programme online for doctoral students and postdocs this semester.

GA Digital focuses on the development of interdisciplinary key qualifications in the areas of scientific work, leadership, and management skills, career planning, scientific communication and scientific management. Digital courses in **scientific writing** complement the extensive continuing education programme. **Membership** in the GA is a prerequisite for taking advantage of the new e-learning offers.

Virtual W2 Symposium

Job interviews via video chat are part of today's professional world in times of digitalisation and internationalisation. Due to the current COVID-19 pandemic, virtual job interviews are even more in demand.

As part of the call for applications to head a joint **Junior Research Group on Tissue Organisation and Dynamics** of the Cluster of Excellence Physics of Life (PoL) and the **Max Planck Institute of Molecular Cell Biology and Genetics (MPI-CBG)**, a virtual scientific symposium with seven international candidates was held on 20th and 21st April 2020. Another special feature of this selection process is that the position includes a **W2 Tenure Track option** at TU Dresden.

The scientific symposium and the interviews conducted by the Recruitment Committee with the seven international candidates invited by the Commission, selected from 54 applications, were extremely successful. In this way, the current challenging situation was used to find new ways of **recruiting top international scientists**.

Congratulations Dr. Frank Ortmann – Call of TU Munich accepted

We would like to congratulate Dr. Frank Ortmann, group leader at the **Center for Advancing Electronics Dresden (cfaed)**, on his appointment to the Faculty of Chemistry at TU Munich.

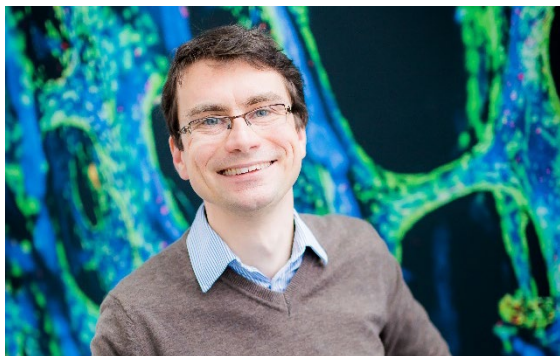
From 1st June 2020, Dr. Ortmann will take up the W2 Tenure Track Professorship "Theoretical Methods in Spectroscopy". In cooperation with other group members, the new professorship will strengthen the theoretical area of the Department of Chemistry.

Frank Ortmann obtained his doctorate with distinction (summa cum laude) at the Friedrich Schiller University of Jena in 2009 with the dissertation "Theory of charge transport in organic semiconductors". In the same year,

he took up a post-doctoral position at the CEA Grenoble, France, and in 2010 he was awarded a Marie-Curie Fellowship from the European Commission. Since 2013, Dr. Ortmann has been researching at TUD, where he has been Head of an Emmy Noether Research Group since 2014. At [cfaed](#), he successfully headed the [group "Computational Nanoelectronics"](#) for three years and boasts a number of excellent collaborations. We wish him all the best for the future!

PD Dr. Benjamin M. Friedrich joins the Heisenberg Fellowship

The German Research Foundation (DFG) will support the research project proposed by PD Dr. Benjamin M. Friedrich on the "physics of active matter" over five years by contributing almost half a million euros.



As a theoretical physicist, Dr. Friedrich researches at the interface of physics, biology and engineering sciences and heads the research group "Biological Algorithms" at the Center for Advancing Electronics Dresden ([cfaed](#)). He is also Principal Investigator at the new Cluster of Excellence Physics of Life (PoL).

His research group is investigating efficient navigation strategies of biological microswimmers as well as physical principles of self-organised pattern formation, e.g. in muscle cells or cilia in our bronchi. The promotion of the cooperation between the main campus of TUD and the Johannstadt "life science" campus is of particular importance to him.

The DFG's [Heisenberg Programme](#) will help on the way to a future scientific leadership position.

Podcast about the Cluster of Excellence ct.qmat

Quantum matter, professional curiosity and a Cluster of Excellence that traverses federal state boundaries - in the current episode of the [JMU podcast](#), Prof. Dr. Ralph Claessen, [ct.qmat](#) spokesperson from Würzburg, talks about the cluster title "**Complexity and Topology in Quantum Matter**", what is behind this research, how such a cluster works, what the scientists want to find out and what role coffee cups and donuts play in this.



Since 2019, [ct.qmat](#) has been a scientific cooperation between the [Julius-Maximilians-University of Würzburg](#) and TU Dresden, closely linked to the top-level research of five renowned extra-mural institutes: the [Helmholtz-Zentrum Dresden Rossendorf](#), the [Leibniz Institute for Solid State and Materials Research Dresden](#), the [Max-Planck-Institute for Chemical Physics of Solids Dresden](#), the [Max Planck Institute for the Physics of Complex Systems Dresden](#) and the [Bavarian Center for Applied Energy Research](#).

'Zeitgeist' material discovered

What happened yesterday and what will happen tomorrow are usually two distinct and independent matters. The situation is different in microscopic physics. For elementary particles, atoms and molecules, moving forward or backward in time makes no difference. This is the so-called **time-reversal symmetry**.

Dresden physicists from the Cluster of Excellence Complexity and Topology in Quantum Matter (ct.qmat) have discovered a novel magnetic state with broken time-reversal symmetry in a class of iron-based superconductors for the first time. **This material can therefore distinguish past and future!** This exceptional property, which only about one percent of all superconductors exhibit, calls for new theoretical models and may become **important in quantum computing**. The **research results** have recently been published in the scientific journal *Nature Physics*.

Genome researchers create German COVID-19 OMICS Initiative (DeCOI)

How does the new corona virus change its genetic information? What other infections occur in patients with COVID-19? Are there genetic risk factors that favour an infection?



Numerous genome researchers are pooling their expertise and sequencing infrastructure to make a scientific contribution to manage the COVID-19 pandemic. These activities are now officially combined in the **German COVID-19 OMICS Initiative (DeCOI)** to accelerate research. Scientists at more than 22 institutions are **actively involved in DeCOI**.

In Saxony, the Center for Regenerative Therapies (CRTD) at TU Dresden and the DRESDEN-concept Genome Center (DcGC) have joined the DeCOI initiative.

Project SaxoCell in the BMBF competition "Clusters4Future"

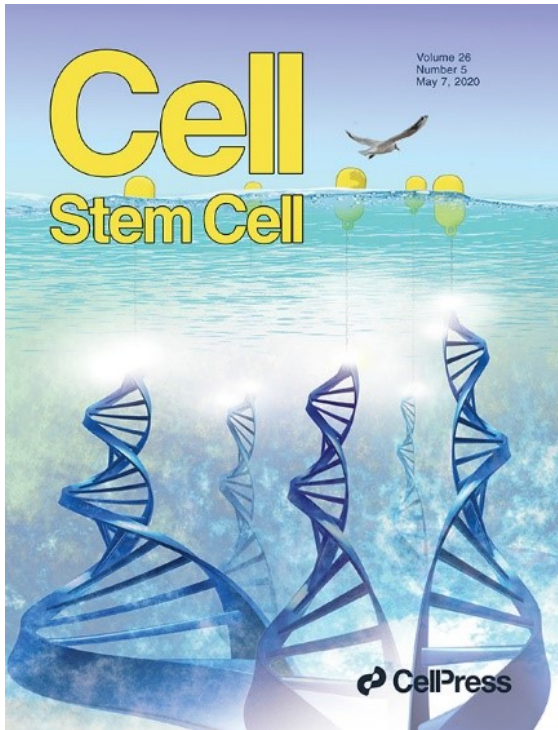
They want to make better use of the **body's self-healing powers** and make **"living drugs"** available to many patients: Scientists of TUD from the Center for Regenerative Therapies Dresden (CRTD) and the Carl Gustav Carus Faculty of Medicine alongside the University of Leipzig, the Fraunhofer Institute for Cell Therapy and Immunology IZI, Leipzig, the University Hospital Leipzig and the Carl Gustav Carus University Hospital, Dresden are in the conception phase of their **joint future cluster SaxoCell** in the innovation competition "Clusters4Future" of the Federal Ministry of Education and Research (BMBF).

The SaxoCell project started on 1st May 2020 and was selected as one of 16 out of 137 proposals for funding of the first concept phase in 2020.

CRTD research featured on the cover of Cell Stem Cell

The cover of the renowned scientific journal *Cell Stem Cell* shows the **immune potential** hidden under the surface of **blood stem cells**, illustrating a study by the group of Prof. Michael Sieweke at the Center for Regenerative Therapies (CRTD) in the May issue of the journal.

Although on the surface gene expression appears normal after an infectious challenge, specific regions deep down in the genome of the blood stem cell remain marked, like by a buoy, to be found easily in the event of a secondary infection.



This "memory" enables blood stem cells to provide a rapid and more efficient immune response to new infections, while avoiding excessive inflammation. The findings should lead to new treatments of an underperforming or over-reacting immune system, and could significantly **influence future vaccination strategies, including in the current COVID-19 pandemic.**

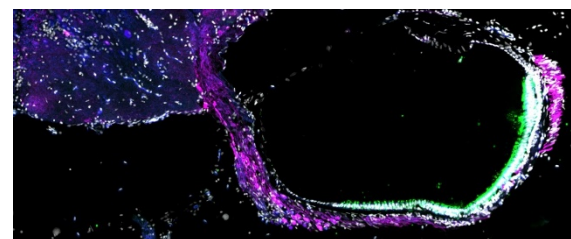
Who measures the temperature in our cells? Yeast is the key

The **conditions in the environment** are subject to large fluctuations. In Germany, for instance, temperatures can range from a freezing minus 20 degrees Celsius in the winter to a scorching 40 degrees Celsius in the summer. Organisms that are unable to adapt to such temperature changes will not survive and thus will not pass on their genetic information to the next generation. In a world in which we are confronted with constantly rising average temperatures due to **global warming**, we must ask ourselves:

How do organisms react to changing temperatures? What molecular mechanisms do they use? Scientists at the **Biotechnology Center (BIOTEC)** of TU Dresden and the **Max Planck Institute for Molecular Cell Biology and Genetics (MPI-CBG)**, in cooperation with partners in Heidelberg and Toronto, Canada, investigated these fundamental questions.

Insights from zebrafish to help the hearing impaired

The inner ear is of central importance for hearing and balance. Sound waves and movements are registered by sensory hair cells. Neurons of the inner ear transmit this information to the brain, where it is processed and passed on to other organs. In humans, both hair cells and neurons are only generated during embryonic development. The capacity to replace damaged cells is lost soon after birth. This makes **deafness irreversible.**



Currently, about five percent of the world's population is affected by hearing impairment or deafness, and it is estimated that this number will continue to rise.

Hence, there is a pressing need to develop **new therapies to restore hearing abilities.** Researchers at TU Dresden's **Center for Regenerative Therapies (CRTD)** have **published related findings** in the scientific journal **DEVELOPMENT.**

Milestone at the POInt-study

A further milestone could be achieved in the **Europe-wide cooperation for the prevention of type 1 diabetes, GPPAD (Global Platform for the Prevention of Autoimmune**

Diabetes): 100 children are now participating in the study around Saxony.



5-month-old Ylvie from Oderwitz was welcomed at the [Carl Gustav Carus University Hospital](#) at TU Dresden as the 100th study participant.

Dresden's Microelectronics Academy at cfaed has been cancelled

With a heavy heart, the organisers of [Dresden's Microelectronics Academy \(DMA\)](#) has made the decision to cancel the traditional summer school this year. It is too uncertain as to whether the usual events, which are strongly characterised by close personal contact, can take place in September. Furthermore, it is also difficult for potential participants to know for sure whether they will be able to travel to Dresden in late summer.

The highlights of the DMA, such as exclusive insights into production and processes at industry giants Globalfoundries, X-FAB, Infineon and Bosch, cannot be offered this year. Nevertheless, the co-hosts of the DMA are already looking forward to planning the 2021 summer school.

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