



Press release | September 27th 2018

Biophysicists delve into the organisation of life – New Cluster of Excellence to unravel the “Physics of Life” (PoL)

To fathom the structure and dynamics of living matter is one of the great scientific challenges of our time. The new Cluster of Excellence “Physics of Life” (PoL) will concentrate on the underlying laws of physics that govern the organisation of life into molecules, cells and tissues. PoL is a collaboration between scientists of TU Dresden and other DRESDEN-concept research institutions such as the Max Planck Institute of Molecular Cell Biology and Genetics (MPI-CBG), the Max Planck Institute for the Physics of Complex Systems (MPI-PKS), the Leibniz Institute of Polymer Research (IPF), and the Helmholtz-Zentrum Dresden-Rossendorf.

Molecules assemble to form functional machines. These molecular machines form the structures within cells. Cells interact to form tissues. Organs and organisms are shaped by the growth and self-assembly of molecules, cells and tissues. Together, molecules, cells and tissues create an active and “living state” of matter, with hitherto unexplored physical properties and behavioural patterns. Physicists, biologists and computer scientists of TU Dresden have now succeeded in the Excellence Strategy of the German Federal and State Governments with their pioneering and interinstitutional approach, in order to grasp the “Physics of Life”. In its choice of location, the Cluster of Excellence PoL benefitted both from the outstanding reputation of TU Dresden for interdisciplinary research in biophysics and from the innovative and international atmosphere of the life science campus in Dresden-Johannstadt.

Stephan Grill, professor of biophysics at TU Dresden’s Biotechnology Center (BIOTEC) and spokesperson of the cluster, is thrilled about these developments: “For years, researchers from Dresden have been at the forefront of developing the physics of living matter with the goal of understanding biological processes. We are very proud that our interdisciplinary efforts have now been acknowledged by the Excellence Commission. The time is ripe for physics to tackle its perhaps greatest challenge: to decipher the principles of organisation of living matter. PoL will shed

light on tissue formation and structure, while unveiling the mechanisms by which cells organise their inner workings. It is sensible to first understand the controlled formation of organs by cells before attempting to devise ways to inhibit uncontrolled cell growth, e.g. in cancers. Our fundamental research is aimed at understanding life and our approaches will provide solutions to some of the world's most pressing bioengineering and health issues."

More information: <https://physics-of-life.tu-dresden.de/en>

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Pictures



Spokesperson of the Cluster of Excellence "Physics of Life" Prof. Stephan Grill ©
Katrin Boes MPI-CBG



The team of researchers of the Cluster of Excellence "Physics of Life", together with TU Dresden's Rector, Prof. Dr. Müller-Steinhagen (8th from the left).