

Meeting report of the 21st workshop "Cell Biology of Viral Infections" of the German Society for Virology (GfV) in Schöntal

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For its 21st edition, the „Cell Biology of Viral Infections“ Workshop of the German Society of Virology (GfV) reconvened at the beautiful Kloster Schöntal, 70 km south of Würzburg. The meeting was organized from October 18–20th and attracted 39 participants, mostly PhD students and postdocs. In 2022, Gabrielle Vieyres (Leibniz Institute for Virology) and Christian Sieben (Helmholtz-Centre for Infection Research) took over the meeting series. This year's topic on the "Cytoskeleton" was well represented by four invited keynote speakers from Germany, Austria and the United Kingdom. The program encompassed 4 sessions, covering the different steps of the viral replication cycle (early events in virus infection, virus-host interface, viral replication and morphogenesis). In addition, one session was specifically devoted to the cytoskeleton, the focus of this year's meeting. The meeting underscored the necessity of gaining a more comprehensive perspective on the cytoskeleton, an integral component of cellular biology, to establish a fundamental grasp of viral cell biology.

The first keynote lecture was given by Dr. Katharina Scherer from the University of Bonn on "Tracing the reorganization of the cytoskeleton during viral infections with light microscopy". Dr. Scherer presented her work on using advanced microscopy to follow the chronology of Herpes Simplex Virus 1 (HSV-1) infection within a cell. Using reporter „timestamp“ viruses and high-resolution imaging she could correlate distinct steps of the viral replication cycle with striking alterations of various cellular organelles such as the ER and Golgi apparatus but also the cytoskeleton. The used timestamp viruses express fluorescent early and late viral protein reporters, which could be used to classify the replication cycle into four distinct stages. Cellular changes could then be associated with a specific stage of viral replication. The following session of the meeting was devoted to early events in virus infection and included presentations on virus-receptor interaction, cell entry and the development of Lassa anti-spike protein antibodies.

The first day was concluded by the second keynote lecture by Prof. Franziska Lautenschläger from Saarland University. Prof. Lautenschläger presented an exciting overview of her group's activities with respect to cell migration and intermediate filaments. She reported on two modes of cell movement that depend on the cellular microenvironment and can be mimicked using different sample chamber geometries. Using such devices, cells can be tracked to better understand and extract motion patterns associated with a specific cellular context. The Lauten-

schäger group uses a number of microscopy and force probing technologies for their research which nicely highlights the use of quantitative imaging in cell biology and biophysics.

The second day was kicked off by the keynote lecture from Prof. Michelle Peckham on "Seeing into the cytoskeleton". Prof. Peckham has a long-standing expertise in muscle physiology, specifically the structure and cell biology of myosins. During the talk, Prof. Peckham highlighted the many different flavors of myosins and how their cellular functions can be probed using genetic knock-out systems in combination with the exquisite use of fluorescence microscopy. A further highlight of the talk was the recently published structural investigation of the shut-down state of myosin-2 which will form the basis to better understand disease-causing mutations. Prof. Peckham finished by introducing affimers, small recombinant binders that hold great potential for instance as new labeling tools in combination with super-resolution microscopy.

As the fourth keynote lecture, Prof. Florian Schur from the Institute of Science and Technology Austria (ISTA) took us for a deep dive across resolutions and between structure and function of the actin cytoskeleton with a focus on the Arp2/3 complex that nucleates branching of the actin cytoskeleton and is critical for lamellipodia formation and cell migration. Prof. Schur presented his results on an exciting study investigating the role of specific subunit isoforms within the Arp2/3 complex. During the second part of his lecture, he then illustrated the power of cryo-electron tomography and subtomogram averaging to decipher the organization of the vaccinia virus core revealing a number of new organizational structures.

Among the variety of topics and methods covered, we would like to highlight the use of cryo-EM to illuminate the structure of the vaccinia virus core, to gain insight into the mechanism of viral transcript release and in progeny virus production, as illustrated by our plenary speaker, Prof. Schur, but also other contributors. The participants further enjoyed several talks about membraneless organelles relevant in Ebola and Nipah virus replication. In this context, the prize for the best presentation was after voting of all participants awarded to Nico Becker, from the University Marburg, who discovered and presented how Nipah virus phosphoprotein P sequesters the innate immune adaptor proteins STAT1/2 to virus-induced inclusion bodies, thereby antagonizing the antiviral interferon response in the infected cells. We would like to thank all participants of the workshop for their excellent presentations, the stimulating discussions and the

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friendly atmosphere throughout the three days. Furthermore, we express our gratitude to the German Society for Virology (GfV), the German Society for Cell Biology (DGZ), and the company ReBlikon GmbH for their support. The workshop would not have been possible without their generous contributions. The 22nd workshop "Cell Biology of Viral Infection" of the German Society of Virology (GfV) will take place from November 4 to 6th 2024, again at Schöntal Monastery. For updates, please visit our website at <https://cellviro.g-f-v.org/>.

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The 21st edition of the "Cell Virology of Viral Infections" Workshop of the GfV took place from October 18th to October 20th at the Kloster Schöntal.



Nico Becker, PhD student at the Philipps University of Marburg and winner of the best presentation award, surrounded by the organizers Christian Sieben and Gabrielle Vieyres. Nico Becker was awarded the prize for his presentation on the mechanism underlying the antagonism of the interferon response by the Nipah virus phosphoprotein P.