

Report of the Workshop "Cell Biology of Viral Infections"

Steeve Boulant and Claudia Claus

Dr. Steeve Boulant (Heidelberg) and Dr. Claudia Claus (Leipzig) took on the task of organizing the 13th annual workshop on "Cell Biology of Viral Infection". This year's conference was no longer held at the traditional site of Ketschauer Hof in Deidesheim but was moved to the Kloster Schöntal in Schöntal, Germany. The participants were all very enthusiastic about the location change and enjoyed being able to stay directly at the conference site, and having evening gatherings and wine tasting in the cellar. The very active, lively and interested participations of the attendees during the seminar sessions had a very positive impact on the course of this year's meeting, which, from the beginning to the end, was a real success for us.

The theme of this year's workshop was "Mimicking Organ Physiology: Impact of Stem Cells and Tissue Engineering on Virology". This topic was chosen to help advance the current classical culture systems used by virologist. The workshop was held from the 19th–21st of November and we were very happy to have four keynote lecturers, which are leaders in the field of stem cell biology. The workshop was opened with a fantastic lecture by Dr. Micha Drukker on the "Fate Choice of Pluripotent Stem Cells". Dr. Drukker is the head of the research group "Human Pluripotent Stem Cell Lineage Choice Research" at the Institute for Stem Cell Research at the Helmholtz Zentrum München. Since most participants were from a virology background, Dr. Drukker gave a nice introduction to the field of pluripotent stem cells. He also showed exciting data from his lab demonstrating the post-transcriptional changes of transcription factors, which leads to exiting a pluripotent state and how they were able to identify surface markers to differentiate stem cells subtypes. Finally, he described the recently unraveled phenomenon of paraspeckles, which marks cells that have undergone differentiation.

The following day, two fabulous lectures from Prof. Petra Boukamp and Prof. Catherine Verfaillie gave us detailed examples to obtain specific organ cultures close to physiology from stem cells. First, Prof. Petra Boukamp from the German Cancer Research Center (DKFZ) discussed "Goodbye Flat Biology: the Role of the Microenvironment in Normal Human Skin and Skin Cancer". She described beautifully the years of work from her lab showing the development of a 3D human skin cell model. They found that mice are unable to substitute as a model due to their drastically different tissue organization. Additionally, she showed that a 2D culture system is also not sufficient and a 3D structure is essential for the skin growth because a layered organization is needed. This layered structure allows for the expression of growth factors in the proper time and space. This elegant model has then been used to answer questions about skin regeneration, and how cancer can develop and vascularize in skin tissue. Next, Prof. Catherine Verfaillie of the Stem Cell Institute of the University of Leuven in Belgium discussed "Creating and Engineering Hepatocytes from Pluripotent Stem Cells". Prof. Verfaillie's research group is using many state-of-the-art techniques to genetically modify and visualize stem cells. This has allowed for the generation of a hepatocyte culture model from stem cells, which was of particular interest to many hepatitis virologist in the audience. The final day was concluded with a lecture from Prof. Ian Chambers from the MRC Centre for Regenerative Medicine at the University of Edinburgh on "Transcription Control of Pluripotent Cell States". His group was the first to discover Nanog, which is a key factor for the maintenance of stem cell pluripotency. He discussed the impressive work from his lab in unraveling the expression patterns of proteins, which regulate the process of self-renewal and cell differentiation.

This year's workshop was attended by 32 participants coming from most regions in Germany and also from Bordeaux, France. The majority of participants were virology students and post-doctoral fellows. The participants gave presentations on three virology themes: "Virus-Host Interactions", "Virus in 3D Culture Model" and "Virus Assembly and Replication". These presentations covered a large variety of RNA and DNA viruses and discussed topics from virus entry, and replication to

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sensing by the innate immune system. There were also talks on using 3D cell culture systems to study viral infection and using viruses as models for drug delivery design. This year Sarah Hofmann from the group of Dr. Eva Herker at Heinrich-Pette-Institute in Hamburg was awarded a prize for the best student presentation with the title "HCV's interaction with host lipid metabolism". Sarah discussed how she has performed lipid profiling to determine how lipids change during hepatitis C virus infection. Her award will allow for her to attend next year's workshop for free.

The workshop would like to thank the German Society for Cell Biology (DGZ), the Society for Virology (GfV) and the company Reblikon for their efforts of both financial and administrative support of the workshop. Additionally, this workshop would not have been possible without the generous sponsorship of the Chica and Heinz Schaller (CHS) Foundation and Peprotech. We would also like to thank all the keynote speakers for their exciting presentations on stem cell biology and participants for the lively discussion and great atmosphere.

The 14th annual workshop will be held again at the Kloster Schöntal from September 30th-October 2nd 2015. This year's theme will be "Regulation of cell fate: Balance between death and survival pathways". Additional information and updates can be found at our website www.qfv-cellviro.de.

Our selection leaves little to be desired!

**Let us convince you on our booth at the
DGZ Meeting, 24th – 27th March in Cologne**

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