Workshop „Cell Biology of Viral Infections"

Kloster Schoental, September 30th – October 2nd 2015

The 14th Annual Workshop on "Cell Biology of Virus Infection" organized by Dr. Steeve Boulant (Heidelberg) and Dr. Claudia Claus (Leipzig) was conducted for a second time at the Kloster Schöntal in Schöntal, Germany from September 30th–October 2nd 2015. The theme of this year's workshop was "Regulation of cell fate: Balance between death and survival pathways". The workshop was a great success due to four amazing keynote speakers from Ireland and Germany and the enthusiastic discussions by the participants. All participants enjoyed the relaxed atmosphere and the social events, which allowed for the establishment of new collaborations.

The workshop opened with the keynote lecture "Non-apoptotic roles of killer caspases" given by Dr. Howard Fearnhead from the National University of Ireland, Galway. Dr. Fearnhead is an expert in caspases and although these proteins play a well-known role in apoptosis, he explained to the participants their diverse activities within the cell. He described that not only is the expression of caspases important but also that the amount of caspase produced will drastically change the cellular outcome. For example, low levels of cas3 will lead to Ras-GAP cleavage and cells will survive, whereas high cas3 levels cause complete protein cleavage within the cell leading to cell death. Interestingly, some of the effects of cas3 can be transient but can cause altered gene expression due to stimulation of a DNA damage response leading to chromatin remodeling. These DNA changes can be important for cell differentiation or cell fusion.

The second day of the workshop began with Prof. Dr. Seamus Martin's lecture "Cell Death and Inflammation". Dr. Martin is the chair of Molecular Genetics at Trinity College in Dublin Ireland. Dr. Martin is a reference in the field of cell death and has been a pioneer in the field by introducing annexin-V labeling, the gold standard for measuring apopotosis. His contributions to the field have been cited over 22,000 times. Dr. Martin gave the participants a full overview of the three main types of cell death: programmed (apoptosis), necrosis and necroptosis. He described the current dogma on how each type of cell death is related to inflammation and then showed current research from his lab that questions the current view. His talk was filled with many humorous examples as a reminder that you need to be careful of how you look/interpret your data.

The second day concluded with Prof. Dr. Elke Pogge-von Strandmann's lecture on "Formation and role of exosomes in cancer". She discussed the ongoing work in her lab, which focuses on the methods that NK cells use to identify and eliminate tumor cells. They have found that BAG6 regulates NK cell activity and is responsible for NK cell activation by exosomes. These BAG6 exosomes have RIG-I stimulation properties and are able to inhibit tumor growth in vivo. This work is now being used to develop NK cell-based therapies for cancer patients.

Prof. Dr. Simone Fulda gave the final keynote on "Novel opportunities for therapeutic exploitation of cell death pathways in cancer". Prof. Fulda is the Director of the Institute for Experimental Cancer Research in Pediatrics at the J.W. Goethe University Hospital in Frankfurt. She discussed that one of the major challenges in oncology is the resistance of cancer cells to apoptosis. In her lab they are investigating small molecular mimetics to stimulate apoptosis in cancer cells. They have found that if they use mimetics to SMAC, a endogenous protein located on mitochondria known to promote apoptosis, along with glucocorticoids they can induce apoptosis selectively in their tumor cell models. This work is very exciting and brings about new therapies for oncology.

The workshop was happy to have 36 participants from Germany, Sweden, and France. The students and post-docs also gave great lectures on virus entry, virus induced signaling and apoptosis, and

virus host interaction. This year the participants voted and gave two awards for best presentation to Dr. Bastian Thaa from the Karolinska Institute and Cornelius Rohde from Phillips University, Marburg. Bastian is a post-doctoral fellow in the lab of Gerald McInerney where his work focuses on the activation of the mTOR pathway by both Simliki Forest Virus and chikungunya virus (CHIKV). He found a non-structural protein (NSP3) in SFV, which was responsible for the activation of mTOR however he found that CHIKV uses a different strategy to activate mTOR, which causes a much lower stimulation of this pathway. Cornelius, a PhD student of Prof. Dr. Stephan Becker, discussed his work on how Marburg virus proteins induce the unfolded protein response (UPR). Interestingly he showed that the UPR was induced by the viral glycoprotein GP and this response was able to be regulated through VP30 during a viral infection. Both Bastian and Cornelius will have their registration fee waived for the workshop next year.

The organizers would like to thank the German Society for Cell Biology (DGZ) and the Society for Virology (GfV) for their continued organizational and financial support. The workshop would also not be possible without generous contributions from the Chica and Heinz Schaller (CHS) Foundation, ReBlikon, and PerkinElmer. Additionally, the workshop is a success due to the exciting keynote lectures and the lively discussions from the participants.

The 15th Annual workshop will be held again at the Kloster Schoental November 2 - 4 2016 with the theme "Revolutionizing cell biology tools for virology". More information can be found at **www.gfv-cellviro.de.**