

## **Regulation of cellular processes by the ubiquitin-proteasome-system in viral myocarditis**

### **Summary:**

The ubiquitin-proteasome-system (UPS) is vital for cells to preserve the intracellular balance of protein synthesis and destruction. By degrading short-lived poly-ubiquitin-tagged proteins it determines the availability of regulatory proteins and controls a large number of cellular processes. Increased proteolytic activity of the UPS upon formation of immunoproteasomes is essential to preserve cellular viability and to counterbalance detrimental outcomes of inflammation in acute CoxsackievirusB3 (CVB3)-myocarditis. In this project we aim to decipher how the UPS regulates viral replication, innate and adaptive anti-viral immune responses and apoptosis. We shall study UPS-modulated signaling pathways of inflammation, immune cell invasion and differentiation. Moreover, we seek to unravel how inducible components of the UPS complex in inflammation affect disease progression at the different stages of viral cardiomyopathy ranging from acute infection to post-viral autoimmune disease with chronic tissue destruction. The here envisaged studies will substantially broaden our knowledge about the translational potential of proteasome regulation in inflammation to modulate viral cardiomyopathy.