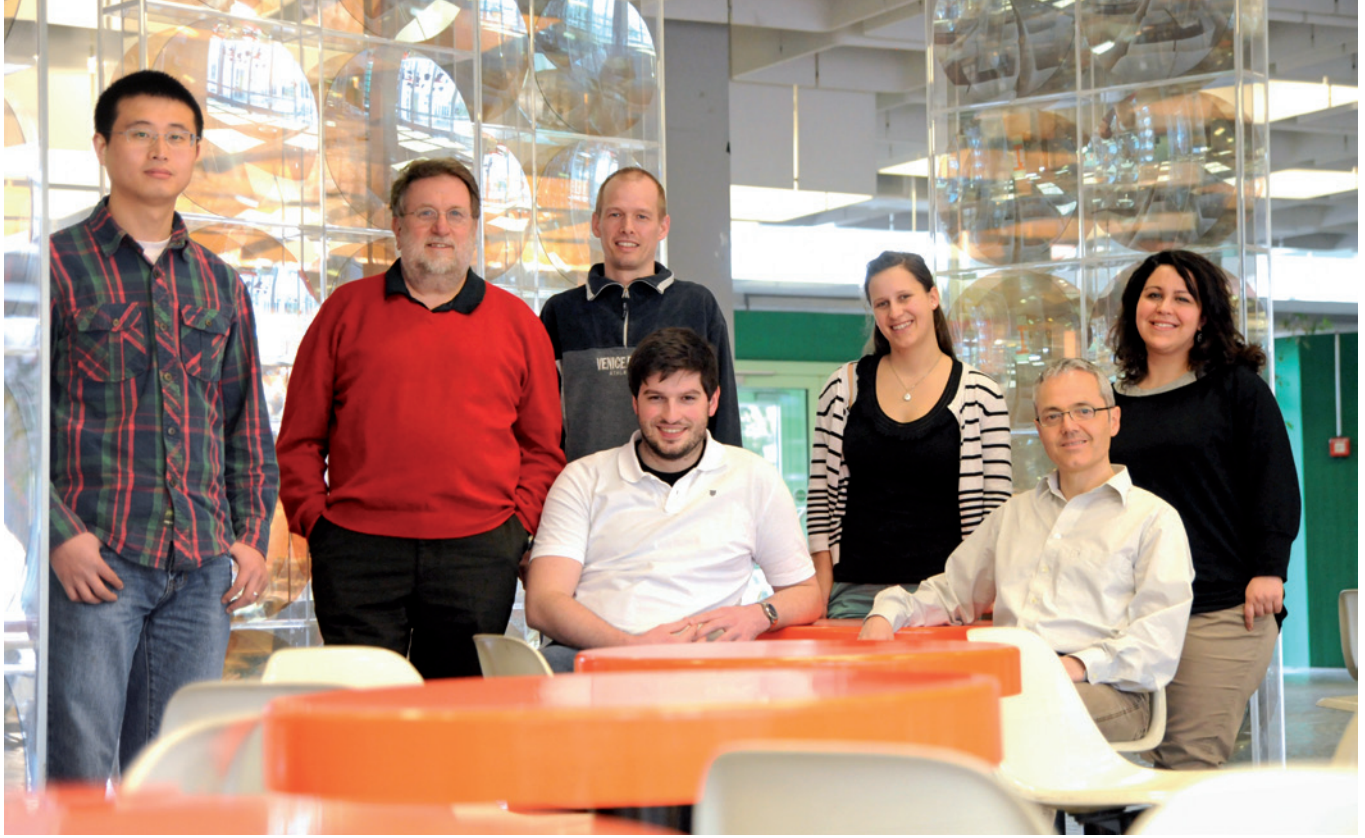


Institute of Virology

Work Group: Morphogenesis, Pathogenesis and Therapy in Human Cytomegalovirus (HCMV) Infection, as well as Interaction of the Virus with the Adaptive and Innate Immune System and Molecular Mechanisms of Cell Tropism

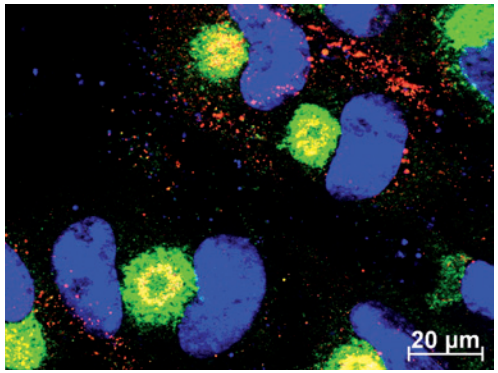
Head: Thomas Mertens

Human Cytomegalovirus (HCMV), a member of the Herpes virus family, is a highly relevant and threatening pathogen for individuals with an immature or compromised immune system (e.g. transplant recipients, intrauterine children, preterm babies, AIDS patients). Serious infections can occur following primary infection or reactivation from lifelong latent infection. Our group characterizes HCMV genes and their gene products with respect to viral morphogenesis, cell tropism, pathogenesis and antiviral therapy.

The Team:
Head of Institute: Th. Mertens
Professors: D. Michel, C. Sinzger
Group Leaders/Postdocs: J. von Einem, G. Frascaroli, D. Lieber, B. Reinhardt, A. Schubert
PhD Students: I. Brock, I. Cappadona, D. Hochdorfer, Z. Wu
Additional Members of Thesis Advisory Committees: W. Brune (Hamburg), S. Jonjic (Rijeka), G. Palù (Padua)

Therefore, we investigate the consequences of viral infection for the host cells and the interaction of viral and cellular proteins as well as the impact of HCMV infection on the immune functions of monocytes, macrophages and NK cells.

In cooperation with the Central Unit of Electron Microscopy, we are investigating intracellular viral transport and egress mechanisms by focusing on the interactions of HCMV tegument proteins with cellular proteins. The scope is also to clarify what cellular machineries are hijacked by the virus and if new targets for antiviral intervention can be characterized. Another focus of our work concerns the interaction of the virus with the innate immune system and the role of NK cells in protecting against severe HCMV disease in humans. The latter work is done in cooperation with the BMT unit of the pediatric clinic at the University Hospital Ulm.



Localization of viral proteins (red and green) in HCMV-infected cells (cell nucleus – blue)

The impact of antiviral therapy and viral resistance is constantly increasing. We are analyzing the two genes, UL97 and UL54, known to be responsible for HCMV antiviral resistance. We are also compiling a database for the correlation of resistant pheno- and genotypes in collaboration with the Department of Neuroinformatics. This database, which is the first for HCMV, has been made available through the internet and is currently being used worldwide.

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