MOI Project 18

The role of cellular membrane bodies during viral infection

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Background:

Viral infection remain a global health problem. Innate immune functions are critical to prevent viral replication and consequently limit virus load. However, a full understanding on effector mechanisms limiting virus replication and assembly remains still insufficiently studied.

Own previous work:

Own studies identified several molecular pathways inducing innate and adaptive immunity using murine model systems. Furthermore, new findings hint towards involvement of cellular membrane bodies during innate defense. However, the role and significance of the membrane bodies remains unclear and will be investigated in the proposed research project.

Aim of the project:

To understand the role and significance of cellular membrane bodies during viral replication.

Work program:

In the proposed research project the appearance of cellular membrane bodies will be assessed following infection with virus model systems (LCMV, VSV, non replicating VSV particles, HSV, etc.). Cellular membrane bodies will be visualized using several state of the art techniques (STED microscopy, electron microscopy, fluorescence labelling). Lipid metabolism and constitution of membrane bodies will be determined following infection and innate immune activation (MS, transcriptomics, RT-PCR, Western Blot). Accordingly, significant relevance of the identified targets will be tested (CRISPR, Plaque assay, gene modified mice). Overall, the obtained data will identify lipid and membrane pathways as critical for innate immune defense.