

TWINCORE – Seminar

Friday November 6th, 2015, 10 a.m.
TWINCORE Lecture Hall

„A broad virus-miRNA survey identifies critical miRNA interactions for pestiviruses“



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Small non-coding RNAs have emerged as key players in modulation of viral infection. An example is the dependence of hepatitis C virus (HCV) on the liver-specific microRNA (miRNA), miR-122, which has surfaced as therapeutic target. We used crosslinking immunoprecipitation (CLIP) of the Argonaute (AGO) protein to characterize strengths and specificities of miRNA interactions across 15 viral genomes. Intriguingly, replication of pestiviruses, which are major threats to milk and meat industry, critically depend on cellular miR-17 and let-7 interactions with the viral 3'UTR. Like HCV, miRNA binding enhanced translation and prevented viral RNA degradation. On the cellular transcriptome, pestiviral miR-17 sequestration in vitro and ex vivo conferred reduced AGO binding and functional mRNA derepression for miR-17 targets. These findings generalize the concept of RNA virus dependence on cellular miRNAs, highlight such interactions as therapeutic targets, and connect functional regulation of the transcriptome in primary cells to miRNA sequestration.

Who is Troels Scheel?

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