POSTER 18:

Effect of ADAR1 enzyme knockout on HCV replication

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The hepatitis C virus (HCV) is a member of the Flaviviridae family whose genome consists of a +RNA molecule. It causes hepatitis C, a disease that affects tens of millions of people worldwide. Although there is an effective treatment for this form of hepatitis, a preventive vaccine against the HCV virus has not yet been developed. Several papers have been published in the past focusing on the relationship between HCV and the enzyme adenosine deaminase acting on double-stranded RNA 1 (ADAR1). This dimeric double-stranded RNA-binding enzyme is part of innate immunity and causes the catalytic conversion of adenosine to inosine, which is recognised by cellular mechanisms as guanine, ultimately leading to mutations in the targeted dsRNA molecule. The work published to date ascribes an antiviral function to the ADAR1 enzyme in the context of HCV infection. In these papers, the effect of the ADAR1 enzyme was tested using ADAR1 siRNA knockdown. We are using a novel approach using an ADAR1 gene deletion cell line to assess the effect of ADAR1 enzyme on HCV replication. We prepared infectious HCV particles, determined their specific infectivity and determined growth curves in Huh7.5 wt and ADAR1 KO cells. We also tested the effect of interferon on viral replication in these cell lines.