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Modeling hepatitis C virus (HCV) RNA kinetics during treatment: in vitro and in vivo

In the last decade HCV kinetic modeling in vivo has played an important role in the analysis of HCV dynamics and the effects of antiviral therapy and they have suggested mechanisms of action (MOA) for both interferon-alpha (IFN) and ribavirin. While we still do not fully understand the MOAs of IFN and ribavirin, understanding the observed HCV RNA profiles during therapy with new direct acting agents (DAA) against HCV will shed light on HCV-host interaction, the dynamics of infection and the MOA of antivirals. The new cell-culture systems (in vitro) that allow the study of HCV replication, infection and treatment at the molecular level will provide valuable insights into HCV-host-drug dynamics within infected cells; a feature that has been considered as a black box. Recent experimental data (in vitro and in vivo) and modeling efforts in the presence of IFN/ribavirin/DAAs will be presented.