Title of Project 2: Host-pathogen interaction mechanisms of Hepatitis B Virus and identification of host factors that interfere with viral replication

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Short Description

The aim of this project is to understand the regulation of hepatitis B virus (HBV) replication in host human hepatocytes. By precisely defining the host cellular factors that are essential to HBV replication, we can conceivably block HBV replication by pharmacologic modulation of these host factor targets. Our results reveal that there are indeed host protein candidates that function as viral replication dependent factors and hence present an opportunity as novel targets in the treatment of chronic hepatitis B carriers.

We have previously identified hnRNPK as a key regulator that binds to the HBV enhancer/basic core promoter region and we are currently looking for accessory binding factors that may influence viral replication. To uncover possible binding factors that do not follow currently known canonical motifs, a series of probes that represent an overlapping scan of the regulatory region is being used to detect any novel transcriptional binding proteins that will provide the avenue as a means to control its replication. We envisage a combination therapy approach involving targeting of the virus itself, virus dependent host factors and immuno-modulatory factors to synergistically bring about a cure in HBV chronic carriers.