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Proteomics of Hepatitis C virus - Host cell Interaction: Identification of cellular/viral factors associated with HCV (+) strand RNA genome

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hronic infection by Hepatitis C virus (HCV) is the leading cause of severe hepatitis which often develops into liver cirrhosis (LC) and hepatocellular carcinoma (HCC). HCV preferentially replicates in hepatocytes without any direct cytopathic effect and thus able to maintain persistent chronic infection. The molecular mechanisms underlying HCV replication and pathogenesis are poorly understood. Similarly, the role(s) of host factors in the HCV replication and associated pathogenesis remain undefined. It is likely that a number of cellular factors may be involved in facilitating HCV replication and establishing chronic infection and its subsequent progression to LC and HCC. However, the identity of cellular factors interacting with HCV RNA genome is largely unknown. Recently a number of cellular proteins interacting with in vitro transcribed HCV 3'NTR have been affinity captured and identified by LC/MS/ MS; some of these proteins were found to be critical for HCV replication as validated by siRNA (Harris et al., 2006). A more direct approach would be to capture the replicating HCV RNA genome in situ and identify all the associated cellular and viral factors. The structured HCV genome and the interplay of tightly regulated viral and host factors assembled on it should be highly specific and relevant. In the present talk, we present a novel strategy for capturing the replicating HCV genome in situ from HCV infected cells and identifying all the associated cellular/viral factors by state-of-the-art proteomics technology.

Biography

Dr. Virendra Pandey received his Ph.D. in 1985 from the University of Mumbai at Bhabha Atomic Research Center (BARC), India. He served as a Senior Scientific Officer at BARC until 1994 and received the prestigious Shanti Swaroop Bhatnagar Award in 1991 from the Prime Minister of India for his research contribution in Life Sciences. He joined UMDNJ-New Jersey Medical School in 1994 and currently a tenured senior faculty in the Department of Biochemistry and Molecular Biology. He has published more than 75 research articles in reputed journals and has received uninterrupted research funding from NIH far the past 14 years.