Development and assessment of innovative approaches to characterise novel viral biomarkers of Hepatitis B infection and study the diversity of the relevant epidemics

ABSTRACT

Infection with Hepatitis B virus (HBV) still remains and will remain in the next 30 years a global public health issue according to WHO, with approximately 700,000 deaths per year due to HBV-liver related diseases, despite the fact that effective vaccine as well as long-term suppressive treatment are available. There is an urgent need to develop and evaluate novel viral biomarkers, such as HBV pregenomic RNA (pgRNA) and protein X (HBx), in order to improve treatment strategies and even cure infected persons. The research project will develop and assess innovative approaches to characterise the emerging novel viral biomarkers, namely HBV pgRNA and HBx, for their potential ability to guide clinical management and inform curative strategies in Chronic Hepatitis B (CHB), by studying a cohort chronically infected patients. We will also study the impact of HBV genomic diversity in the clinical outcome of HBV infection. We aim to implement advanced sequencing methodologies - Full-length Genome Sequencing (FGS) and Next Generation Sequencing (NGS) – to characterise HBV epidemic patterns and to investigate the impact of intra-host HBV genomic diversity in the CHB outcome. This research study proposes cutting-edge research in the field of viral genomics and blood-born viral infectious diseases by developing and implementing novel approaches and methodologies.