Understanding viral signatures in Hepatitis C

OVERVIEW

Darragh Duffy is an immunologist at the laboratory of Immunobiology of Dendritic Cells at Institut Pasteur/Inserm in France.

He specializes in infectious diseases and the variability in responses to interventions such as treatments and vaccines. This inherent variability could be due to genetic, environmental, lifestyle or microbiotic factors or a combination of these factors.

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TECHNICAL SITUATION

The people of Egypt face a largely unseen public health issue: Hepatitis C (HCV), a disease of the liver that around the world affects around 170 million people – 3% of the world's population, but up to 15% in Egypt. Left untreated, sufferers can go on to develop cirrhosis and liver cancer. The researchers have been analyzing the blood plasma of patients infected with Hepatitis A, B and C, as well as healthy patients, against as many proteins as was technically feasible. This has resulted in a huge dataset: "190 individuals (roughly equally divided between A, B, C and the healthy controls), 182 proteins, and a huge number of clinical factors, which were studied to identify both common and unique viral signatures," according to Duffy (Hepatology. 2014 Apr;59(4):1273-82).There are plenty of challenges ahead and work to do, however. Within the last 18 months, three new therapies have been released that are much more effective than Interferon in treating the disease, although much more expensive. "It's made developing the optimum companion biomarker much more challenging," said Duffy. "However, we still think that the tools that we are developing will be very useful for resource-limited countries where interferon therapy may still be used."

SOLUTION

"Initially I wasn't sure of the best way to analyze this large dataset and was looking for a solution. When I first put the data into Qlucore, it looked interesting almost straight away. As soon as we started using Qlucore we saw clear differences in some of the chemokines (proteins that control immune cell migration) between the A, B and C virally infected groups," Darragh Duffy explains.An additional impact was that Duffy and co- workers found the use of Qlucore on the Egypt biomarker data so positive that researchers from the company are now working with the research laboratory as partners a three-year European Union-funded program known as PoC-HCV. This program builds on the research in Egypt and elsewhere and is developing point-of-care predictive and prognostic tests intended to improve therapeutic decisions for management of chronic HCV patients (http://www.poc-hcv.eu/).

Understanding Viral signatures in Hepatitis C at Institute Pasteur