WCMC-Q’s new professor publishes groundbreaking study on metabolism and biomedical markers

The applicability of personalised medicine has moved one step closer thanks to a research study undertaken by WCMC-Q’s new Professor of Physiology and Biophysics, Karsten Suhre, PhD. In the most comprehensive investigation of its kind, the genetic variance in human metabolism was analysed and new insights into a range of common diseases were discovered.

The study, recently published in the prestigious Journal ‘Nature’ and titled ‘Human metabolic individuality in biomedical and pharmaceutical research’, establishes metabolomics as an intermediate to providing a biological link that contributes to the understanding of the genetic effects and more effectively impacts discovery and development of individualized biomarkers and therapies.

Professor Suhre led the study, which was a collaboration between European research centres, prior to taking up his position as Director of the Bioinformatics Core at WCMC-Q. Prof. Suhre said, ‘This study suggests that testing biochemical levels, not withstanding inborn errors of metabolism, is an excellent way of understanding individual uniqueness and can potentially increase the development of personalized medicine.’

The research project searched for genetic influences on levels of more than 250 compounds in blood, including lipids, sugars, vitamins, amino acids and others. They discovered variants that have a significant effect on the levels of these compounds, and therefore on the underlying biological and disease processes. The findings provide new insights for many disease-related associations that have been reported in previous studies, including cardiovascular and kidney disorders, type 2 diabetes, cancer, gout, thrombosis and Crohn’s disease.

‘Often the effects of variants discovered in genome wide association analyses are modest and we then have a poor understanding of the biological mechanisms behind the associations. However, this approach can overcome these problems and possibly inform individualized therapy or treatment. Previous studies have focused on the levels of one or a few metabolites such as cholesterol levels or sugar in the blood, these are investigated by a general practitioner to help diagnose disease. The new approach in this work analysed a much wider range of small biochemical compounds, to give as complete a picture as possible of the molecules that are symptoms of disease and those that might contribute to disease,’ said Prof Suhre. ‘These remarkable findings enable researchers to identify new and potentially relevant metabolic processes and pathways. We have, therefore, identified new molecules of interest that could be clinically significant.’

Prof Suhre is excited to be part of the visionary and dedicated team of researchers at WCMC-Q and is looking forward to participating in the drive to alleviate the health issues that are impacting on the region such as diabetes and heart disease.