WTDTP Projects for September 2023

Project Reference: T1/46

Project Title: **Multi-omic approaches to understand the medium and long-term effects of COVID-19 and identify novel therapeutic opportunities**

Theme(s): Theme 1: Genomics for drug development & pharmacogenetics

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Project Summary: As we progress through the COVID-19 pandemic the focus is shifting from short-term illness to the chronic effects of long COVID. With good access to vaccines in UK, acute COVID-19 and healthcare overload are becoming less pressing concerns, while the health and economic implications of long COVID are coming to the fore. Approximately 3% of the population have long COVID at any one time and the first large UK study of hospital survivors reported that only a third felt fully recovered 5 months after leaving hospital. Therefore, developing new treatments and improving our understanding of the risk factors and effects of comorbidity of this disease is particularly important.

This project will involve integrative multi-omic data analyses, including machine-learning, to generate new insights into the mechanisms that underlie ‘long-COVID’ and other after-effects of COVID-19 in order to identify potential new treatments. We have collected longitudinal clinical data and research samples for over 2500 post-hospitalisation survivors of COVID-19 from across the UK. We are generating genomic, proteomic and microbiomics data, linked to detailed health outcomes, electronic healthcare records and other COVID-19 studies. This rich resource therefore presents an exciting opportunity to develop and apply state-of-the-art analytic approaches to directly answer important research questions about the biological processes that underlie the long-term effects of COVID-19.