WTDTP Projects for September 2022

Project Reference: T1/33

Project Title: **Defining genetic associations in the complex 17q21.31 inversion region to identify**

**potential drug targets**

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

Primary Supervisor: Dr Ed Hollox (University of Leicester)

Secondary Supervisor(s): Prof Louise Wain (University of Leicester)

Department: Genetics and Genome Biology

Project Summary: Understanding the basis of genetic associations with common diseases or traits is important both for understanding the etiology of the disease and for developing drugs targeted at particular gene products and pathways. A structurally variable region at chromosome 17q21, including a large inversion and copy number variation, harbours robust genetic associations with many traits and diseases (including lung disease). However, because the strong linkage disequilibrium spans the entire region, standard fine-mapping approaches are ineffective, and the bases for these associations is not known. The aim of this project is to use large scale genomic and epidemiological data to discover the variation responsible for the associations and disentangle. This will involve manipulation of large genomic datasets to impute structural variants, directly type structural variants, and test for associations between individual structural variants and disease. The project aims to use population genetics and genetic epidemiology to dissect the associations with particular traits, and identify causal genes, providing mechanistic insight into disease etiology and identifying potential new drug targets.