Defining Idiopathic Nephrotic Syndrome with proteogenomic analysis – A Proof of Concept study

Idiopathic nephrotic syndrome is an umbrella term wherein the glomerulus (functional unit of kidney; with a million in each kidney) and its cells in kidney are affected. 2 diseases called MCD & FSGS are on a spectrum leading to similar symptoms, and diagnosis is made on kidney biopsy. However, treatment response and progression to end stage kidney disease (ESKD) in patients varies widely. Often it is unclear as to what triggers the disease and currently, there are no clear ways of predicting the prognoses. The disease can reappear after transplantation.

Rare cases of vaccine associated nephrotic syndrome were reported in past. During the Covid-19 epidemic we identified a rare association of NS after C-19 vaccination. Developing NS soon after the vaccine suggests a clear trigger. Even before the C-19 pandemic, we have been collecting deep clinical phenotype, blood/urine samples in patients with NS to be able to study the association of biological processes with the disease. This exercise of deep phenotyping & bio-sampling is approved under the Manchester Renal Biobank Ethics.

We aim to use a technique called Laser Microdissection/Mass Spectrometry (LM/MS) on spare kidney tissue obtained at the time of diagnosis, and to look for biological pathways and compare them between specific cohorts. This is an exploratory study and to our knowledge is the first in kind to correlate the LM/MS findings with prognosis and defining the biological pathways in iNS. The Glomerular Disease Working group in Manchester include clinicians with interest in NS, researchers and scientists studying different techniques. This provides us with a proper platform to study the disease further and we believe that this work would pave way for further studies that could unravel hitherto unknown phenomena.