Renal tubulopathies

Contact details
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Samples required
- 5ml venous blood in plastic EDTA bottles (>1ml from neonates)
- Prenatal testing must be arranged in advance, through a Clinical Genetics department if possible.
- Amniotic fluid or CV samples should be sent to Cytogenetics for dissecting and culturing, with instructions to forward the sample to the Regional Molecular Genetics laboratory for analysis
- A completed DNA request card should accompany all samples

Patient details
To facilitate accurate testing and reporting please provide patient demographic details (full name, date of birth, address and ethnic origin), details of any relevant family history and full contact details for the referring clinician

Introduction
The renal tubule is responsible for maintenance of acid-base balance, blood pressure and the correct concentration of electrolytes in the body. Consequently, disorders in renal tubular function are typically associated with abnormalities in these critical physiological parameters. Depending on the severity of the disorder, these abnormalities can be life-threatening and/or associated with severe complications, including sudden death, prematurity, critically high or low blood pressure, heart arrhythmia, failure-to-thrive and kidney stones, or only manifest in mild abnormalities seen on blood tests.

Referrals
Patients with a strong clinical suspicion of a monogenic predisposition to a renal tubulopathy. Referrals will be accepted from clinical geneticists and consultant nephrologists.

Prenatal testing
Prenatal testing may be available for families following analysis of the affected proband - please contact the laboratory to discuss.

Service offered
Variant screening is carried out by next generation sequencing with library preparation using the Agilent focused clinical exome +1 kit followed by sequencing on the Illumina platforms. Data is analysed using an in-house pipeline with all pathogenic variants confirmed by Sanger sequencing. Screening of the 37 gene panel or one of the following sub-panels may be requested:
- Magnesium related renal tubulopathy 10 gene panel (FXYD2, TRPM6, EGF, HNF1B, CLDN16, CLDN19, KCNA1, KCNJ10, SLC12A3, CLCNKB)
- Dent disease 2 gene panel (CLCN5, OCRL)
- Hypokalaemic alkalosis (Bartter; Gitelman; EAST; Liddle) 8 gene panel (SLC12A3, SLC12A1, KCNJ1, CLCNKB, BSND, KCNJ10, SCN1B, SCN1G)
- Hyperkalaemic acidosis (PHA1/2) 8 gene panel (WNK1, WNK4, KLHL3, CUL3, SCN1A, SCN1B, SCN1G, NR3C2)
- Hypophosphatemia with hypercalciuria 3 gene panel (SLC9A3R1, SLC34A1, SLC34A3)
- Autosomal dominant interstitial kidney disease 2 gene panel (UMOD, REN)
- Nephrogenic diabetes insipidus 2 gene panel (AQP2, AVPR2)
- Calcium related renal tubulopathy 3 gene panel (CASR, GNA11, AP2S1)
- Renal tubular acidosis 4 gene panel (SLC4A4, SLC4A1, ATP6V1B1, ATP6V0A4)

Target reporting time
4 months for next generation sequencing screening in an index case. 4 weeks for familial testing.

Please contact the laboratory for urgent cases.