JAK3-deficient severe combined immunodeficiency (JAK3-SCID)

**Contact details**
Molecular Genetics Service
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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**
JAK3-SCID (MIM 600802) is an autosomal recessive immunodeficiency characterised by a lack of circulating T cells. Affected individuals can be diagnosed on the basis of an abnormality or deficiency of the Janus 3 kinase protein (JAK3). The JAK3 gene has 24 exons (23 coding) and family specific mutations are found throughout the gene.

**Referrals**
- Affected patients should be referred to the Molecular Immunology laboratory at GOSH for JAK3 protein analysis. This requires prior arrangement and completion of specific request forms (see contact information below). We work closely with this department and will undertake mutation screening in appropriate patients.
- Carrier testing can be offered to the relatives of JAK3 patients once a disease causing mutation has been identified, however due to the rarity of the disorder partner screening is not offered unless there is consanguinity or a family history of JAK3-SCID in the partner.

**Prenatal testing**
Prenatal testing is available for families in whom specific mutations have been identified or in whom appropriate family studies have been undertaken - please contact the laboratory to discuss.

**Service offered**
Mutation screening of the JAK3 gene in affected individuals found to have absent or abnormal JAK3 expression. Cases found to have JAK3 expression may be screened if there is a strong clinical indication for a diagnosis of JAK3-SCID. If DNA from the affected individual is unavailable screening can be undertaken in the parents. Mutation-specific tests for family members are available.

**Technical**
Mutation screening is undertaken by sequence analysis of the JAK3 gene.

**Target reporting time**
8 weeks for routine mutation screen in index case. 2 weeks for carrier testing using mutation-specific tests. For urgent samples please contact the laboratory.

To arrange JAK3 expression studies please contact Dr Kimberly Gilmour in Molecular Immunology, GOSH
Tel: +44 (0) 20 7829 8835
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