Fanconi Anemia Type B: \textit{FANCB} Gene Deletion/Duplication

\textbf{Test Code:} DFANB  
\textbf{Turnaround time:} 2 weeks  
\textbf{CPT Codes:} 81228 x1

\textbf{Condition Description}

Fanconi anemia (FA) is characterized by physical abnormalities. Approximately 60-75\% of affected individuals have variable physical abnormalities which may include short stature, abnormal skin pigmentation, skeletal anomalies, and ear or eye abnormalities. Other features include heart defects, hearing loss, developmental delay, hypogonadism, and genitourinary tract abnormalities.

FA is diagnosed by the detection of chromosomal aberrations in cells that have been cultured with a DNA interstrand cross-linking agent. There are at least 15 genes that are responsible for the known FA complementation groups. Mutations in the \textit{FANCB} gene (Xp22.31) (\textbf{OMIM\# 300515}), which are responsible for FA complementation group B (FA-B) (\textbf{OMIM\# 300514}), account for 2\% of FA cases. FA-B cases are the only X-linked form of FA and mainly affect males. Females can be heterozygote carriers at risk for having a child with X-linked FA. Carriers are found to have 100\% skewing of X inactivation.

This testing is for sequence analysis of the \textit{FANCB} gene only.

For patients with suspected FA-B, sequence analysis is recommended as the first step in mutation identification. For patients in whom mutations are not identified by full gene sequencing, deletion/duplication analysis is appropriate.

\textbf{References:}

- GeneReviews  
- \textbf{OMIM\# 300514}: Fanconi anemia complementation group B  
- \textbf{OMIM\# 300515}: \textit{FANCB} gene

\textbf{Genes}

\textit{FANCB}

\textbf{Indications}

This test is indicated for:

- Confirmation of a clinical diagnosis of Fanconi Anemia Type B in an individual in whom sequence analysis was negative.  
- Carrier testing in adults with a family history of Fanconi Anemia Type B in whom sequence analysis was negative.

\textbf{Methodology}

DNA isolated from peripheral blood is hybridized to a CGH array to detect deletions and duplications. The targeted CGH array has overlapping probes which cover the entire genomic region.

Please note that a “backbone” of probes across the entire genome are included on the array for analytical and quality control purposes. Rarely, off-target copy number variants causative of disease may be identified that may or may not be related to the patient's phenotype. Only known pathogenic off-target copy number variants will be reported. Off-target copy number variants of unknown clinical significance will not be reported.

\textbf{Detection}

Detection is limited to duplications and deletions. The CGH array will not detect point or intronic mutations. Results of molecular analysis must be interpreted in the context of the patient's clinical and/or biochemical phenotype.

\textbf{Specimen Requirements}

Submit only 1 of the following specimen types
* Preferred specimen type: Whole Blood

**Type: Whole Blood**

Specimen Requirements:

In EDTA (purple top) tube:
- Infants (2 years): 3-5 ml
- Older Children & Adults: 5-10 ml

Specimen Collection and Shipping: Refrigerate until time of shipment. Ship sample within 5 days of collection at room temperature with overnight delivery.

**Type: Saliva**

Specimen Requirements:

Oragene™ Saliva Collection kit (available through EGL) used according to manufacturer instructions.

Specimen Collection and Shipping: Store sample at room temperature. Ship sample within 5 days of collection at room temperature with overnight delivery.

**Related Tests**

- Sequence analysis of the *FANCB* gene is available and is required before deletion/duplication analysis.
- Custom diagnostic mutation analysis (KM) is available to family members if mutations are identified by targeted mutation testing or sequencing analysis.
- Prenatal testing is available only for known familial mutations to individuals who are confirmed carriers of mutations. Please contact the laboratory genetic counselor to discuss appropriate testing prior to collecting a prenatal specimen.
- X-Linked Intellectual Disability panels are available for 30, 60, and 90 genes.