Early Onset Inflammatory Bowel Disease: Deletion/Duplication Panel

Test Code: MD160
Turnaround time: 2 weeks
CPT Codes: 81228 x1, 81323 x1, 81403 x1

Condition Description

Inflammatory bowel disease (IBD), encompassing Crohn’s disease, ulcerative colitis, and unclassified IBD (IBDU) is characterized by chronic intestinal inflammation and has multi-factorial etiology with complex interactions between genetic and environmental factors. Although the genetics of IBD is believed to be common and complex, over 150 genetic loci have been described to be associated with IBD. The genetic contribution of the majority of those common loci towards explained heritability or their effect sizes are low. Recent studies have revealed an increasing spectrum of human monogenic diseases with high effect sizes/penetration that can present with IBD or IBD-like intestinal inflammation. A substantial proportion of patients with those genetic defects present with very early onset intestinal inflammations, particularly if the onset of IBD occurs in subjects less than 10 years of age. There is also considerable overlap between primary immunodeficiency and very early onset IBD. Over 20 monogenic defects/genetic loci have been selected in this genetic diagnostic panel to test for very early onset IBD or IBD-like diseases. In addition to IBD or IBD-like diseases, these monogenic disorders also overlap with immunodeficiency affecting granulocyte and phagocyte activity, hyper- and autoinflammatory disorders, defects with disturbed T and B lymphocyte selection and activation, and defects in immune regulation affecting regulatory T cell activity and interleukin (IL)-10 signaling.

The Inflammatory Bowel Disease Panel will:

- Identify mutations associated with very early onset IBD (onset in less than 10 years) or IBD-like diseases
- Make a molecular diagnosis with the basis of pathogenesis
- Obtain rationale for patient-specific early intervention with emerging or experimental therapeutics and cell-based approaches
- Screen family members for carrier detection and genetic counseling

References:

- OMIM

Genes

AICDA, BTK, CD40LG, CYBA, CYBB, DCLRE1C, FOXP3, HPS1, HPS4, HPS6, ICOS, IL10RA, IL2RA, LRBA, MEFV, MVK, NCF2, NCF4, PTCN, RET, SH2D1A, SLC37A4, STXBP2, TTC37, WAS, XIAP

Indications

This test is indicated for:

- Confirmation of a clinical diagnosis of inflammatory bowel diseases (IBD).
- Carrier testing in adults with a family history of inflammatory bowel diseases (IBD).

Methodology

Deletion/Duplication Analysis: DNA isolated from peripheral blood is hybridized to a gene-targeted CGH array to detect deletions and duplications. The targeted CGH array has overlapping probes that 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.

Detection

Deletion/Duplication Analysis: 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.

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## Specimen Requirements

Submit only 1 of the following specimen types

### 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: Ship sample at room temperature with overnight delivery.

### Type: Isolated DNA

Specimen Requirements:

- In microtainer: 10 ug

Isolation using the Qiagen™ Puregene kit for DNA extraction is recommended.

Specimen Collection and Shipping: Refrigerate until time of shipment in 100 ng/ul of TE buffer. Ship sample at room temperature with overnight delivery.

## Related Tests

- Early Onset Inflammatory Bowel Disease: Sequencing Panel