Lysosomal Acid Lipase Deficiency: LIPA Gene Sequencing

**Test Code:** SLIPA  
**Turnaround time:** 4 weeks  
**CPT Codes:** 81479 x1

**Condition Description**

Mutations in the *LIPA* gene (10q23.31) cause autosomal recessive lysosomal acid lipase deficiency. The phenotype varies in clinical onset and the severity of the disease. While lysosomal acid lipase deficiency is a spectrum, two distinct types have been described. Wolman disease (WD) is on the severe end of the spectrum. It is characterized by infantile onset, severe hepatosplenomegaly, failure to thrive, malabsorption, abdominal distention, steatorrhea, and adrenal calcification. Cholesteryl esters and triglycerides are stored in the lysosomes of the small intestine, liver, and adrenal gland. Plasma lipid levels are normal. Cholesteryl ester storage disease (CESD) is on the milder end of the spectrum. It is characterized by hepatomegaly, hypercholesterolemia, and deposition of cholesteryl esters in many tissues. Premature atherosclerosis can develop in some patients.

**References:**
- OMIM #613497: LIPA gene
- OMIM #278000: Lysosomal acid lipase deficiency

**Genes**

*LIPA*

**Indications**

This test is indicated for:
- Confirmation of a clinical diagnosis of lysosomal acid lipase deficiency.
- Carrier testing in adults with a family history of lysosomal acid lipase deficiency.

**Methodology**

PCR amplification of 9 exons contained in the *LIPA* gene is performed on the patient's genomic DNA. Direct sequencing of amplification products is performed in both forward and reverse directions, using automated fluorescence dideoxy sequencing methods. The patient's gene sequences are then compared to a normal reference sequence. Sequence variations are classified as mutations, benign variants unrelated to disease, or variations of unknown clinical significance. Variants of unknown clinical significance may require further studies of the patient and/or family members. This assay does not interrogate the promoter region, deep intronic regions, or other regulatory elements, and does not detect large deletions.

**Detection**

Clinical Sensitivity: Unknown. Mutations in the promoter region, some mutations in the introns and other regulatory element mutations cannot be detected by this analysis. Large deletions will not be detected by this analysis. Results of molecular analysis should be interpreted in the context of the patient's clinical and/or biochemical phenotype.

Analytical Sensitivity: ~99%

**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**

- 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.