Hypophosphatasia: *ALPL* Deletion/Duplication

**Test Code:** DSALP  
**Turnaround time:** 2 weeks  
**CPT Codes:** 81228 x1

## Condition Description

Hypophosphatasia is a rare disorder characterized by impaired mineralization in bones and/or teeth due to deficiency in serum and bone alkaline phosphatase. At least six clinical forms are currently recognized based on age at diagnosis and severity of features. The highly variable clinical presentation ranges from a severe perinatal form to a mild odontohypophosphatasia form in which only teeth are affected. Clinical features may include prenatal long-bone bowing, infantile rickets with growth failure, craniosynostosis, scoliosis, costochondral enlargements, hypotonia, hypercalcemia and hypercalciuria, bone pain, and premature loss of deciduous teeth.

Hypophosphatasia is caused by pathogenic variants in the *ALPL* gene. The *ALPL* gene provides instructions for making the enzyme alkaline phosphatase, which is essential in the formation of strong bones and teeth.

Perinatal and infantile forms are inherited in an autosomal recessive manner, while milder forms, such as adult hypophosphatasia and odontohypophosphatasia, may be inherited in an autosomal recessive or autosomal dominant fashion. Severe forms of hypophosphatasia affect an estimated 1 in 100,000 newborns and appears most commonly in a Mennonite population in Manitoba, Canada.

### References:

## Genes

### ALPL

#### Indications

This test is indicated for:
- Individuals with a clinical diagnosis of hypophosphatasia.

#### 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.

#### Detection

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

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

### Type: Isolated DNA

**Specimen Requirements:**

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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

Hypophosphatasia: ALPL Gene Sequencing