PREVENTION GENETICS
DISEASE PREVENTION THROUGH GENETIC TESTING

CLIA #: 52D1027685 ● CAP #: 7185561
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Mucolipidosis III Gamma
via *GNPTG* Gene Sequencing (Test #317)

Brief Description of Disorder: Mucolipidosis III Gamma (ML III γ) (OMIM 252605), also called Pseudo-Hurler Polydystrophy, is part of the lysosomal storage disease family. The disease manifests clinically in childhood. Phenotypic characteristics include moderate dysostosis multiplex, joint stiffness (in the shoulders, hips, and fingers), coarsening of facial features, genu valgum, restrictive lung disease, thickening and insufficiency of the mitral and aortic valves, left ventricular hypertrophy, and in a few cases, mild cognitive impairment. ML III γ is distinguished from Mucolipidosis III alpha/beta (ML III α/β) by a milder phenotype and by the underling causative mutations.

Genetics: ML III γ is inherited in an autosomal recessive manner and is caused by mutations in *GNPTG* (encoding the protein N-acetylglucosamine-1-phosphotransferase subunit gamma) (Raas-Rothschild et al. J Clin Invest 105:673-681, 2000). Missense, nonsense, and frameshift mutations as well as small intragenic insertions and deletions have been reported as disease causing (eg Persichetti et al. Hum Mutat 30:978-84, 2009).

Description of This Particular Test: Testing is performed by determining and analyzing the deoxyribonucleic acid (DNA) sequence of the entire *GNPTG* gene. This is accomplished by amplifying the 11 coding exons and ~50 of adjacent noncoding sequences using PCR followed by DNA sequencing using the dideoxy chain-terminating method of Sanger et al. in conjunction with a capillary electrophoresis apparatus.

Reference Sequences: **Genomic: NC_000016.9** **mRNA: NM_032520.3**
Protein: NP_115909.1 **mRNA and Protein: CCDS 10436.1**

Indications for Test: For ML III γ, patients are candidates for this test if they have a family history of ML III γ, phenotypic symptoms common to ML III γ and show increased hydrolase (β-D-hexosaminidase, β-D-glucuronidase, β-D-galactosidase, and α-D-mannosidase) activity.

Sensitivity of Test: The sensitivity for the *GNPTG* sequencing test is >95% for ML III γ.

Turnaround Time: Maximum of 40 days, although many tests are completed in 2-3 weeks.

Specimen Requirements: Refer to page 4 of the Test Requisition form.

Price: **Sequencing of *GNPTG* Gene:** **$ 490**

CPT Codes:

Sample Ascertainment x1	83890	$ 30	DNA Isolation x1	83891	$ 40
Amplification x5	83898	$ 120	Sequencing x5	83904	$180
Separation x1	83894	$ 40	Interpretation/Report x1	83912	$ 80

Accreditation Info. CLIA ID #: 52D1027685 (expires 1/18/13) (CAP#: 7185561, AU ID: 1407125 expires 12/20/12)

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