The GBA gene encodes the enzyme beta-glucocerebrosidase which is active in lysosomes. Beta-glucocerebrosidase is a housekeeping enzyme that helps break down the glycolipid glucocerebroside to ceramide and glucose. Glucocerebroside is a component of the membrane that surrounds cells. It gets broken down by beta-glucocerebrosidase when cells die, and the components are reused as new cells are formed. GBA gene contains 11 exons spanning 10.4 kb of genomic DNA that had been mapped to Chromosome 1q22. Mutations in GBA gene are associated with Gaucher disease, cardiovascular calcifications and valvular calcification (mitral valve calcification). GBA mutations demonstrate autosomal recessive inheritance with a broad range of clinical severity both within and between families. Definitive genotype/phenotype correlations have not been described.

The John Welsh Cardiovascular Diagnostic Laboratory offers molecular genetic testing for GBA mutations. Individuals are tested by automatic fluorescent DNA sequencing of the coding exons of the GBA gene. We strongly recommend initial testing of a clearly affected individual, if available, in order to provide the greatest test sensitivity and clearest interpretation of results for subsequent family members. Genetic counseling is recommended for all individuals.

**REASONS FOR REFERRAL**

Molecular confirmation of the diagnosis of Gaucher disease, cardiovascular calcifications and valvular calcification (mitral valve calcification).

**METHODOLOGY**

Genomic DNA is analyzed for GBA mutations by automatic fluorescent DNA sequencing of the coding exons of the GBA gene, as well as the exon/intron junctions and a portion of the 3’ untranslated region. Patient DNA is sequenced in both the forward and reverse orientations. If a mutation is identified, additional family members are analyzed only for the familial mutation by automatic fluorescent DNA sequencing.

**SERVICE FEES**

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<th>Direct and Institutional Billing</th>
<th>CPT Codes</th>
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<tr>
<td>Index Case (Male or Female)</td>
<td>$1000 per sample</td>
<td>81406X2</td>
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<tr>
<td>Additional Family Members</td>
<td>$400 per sample; Known familial mutation only</td>
<td>81403X2</td>
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**SENSITIVITY**

DNA Sequencing Analysis: Approximately 99% detection of mutations in the coding exons of GBA.

**SPECIMEN REQUIREMENTS**

- **Blood** (preferred): EDTA (purple-top) tubes: *Adult*: 5 cc *Child*: 5 cc *Infant*: 2-3 cc
- **Tissue**: Frozen (preferred), RNALater, Formalin-fixed, Paraffin-embedded
- **Other Body Fluids**: Call to inquire