ABCA1 encodes a member of the superfamily of ATP-binding cassette (ABC) transporters. The human gene ABCA1 encodes a product containing 2261 amino acids and encompasses 49 exons. It is located at 9q31.1. ABC proteins transport various molecules across extra- and intracellular membranes. The ABCA1 protein functions as a cholesterol efflux pump in the cellular lipid removal pathway. Mutations in this gene have been associated with Tangier's disease, type 2 HDL deficiency and familial hypercholesterolemia. ABCA1 mutations demonstrate autosomal recessive inheritance for Tangier’s disease 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 ABCA1 mutations. Individuals are tested by DNA sequencing of the coding exons of the ABCA1 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.

Molecular confirmation of the diagnosis of Tangier's disease, type 2 HDL deficiency and familial hypercholesterolemia.

METHODOLOGY

Genomic DNA is analyzed for ABCA1 mutations by DNA sequencing of the coding exons of the ABCA1 gene, as well as the exon/intron junctions and a portion of the 5’ and 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

<table>
<thead>
<tr>
<th>Direct and Institutional Billing</th>
<th>CPT Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Case (Male or Female)</td>
<td>$1500 per sample</td>
</tr>
<tr>
<td>Additional Family Members</td>
<td>$300 per sample; Known familial mutation only</td>
</tr>
</tbody>
</table>

SENSITIVITY

DNA Sequencing Analysis: Approximately 99 percent detection of mutations in the coding exons 1-49 of ABCA1.

SPECIMEN REQUIREMENTS

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