The human \( LPL \) gene is located at 8p22 and encompasses 10 exons. This gene encodes the 475-amino-acid lipoprotein lipase which is made primarily in fatty (adipose) tissue and in muscle. LPL removes fatty substances from two types of lipoproteins: chylomicrons and very low density lipoproteins (VLDLs). After a meal, chylomicrons are formed to carry fat from the intestine into the bloodstream. VLDLs are molecules that circulate in the blood, carrying fat and cholesterol from the liver to other tissues throughout the body. Mutations in \( LPL \) gene have been linked to familial combined hyperlipidemia (FCHL) and lipoprotein lipase deficiency. \( LPL \) mutations demonstrate autosomal dominant 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 \( LPL \) mutations. Individuals are tested by DNA sequencing of the coding exons of the \( LPL \) 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 familial combined hyperlipidemia (FCHL) and lipoprotein lipase deficiency.

### METHODOLOGY

Genomic DNA is analyzed for \( LPL \) mutations by DNA sequencing of the coding exons of the \( LPL \) 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></th>
<th>Direct and Institutional Billing</th>
<th>CPT Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Case (Male or Female)</td>
<td>$800 per sample</td>
<td>81405</td>
</tr>
<tr>
<td>Additional Family Members</td>
<td>$300 per sample; Known familial mutation only</td>
<td>81403</td>
</tr>
</tbody>
</table>

### SENSITIVITY

DNA Sequencing Analysis: Approximately 99 percent detection of mutations in the coding exons 1-10 of \( LPL \).

### SPECIMEN REQUIREMENTS

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