COL1A2 (COLLAGEN, TYPE I, ALPHA-2) is the pro-alpha2 chain of type I collagen which is a fibril-forming collagen found in most connective tissues and is abundant in bone, cornea, dermis and tendon. Human COL1A2 gene contains 52 exons maped within chromosome 7q21.3. Mutations in this gene are associated with Ehlers-Danlos syndrome with a cardiac valvular phenotype, and atypical Marfan syndrome. The patients have severe mitral regurgitation and moderate aortic regurgitation with borderline dilatation of the aortic root, episodes of arrhythmias and atrial fibrillation. Definitive genotype/phenotype correlations have not been described.

The John Welsh Cardiovascular Diagnostic Laboratory offers molecular genetic testing for COL1A2 mutations. Individuals are tested by automatic fluorescent DNA sequencing of the coding exons of the COL1A2 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 valvar and vascular disorders, Ehlers-Danlos syndrome with a cardiac valvar phenotype, and atypical Marfan syndrome.

**METHODOLOGY**

Genomic DNA is analyzed for COL1A2 mutations by DNA sequencing of the coding exons of the COL1A2 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>$1,600 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 exon 1-52 of COL1A2.

**SPECIMEN REQUIREMENTS**

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