COL5A2 (COLLAGEN, TYPE V, ALPHA-2) is an alpha chain for one of the low abundance fibrillar collagens. Fibrillar collagen molecules are trimers that can be composed of one or more types of alpha chains. Type V collagen is found in tissues containing type I collagen and appears to regulate the assembly of heterotypic fibers composed of both type I and type V collagen. Type V collagen binds to DNA, heparan sulfate, thrombospondin, heparin, and insulin, which is a key determinant in the assembly of tissue-specific matrices. Human COL5A2 gene contains 54 exons mapped within chromosome 2q32.2. Mutations in this gene are associated with Ehlers-Danlos syndrome, types I and II. The Ehlers-Danlos syndromes (EDS) are a group of heritable connective tissue disorders that share the common features of skin hyperextensibility, articular hypermobility, and tissue fragility. The patients with EDS also have audible mitral valve prolapse, and even spontaneous arterial rupture. Definitive genotype/phenotype correlations have not been described.

The John Welsh Cardiovascular Diagnostic Laboratory offers molecular genetic testing for COL5A2 mutations. Individuals are tested by automatic fluorescent DNA sequencing of the coding exons of the COL5A2 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, types I and II.

METHODOLOGY

Genomic DNA is analyzed for COL5A2 mutations by DNA sequencing of the coding exons of the COL5A2 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

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<th>Direct and Institutional Billing</th>
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<td>Index Case (Male or Female)</td>
<td>$1,600 per sample</td>
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<tr>
<td>Additional Family Members</td>
<td>$300 per sample; known familial mutation only</td>
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SENSITIVITY

DNA Sequencing Analysis: Approximately 99 percent detection of mutations in the coding exons 1-54 of COL5A2.

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