The UQCRB (Ubiquinol-Cytochrome C Reductase Binding Protein) is a nucleus-encoded component of ubiquinol-cytochrome c oxidoreductase (Complex III) in the mitochondrial respiratory chain and plays an important role in electron transfer as a complex of ubiquinone and QP-C. Complex III consists of 10 nuclear-encoded subunits and 1 mitochondrial-encoded subunit (cytochrome b). The UQCRB gene locates on chromosome 8q22, contains four exons and spans around 9.7 Kb of genomic sequence. Mutations in this gene are associated with mitochondrial complex III deficiency, resulting in a highly variable phenotype depending on which tissues are affected. Clinical features include mitochondrial encephalopathy, psychomotor retardation, ataxia, severe failure to thrive, liver dysfunction, renal tubulopathy and muscle weakness. UQCRB 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 UQCRB mutations. Individuals are tested by DNA sequencing of the coding exons of the UQCRB 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 CHD and mitochondrial complex III deficiency.

**METHODOLOGY**
Genomic DNA is analyzed for UQCRB mutations by DNA sequencing of the coding exons of the UQCRB 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>
<th>CPT Codes</th>
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<td>Index Case (Male or Female)</td>
<td>$500 per sample</td>
<td>81404</td>
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<tr>
<td>Additional Family Members</td>
<td>$300 per sample; known familial mutation only</td>
<td>81403</td>
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**SENSITIVITY**
DNA Sequencing Analysis: Approximately 99 percent detection of mutations in the coding exons 1-4 of UQCRB.

**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