SCN2B MUTATION ANALYSIS
JOHN WELSH CARDIOVASCULAR DIAGNOSTIC LABORATORY

SCN2B gene encodes the sodium channel subunit beta-2 precursor. The sodium channel consists of a pore-forming alpha subunit, beta-1 and beta-2 subunits. Beta-1 is non-covalently associated with alpha, while beta-2 is covalently linked by disulfide bonds. The subunit beta-2 causes an increase in the plasma membrane surface area and in its folding into microvilli. Interacts with TNR may play a crucial role in clustering and regulation of activity of sodium channels at nodes of Ranvier. SCN2B gene contains four exons spanning 14 kb of genomic distance that has been mapped to chromosome 11q23. Mutations in this gene have been linked to Brugada syndrome and atrial fibrillation (AF). SCN2B mutations demonstrate autosomal dominant inheritance with a broad range of clinical severity both within and between families.

The John Welsh Cardiovascular Diagnostic Laboratory offers molecular genetic testing for SCN2B mutations. Individuals are tested by DNA sequencing of the coding exons of the SCN2B 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 Brugada syndrome and atrial fibrillation (AF).

METHODOLOGY

Genomic DNA is analyzed for SCN2B mutations by DNA sequencing of the coding exons of the SCN2B gene, as well as the exon/intron junctions and a portion of the 5’ and 3’ untranslated regions. 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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<tr>
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<th>Direct and Institutional Billing</th>
<th>CPT Codes</th>
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<tbody>
<tr>
<td>Index Case (Male or Female)</td>
<td>$700 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% detection of mutations in the four coding exons of SCN2B.

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 and Formalin-fixed, Paraffin-embedded Tissue: Call to inquire