SALL4 MUTATION ANALYSIS
JOHN WELSH CARDIOVASCULAR
DIAGNOSTIC LABORATORY

SALL4 (Spalt-Like Transcription Factor 4) gene is a member of the SALL family. These genes encode transcription factors that are involved as mediators of developmental pathways during organogenesis and cell differentiation in embryonic development by helping to control the activity of particular genes. SALL4 gene is located in chromosome 20q13–20q13.2, covering 18.14 kb genomic sequence and contains four exons. Mutations in SALL4 gene have been clinically linked to a series of congenital abnormalities, such as Duane-radial ray syndrome (also known as Okihiro syndrome), a very similar condition called acro-renal-ocular syndrome, IVIC syndrome, ventricular septal defect and premature ovarian failure. Duane-radial ray syndrome is a disorder characterized by the association of forearm malformations with Duane retraction syndrome. SALL4 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 SALL4 mutations. Individuals are tested by DNA sequencing of the coding exons of the SALL4 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 Duane-radial ray syndrome.

METHODOLOGY
Genomic DNA is analyzed for SALL4 mutations by DNA sequencing of the coding exons of the SALL4 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>
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SENSITIVITY

DNA Sequencing Analysis: Approximately 99 percent detection of mutations in the coding exons 1- 4 of SALL4.

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