Rubinstein-Taybi Syndrome: \textit{CREBBP} Gene Deletion/Duplication

\textbf{Test Code:} DCREB  
\textbf{Turnaround time:} 2 weeks  
\textbf{CPT Codes:} 81406 $\times$1

\textbf{Condition Description}

Rubinstein-Taybi syndrome (RSTS) is characterized by clinical findings that include broad thumbs and great toes, distinctive facial features, moderate to severe intellectual disability, and short stature. The characteristic facial features include beaked nose, grimacing smile, high arched palate, downsloping palpebral fissures, and talon cusps. Other variable features include congenital heart defects, renal abnormalities, cataract, cryptorchidism, and coloboma.

The \textit{CREBBP} and \textit{EP300} genes are the only two genes known to cause RSTS. Mutations in the \textit{CREBBP} gene (16p13.3) are identified in 30-50\% of individuals with RSTS. Mutations in the \textit{EP300} gene are identified in 3\% of individuals with RSTS. Microdeletions account for approximately 10\% of individuals with RSTS. RSTS is inherited in an autosomal dominant pattern; however, most of the mutations are de novo.

Please note that this test is for the \textit{CREBBP} gene only.

For patients with suspected RSTS, sequence analysis is recommended as the first step in mutation identification. For patients in whom mutations are not identified by full gene sequencing, deletion/duplication analysis is appropriate.

\textbf{References:}

- GeneReviews
- OMIM \#600140: \textit{CREBBP} gene
- OMIM \#180849: RSTS

\textbf{Genes}

\textit{CREBBP}

\textbf{Indications}

This test is indicated for:

- Confirmation of a clinical diagnosis of Rubinstein-Taybi syndrome in an individual in whom sequence analysis was negative.
- Carrier testing in adults with a family history of Rubinstein-Taybi syndrome in whom sequence analysis was negative.

\textbf{Methodology}

DNA isolated from peripheral blood is hybridized to a CGH array to detect deletions and duplications. The targeted CGH array has overlapping probes which cover the entire genomic region.

\textbf{Detection}

Detection is limited to duplications and deletions. The CGH array will not detect point or intronic mutations. Results of molecular analysis must be interpreted in the context of the patient's clinical and/or biochemical phenotype.

\textbf{Specimen Requirements}

\textit{Submit only 1 of the following specimen types}

\textbf{Type: DNA, Isolated}

\textbf{Specimen Requirements:}
- Microtainer
- 3µg

Isolation using the Perkin Elmer™Chemagen™ Chemagen™ Automated Extraction method or Qiagen™ Puregene kit for DNA extraction is recommended.

\textbf{Specimen Collection and Shipping:}
- Refrigerate until time of shipment in 100 ng/µL in TE buffer. Ship sample at room temperature with overnight delivery.

\textbf{Type: Whole Blood (EDTA)}

\textbf{Specimen Requirements:}
- EDTA (Purple Top)
- Infants and Young Children (2 years of age to 10 years old): 3-5 ml
- Older Children & Adults: 5-10 ml
- Autopsy: 2-3 ml unclotted cord or cardiac blood

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Specimen Collection and Shipping:
Ship sample at room temperature for receipt at EGL within 72 hours of collection. Do not freeze.

Special Instructions

Sequence analysis is required before deletion/duplication analysis by targeted CGH array. If sequencing is performed outside of EGL Genetics, please submit a copy of the sequencing report with the test requisition.

Related Tests

- Sequence analysis of the CREBBP gene is available and is required before deletion/duplication analysis.
- Sequence analysis of the EP300 gene is available.
- Custom diagnostic mutation analysis (KM) is available to family members if mutations are identified by targeted mutation testing or sequencing analysis.
- Prenatal testing is available only for known familial mutations to individuals who are confirmed carriers of mutations. Please contact the laboratory genetic counselor to discuss appropriate testing prior to collecting a prenatal specimen.