

Rett Syndrome: *MECP2* Gene Sequencing

Test Code: SR

Turnaround time: 4 weeks

CPT Codes: 81302 x1

Condition Description

Rett syndrome is one of the leading causes of mental retardation and developmental regression in girls. Mutations in the *MECP2* gene are found in approximately 80% of affected girls. Rett syndrome is inherited as an X-linked dominant trait. Though usually lethal in males, males meeting the clinical criteria for Rett syndrome have been identified. Some of them survive into adulthood with moderate to severe mental retardation, impaired language development, and movement disorders. *MECP2* gene mutations may also present as atypical Rett syndrome. Patients previously diagnosed with autism, mild learning disability, clinically suspected but molecularly unconfirmed Angelman syndrome, or mental retardation with spasticity or tremor have been found to carry *MECP2* mutations. The *MECP2* gene consists of four exons. Over 200 mutations have been reported in this gene that account for approximately 80% of the causes. About 64% of all *MECP2* mutations are caused by C>T transitions at eight CpG dinucleotides. The C-terminal domain is prone to larger multi-nucleotide deletions that account for ~15% of all mutations. Although these deletions tend to affect the same region, completely identical deletions are rare. These may not be detectable in females by sequencing. For patients with mutations not identified by full gene sequencing, a separate deletion/duplication assay is available using a targeted CGH array (KT).

[Click here](#) for the GeneReviews summary on this condition.

Visit www.ThinkGenetic.com for patient-friendly information on [Rett syndrome](#).

Genes

[MECP2](#)

Indications

This test is indicated for:

- Confirmation of a clinical diagnosis of Rett syndrome.
- Carrier testing in adults with a family history of Rett syndrome.

Methodology

The 4 exons and flanking regions of *MECP2* are amplified by PCR and sequenced in both the forward and reverse directions. Custom mutation detection is available for known familial mutations.

Detection

This assay will detect over 85% of sequence variants in the coding region and splice junctions. Mutations in the promoter region, some mutations in the introns, and other regulatory elements cannot be detected by this analysis. Large deletion and insertion mutations will not be detected by this assay. It is possible that some patients with a typical presentation may not carry a mutation detected by this analysis. This analysis may detect novel variants of unclear effect, which may require further studies.

Specimen Requirements

Submit only 1 of the following specimen types

Type: DNA, Isolated

Specimen Requirements:

Microtainer

8µg

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

Specimen Collection and Shipping:

Refrigerate until time of shipment in 100 ng/µL in TE buffer. Ship sample at room temperature with overnight delivery.

Type: Whole Blood (EDTA)

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

Specimen Collection and Shipping:

Ship sample at room temperature for receipt at EGL within 72 hours of collection. Do not freeze.

Type: Saliva

Specimen Requirements:

Oragene™ Saliva Collection Kit

Orangene™ Saliva Collection Kit used according to manufacturer instructions. Please contact EGL for a Saliva Collection Kit for patients that cannot provide a blood sample.

Specimen Collection and Shipping:

Please do not refrigerate or freeze saliva sample. Please store and ship at room temperature.

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. Contact the laboratory if further information is needed.

Related Tests

- [Custom Diagnostics Known Mutation Analysis \(KM\)](#) is available to family members if mutations are identified by sequencing.
- [Rett Syndrome Deletion/Duplication of MECP2 Gene \(KT\)](#) is available separately for individuals where mutations are not identified by sequence analysis. Refer to the test requisition or contact the laboratory for more information.