

Primary Autosomal Recessive Microcephaly Type 2 via *WDR62* Gene Sequencing (Test #293)

Brief Description of Clinical Features: Microcephaly Type 2 (MCPH2; OMIM 604317) is a clinically heterogeneous neurodevelopmental disorder. MCPH2 is characterized by prominent microcephaly, pachygyria, hypoplasia of the corpus callosum, lissencephaly with various degrees of cortical abnormalities, mental retardation and speech delay (Bilguvar et al. Nature 467:207-210, 2010; Nicholas et al. Nat Genet 42:1010-1014, 2010; Yu et al. Nat Genet 42:1015-1020, 2010). MCPH2 cortical abnormalities include cortical thickening, polymicrogyria, schizencephaly and subcortical heterotopia (Bilguvar et al. 2010; Nicholas et al. 2010; Yu et al. 2010).

Genetics: MCPH2 is inherited in an autosomal recessive manner. Mutations in the *WDR62* gene cause MCPH2 with or without cortical malformation (Bilguvar et al. 2010; Nicholas et al. 2010; Yu et al. 2010). *WDR62* gene encodes the WDR62 protein, which contains multiple WD40 repeats. Although, the precise function of the WDR62 is not known, it is speculated that WDR62 have a role in neuronal migration and proliferation (Nicholas et al. 2010; Yu et al. 2010). The exact subcellular localization of the WDR62 protein is still controversial (Bilguvar et al. 2010; Nicholas et al. 2010; Yu et al. 2010). A mix of missense, nonsense, splicing and frameshift mutations within the *WDR62* gene has been reported (Bilguvar et al. 2010; Nicholas et al. 2010; Yu et al. 2010).

Description of This Particular Test: This test involves bidirectional sequencing using genomic DNA of the 32 coding exons (exons 1-32) of the *WDR62* gene. The full coding region of each exon plus ~50 bp of flanking non-coding DNA on each side are sequenced. As indicated, we will also perform sequencing of any single exon (Test #100, \$190) or pair of exons (Test #200, \$340) for family members of patients with known mutations and to confirm previous research results.

Reference Sequences: Genomic: NC_000019.9 mRNA: NM_001083961.1 Protein: NP_001077430.1 (CCDS 46059.1)

Indications for Test: Candidates for this test are patients with symptoms consistent with MCPH2 and family members of patients who have known *WDR62* mutations.

Sensitivity of Test: Sensitivity of this test is currently unknown.

Turnaround Time: Maximum of 40 calendar days, although many tests are completed in 2-3 weeks.

Specimen Requirements: See page 4 of the Requisition Form.

Prices: Sequencing of *WDR62* gene \$ 1,440

CPT Codes:

Sample Ascertainment x1	83890 \$ 30	DNA Isolation x1	83891 \$ 40
Amplification x30	83898 \$ 460	Sequencing x30	83904 \$ 690
Separation x1	83894 \$ 90	Interpretation/Report x1	83912 \$ 130

Accreditation: CLIA ID:52D1027685 (expires 1/18/13) CAP ID:7185561, AU ID:1407125 (expires 12/20/12)

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