

## CHARGE Syndrome Testing via *CHD7* Exon Sequencing (Test #130)

**Brief Description of Disorder:** CHARGE Syndrome (OMIM 214800) is a severe developmental disorder with an incidence of roughly 1 out of every 10,000 births. Clinical features often present include: vision loss (coloboma), cranial nerve abnormalities leading to swallowing and/or breathing difficulties, facial palsy and/or loss of sense of smell, choanal atresia or stenosis, growth retardation, external and inner ear malformations resulting in hearing loss and balance problems, and a wide variety of heart defects. Symptoms are quite variable even among siblings carrying the same mutation. See Blake et al. (Clin Pediatr 37:159-173, 1998) and CHARGE Syndrome Foundation ([www.chargesyndrome.org](http://www.chargesyndrome.org)) for additional references and information.

**Genetics:** Vissers et al. (Nature Genet 36:955-957, 2004) reported that heterozygous mutations within the large *CHD7* gene on 8q12.1 are present in a majority of CHARGE patients. Lalani et al (Amer J Hum Genet 78:303-314, 2006) and Jongmans et al. (J Med Genet 43:306-314, 2006) both reported sequencing of *CHD7* in over 100 CHARGE patients. Causative mutations are located throughout the length of the gene. No mutations are predominant. The great majority of the mutations (perhaps 90-95%) are *de novo*. Although some causative missense mutations have been reported, the great majority of mutations have been nonsense, frameshift, or obvious splicing defects. Parental germline mosaicism has been detected. Only very modest differences in clinical features between patients who test positive versus negative in *CHD7* sequencing have been reported.

**Description of This Particular Test:** This test involves bidirectional DNA sequencing of the coding regions of all 37 coding exons of *CHD7* (exons 2 – 38) plus about 50 bp of flanking non-coding DNA on each side.

**Indications for Test:** All CHARGE Syndrome patients are candidates for this test. Testing may confirm diagnoses. Eventually, test results may narrow prognoses and treatment pathways. We also offer clinical confirmation of mutations that have been identified in research labs.

**Sensitivity of Test:** Several groups have reported detecting likely causative mutations by *CHD7* sequencing in about *two-thirds* of CHARGE patients. Large deletions in this gene which would not be detected by sequencing seem to be relatively rare, but have been reported.

**Turn Around Time:** Maximum of 40 days, although many tests are completed in 2-3 weeks.

**SPECIMEN REQUIREMENTS:** See page 4 of the Requisition Form.

**Sequencing of the 37 coding exons of the *CHD7* gene** **\$1890**

Sample Ascertainment		83890	\$ 30
DNA Isolation		83891	\$ 40
Amplification	x 38	83898	\$ 660
Mutation Identification by Sequencing	x 38	83904	\$1010
Interpretation and Report		83912	\$ 150

Single exon sequencing for the presence of previously identified mutations in the *CHD7* gene is also available for \$190.

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

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