Dystonia: Sequencing Panel

**Test Code:** MM550
**Turnaround time:** 6 weeks
**CPT Codes:** 81290 x1, 81321 x1, 81404 x1, 81405 x1, 81406 x1, 81407 x1, 81408 x1

### Condition Description

Dystonia is a movement disorder affecting 1-2 people per 10,000 and is characterized by prolonged or intermittent muscle contractions resulting in abnormal movement or body postures that can be painful. Some forms may involve involuntary actions such as closing of the eyelids or larynx. Dystonia can affect one part of the body or can be generalized across multiple muscle groups. In addition, complex dystonia syndromes have the prolonged muscle contraction as a major manifestation, but other neurological signs or atypical features are also present. There are non-genetic causes such as infection, medications, and vascular or hypoxic insults to the body, but most forms of dystonia have genetic causes. Although most dystonia and dystonic syndromes are inherited in an autosomal dominant manner, autosomal recessive and X-linked forms also exist. All of these factors make diagnosing the exact type/cause of dystonia extremely difficult.

Testing one suspected gene at a time can be both costly and time-consuming. Gene panels offer healthcare providers the ability to cast a wider net when searching for a diagnosis. Certain diagnoses can provide better guidance for prognosis, treatment, and recurrence.

**References:**

### Genes

- ADAR
- AFG3L2
- AP1S2
- APTX
- ARSA
- ARX
- ATM
- ATP1A2
- ATP1A3
- ATP7B
- AUH
- C19orf12
- CACNA1A
- CHMP2B
- COL6A3
- CP
- CYP27A1
- DCAF17
- DDC
- DLAT
- DRD2
- DRD5
- EARS2
- ERCC8
- FA2H
- FASTK2
- FBXO7
- FOXG1
- FOXRED1
- GAMT
- GCDH
- GCH1
- HPRT1
- KCNQ2
- L2HGDH
- MAT1A
- MCOLN1
- MMADHC
- MPV17
- MR1
- NPC2
- PANK2
- PARK2
- PDGFRB
- PDHX
- PINK1
- PLA2G6
- PLP1
- PNKD
- PNPT1
- PRRT2
- PSRN1
- PTEF
- PTS
- QDPR
- RNASEH2A
- RNASEH2B
- RNASEH2C
- SAMHD1
- SCP2
- SDHA1F1
- SERA1
- SGC
- SLC19A3
- SLC20A2
- SLC2A1
- SLC46A1
- SLC6A3
- SPR
- SUCL2
- SUOX
- TAF1
- TH
- THAP1
- TIMM8A
- TOR1A
- TPK1
- TREX1
- VPS37A
- WDR45

### Indications

The test is indicated for:

- Individuals with a clinical or suspected diagnosis of dystonia.

### Methodology

**Next Generation Sequencing:** In solution hybridization of all coding exons contained in the genes of the Dystonia Panel is performed on the patient's genomic DNA. Direct sequencing of the amplified captured regions is performed using next generation sequencing. The patient's gene sequences are then compared to a standard reference sequence. Potentially causative variants and areas of low coverage are Sanger sequenced in order to confirm variants and ensure 100% coverage of the targeted exons. Sequence variations are classified as pathogenic variants, benign variants unrelated to disease, or variants of unknown clinical significance. Variants of unknown clinical significance may require further studies of the patient and/or family members. This assay does not interrogate the promoter region, deep intronic regions, or other regulatory elements, and does not detect single or multi-exon deletions or duplications.

### Detection

**Next Generation Sequencing:** Clinical Sensitivity: Unknown. Mutations in the promoter region, some mutations in the introns and other regulatory element mutations cannot be detected by this analysis. Large deletions/duplications will not be detected by this analysis. Results of molecular analysis should be interpreted in the context of the patient's clinical/biochemical phenotype.

**Analytical Sensitivity:** ~99%.

### Specimen Requirements

Submit only 1 of the following specimen types

**Type: Whole Blood**

Specimen Requirements:

- In EDTA (purple top) tube:
  - Infants (2 years): 3-5 ml
  - Older Children & Adults: 5-10 ml.
Specimen Collection and Shipping: Ship sample at room temperature with overnight delivery.

Type: Isolated DNA

Specimen Requirements:

In microtainer: 60 ug

Isolation using the Qiagen™ Puregene kit for DNA extraction is recommended.

Specimen Collection and Shipping: Refrigerate until time of shipment in 100 ng/ul of TE buffer. Ship sample at room temperature with overnight delivery.