Maturity Onset Diabetes of the Young (MODY): Sequencing Panel

**Test Code:** MM220  
**Turnaround time:** 6 weeks  
**CPT Codes:** 81404 x1, 81405 x1, 81406 x1

### Condition Description

Maturity-onset diabetes of the young (MODY) is defined by the clinical features of early-onset Type 2 (non-insulin-dependent) diabetes and an autosomal dominant inheritance. Pathogenic variants in four genes have been shown to cause MODY, with each having a defined clinical presentation. In the European Caucasian population, molecular analysis of these four genes is useful in confirming the clinical diagnosis of MODY and the prediction of the future clinical course.


### Genes

- **GCK**  
- **HNF1A**  
- **HNF4A**  
- **PDX1**

### Indications

This test is indicated for individuals with:

- Confirmation of a clinical diagnosis of maturity-onset diabetes of the young (MODY).
- Carrier testing in adults with a family history of hereditary maturity-onset diabetes of the young (MODY).

### Methodology

**Next Generation Sequencing:** In-solution hybridization of all coding exons is performed on the patient's genomic DNA. Although some deep intronic regions may also be analyzed, this assay is not meant to interrogate most promoter regions, deep intronic regions, or other regulatory elements, and does not detect single or multi-exon deletions or duplications. Direct sequencing of the 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. Sequence variations are classified as pathogenic, likely pathogenic, benign, likely benign, or variants of unknown significance. Variants of unknown significance may require further studies of the patient and/or family members.

### 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/μl of TE buffer. Ship sample at room temperature with overnight delivery.