

## Malignant Hyperthermia Susceptibility Testing via *RYR1* Extended Exon Sequencing

**Brief Description:** Malignant Hyperthermia (MH) is a severe adverse reaction to commonly used volatile anesthetics (halothane, sevoflurane, desflurane, enflurane, isoflurane) or to depolarizing muscle relaxants (succinylcholine). In susceptible patients these agents may trigger uncontrolled skeletal muscle hypermetabolism. In almost all cases, the first manifestations of MH occur in the operating room. Death can result unless the patient is promptly treated.

**Genetics:** MH susceptibility and Central Core Disease are inherited in an autosomal dominant manner. Mutations in the *RYR1* gene are the primary known cause of MH and the only known cause of Central Core Disease. The large *RYR1* (ryanodine receptor type I) gene with 106 exons encodes the skeletal muscle calcium release channel. This particular test involves DNA sequencing of 7 *RYR1* exons (34, 42, 43, 50, 51, 67, 71). These exons contain ~8% of reported mutations for MH Susceptibility. This test can be ordered separately or as a continuation of previous sequencing of the *RYR1* gene.

**Indications for Test:** Ideal candidates for this test are patients who may be MH susceptible and who have already received a negative test result for sequencing of the Primary and 3' Panels of 24 *RYR1* exons (see Primary and CCD/3' MH Exon Tests).

**Sensitivity of Test:** Based on literature reports, we estimate that cumulatively with the Primary and CCD/3' Exon Tests, this Test will detect likely causative mutations in 50-70% of ideal MH test candidates.

**MHAUS:** PreventionGenetics is working closely with the Malignant Hyperthermia Association of the U. S. ([www.mhaus.org](http://www.mhaus.org)). There is a 10% price discount for MHAUS members. MHAUS provides financial support for testing in some cases.

### SPECIMEN REQUIREMENTS

Collect a minimum of 1 ml of whole blood in EDTA (purple top tube) or ACD (yellow top tube).

Whole blood collected in Na Heparin is acceptable but not preferred.

Ship whole blood specimens at ambient temperature. Do not freeze blood tube.

During hot summer months, include a frozen ice pack in the shipping container. Do not allow the ice pack to come in direct contact with the specimen tubes. In winter, include an unfrozen ice pack to help moderate extremes in temperature. The DNA in whole blood is stable for at least 48 hours at 21°C, 5-7 days at 4°C.

### Selected exon sequencing of the *RYR1* gene

**\$570.00**

Molec Diag, Ascertainment 83890

Molec Diag, Isolation 83891

Molecular Diag, Amplif x 9 83898

Mutat Id By Seq, Single Seg x 9 83904

Molecular Diag, Separation 83894

Interpretation And Report 83912

Single exon sequencing for the presence previously identified mutations in the *RYR1* gene will also be provided for \$230.

**Accreditation Info. CLIA ID #: 52D1027685** (expires 1/18/07) (CAP#: 7185561, AU ID: 1407125 expires 12/20/06)

### Ship to:

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