Kimball Assay Being Transferred

Hemochromatosis DNA Test 081473

Available LabCorp Assay

Hereditary Hemochromatosis, DNA Analysis

Test Number 511345
CPT Code 81256
Specimen Whole blood or LabCorp buccal swab kit (buccal swab collection kit contains instructions for use of a buccal swab)
Volume 7 mL whole blood or LabCorp buccal swab kit
Minimum Volume 3 mL whole blood or two buccal swabs
Container Lavender-top (EDTA) tube, yellow-top (ACD) tube, or LabCorp buccal swab kit
Storage Instructions Maintain specimen at room temperature or refrigerate.
Causes for Rejection Frozen specimen; hemolysis; quantity not sufficient for analysis; improper container; one buccal swab; wet buccal swab
Use Follow-up evaluation in individuals with elevated saturated transferrin; detection of affected individuals and carriers of hereditary hemochromatosis
Limitations This assay detects only the C282Y, H63D, and S65C mutations in the HFE gene and will help identify those who are at increased risk for hereditary hemochromatosis. Increased risk for hereditary hemochromatosis can be caused by a variety of genetic and nongenetic factors not detected by this assay.
Methodology Polymerase chain reaction (PCR); restriction enzyme analysis; gel electrophoresis
Additional Information Hereditary hemochromatosis (HH) (OMIM 235200) is an autosomal recessive disorder of iron metabolism resulting in the accumulation of excess iron in a variety of organs. Populations of Northern European origin show the highest frequency of HH, with 1 in 300 individuals affected. The HFE gene was identified as being responsible for hemochromatosis. The HFE gene encodes an HLA class I-like protein. In association with β-2 microglobulin, HFE, has an expression pattern that is correlated with the localization of iron absorption. HFE seems to play a role in iron uptake by interacting with the transferrin receptor, which leads to a decreased affinity of the transferrin receptor for transferrin.

Eighty-five percent of HH chromosomes have the mutation 845A that results from a G to A mutation at nucleotide 845 of the open reading frame of HFE. This mutation changes a cysteine to a tyrosine at amino acid 282 (C282Y). The second mutation, 187G, results from a C to G mutation at nucleotide 187 of the open reading frame of HFE. It accounts for 40% to 70% of the non-C282Y HH mutations (about 39% of HH). This mutation changes a histidine to an aspartic acid at amino acid 63 (H63D). The third mutation, 193T, results from an A to T mutation at nucleotide 193 of the open reading frame of HFE. This mutation changes a serine to a cysteine at amino acid 65 (S65C). This mutation accounts for 4.7% of the affected HH chromosomes. Of the three mutations, C282Y carries the highest risk for an iron overload pathology, when inherited in the homozygous state. H63D and S65C are mutations of reduced penetrance, and may not cause disease even when detected in the compound heterozygous state with C282Y.

NOTE: Please remember to send specimens for hereditary hemochromatosis testing to LabCorp's Center for Molecular Biology and Pathology, beginning September 14, 2013. Current Kimball buccal swab kits may be used as long as they are sent to:

LabCorp CMBP
Attn: Specimen Management
1912 TW Alexander Drive
RTP, NC 27709

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www.LabCorp.com