Test Definition: BRAFB

cfDNA BRAF V600 Test, Blood

Overview

Useful For

An alternative to invasive tissue biopsies for the determination of *BRAF* V600E and V600 K mutations

Identification of patients with melanoma who are most likely to benefit from targeted therapies

Genetics Test Information

This test evaluates cell-free DNA (cfDNA) in the peripheral blood for the presence of *BRAF* V600E or K mutations in patients with melanoma and can be used to determine if these patients are candidates for targeted therapies.

This test is not validated for serial monitoring of patients with malignant melanoma, nor should it be used for evaluating patients with other malignancies. This test is also not intended as a screening test to identify cancer.

Highlights

This test evaluates peripheral blood for *BRAF* mutations in cell-free DNA.

Detection of *BRAF* mutations in melanoma patients can be used as an alternative for *BRAF* analysis of tissue.

Current data suggests that the efficacy of *BRAF*-targeted therapy and anti-*MEK* therapy in melanoma is limited to patients whose tumors harbor a V600E/K mutation.

Method Name

Digital Droplet Polymerase Chain Reaction (PCR)

NY State Available

Yes

Specimen

Specimen Type

Whole blood

Advisory Information

This test is **not** a prenatal screening test. To evaluate for the presence of common fetal chromosome abnormalities using cell-free DNA, see NIPS / Cell-Free DNA Prenatal Screen.

Shipping Instructions

1. Samples should be transported at ambient temperature or refrigerated (4 degrees C)

2. Samples are viable for 7 days in the Streck Black/Tan Top Tube Kit (T715)

Specimen Required

Supplies: Streck Black/Tan Top Tube Kit (T715)

Specimen Volume: Two, 10-mL Streck Cell-Free DNA blood collection tubes

Additional Information:

1. Only blood collected in Streck Cell-Free DNA BCT tubes will be accepted for analysis.

2. Whole blood will be processed to produce platelet-poor plasma before cfDNA isolation.

Forms

If not ordering electronically, complete, print, and send an Oncology Test Request (T729) with the specimen.

Specimen Minimum Volume

One 10 mL Streck tube

Reject Due To

No specimen will be rejected.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole blood	Ambient (preferred)	7 days	
	Refrigerated	7 days	

Clinical and Interpretive

Clinical Information

This test uses DNA extracted from the peripheral blood to evaluate for the presence of *BRAF* V600E and V600K mutations. A positive result indicates the presence of an activating *BRAF* mutation and may be useful for guiding the treatment of individuals with melanoma.

Targeted cancer therapies are defined as antibody or small molecule drugs that block the growth and spread of cancer by interfering with specific cell molecules involved in tumor growth and progression. Multiple targeted therapies have been approved by the FDA for treatment of specific cancers. Molecular genetic profiling is often needed to identify targets amenable to targeted therapies and to minimize treatment costs and therapy-associated risks.

Interpretation

An interpretive report will be provided.

Cautions

Patients with a negative test result may still harbor a V600E or V600K mutation. Mutation testing of a tissue specimen for *BRAF* mutations should be considered for patients with a negative result with this test.

The limit of detection of this assay for the detection of *BRAF* V600E and V600K mutations is influenced by the amount of cfDNA in the blood. This is a biological variable that cannot be controlled.

This assay was designed to detect V600E and K mutations. The sensitivity for rarer V600 mutations has not been established.

This test has not been clinically validated for use as a tool to monitor response to therapy or for early detection of tumors.

This test cannot differentiate between somatic and germline alterations.

Supportive Data

This test has been evaluated by our laboratory as an alternative to assessing paraffin embedded tumor specimens for *BRAF* mutations in patients with advanced melanoma. Those studies revealed that this assay has a high positive predictive value (100% in our study) for the presence of a *BRAF* V600 mutation in a patientÃ¢â‚¬â„¢s tumor and high concordance between the specific mutation type observed in the patientÃ¢â‚¬â„¢s plasma and tumor.

While the positive predictive value of this assay was very high, the negative predictive value of the assay in this study (using *BRAF* tissue result as the gold standard) was only 71%.

Clinical Reference

1. Sanmamed MJ, Fernandez-Landazuri S, Rodriguez C, et al: Quantitative cell-free circulating BRAFV600E mutation analysis by use of droplet digital PCR in the follow-up of patients with melanoma being treated with BRAF inhibitors. Clin Chem 2015;61(1):297-304

2. Schwarzenbach H, Hoon DS, Pantel K: Cell-free nucleic acids as biomarkers in cancer patients. Nat Rev Cancer 2011;11(6):426-437

3. Johnson DB, Sosman JA: Update on the targeted therapy of melanoma. Curr Treat Options Oncol 2013;(2):280-292

4. McArthur GA, Chapman PB, Robert C, et al: Safety and efficacy of vemurafenib in BRAF (V600E) and BRAF (V600K) mutation-positive melanoma (BRIM-3): extended follow-up of a phase 3, randomized, open-label study. Lancet Oncol 2014 Mar;15(3):323-332

Performance

Method Description

Blood samples are collected in Streck Cell-Free DNA blood collection tubes. cfDNA is isolated from double-spun plasma and assessed for the presence of the *BRAF* V600E and *BRAF* V600K mutations using digital droplet PCR.(Unpublished Mayo method)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday; Varies

Analytic Time

5 days

Maximum Laboratory Time

10 days

Performing Laboratory Location

Rochester

Fees and Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

81210

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
BRAFB	cfDNA BRAF V600 Test, Blood	93690-6

Result ID	Test Result Name	Result LOINC Value
48044	Result Summary	50397-9
48045	Result	93690-6
48046	Interpretation	69047-9
48047	Additional Information	48767-8
48048	Specimen	31208-2
48049	Source	31208-2
48050	Released By	18771-6