KRAS Mutation Detection Test

- Therapy decision
- Better disease management
KRAS Mutation

The KRAS gene (Ki-ras2 Kirsten rat sarcoma viral oncogene homolog) encodes a small GTPase transducer protein called KRAS in humans. The protein product of the normal KRAS gene performs an essential function of signaling and has major role in cell division in normal tissue.

KRAS gene is located on human chromosome 12p12.1. A single amino acid substitution is responsible for an activating mutation with implications in various malignancies, including colorectal carcinoma, ductal carcinoma of the pancreas and mucinous adenoma.

Clinical Significance

The patients of Colorectal cancer (CRC) or Non-small-cell lung carcinoma (NSCLC) who are being considered for treatment with an EGFR antagonist should undergo KRAS mutation screening test. The presence of KRAS mutations is directly associated with an absence of response to anti-EGFR monoclonal-antibody-based treatments. KRAS mutations associated with BRAF mutations are commonly observed in lung cancer, papillary thyroid cancer, ovarian cancers and breast carcinomas. Xcelris Labs strongly recommends to undergo KRAS gene testing if any individual has family history of NSCLC, CRC or pancreatic cancer. We also recommend clinicians to test mutation at codon 12 and 13 at all stages of colorectal cancer.

1) Colorectal Cancer: High incidence (about 20% - 50% of cases) of mutations in the KRAS gene is found in colorectal cancers.

2) Lung Cancer: KRAS mutations appear in 10-30% of lung carcinoma cases, demonstrating strong associations with a history of smoking and poor prognosis. In current and former smokers, KRAS gene mutations have been identified in 30% of lung adenocarcinoma cases.

Screening of KRAS gene for NSCLC, pancreatic cancers and combination of EGFR and KRAS gene for lung cancer and gastric cancer is done to predict the efficacy of the drugs geftinib, erlotinib and cetuximab etc.
Technology Advantage
Xcelris Labs is using the Gold standard, Sanger Sequencing Technology to identify clinically relevant mutations in codon 12 and codon 13 of the KRAS gene. This aids to predict KRAS gene heredity and efficacy of the various drugs relevant to therapeutic decisions in lung and colorectal cancer.

Through this technology we can read the targeted region of relevant genes to detect mutations. All SNPs and anomalies are precisely analyzed. The sensitivity of this technology has been highly studied and approved for use in clinical diagnostic settings.

Methodology for Testing
Gene specific PCR coupled with Sanger Sequencing is presently used to identify the gene mutations in KRAS gene.

Mutations Covered

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<th>Mutations</th>
<th>Clinical Significance</th>
<th>Technology</th>
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<td>Codon 12 and 13</td>
<td>Predicts efficacy of gefetinib, erlotinib, cetuximab etc.</td>
<td>Gold Standard – Sanger Sequencing Technology</td>
<td>FFPE tissue or Fresh Tissue</td>
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Sample Requirement

**FFPE Tissue**: Formalin-Fixed Paraffin Embedded (FFPE) tissue block with at least 3-4 sections of tumor tissue. Tissue section should contain >70% tumor content verified by a pathologist and should be sent along with 5H&E stained and 5 unstained slides of tumor tissue.

**Fresh Tissue**: Fresh tissue in tms RNA stabilizer (XGtms-100) provided by Xcelris Labs in sterile leak proof container at -20°C (in DRY ICE)

**Note**: For proper diagnosis the Tumor tissue should contain at least 70% of cancer cells verified by a pathologist. The sample should be precisely labeled, also relevant Test Request Form and pathology reports must be enclosed with the tissue sample.

Transportation

Samples should be shipped to Xcelris Labs with overnight delivery for receipt from Monday to Friday, within 24 hours of collection.

How to Order Test?

You can order this test with following product code: **ONKR04**

Contact our Local Representative or email your test request on diagnostics@xcelrislabs.com

About Xcelris:

Xcelris is one of the leading genomics research organizations and service provider offering cutting edge solutions to the life science industry and research institutions. Xcelris Molecular Diagnostics (XMDx) offers genetic testing service based on sequencing and genotyping using latest platforms. Xcelris labs provides genetic tests for cancer detection, infectious diseases and inherited genetic disorders in humans.

At Xcelris, we believe that Next Generation Sequencing Technology will be a breakthrough in the diagnostic segments by which clinicians will be able to track diseases at early stages, making clinical management more effective and easy.

STATE OF THE ART TECHNOLOGY PLATFORMS

- QIAsymphony
- LightCycler® 480
- ABI 3730xl
- HiSeq 2000/2500
- MiSeq
- iScan

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