Unipath
SPECIALTY LABORATORY Ltd.

# K-RAS MUTATION SCREENING IN NSCLC AND CRC

Department of Molecular Biology

## ROLE OF K-RAS GENE

Several genes that encode proteins in the EGFR– signaling cascade are known to harbor mutations in tumors such as colorectal and lung cancer. In particular, activating mutations (ie, mutations that increase the activity of the oncogenic protein) of KRAS commonly occur in these tumors. These KRAS mutations are almost always found in codons 12 and 13 in exon 2, but occasionally involve codon 61 in exon 3 or other codons.

The activated KRAS results in downstream signaling that is independent of its normal upstream EGFR regulation. KRAS activating mutations negate the mechanism of action of the anti-EGFR class of drugs by stimulating the EGFR–signaling cascade at a point downstream of the drug's target. The association between KRAS mutations and a failure to respond to anti-EGFR therapies has been observed for both monoclonal antibodies and small molecule tyrosine kinase inhibitors.

## COLORECTAL CANCER AND K-RAS

An investigated approach in the management of advanced and metastatic colorectal cancer (CRC) has been the delivery of agents whose primary purpose is to interfere with the biological activity of the epidermal growth factor receptor (EGFR)

Patients with metastatic CRC that included anti-EGFR antibody therapy have specifically evaluated the impact of the mutational status of KRAS (wild-type [normal] versus mutated [abnormal]) on patient outcome. Notably, the presence of a KRAS mutation was found to be associated with the absence of biological and clinical activity for the anti-EGFR antibody treatment. KRAS Mutation Analysis guidance in therapeutic treatment decisions for patients with colorectal cancer (CRC).

Mutations in the KRAS gene, a known downstream signaling molecule in the EGFR signaling pathway, have been described in approximately 30-50% of colorectal carcinomas.

Mutations in the KRAS gene, a known downstream signaling molecule in the EGFR

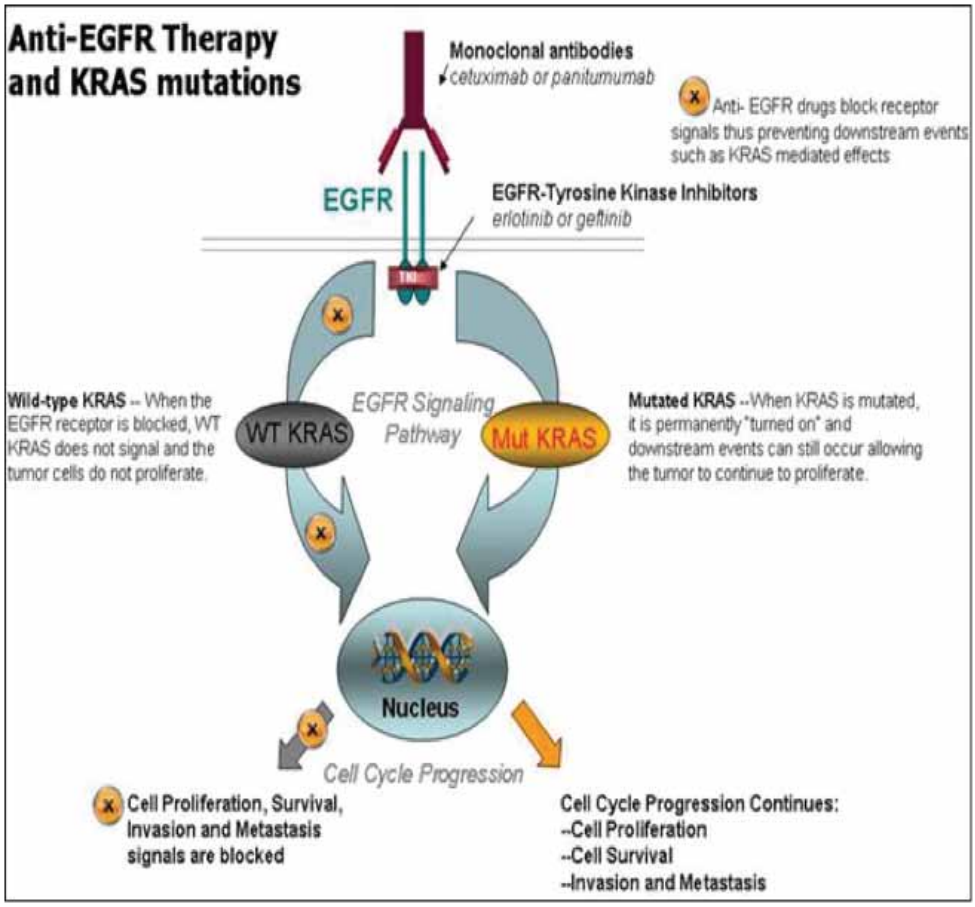
Recent studies have found mutations in the KRAS gene to be associated with a poor prognosis. Studies have also found KRAS mutations more frequent in patients who show limited clinical response to targeted anti-epidermal growth factor receptor (anti-EGFR) therapies. As a result, determining the KRAS mutational status of a tumor may guide therapeutic decision making for patients with CRC.

The molecular diagnostic procedure detects mutations in codon 12, 13 and 61 of the KRAS gene.

## NSCLC AND K-RAS

Mutations in the KRAS gene, a known downstream signaling molecule in the EGFR signaling pathway, have been described in approximately 15-30% of lung adenocarcinoma.

## ROLE OF K-RAS AND ANTI-EGFR THERAPY




## METHODOLOGY

**PCR Sequencing**

## CODON COVERED

**12, 13 and 61**

## SPECIMEN REQUIREMENTS

FFPE solid tumor tissue: Paraffin block is preferred. Alternatively, send 1 H&E slide plus 5-10 unstained slides cut at 5 or more microns. Please use positively-charged slides and 10% NBF fixative. Do not uses zinc fixatives. Fine needle aspirate (FNA): Requisition must note specimen is FNA. Fresh cells in suspension, unstained air-dried smears (approx. 6-8 slides), or FFPE cell blocks are acceptable if pathologist attaches note verifying sample has >30% tumor or abnormal cells (required). Minimum 10^6 cells.

## RESULT

Each test report includes a detailed interpretation of the genetic findings, the clinical significance of the result, and specific recommendations for clinical management and additional testing.

## TURN AROUND TIME

**15 Days**


ISO 9001 International Standard Certification LIC No QAC/R91/3585 NABL M-0520

Unipath SPECIALTY LABORATORY Ltd.

**Unipath specialty Laboratories ltd**
102 Sanoma Plaza, B/S JMC House, Opp. Parimal Garden, Ellis Bridge, Ahmedabad – 380006
Phone No -079-49006800/31
Mail to: unipathmdx@gmail.com