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REGIONAL PATHOLOGY SERVICES  
DEPARTMENT OF PATHOLOGY AND MICROBIOLOGY  
www.reglab.org

### **KRAS Codon 61 Mutation Detection**

*This test is currently validated and recommended for mutation detection in colon and lung adenocarcinomas.*

#### **CLINICAL SIGNIFICANCE**

Molecular Diagnostics Laboratory will begin to include codon 61 with codons 12 and 13, which are already evaluated in the current KRAS mutation clinical assay. Like codons 12 and 13, codon 61 will be evaluated by the Pyromark Q24 pyrosequencer system in various cancers. The human *KRAS* gene encodes a 21-kD protein (p21ras or K-Ras). K-Ras functions as a binary molecular switch that controls intracellular signaling networks in a number of signaling pathways, including the signal transduction pathway involving Epidermal Growth Factor Receptor (EGFR).

Recent evidence has shown that mutations in codon 61 function similarly to mutations in codons 12 and 13 of *KRAS*. These mutations result in constitutively active K-Ras protein, leading to uncontrolled cell proliferation. *KRAS* mutation status is important for determination of treatment with EGFR inhibitor therapy. For example, colon adenocarcinomas with *KRAS* mutations have a poor response to monoclonal antibody therapy to the EGFR.

#### **TEST METHOD**

-Pyrosequencing

#### **PERFORMED**

-Monday through Friday

#### **REPORTED**

-Report within 5 to 7 days

#### **SPECIMEN REQUIRED**

- Paraffin embedded formalin fixed tissue block with  $\geq 25\%$  tumor, or 6 Unstained slides, 10 $\mu$ m thick with  $\geq 50\%$  tumor (with one adjacent H&E). Minimum volume: 5mm X 5mm area if tissue is 100% tumor; 10mm X10mm if tissue is 50% tumor.
- Tissue snap frozen is acceptable but not preferred.

#### **SPECIMEN TRANSPORT**

- Ambient Temperature: Paraffin blocks, slides
- Frozen: Snap Frozen Tissue

#### **UNACCEPTABLE CONDITIONS**

- Paraffin blocks with  $\leq 10\%$  tumor. Tissue fixed in heavy metal fixative or decalcified t

#### **RESULTS:**

- Negative:** No Mutation was identified in codons 12, 13 or 61 of the *KRAS* gene.
- Positive:** A (insert mutation) was identified in (insert codon) of the *KRAS* gene.