

KRAS Mutation Analysis

Background

The KRAS gene is the most commonly mutated oncogene in all human cancer, and it is mutated in about 30-50% of colorectal carcinoma cases. Activating mutations at codons 12 and 13 confer resistance to monoclonal antibody therapy targeted at the epidermal growth factor receptor (EGFR) in patients with metastatic colorectal cancer.^{1,2} Anti-EGFR monoclonal antibodies, including cetuximab (ErbixTM) and panitumumab (VectibaxTM), prolong life in patients with metastatic colorectal cancer, but only when the cancer tissue has the wild-type (non-mutant) KRAS gene. This test, performed on cancer tissue DNA, detects all activating KRAS mutations at codon 12 and 13, and can be used to evaluate eligibility for anti-EGFR monoclonal antibody therapy in patients with metastatic colorectal cancer.

Sample Requirements, Specimen Handling and Ordering

1. Fill out a Clinical Lab Request - Genetics for each patient (available at <http://depts.washington.edu/labweb/Divisions/MolDiag/MolDiagGen/index.htm>). Under "Check Test Requested," check: "**KRAS Mutation Analysis**"
2. Obtain a formalin-fixed, paraffin-embedded tissue block containing primary or metastatic colon cancer tissue.
3. From the tissue block, prepare
 - (a) Ten unstained, non-baked slides of cancer tissue, each with 10-micron thick tissue slices
 - (b) One hematoxylin and eosin (H&E)-stained slide at 4-5 microns thick.NOTE: Sections should contain as much cancer tissue as possible.
4. The area(s) of cancer tissue should be circled by a pathologist on the hematoxylin-and-eosin stained slide.
5. Send all slides at ambient temperature. Unstained slides are stable at room temperature for at least two years.

Notes:

- Unstained slides can be on charged or uncharged slides.
- Test can be performed on tissue from primary or metastatic colon cancer
- Archived primary colon cancer resection tissue is an acceptable specimen to evaluate KRAS mutation status in metastases.
- Test can not be performed on blood samples or normal tissue samples

Test Frequency:	Once a week; results usually reported within two weeks of specimen receipt.
Reference Range:	No mutation detected
Test Order Code:	KRAS
CPT Codes:	83891, 83896, 83898, 83903, 83907, 83912
Price:	\$420.00

References

1. Karapetis et al. K-ras Mutations and Benefit from Cetuximab in Advanced Colorectal Cancer. *N Engl J Med* 2008; **359**:1757-65.
2. Lievre A, Bachet J-B, Boige V, Cayre A, Le Corre D, Buc E, Ychou M, Bouche O, Landi B, Louvet C, Andre T, Bibeau F, Diebold M-D, Rougier P, Ducreux M, Tomasic G, Emile J-F, Penault-Llorca F, Laurent-Puig P. KRAS Mutations As an Independent Prognostic Factor in Patients with Advanced

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*Colorectal Cancer Treated with Cetuximab. *J Clin Oncol* 2008; **26**:374-379. Also see correspondence for a good meta-analysis: *J Clin Oncol* **26**:2601-2602 (2008).*