Colon Cancer Mutation Panel (KRAS & BRAF)

**Test Code:** 4224  
**Department:** Molecular Oncology  
**CPT Code(s):**
- 83890
- 83892
- 83898 x 3
- 83903 x 3
- 83907

**Background:**
KRAS gene mutations are present in approximately 35% of colorectal carcinomas and correlate with resistance to treatment with cetuximab.¹ For patients whose tumor is positive for a KRAS mutation, treatment with anti-EGFR monoclonal antibody therapy is not recommended based on the Provisional Clinical Opinion issued by the American Society for Clinical Oncology.²

BRAF gene mutations are present in approximately 12% of colorectal carcinomas and correlate with resistance to treatment with cetuximab.³ In addition, BRAF mutations are a significant negative prognostic factor in patients with stage II and III colorectal carcinoma.⁴⁻⁷

**Methodology:**
1. Microscopic examination of the specimen and macrodissection of tumor-rich areas.
2. DNA extraction and purification.
3. PCR amplification of KRAS coding exons 1 and 2, and BRAF exon 15.
4. Screening for mutations by one of two methods, depending on tumor cellularity.
   a. Real-time PCR with high resolution melting curve analysis (HRM). DNA sequencing is used to confirm any potential mutations identified by this approach.
   b. Bidirectional Sanger sequencing
      i. For coding exon 1, an LNA-modified oligonucleotide is included to suppress wild-type allelic amplification (LNA-sequencing).
5. Estimated sensitivity:
   a. 20% mutant allele for HRM.
   b. 1% mutant allele for LNA-sequencing (used for samples with low tumor cellularity)
6. Estimated specificity: 99% of KRAS and BRAF mutations reported in colorectal carcinoma.

**Specimen Requirements:**
- A paraffin block or
- 10 unstained sections of tumor (4-5 microns)(15 sections for small biopsies)

**A REQUISITION FORM MUST ACCOMPANY ALL SAMPLES. Please include detailed clinical information.**

**Test Performed (Days):**
Mon - Fri
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Turn Around Time:
5-10 days

Shipment Sensitivity Requirements:
Package and ship specimen to remain cold, but not frozen. Ship via overnight express, using the FedEx priority overnight label provided. Contact Client Services at (855) 535-1522 for shipping kits and instructions.

References: