MAYO CLINIC LABORATORIES

TEST OBSOLETE

Notification Date: June 17, 2025
Effective Date: July 29, 2025

MGMT Promoter Methylation, Tumor

Test ID: MGMT

Explanation:
On the effective date, this assay will be discontinued and replaced by the new assay below, MGMTD: MGMT Promoter Methylation Analysis, Tumor. This updated assay offers improved accuracy and reliability due to advancements in methodology. Reports will be simplified to indicate a positive or negative result only; the indeterminate category will no longer be used.

Recommended Alternative Test:
MGMT Promoter Methylation Analysis, Tumor

Test ID: MGMTD

Useful for:
- Prognostication of newly diagnosed patients with glioblastoma
- Identification of newly diagnosed glioblastoma patients that may derive benefit from alkylating chemotherapy (ie, temozolomide)
- Therapy selection for newly diagnosed glioblastoma in older patients (>60-65 years)

Highlights:
MGMT promoter methylation status has prognostic and predictive value for patients with glioblastoma.

Additional Tests:

Test ID	Reporting Name	Available Separately	Always Performed
SLIRV	Slide Review in MG	No (Bill Only)	Yes

Testing Algorithm:
When this test is ordered, slide review will always be performed at an additional charge.

Methods:
Droplet Digital Polymerase Chain Reaction (ddPCR)

Reference Values:
An interpretive report will be provided.

Necessary Information:
A pathology report (final or preliminary), containing the following information, is required and must accompany specimen for testing to be performed:

1. Patient name
2. Block number-must be on all blocks, slides, and paperwork (can be handwritten on the paperwork)
3. Tissue collection date
4. Source of the tissue

Specimen Requirements:
This assay requires at least 20% tumor nuclei.

- Preferred amount of tumor area with sufficient percent tumor nuclei: tissue 144 mm(2) tissue (4 x 6 mm x 6 mm areas)
- Minimum amount of tumor area: 36 mm(2) tissue (1 x 6 mm x 6 mm area)
- These amounts are cumulative over up to 10 unstained slides and must have adequate percent tumor nuclei.
- Tissue fixation: formalin-fixed paraffin-embedded (FFPE), non-decalcified

Submit only 1 of the following specimens:

Specimen Type:	**Tissue block**
Collection Instructions:	Submit a formalin-fixed non-decalcified, paraffin-embedded tissue block.

Specimen Type:	**Tissue slide**
Slides:	1 Stained and 10 unstained
Collection Instructions:	Submit 1 slide stained with hematoxylin and eosin and 10 unstained, nonbaked slides with 5-micron thick sections of the tumor tissue.
Note:	The total amount of required tumor nuclei can be obtained by scraping up to 10 slides from the same block.

Specimen Minimum Volume:
5 unstained slides at 5-microns thickness

Specimen Stability Information:

Specimen Type	Temperature	Time	Special Container
Varies	Ambient (preferred)		
	Refrigerated		

Cautions:

- Test results should be interpreted in context of clinical findings, tumor sampling, and other laboratory data. If results obtained do not match other clinical or laboratory findings, contact the laboratory for possible interpretation. Misinterpretation of results may occur if the information provided is inaccurate or incomplete.
- Reliable results are dependent on adequate specimen collection and processing. This test has been validated on formalin-fixed, paraffin-embedded tissues; other types of fixatives are discouraged.
- Improper treatment of tissues, such as decalcification, may cause polymerase chain reaction failure.
- Rare polymorphisms exist that could lead to false-negative or false-positive results.
- This test evaluates for the presence of increased levels of methylation of downstream CpG sites 75-80 and 84-87. Analytical validation studies showed that this assay requires at least 25 methylated copies for a positive result. Retrospective clinical validation study of approximately 200 patients with integrated diagnosis of glioblastoma, IDH-wildtype with grade 4 histological features who were treated with standard of care regiment including temozolomide established the cutoff of 6.50% fraction abundance to distinguish two groups of patients with statistically different overall survival rates. Using the combined cutoff of at least 25 methylated copies and 6.50% fraction abundance to define positive for increased promoter methylation ("methylated") status, patients with tumors positive for increased *MGMT* promoter methylation ("methylated") status have shown improved survival when compared to patients with tumors negative for increased *MGMT* promoter methylation ("unmethylated") status.
- Negative results do not exclude the possibility that increased levels of methylation may be present but below the cut-offs for this assay due to low tumor purity. This assay requires at least 20% tumor.
- Negative results do not exclude the presence of increased levels of methylation in other CpG sites.

CPT Code:

81287
88381-Microdissection manual

Day(s) Performed: Varies

Report Available: 7 to 10 days

Questions

Contact Michelle Raths, Laboratory Resource Coordinator at 800-533-1710.