# Malignant Glioma: FISH for 1p/19q

**Test Purpose**
Detection of deletions of 1p and 19q.

**Background Information**
Malignant gliomas is a common type of brain tumour. Common histological subtypes of malignant gliomas include: glioblastoma multiforme (GBM), astrocytomas, oligodendrogliomas, and ependymomas.

Specific genetic alterations have recently been identified in gliomas that correlate with prognosis and response to therapy. Combined loss of 1p and 19q has been shown to be a statistically significant predictor of prolonged survival in patients with oligodendroglioma, independent of grade (Smith et al 2000). Loss of 1p and 19q has also been seen in higher-grade malignancies such as GBM and anaplastic astrocytomas. Retrospective analysis has suggested genetic alterations may also affect outcome (Schmidt et al 2002).

**Clinical Indications**
1p/19q FISH analysis is specifically offered as a prognostic marker for patients with malignant glioma. The results should be interpreted in context with other genetic, pathological, radiological and clinical information.

**Principle of Test**
DNA is labeled with coloured tags that can be seen using a special fluorescence microscope. This technique is called Fluorescence *In Situ* Hybridization (FISH).

**Specimen Requirement**
Formalin Fixed Paraffin Embedded (FFPE) tissue: The laboratory requires 6 x unstained slides from 4 micron sections on polylysine coated slides. At least 60 malignant cells must be available for analysis.

A Referral Form should be completed and a histology report enclosed to assist in the interpretation of the result.

**Result Interpretation**
- **No loss** is where ratio > 0.9
- **Equivocal** is where ratio is equal to or between 0.8 and 0.9
- **Loss** is where ratio is < 0.8
- **Polysomy** should be interpreted with caution.

**Representative Image**

<table>
<thead>
<tr>
<th>Loss of 1p</th>
<th>Loss of 19q</th>
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<tbody>
<tr>
<td>R=1p36</td>
<td>R=19q13</td>
</tr>
<tr>
<td>G=1q25</td>
<td>G=19p13</td>
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**Limitations**
This technique examines anomalies that are at the defined locus and will not detect other anomalies. Very small rearrangements or point mutations will not be detected by this method.

**Extra Tests**
FFPE 004.1 Brain+EGFR

**References**


**Billing Code**
FFPE 004.0 Brain