

Sample: 16K1023 Name: No Patient DOB: 01-Jan-2000 URN:

## LUNG CANCER MUTATION ANALYSIS

### SPECIMEN

extref

### PATHOLOGY

Histological typing: .....

The sample was reviewed by a pathologist and was considered to have ....% tumour cells within the area selected for analysis. Please note: This is not a formal pathology review and is based solely on an H&E of the tissue provided and not on ancillary clinical or pathology information that may be available elsewhere.

### RESULT

NO MUTATIONS DETECTED

### TEST DESCRIPTION

Tumour DNA was tested in duplicate for mutations in exons 19 to 21 of the EGFR gene, exons 2 to 4 of the KRAS gene, and exon 15 of the BRAF gene using massively parallel sequencing. This test detects single nucleotide variants and indels in the target exons only. At 1000x coverage, the limit of detection of this assay has been determined to be X%. At 500x coverage the limit of detection has been determined to be X%. The sample was sequenced to an average 0 aligned reads per amplicon with 0% uniformity. Regions with less than 100x coverage have not been analysed. These are listed below.

### INTERPRETATION

This sample is wild type at common activating mutation sites in EGFR, KRAS and BRAF. The majority of patients with this result derive greater benefit from standard chemotherapy (1).

### COMMENTS

Mutations in the kinase domain of the epidermal growth factor receptor (EGFR) gene result in constitutive signalling leading to tumour development. Kinase domain mutations occur in approximately 10% of non-South East Asian and 35% of South East Asian NSCLC patients, the majority of which display a dramatic response to EGFR kinase domain inhibitors (1). Confirmation of EGFR mutation status is required before administering kinase domain inhibitors such as gefitinib (Iressa) and erlotinib (Tarceva).

Activating KRAS mutations occur in up to 40% of NSCLC and occur most frequently at codons 12, 13 and 61. KRAS mutations cause constitutive activation resulting in a continual proliferative signal downstream of EGFR. KRAS mutant NSCLC is insensitive to targeted EGFR inhibitors (2). In a retrospective series of 1,046 NSCLC patients, the BRAF V600E mutation was associated with shorter disease free survival (3).

Note: Testing of tissue treated with chemo and/or radiotherapy reduces the cellularity of the neoplastic element and reduces the sensitivity of the assay. Where possible tissue derived from untreated tumour should be tested.

### REFERENCES

1. Mok, T.S., et al., N Engl J Med, 2009. 361(10): p. 947-57.
2. Sun, J.M., et al., PLoS One, 2013. 8(5): p. e64816.
3. Marchetti, A., et al., Journal of Clinical Oncology, 2011. 29(26): p. 3574-3579.

Low coverage amplicons:

Assay region of interest coverage: