

ROS Oncogene 1 (ROS1) Fluorescence *In Situ* Hybridization

Test Description

The c-ros oncogene 1 (*ROS1*) is an oncogene that encodes a transmembrane receptor tyrosine kinase from the insulin receptor subfamily and shares 49% amino acid sequence homology with *ALK* in the kinase domain. The *ROS1* fusion gene has been demonstrated to transform NIH3T3 fibroblasts *in vitro* and induce tumorigenesis in lung alveolar epithelial cells *in vivo*. Recently, *ROS1* fusions have been discovered in several other tumors, including cholangiocarcinoma, non-small-cell lung cancer (NSCLC), ovarian cancer, gastric carcinoma, and colorectal cancer suggesting that *ROS1* is likely to be an effective molecular target in these patients.

Specimen

Sample Type: FFPE block SB-2842 B/19
Site: Lung
Pathology ID: MOLQ/FISH-01082019
Disease: NSCLC

Methodology

Fluorescence *In Situ* Hybridization (FISH)
 Probe: ROS1 3'= Orange; ROS1 5'= Green

Comments

1. Normal hybridization pattern (absence of gene rearrangements involving the *ROS1* gene) < 15% of the tumor cells scored show gene rearrangement involving the *ROS1* gene, as evidenced by the break-apart signal.
2. *ROS1* gene found on chromosome 6, codes for Receptor Tyrosine Kinase gene. *ROS1* gene rearrangement are seen in 2 % to 4% of non-small cell lung carcinoma (NSCLC).
3. *ROS1* gene rearrangement positive tumors show good response to Crizotinib therapy.

References

1. Rosai and Ackerman's Surgical Pathology.
2. Testing for *ROS1* in non-small cell lung cancer: a review with recommendations Lukas Bubendorf et al. Virchows Arch. 2016; 469(5): 489-503.
3. Evaluation of a Dual ALK/ROS1 Fluorescent In Situ Hybridization Test in Non-Small-cell Lung Cancer Ginestet F et al. Clin Lung Cancer. 2018 Sep;19(5):e647-e653
4. Biomarkers for ALK and ROS1 in Lung Cancer Peter P. Luk et al. Arch Pathol Lab Med—Vol 142, August 2018

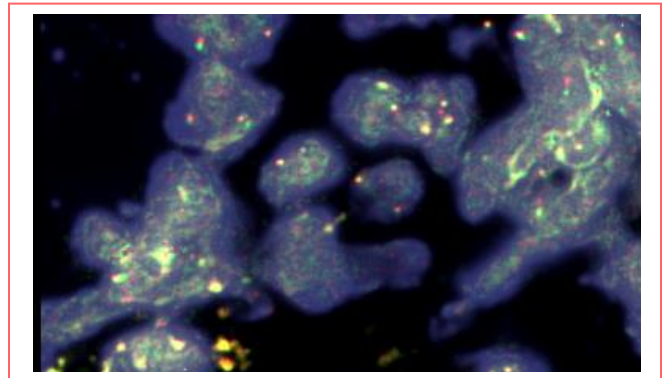
Result

ROS1 gene rearrangement: Negative

Clinician

Clinician Name: Dr. Archit Pandit
 Medical Facility: Max Hospital, Shalimar Bagh
 Pathologist: Not provided

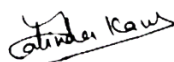
Figure



Microscopic Evaluation

Total number of cells scored	100
Percentage of tumor cells with <i>ROS1</i> rearrangements	03
Percentage of tumor cells with no <i>ROS1</i> rearrangements	98

Reviewed by



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