# European Respiratory Society
# Annual Congress 2013

**Abstract Number:** 1982

**Publication Number:** P5095

**Abstract Group:** 11.1. Lung Cancer

**Keyword 1:** Lung cancer / Oncology **Keyword 2:** Biomarkers **Keyword 3:** No keyword

**Title:** The art of detecting EML4-ALK gene rearrangements in NSCLC patients – Immediate implications for patient care

Marina 19507 Pekar pekar_m@yahoo.com [1], Dr. Maya 19508 Ilouze mayailouze@gmail.com [1], Dr. Vincent 19509 Miller vmiller@foundationmedicine.com [2], Dr. Doron 19510 Lipson dlipson@foundationmedicine.com [2], Dr. Siraj 19511 Ali sali@foundationmedicine.com [2], Dr. Jair 19513 Bar bar.jair@gmail.com [3], Dr. Amir 19514 Onn Amir.Onn@sheba.health.gov.il [4], Dr. Dekel 19519 Shlomi Dekel.Shlomi@sheba.health.gov.il [3], Meital 19520 Elimelech meitale26@gmail.com [1], Dr. Lior 19521 Soussan-Gutman Lior.Soussan-Gutman@teva.co.il [5], Dr. Murry 19522 Wynes Murry.Wynes@ucdenver.edu [6], Prof. Fred R. 19524 Hirsch fred.hirsch@ucdenver.edu [6] and Dr. Nir 19531 Peled peled.nir@gmail.com MD [1]. [1] The Thoracic Cancer Research and Detection Center, Sheba Medical Center, Tel Aviv University, Ramat-Gan, Israel, 52621 ; [2] Foundation Medicine, 2Foundation Medicine, Cambridge, MA, United States ; [3] Thoracic Oncology Unit,, Israel, Institute of Oncology, Sheba Medical Center, Ramat-Gan, Israel, 52621 ; [4] Pulmonary Oncology Department, Sheba Medical Center, Ramat-Gan, Israel, 52621 ; [5] Oncotest-Teva Pharmaceutical Industries, Teva, Petach Tikva, Israel and [6] Department of Medicine, Division of Medical Oncology, University of Colorado Cancer Center, UC Denver, Aurora, CO, United States .

**Body:** Background and aims: Patients with lung adenocarcinoma carrying the EML4-ALK rearrangement show dramatic response to crizotinib. There are several methods for identifying this rearrangement, the currently approved being fluorescence in situ hybridization (FISH). Other methods include: gene sequencing and immunohistochemistry (IHC).The purpose of this study is to examine IHC as an alternative method for detecting EML4-ALK translocation. Methods: All the slides were tested by FISH and IHC using D5F3 antibody. When the FISH and IHC results were not identical, the samples were sequenced by "FoundationOne" next-generation sequencing (NGS) based assay Results: 58 consecutive NSCLC adenocarcinoma samples referred for ALK FISH testing were included in the study. 52 had sufficient tissue for further ALK IHC study. Four (6.9%) were positive by FISH; Seven (12%) were positive by IHC while three of them were both FISH+ and IHC+. One sample was FISH+ and IHC-. NGS was done for the mismatched samples (IHC(+); FISH(-); N=4) showing positive ALK rearrangement. Two of the samples were found to harbor a unique novel ALK rearrangement at intron 19. One of the patients that harbor this unique rearrangement showed a complete respond. Conclusion: This study provides evidence to support change of practice when ALK rearrangement detection is required. We recommend ALK IHC as a first screener and NGS as a validated method when IHC is not diagnostic. Due to the significant clinical benefit for patients whose tumor harbor ALK rearrangement, it is extremely important to keep the clinical senses alert and to combine different methodologies for a better personalized medicine.