**ROS1 GENE REARRANGEMENT IS IDENTIFIED IN NSCLC**

Major advances in the treatment of non–small cell lung cancer (NSCLC) can be attributed to the identification of key driver genes and the subsequent development of matched targeted therapies. Two such clinical successes are the tyrosine kinase inhibitors erlotinib and crizotinib that are used to treat NSCLC patients with *EGFR* mutations and *ALK* rearrangements, respectively. However, despite this progress, the genetic events that drive a large proportion of NSCLCs have not yet been identified. Using fluorescence *in situ* hybridization combined with clinicopathologic analysis of NSCLC patients, Bergethon and colleagues found that chromosomal rearrangement of *ROS1*, a gene that encodes a receptor tyrosine kinase of the insulin family, defines a new molecular subset of NSCLC. An initial screen of 1,073 NSCLC patients established a 2% prevalence rate for *ROS1* rearrangement. Correlative studies then revealed that *ROS1*-positive patients tended to be younger never-smokers with a histologic diagnosis of adenocarcinoma, a profile similar to that of patients with *ALK*-rearranged NSCLC. Significantly, treatment with the ALK–MET inhibitor crizotinib inhibited the growth of *ROS1*-rearranged cells *in vitro* and led to near-complete resolution of a multifocal lung tumor in 1 *ROS1*-positive patient with advanced NSCLC. This study not only identifies *ROS1* gene rearrangement as an additional driver mutation in NSCLC but also establishes ROS1 to be a target of crizotinib, a finding that may have significant impact upon the diagnosis and treatment of lung cancer.


*Cancer Discovery; published OnlineFirst January 12, 2012; doi:10.1158/2159-8290.CD-RW2012-006*
ROS1 Gene Rearrangement Is Identified in NSCLC


Updated version

Access the most recent version of this article at:
doi:10.1158/2159-8290.CD-RW2012-006

E-mail alerts

Sign up to receive free email-alerts related to this article or journal.

Reprints and Subscriptions

To order reprints of this article or to subscribe to the journal, contact the AACR Publications Department at pubs@aacr.org.

Permissions

To request permission to re-use all or part of this article, use this link
http://cancerdiscovery.aacrjournals.org/content/2/2/OF9.
Click on "Request Permissions" which will take you to the Copyright Clearance Center's (CCC) Rightslink site.