Biomarker Analysis and the Implications for the Treatment of Non-Small Cell Lung Cancer *(Video Program)*

CME Information

TARGET AUDIENCE

This activity is intended for medical oncologists, radiation oncologists and other healthcare providers involved in the treatment of lung cancer.

OVERVIEW OF ACTIVITY

Recent developments have led to an explosion in lung cancer genetic and biologic knowledge, but the integration of anti-PD-1/PD-L1 checkpoint inhibitors into treatment and the evolution of targeted therapy have complicated decision-making for clinicians caring for patients with metastatic non-small cell lung cancer (NSCLC).

To assist medical oncologists as they think through the complex management of NSCLC, this program features the perspectives of a lung cancer clinical oncology investigator and a pathologist on the results of a patterns of care survey of 25 thoracic oncology experts documenting the current state of biomarker analysis and the related implications for treatment. Upon completion of this CME activity, medical oncologists should be able to formulate an up-to-date and more complete approach to the care of patients with lung cancer.

LEARNING OBJECTIVES

- Analyze the effects of tumor histology, genetic alterations and PD-L1 tumor proportion score on the practice patterns of clinical investigators in the management of NSCLC.
- Recognize the utility and limitations of multiplex and next-generation sequencing platforms, and determine their clinical application for patients with NSCLC.
- Review available research data on the effectiveness of approved EGFR tyrosine kinase inhibitors (TKIs) in patients with various EGFR mutations, and use this information to guide first-line treatment decision-making.
- Describe mechanisms of tumor resistance to EGFR TKIs, and understand the therapeutic options for patients whose disease progresses on first-line EGFR therapy.
- Describe available and emerging data on the efficacy of anti-PD-1/PD-L1 antibodies in NSCLC, and consider this information when counseling patients regarding treatment options.
- Assess new oncogenic pathways mediating the growth of unique NSCLC tumor subsets, and recall emerging data with experimental agents exploiting these targets.

ACCREDITATION STATEMENT

Research To Practice is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

CREDIT DESIGNATION STATEMENT

Research To Practice designates this enduring material for a maximum of 2.25 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

AMERICAN BOARD OF INTERNAL MEDICINE (ABIM) — MAINTENANCE OF CERTIFICATION (MOC)

Successful completion of this CME activity, which includes participation in the evaluation component, enables the participant to earn up to 2.25 Medical Knowledge MOC points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program. Participants will earn MOC points equivalent to the amount of CME credits claimed for the activity. It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of granting ABIM MOC credit.

Please note, this program has been specifically designed for the following ABIM specialty: **medical oncology**.

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HOW TO USE THIS CME ACTIVITY

This CME activity consists of a video component. To receive credit, the participant should review the CME information, watch the video, complete the Post-test with a score of 80% or better and fill out the Educational Assessment and Credit

Form located at **ResearchToPractice.com/BiomarkersLung17/Video/CME**. The corresponding audio program is available as an alternative at **ResearchToPractice.com/BiomarkersLung17**.

CONTENT VALIDATION AND DISCLOSURES

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FACULTY — The following faculty (and their spouses/partners) reported relevant conflicts of interest, which have been resolved through a conflict of interest resolution process:

FACULTY

Gregory J Riely, MD, PhD
Associate Attending
Memorial Sloan Kettering Cancer Center
New York, New York

Consulting Agreement: Genentech BioOncology; **Contracted Research:** Ariad Pharmaceuticals Inc, Astellas Pharma Global Development Inc, Novartis, Pfizer Inc.

Marc Ladanyi, MD
Molecular Geneticist
Chief, Molecular Diagnostics Service
William J Ruane Chair in Molecular Oncology
Memorial Sloan Kettering Cancer Center
New York, New York

Contracted Research: AstraZeneca Pharmaceuticals LP, Loxo Oncology.

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Hardware/Software Requirements:
A high-speed Internet connection
A monitor set to 1280 x 1024 pixels or more
Internet Explorer 11 or later, Firefox 56 or later, Chrome 61 or later, Safari 11 or later, Opera 48 or later
Adobe Flash Player 27 plug-in or later
Adobe Acrobat Reader
(Optional) Sound card and speakers for audio

Last review date: December 2017

Expiration date: December 2018

Select Publications

Awad MM et al. **Impact of MET inhibitors on survival among patients (pts) with MET exon 14 mutant (METdel14) non-small cell lung cancer (NSCLC).** *Proc ASCO* 2017;**Abstract 8511**.

Brahmer JR et al. **Progression after the next line of therapy (PFS2) and updated OS among patients (pts) with advanced NSCLC and PD-L1 tumor proportion score (TPS) ≥50% enrolled in KEYNOTE-024.** *Proc ASCO* 2017;**Abstract 9000**.

Drilon A et al. **Broad, hybrid capture-based next-generation sequencing identifies actionable genomic alterations in lung adenocarcinomas otherwise negative for such alterations by other genomic testing approaches.** *Clin Cancer Res* 2015;21(16):3631-9.

Gainor JF et al. **EGFR mutations and ALK rearrangements are associated with low response rates to PD-1 pathway blockade in non-small cell lung cancer: A retrospective analysis.** *Clin Cancer Res* 2016;22(18):4585-93.

Herbst RS et al. **Pembrolizumab versus docetaxel for previously treated, PD-L1-positive, advanced non-small-cell lung cancer (KEYNOTE-010): A randomised controlled trial.** *Lancet* 2016;387(10027):1540-50.

Hida T et al. **Alectinib versus crizotinib in patients with ALK-positive non-small-cell lung cancer (J-ALEX): An open-label, randomised phase 3 trial.** *Lancet* 2017;390(10089):29-39.

Langer CJ et al; KEYNOTE-021 Investigators. **Carboplatin and pemetrexed with or without pembrolizumab for advanced, non-squamous non-small-cell lung cancer: A randomised, phase 2 cohort of the open-label KEYNOTE-021 study.** *Lancet Oncol* 2016;17(11):1497-508.

Lee CK et al. **Checkpoint inhibitors in metastatic EGFR-mutated non-small cell lung cancer — A meta-analysis.** *J Thorac Oncol* 2017;12(2):403-7.

Love N et al. **A biomarker-driven algorithm for sequencing of systemic therapy for metastatic NSCLC: A survey of 25 investigators.** Chicago Multidisciplinary Symposium in Thoracic Oncology 2017;**Abstract PS02.17**.

Magnuson WJ et al. **Management of brain metastases in tyrosine kinase inhibitor-naïve epidermal growth factor receptor-mutant non-small-cell lung cancer: A retrospective multi-institutional analysis.** *J Clin Oncol* 2017;35(10):1070-7.

Mok TS et al; AURA3 Investigators. **Osimertinib or platinum-pemetrexed in EGFR T790M-positive lung cancer.** *N Engl J Med* 2017;376(7):629-40.

Papadimitrakopoulou V et al. **First-line carboplatin and pemetrexed (CP) with or without pembrolizumab (pembro) for advanced nonsquamous NSCLC: Updated results of KEYNOTE-021 cohort G.** *Proc ASCO* 2017;**Abstract 9094**.

Park K et al. **Afatinib versus gefitinib as first-line treatment of patients with EGFR mutation-positive non-small-cell lung cancer (LUX-Lung 7): A phase 2B, open-label, randomised controlled trial.** *Lancet Oncol* 2016;17(5):577-89.

Peters S et al. **Alectinib versus crizotinib in untreated ALK-positive non-small-cell lung cancer.** *N Engl J Med* 2017;377(9):829-38.

Planchard D et al. **Phase 2 trial (BRF113928) of dabrafenib (D) plus trametinib (T) in patients (pts) with previously untreated BRAF V600E–mutant metastatic non-small cell lung cancer (NSCLC).** *Proc ESMO* 2017;**Abstract LBA51**.

Planchard D et al. **Dabrafenib plus trametinib in patients with previously treated BRAF(V600E)-mutant metastatic non-small cell lung cancer: An open-label, multicentre phase 2 trial.** *Lancet Oncol* 2016;17(7):984-93.

Ramalingam S et al. **Osimertinib vs standard of care (SoC) EGFR-TKI as first-line therapy in patients (pts) with EGFRm advanced NSCLC: FLAURA.** *Proc ESMO* 2017;**Abstract LBA2_PR**.

Reck M et al; KEYNOTE-024 Investigators. **Pembrolizumab versus chemotherapy for PD-L1-positive non-small-cell lung cancer.** *N Engl J Med* 2016;375(19):1823-33.

Sabari JK et al. **PD-L1 expression and response to immunotherapy in patients with MET exon 14-altered non-small cell lung cancers (NSCLC).** *Proc ASCO* 2017;**Abstract 8512**.

Shaw AT et al. **Ceritinib in ALK-rearranged non-small-cell lung cancer.** *N Engl J Med* 2014;370(13):1189-97.

Soria JC et al. **First-line ceritinib versus platinum-based chemotherapy in advanced ALK-rearranged non-small-cell lung cancer (ASCEND-4): A randomised, open-label, phase 3 study.** *Lancet* 2017;389(10072):917-29.

Yang JC et al. **Osimertinib activity in patients with leptomeningeal (LM) disease from non-small cell lung cancer (NSCLC): Updated results from BLOOM, a phase I study.** *Proc ASCO* 2016;**Abstract 9002**.