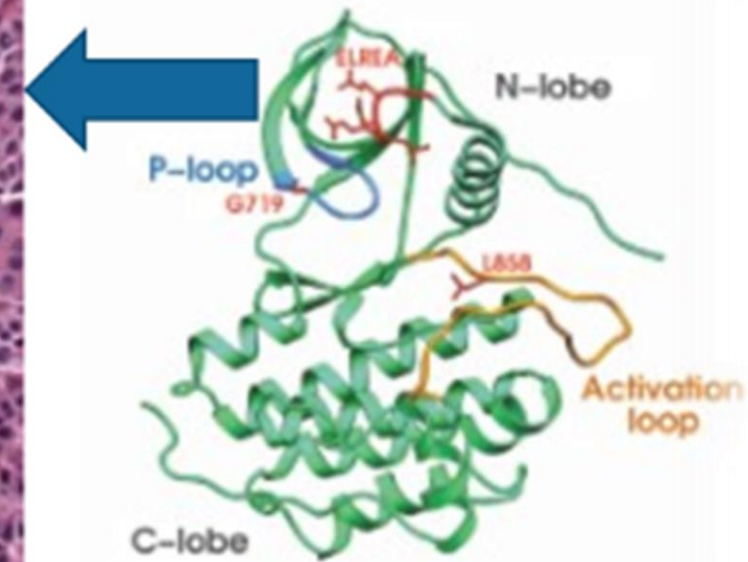
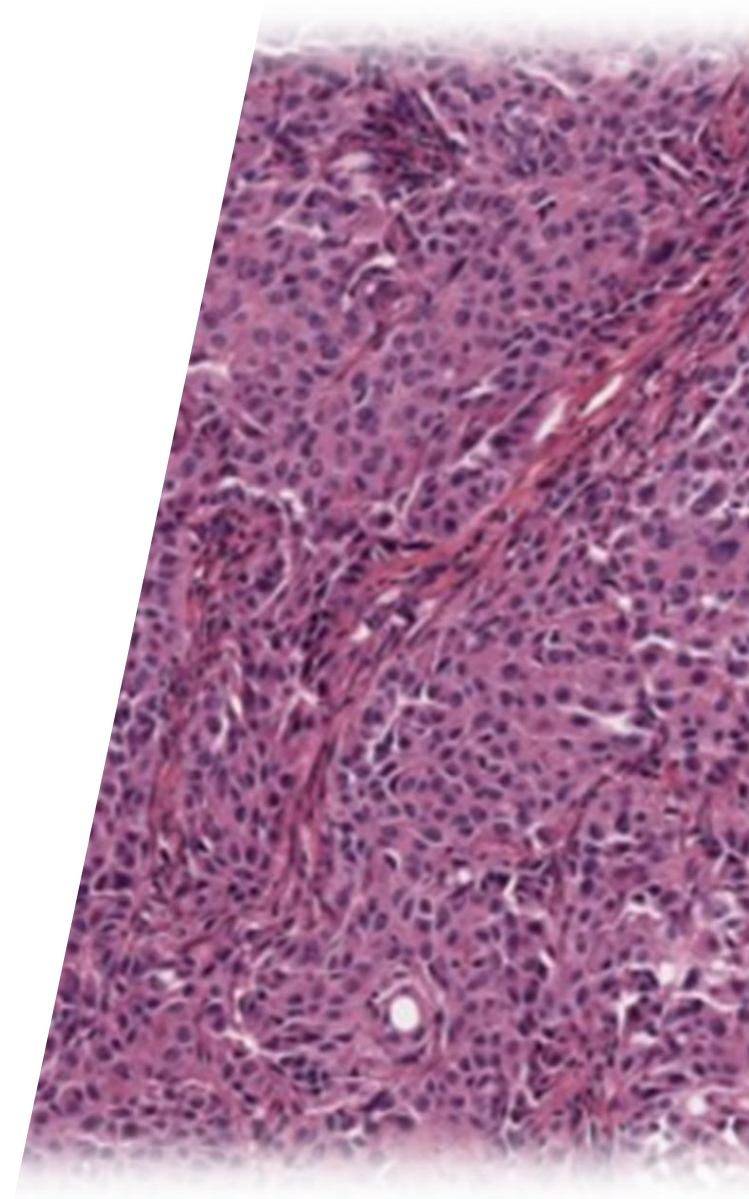


Welcome!

Before we begin...

Today's session will
be recorded

Please add your name
and organization in
the chat



EGFR
Mutation



Wednesday, January 17, 2023 • 4:00 – 5:00 pm EST

Lung Cancer Biomarker Testing ECHO Year 3

Session 1: Understanding the Pathways and Barriers to
Biomarker Testing

Welcome to Session One of the Lung Cancer Biomarker Testing ECHO Year 3



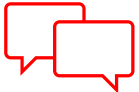
Each ECHO session will be recorded and will be posted to a publicly-facing website



You will be muted with your video turned off when you join the call. Use the buttons in the *black* menu bar to unmute your line and to turn on your video. **If you do not wish to have your image recorded, please turn OFF the video option.**



Today's materials will be made available on our ACS ECHO website, <https://echo.cancer.org>.



Please type your full name, the full name of your organization, and e-mail in the chat box



This ECHO session takes place on the Zoom platform. To review Zoom's privacy policy, please visit zoom.us/privacy



Questions about Zoom? Type in the chat box [@Mindi Odom](#)

The Biomarker ECHO series is made possible with funding provided by:



ONCOLOGY



Additional thanks to Foundation Medicine and founding sponsor, Amgen



Have a question? Don't wait to ask! Feel free to enter in the **Chat** at any time.

Today's Agenda



1 Housekeeping, Agenda Preview, and Introductions

15 minutes

2 Didactic Lecture: Understanding the Pathways and Barriers to Biomarker Testing

Millie Das, MD, Chief of Oncology

Palo Alto VA Healthcare System

10 minutes

3 Didactic Q/A

5 minutes

4 Case Presentation: Cone Health Cancer Center, Greensboro, North Carolina

Mohamed K. Mohamed, MD, PhD

Thoracic Medical Oncologist

5 minutes

5 Case Presentation Recommendations and Discussion

15 minutes

6 Post Session Poll & Wrap Up

5 minutes

Your ECHO Support Team



Korey Hofmann, MPH
ECHO Lead
Program Manager, National Lung
Cancer Roundtable



Mindi Odom
Director, Project ECHO
Your ECHO Co-Lead



Beth Graham, MPH, CHES
Program Manager, Project ECHO



Jennifer McBride, PhD
Senior Data & Evaluation Manager



Donoria Evans, PhD, MPH
Director, Data and Evaluation,
National Roundtables and Coalitions

Introductions

Meet Our Lung Cancer Biomarker Testing ECHO HUB Subject Matter Experts (SMEs)



Millie Das, MD
Chief, Oncology
VA Palo Alto Health Care System
Clinical Associate Professor
Stanford University



Aakash Desai, MBBS, MPH
Assistant Professor of Medicine
O'Neal Cancer Center
University of Alabama, Birmingham



Grace Dy, MD
Professor of Oncology
**Roswell Park Comprehensive
Cancer Center**



**DuyKhanh Pham "Mimi"
Ceppa, MD, FACS**
Associate Professor of Thoracic
Surgery
**Indiana University School of
Medicine**



Matthew Factor, MD
System Chief, Thoracic Surgery
Geisinger Health



Adam Fox, MD
Assistant Professor
**Medical University of South
Carolina**



Jason Merker, MD, PhD
Associate Professor, Department of
Pathology and Laboratory Medicine &
Genetics
**University of North Carolina
Lineberger Comprehensive Cancer
Center**

Introductions

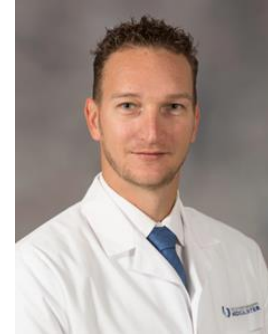
Meet Our Lung Cancer Biomarker Testing ECHO HUB Subject Matter Experts (SMEs)



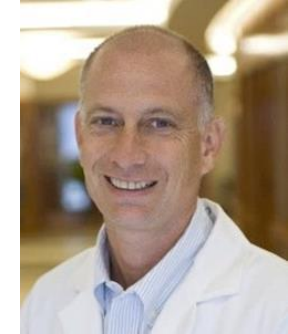
Koosha Paydary, MD, MPH, MSc
Assistant Professor, Department of
Internal Medicine
Rush University



Catherine R. Sears, MD
Associate Professor of Medicine,
Division of Pulmonary, Critical Care,
Sleep and Occupational Medicine
**Indiana University School of
Medicine**
**Simon Comprehensive Cancer
Center**



Michal Senitko, MD
Assistant Professor
**The University of Mississippi
Medical Center**



Gerard Silvestri, MD, MS
Hillenbrand Professor of Thoracic
Oncology
**Medical University of South
Carolina**



**Heather Wakelee, MD
(Ad Hoc)**
Professor of Medicine and Chief
of the Division of Oncology,
**Stanford University School of
Medicine**
Deputy Director, **Stanford
Cancer Institute**



Ignacio Wistuba, MD
Professor and Chair, Department of
Translational Pathology
**The University of Texas MD
Anderson Cancer Center**



Introductions

Participant Learning Site Champions:

- Introduce yourself,
- Organization & location
- Introduce any team members on the call today

Welcome to our Participant Learning Sites



ALABAMA

Mobile Infirmary

O'Neal
Comprehensive
Cancer Center at the
University of Alabama
at Birmingham

University of South
Alabama Health,
Mitchell Cancer
Institute

CALIFORNIA

Comprehensive
Cancer Center at
Desert Regional
Medical Center

Fresno VA Medical
Center

Harbor UCLA

Providence St. Joseph
Health

Sharp Healthcare

INDIANA

Ascension St. Vincent
Indianapolis

Deaconess Hospital,
Inc.

Franciscan Alliance
Burrell Cancer Center
Crown Point

Methodist Hospitals

NORTH CAROLINA

Cone Health Medical
Group/Cone Health
Cancer Center

Novant New Hanover
Regional Medical
Center

UNC Caldwell McCreary



Lung Cancer Biomarker Testing ECHO FACILITATOR

Timothy Mullett, MD, MBA, FACS
Medical Director, Markey Cancer
Center Network Development



Understanding the Barriers and Pathways to Biomarker Testing

Millie Das, MD

Chief of Oncology
Palo Alto VA Healthcare System
Clinical Associate Professor
Stanford University

Conflict of Interest

- **Research Grant:** Genentech, Merck, CellSight, Novartis, Varian
- **Consultant:** Eurofins, Genentech (uncompensated)
- **Advisor:** Sanofi/Genzyme, Beigene, Regeneron, Astra Zeneca, Janssen, Gilead, Bristol Myer Squibb, Catalyst, Abbvie, Novocure, Guardant

Learning objectives



- 1 *Review the need and current guidelines for biomarker testing in NSCLC*
- 2 *Overview of pathways to biomarker testing*
- 3 *Discuss common challenges in ensuring biomarker testing for patients*

NSCLC is a paradigm of precision medicine

- 2004: Detection of sensitizing EGFR mutations (exon 19 del/L858R) and clinical efficacy of EGFR TKIs
- Expanding list of FDA approved therapies for oncogenic driver alterations

ORIGINAL ARTICLE

Activating Mutations in the Epidermal Growth Factor Receptor Underlying Responsiveness of Non–Small-Cell Lung Cancer to Gefitinib

Thomas J. Lynch, M.D., Daphne W. Bell, Ph.D., Raffaella Sordella, Ph.D., Sarada Gurubhagavatula, M.D., Ross A. Okimoto, B.S., Brian W. Brannigan, B.A., Patricia L. Harris, M.S., Sara M. Haserlat, B.A., Jeffrey G. Supko, Ph.D., Frank G. Haluska, M.D., Ph.D., David N. Louis, M.D., David C. Christiani, M.D., [et al.](#)

[Article](#) [Figures/Media](#)

[29 References](#) [8615 Citing Articles](#) [Letters](#)

Abstract

BACKGROUND

Most patients with non–small-cell lung cancer have no response to the tyrosine kinase inhibitor gefitinib, which targets the epidermal growth factor receptor (EGFR). However, about 10 percent of patients have a rapid and often dramatic clinical response. The molecular mechanisms underlying sensitivity to gefitinib are unknown.

May 20, 2004

N Engl J Med 2004; 350:2129-2139

DOI: 10.1056/NEJMoa040938

Related Articles

EDITORIAL MAY 20, 2004

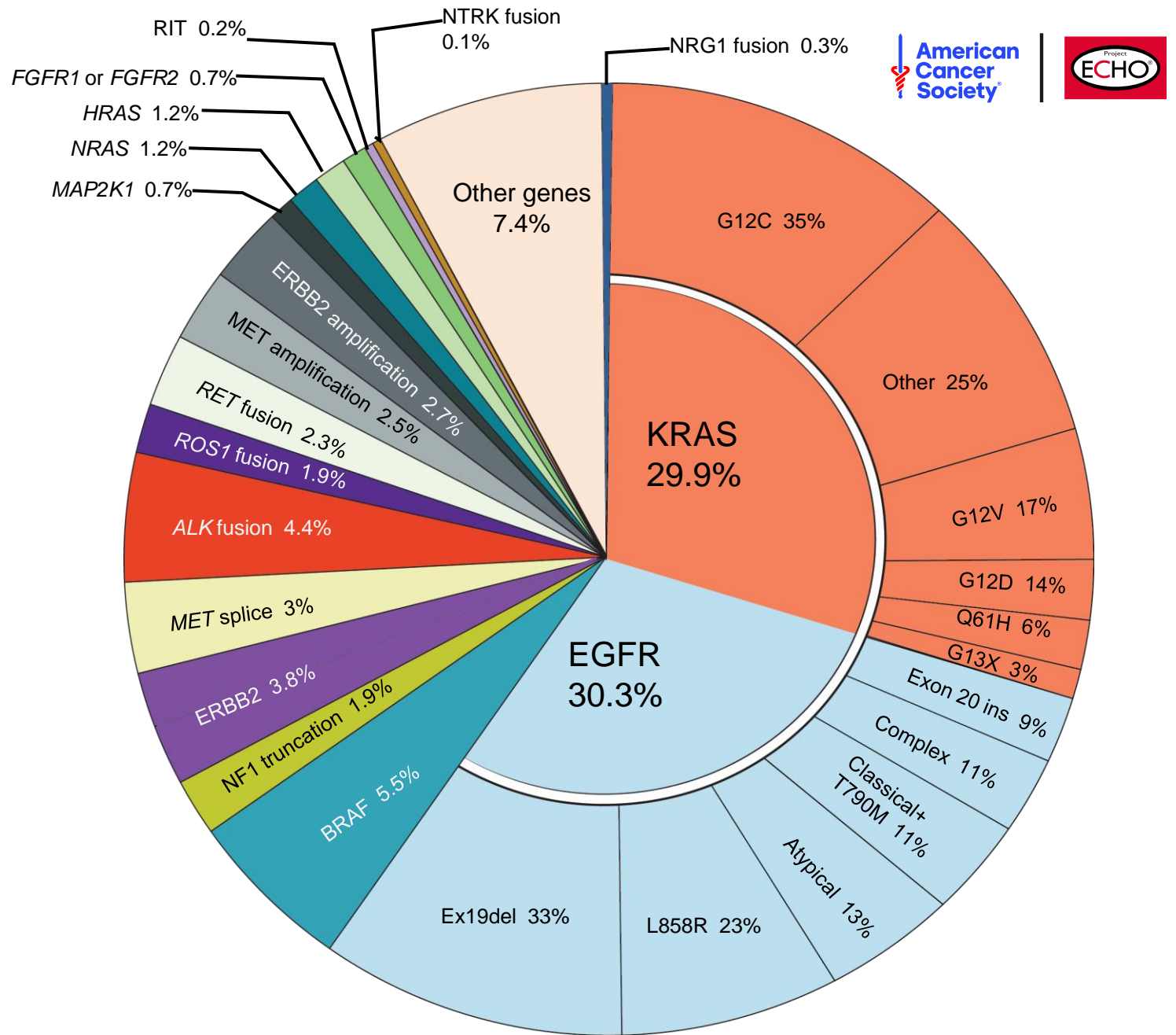
Targeting Targeted Therapy

M.R. Green

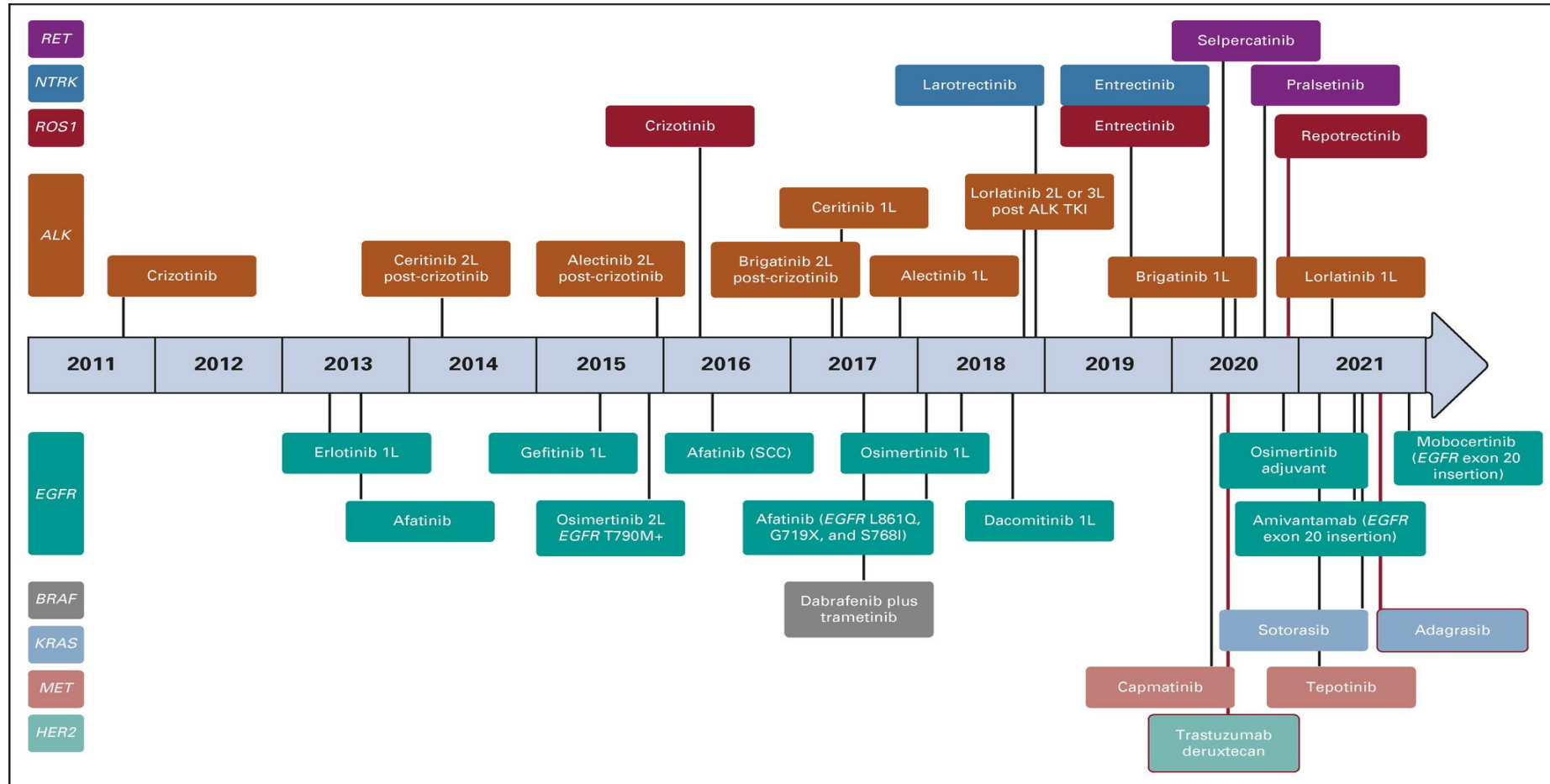
CORRESPONDENCE SEP 16, 2004

EGFR Mutations and Sensitivity to Gefitinib

Identification of driver mutations leads to treatment with targeted therapies in metastatic NSCLC



Timeline of FDA-approved Therapies for Oncogene Driven NSCLC

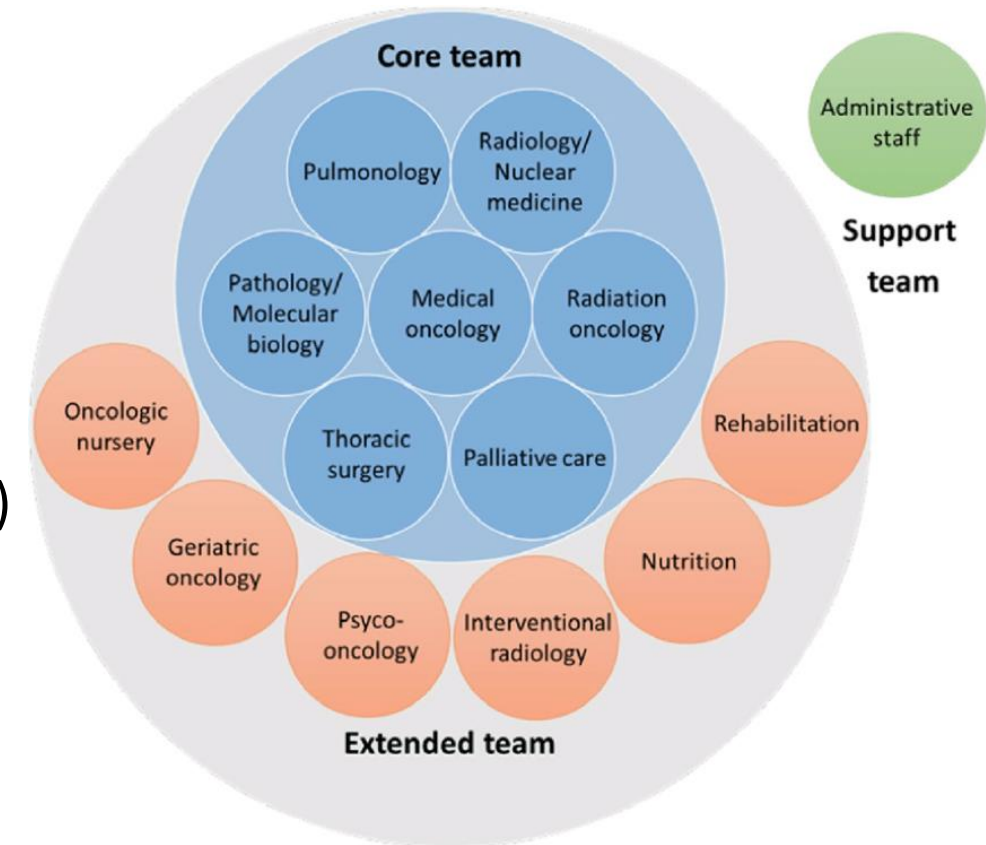


Biomarker Testing Recommendations

- Molecular testing recommended for:
 - All patients with metastatic non-squamous NSCLC
 - Consider also in patients with metastatic squamous NSCLC
- Biomarker tests obtained from tumor tissue or cytology
 - Testing of plasma from peripheral blood (liquid biopsy) can be done concurrently and/or used in cases of insufficient tissue
- Tumor next generation sequencing (NGS) preferred
 - RNA or DNA based

Multidisciplinary Lung Cancer Care Team

- Diagnostics
 - Radiology
 - Pulmonary (EBUS)
 - Interventional radiology (CT-guided)
- Pathology/Laboratory
 - Tissue-based testing: NGS preferred (2-4 wk turnaround)
 - Blood based testing: lower sensitivity (1 wk turnaround)
- Treatment specialists
 - Medical Oncology
 - Radiation Oncology
 - Thoracic surgery
 - Palliative Care



Challenges with biomarker testing in NSCLC

- Insufficient tissue
- Cost/insurance coverage
- Delays in getting results (especially from outside your institution)
 - Who is ordering the biomarker testing?
 - Proceduralists performing biopsy vs. pathology vs. medical oncology
 - What is the turnaround time for the testing?
 - Is reflexive tissue testing able to be performed?
 - Insurance barriers or systems processes can impede
- Understanding and acting upon the results
 - Confusing NGS reports
 - Evolving treatment landscape
- Need to balance patients concerns about waiting too long before starting treatment
 - Biomarkers are now essential to guide optimal therapy
 - Initiation of immunotherapy has consequences for subsequent TKI therapy

Overcoming Barriers to Biomarker Testing

- Organizational/Systems Approach
 - Identify vendor for testing
 - Set expectations regarding costs (including out-of-pocket)
 - Discuss how results will get relayed (addendum to path report, access to external reports)
- Standardize testing
 - Which patients to test
 - Who orders the testing
- Multidisciplinary tumor boards/Molecular tumor boards
- Patient and staff education



Thank You



Open Discussion: Questions & Answers



Mohamed K. Mohamed, MD, PhD
Thoracic Medical Oncologist
Cone Health Cancer Center

Session 1

Case Presentation

Cone Health Cancer Center

Session 1 Case Study

Provided by: Mohamed K. Mohamed, MD, PhD

Cone Health Cancer Center

Focus: Patient



Patient Hx

- 32 y/o female (never used tobacco) admitted to the hospital with worsening dyspnea and tachycardia started 3 months before
- Treated for allergy and asthma at urgent care with no improvements
- She was hypoxic with O2 sat of 86% on 6 L of Oxygen and Face mask
- CT angiogram of the chest was read as extensive peripheral predominant areas of patchy consolidation throughout both lungs, likely representing multifocal pneumonia with likely reactive subcentimeter mediastinal and hilar nodes

Key Elements

- Bronchoscopy performed and the pathology was consistent with poorly differentiated carcinoma with signet ring features positive for CK7 and TTF-1 (lung primary)
- Molecular studies by NGS blood test was negative but the tissue biopsy NGS result was positive for ALK-EML4 fusion.

Treatment

- She started immediately on treatment with Alectinib and has improvement in few days and discharged home with no O2 requirements.

Session 1 Case Study

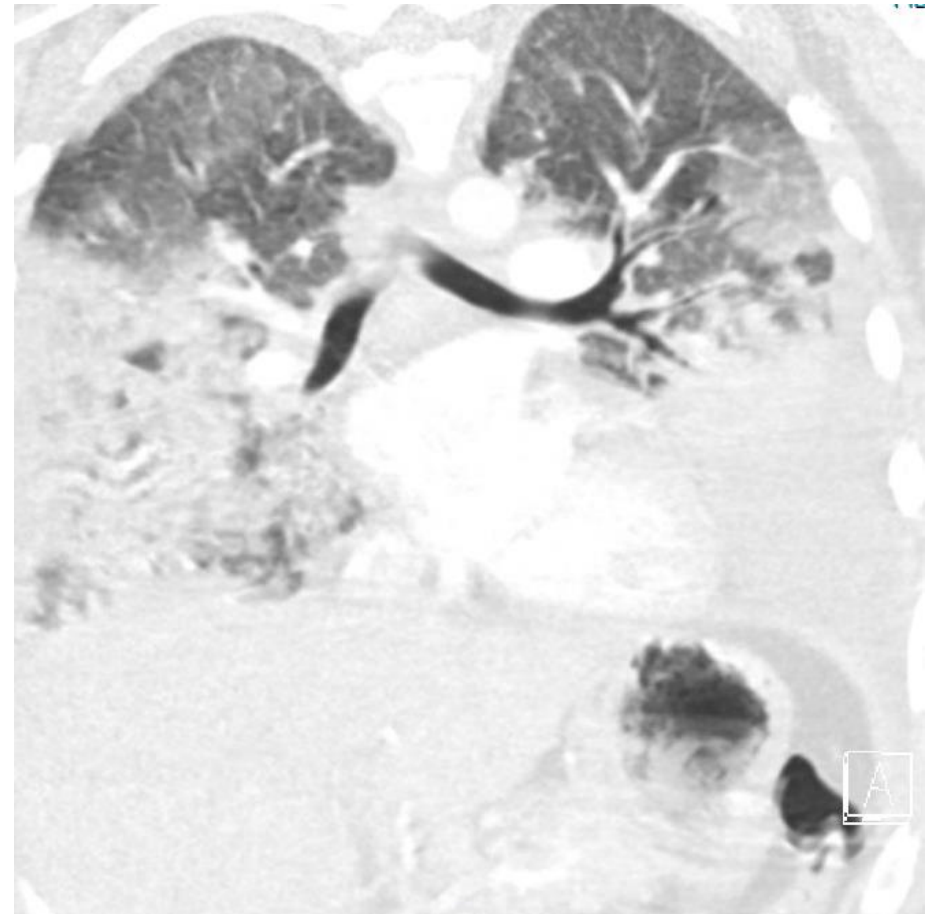
Provided by: Mohamed K. Mohamed, MD, PhD

Cone Health Cancer Center

Focus: Patient



32 YOF with stage IV NSCLC, Adenocarcinoma and ALK Gene Translocation at presentation



Session 1 Case Study

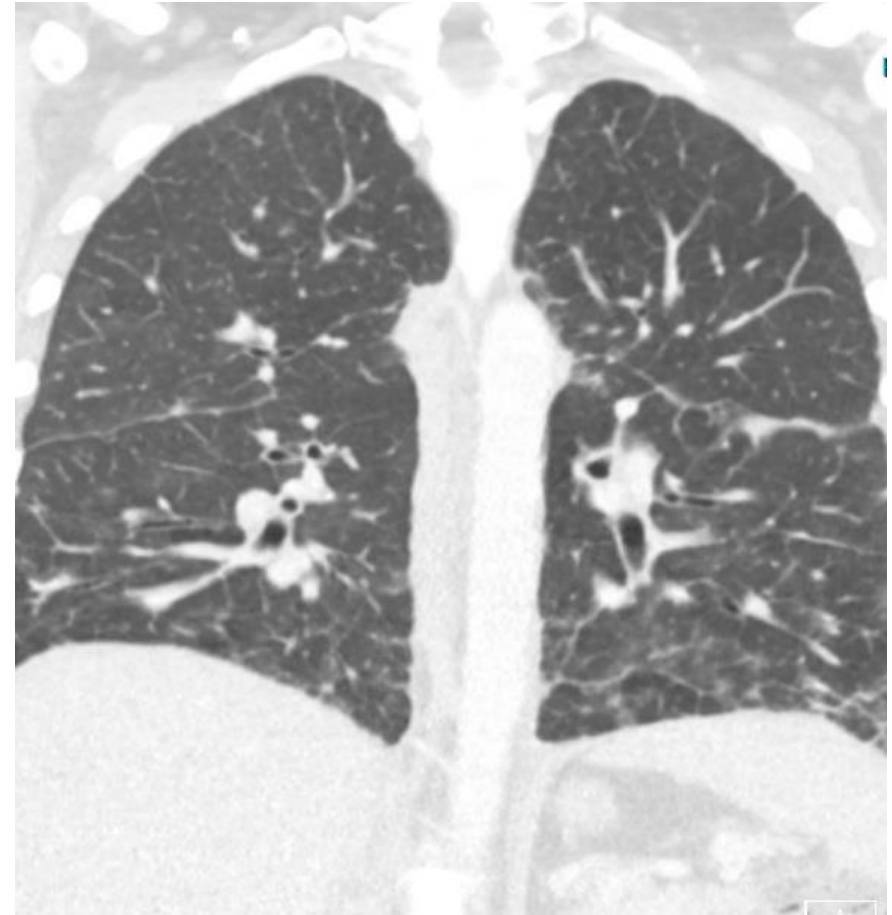
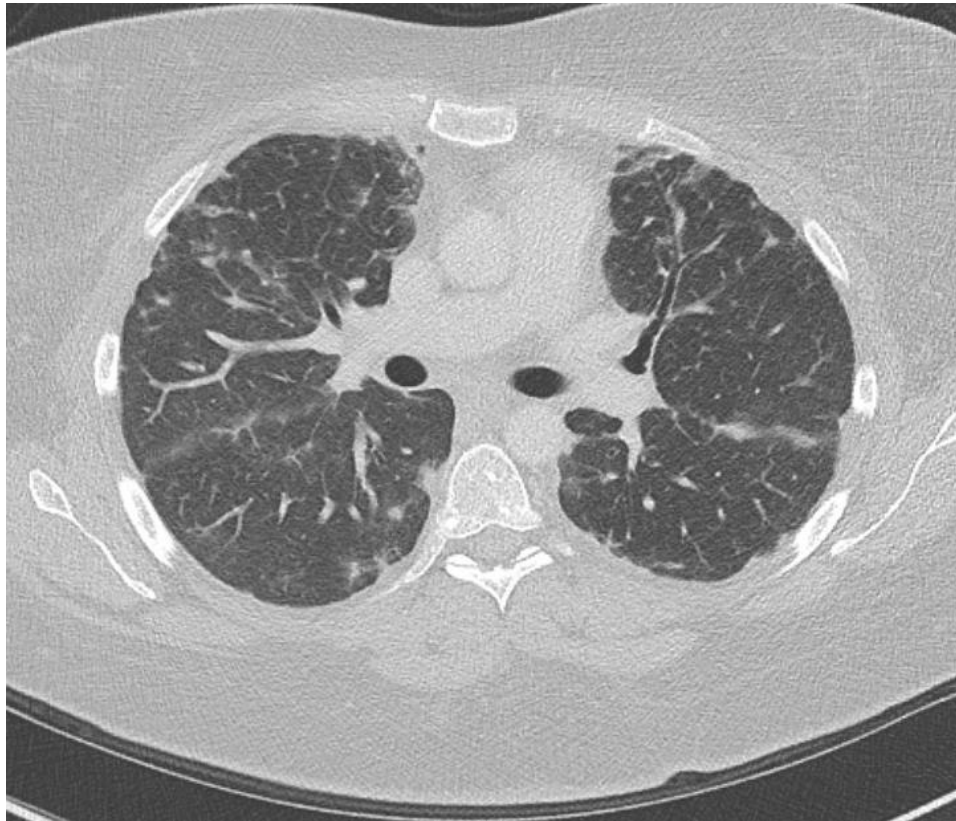
Provided by: Mohamed K. Mohamed, MD, PhD

Cone Health Cancer Center

Focus: Patient



32 YOF with stage IV NSCLC, Adenocarcinoma and ALK Gene Translocation 6 wks. after Alectinib treatment



Session 1 Case Study

Provided by: Mohamed K. Mohamed, MD, PhD

Cone Health Cancer Center

Focus: Patient



Discussion & Questions

- a) How accurate is liquid biopsy for identification of ALK and other fusion protein abnormalities?
- b) How can we improve the turnaround time for NGS tissue biopsy results?
- c) Should we adopt the concurrent liquid and tissue NGS testing?

Case Summary

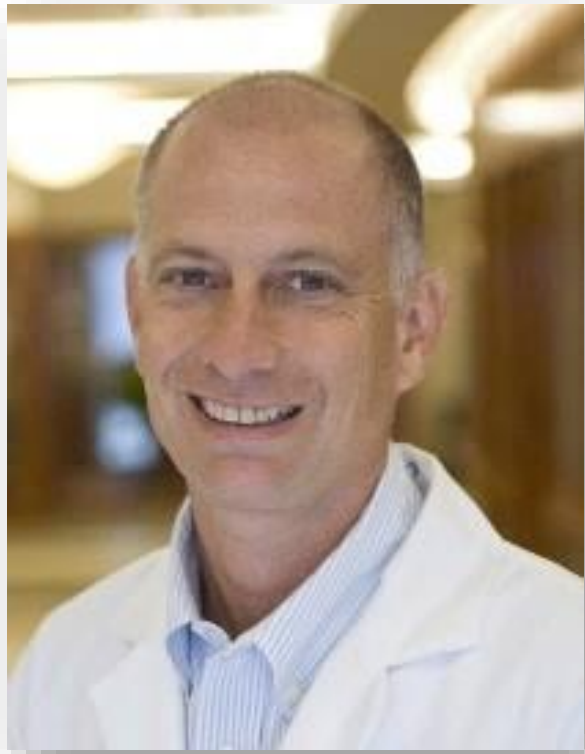
- 32 Year old female (no tobacco use history) admitted to the hospital with worsening dyspnea and tachycardia
- Bronchoscopy was performed and the pathology was consistent with poorly differentiated carcinoma with signet ring features positive for CK7 and TTF-1 (lung primary)
- Molecular studies by NGS blood test was negative but the tissue biopsy NGS result was positive for ALK-EML4 fusion



Open Discussion: Questions & Answers

Sessions

Session 1 Slides, Recordings, & Resources will be made available within one week. All resources will be available on the [ACS ECHO Website](#).



Register Today for **Session 2**

February 9, 2024

4:00 – 5:00pm EST



Topic: Adequate Tissue for Testing

Didactic Presenter: Gerard Silvestri, MD, MS, Hillenbrand Professor of Thoracic Oncology, Medical University of South Carolina

Case Presenter:

Session #	Month	Date	Time (ET)	Didactic Topic	Didactic Presenter	Facilitator
0	December	Weds. 12/13	4:00 – 5:00pm	Series Kick-Off: Introduction to ECHO and Biomarker Testing Guideline Overview:	Mimi Ceppa, MD, Aakash Desai, MBBS, MPH, Hilary Goeckner	Bruce E. Johnson, MD, FASCO
1	January	Weds. 1/17	4:00 – 5:00pm	Understanding the Barriers and Pathways to Lung Cancer Biomarker Testing	Millie Das, MD	Timothy Mullett, MD, MBA, FACS
2	February	Fri. 2/9	4:00 - 5:00pm	Adequate Tissue for Testing	Gerard Silvestri, MD, MS	Bruce E. Johnson, MD, FASCO
3	March	Weds. 3/6	4:00 - 5:00pm	Choice of Panel, Interpretation of Results and Next Steps	Ignacio Wistuba, MD	Timothy Mullett, MD, MBA, FACS
4	March	Weds. 3/27	4:00 - 5:00pm	Improving Turnaround Time	Jason Merker, MD, PhD	Bruce E. Johnson, MD, FASCO
5	April	Weds. 4/24	2:00 - 3:00pm	Navigating Insurance Complexities	Hilary Goeckner & Cori Chandler	Bruce E. Johnson, MD, FASCO
6	May	Fri. 5/24	12:00 - 1:00pm	Series Wrap Up and Next Steps	Patient speaker	Timothy Mullett, MD, MBA, FACS

A Few Reminders



Next ECHO Session: February 9, 2024, 4:00–5:00 PM ET Topic: [Adequate Tissue for Testing](#)



Please *register now* for **Session 2** by using the QR code or the link in the chat.



Slides, Recordings, & Resources will be made available within one week. All resources will be available on the [ACS ECHO Website](#).



Case Presentations: Ready to schedule your presentation?

Contact Korey.Hofmann@cancer.org



Please send us a high-definition logo for your system.



Contact Korey if you haven't received calendar invitations for **Sessions 2 –6**.



Questions? Korey Hofmann | korey.hofmann@cancer.org or Mindi Odom | mindi.odom@cancer.org



Questions?



ECHO Resources



[Project ECHO: Changing the World Fast – Video](#)

[Dr. Arora Ted Talk](#)

www.echo.cancer.org

[UNM Official ECHO Website](#)



Thank You