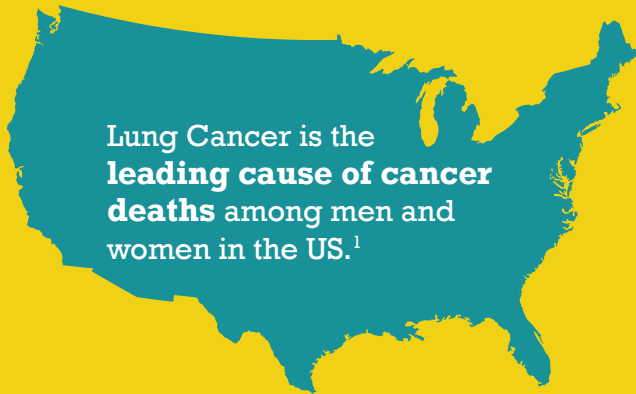


# Understanding Mutations in Stage 4 Lung Cancer: Why it Matters for Asian Americans



## Key Facts About Lung Cancer in the US



Approximately **541,000**

alive today have been diagnosed with lung cancer at some point<sup>2</sup>



An estimated **228,820**

will be newly diagnosed with lung cancer in 2020<sup>1</sup>

**Asian Americans and certain other populations** may be more likely to have a type of lung cancer that tests positive for a **specific type of genetic tumor mutation**.<sup>3</sup>



## Lung Cancer Biomarkers and Mutations

People diagnosed with Stage 4 non-small cell lung cancer (NSCLC) may have a biomarker that helps identify their specific disease type, such as EGFR, ALK, BRAF, NTRK, ROS1, PD-L1<sup>4</sup>

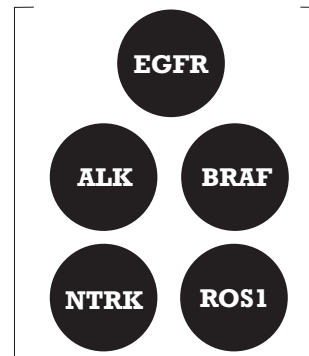


Up to **50% of NSCLC adenocarcinoma patients in Asia** may have a certain type of mutation in the **epidermal growth factor receptor (EGFR)** gene.<sup>5</sup> This compares to only **10-15% of NSCLC patients** in the US and Europe.<sup>5</sup>



Guidelines recommend that all metastatic lung cancer patients get tested to better identify their specific cancer type.<sup>6</sup>

### Molecular Biomarkers

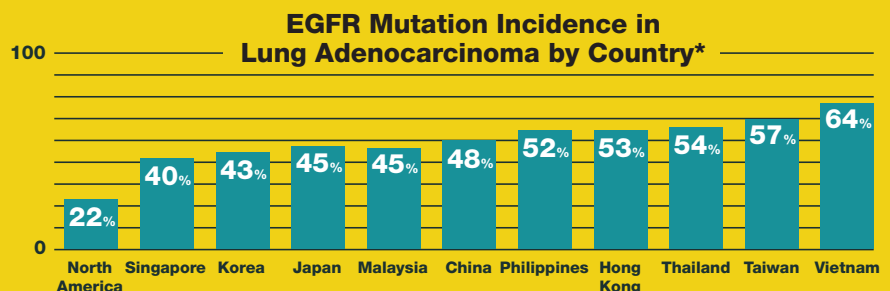


### Immune Biomarker



## The Incidence of EGFR Mutations in Asian Populations Varies By Country of Ethnic Origin<sup>7</sup>

For people of Asian descent, **there is a higher incidence of mutations in the EGFR gene**.<sup>3,5,7</sup> Therefore, it is important that all patients with metastatic NSCLC, including those of Asian descent, **undergo biomarker testing for EGFR mutations**.<sup>7,8</sup>



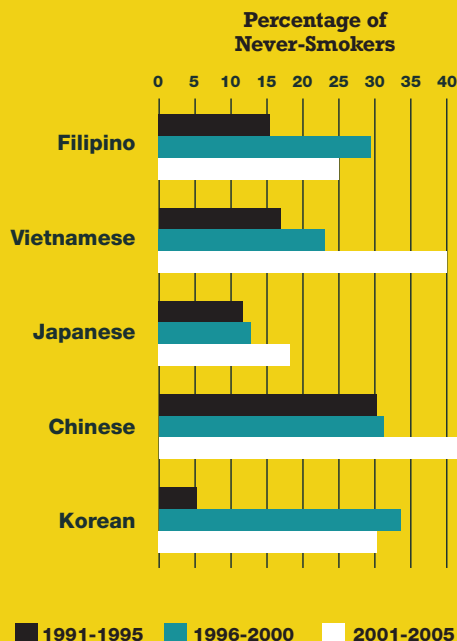
\*Based on a review of 151 multinational studies including 33,162 patients. 9749 patients had EGFR mutation-positive adenocarcinoma.

# Lung Cancer is a Leading Cause of Cancer-related Deaths

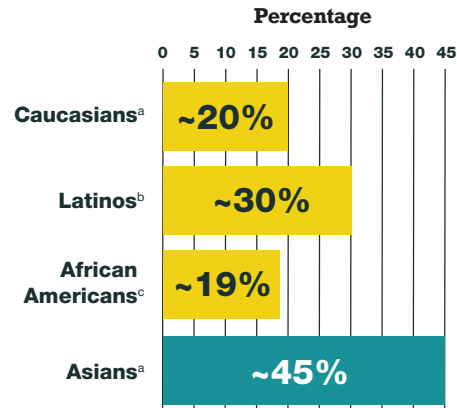


Lung Cancer is a leading cause of cancer-related deaths in patients of Asian descent, yet ~32% of Asians who have lung cancer do not smoke.<sup>9</sup>

The proportion of never-smokers is increasing among Asian-American patients diagnosed with NSCLC<sup>10</sup>



Patients of Asian descent have the highest prevalence of EGFR mutations in NSCLC compared with other racial backgrounds<sup>7,11,12</sup>



Many patients of Asian descent may not be aware of all their lung cancer risk factors, such as a higher prevalence of certain biomarkers, such as EGFR mutations, compared to other racial or ethnic groups.

## A Complete Stage 4 NSCLC Diagnosis Includes Biomarker Testing

Biomarker or molecular testing offers detailed information about a patient's tumor makeup to help identify the best treatment options for their lung cancer type.<sup>13</sup>

Testing is done in two ways:



**Tissue Biopsy**  
Tissue is taken and tested from the tumor<sup>14</sup>



**Blood Test**  
Also known as liquid biopsy or plasma test<sup>15</sup>



In the face of these odds, researchers are finding new ways to fight lung cancer.<sup>16</sup>



The challenge is that lung cancer is not just one disease – there are different types and subtypes – and treatments can vary from person to person.<sup>17</sup>

To learn more about tumor mutations and biomarker testing visit [www.TreatYourLungCancer.com/](http://www.TreatYourLungCancer.com/)

<sup>a</sup>Based on a meta-analysis of 456 multinational studies with 115,815 patients; 153 studies included patients with Stage III or IV disease. 30,466 patients had an EGFR mutation. <sup>b</sup>Based on a multinational study of 642 patients, 480 of whom were tested for EGFR. 93% of patients tested for EGFR had Stage IIIB or IV disease. 105 patients had an EGFR mutation. <sup>c</sup>Based on a review of 151 multinational studies including 33,162 patients. 9749 patients had EGFR mutation-positive adenocarcinoma.

## References

- American Cancer Society. Key Statistics for Lung Cancer. Atlanta, GA: American Cancer Society; 2020. Accessed January 22, 2020.
- American Lung Association. Lung Cancer Fact Sheet. Accessed January 22, 2020.
- Li T, Kung HJ, Mack PC, Gandara DR. Genotyping and Genomic Profiling of Non-Small-Cell Lung Cancer: Implications for Current and Future Therapies. *J Clin Oncol*. 2013;31(8):1039-1049.
- Dong J, Li B, Lin D, Zhou Q, Huang D. Advances in Targeted Therapy and Immunotherapy for Non-small Cell Lung Cancer Based on Accurate Molecular Typing. *Front Pharmacol*. 2019;10:230. doi: 10.3389/fphar.2019.00230.
- Chan BA, Hughes BG. Targeted therapy for non-small cell lung cancer: current standards and the promise of the future. *Transl Lung Cancer Res*. 2015;4(1):36-54. DOI: 10.3978/j.issn.2218-6751.2014.05.01.
- College of American Pathologists Laboratory Improvement Programs. Updated Molecular Testing Guideline for the Selection of Lung Cancer Patients for Treatment with Targeted Tyrosine Kinase Inhibitors. January 2018.
- Midha A, Dearden S, McCormack R. EGFR mutation incidence in non-small-cell lung cancer of adenocarcinoma histology: a systematic review and global map by ethnicity (mutMapll). *Am J Cancer Res*. 2015;5(9):2892-2911.
- Reck M, Rabe KF. Precision Diagnosis and Treatment for Advanced Non-Small-Cell Lung Cancer. *N Engl J Med*. 2017;377(9):849-861.
- Toh CK, Gao F, Lim WT, et al. Never-smokers with lung cancer: epidemiologic evidence of a distinct disease entity. *J Clin Oncol*. 2006 May 20;24(15):2245-51.
- Ou SH, Ziogas A, Zell JA. A comparison study of clinicopathologic characteristics of Southern California Asian American Non-small Cell Lung Cancer (NSCLC) patients by smoking status. *J Thorac Oncol*. 2010;5(2):158-168.
- Zhang YL, Yuan JQ, Wang KF, et al. The prevalence of EGFR mutation in patients with non-small cell lung cancer: a systematic review and meta-analysis. *Oncotarget*. 2016;7(48):78985-78993.
- Lopez-Chavez A, Thomas A, Evbuomwan MO, et al. EGFR Mutations in Latinos From the United States and Latin America. *J Glob Oncol*. 2016;2(5):259-267.
- Pennell NA, Arcila ME, Gandara DR, West H. Biomarker Testing for Patients with Advanced Non-Small Cell Lung Cancer: Real-World Issues and Tough Choices. *Am Soc Clin Oncol Educ Book*. 2019;39:531-542.
- Non-Small-Cell Lung Cancer: Diagnosis. American Society of Clinical Oncology website. Accessed January 22, 2020.
- Seijo LM, Peled N, Ajoná D, et al. Biomarkers in lung cancer screening: achievements, promises and challenges. *J Thorac Oncol*. 2019;14(3):343-357.
- American Cancer Society. Treatment Choices for Non-Small Cell Lung Cancer, by Stage. Accessed January 22, 2020.
- American Cancer Society. What is Lung Cancer? Accessed January 22, 2020.