UNDERSTANDING

Metastatic *RET* Fusion-Positive Non-Small Cell Lung Cancer (NSCLC)

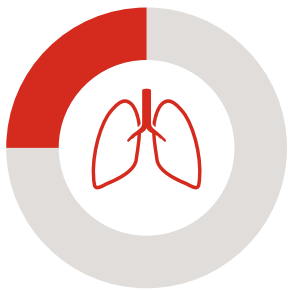
About Metastatic Lung Cancer

Lung cancer is a cancer that starts in a person's lungs. Metastatic cancer means cancer cells have spread to other parts of the body.

Lung cancer may spread to other parts of the body, including bones, adrenal glands, the brain, and the liver. People with lung cancer whose cancer cells have spread to these places likely have metastatic cancer.

Lung cancer is the: [1]

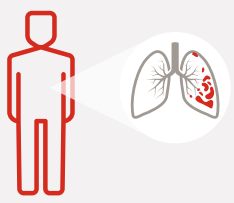
- **2nd most common** cancer
- Leading cause of cancer death among both men and women, accounting for almost **25% of all cancer deaths**.



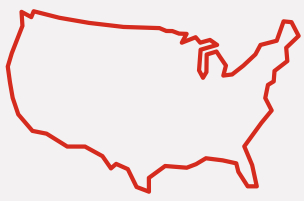
Every year, more people die of lung cancer than of **colon, breast,** and **prostate** cancers combined.[1]

The American Cancer Society estimates that in 2020, there will be:[1]

About **228,820** **new cases** of lung cancer in the U.S.



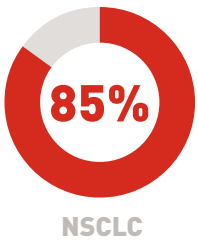
About **135,720** **deaths** from lung cancer in the U.S.



About Metastatic NSCLC

There are two main types of lung cancer: small cell lung cancer (SCLC) and NSCLC.

About 85% of people with lung cancer have NSCLC.



The main subtypes of NSCLC are **adenocarcinoma, squamous cell carcinoma,** and **large cell carcinoma**.

These subtypes start from different types of lung cells, but are grouped together as NSCLC because they usually have a similar treatment and prognosis.[2]

What is Metastatic *RET* Fusion-Positive NSCLC?

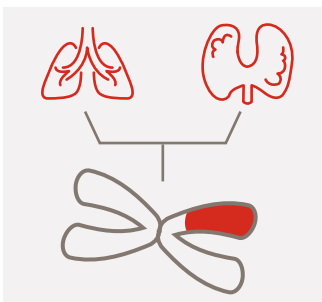
Metastatic NSCLC can be driven by a gene in a person's body. One of those genes is *RET* (rearranged during transfection).[3]

We all have something called *RET* in our bodies, similar to how we have faucets in our homes. When a person has a *RET* alteration, it's like that faucet gets stuck in the "on" position, allowing water to spread, just as *RET* alterations allow cancer to grow. [3,4]

The two main types of these cancer-promoting *RET* gene alterations are mutations and fusions.[3,5]

RET fusions can drive cancer growth of several tumor types, and are most commonly found in NSCLC and certain types of thyroid cancer.[3]

RET fusions have been identified in approximately **2%** of NSCLC cases.[3]



How Are Genetic Alterations in Cancer Identified?

The best way to know if a cancer has an alteration that can be treated is to **talk to a doctor about getting tested for all treatable biomarkers**.[6] A biomarker test is a type of genetic test that can tell the doctor a lot about the cancer's DNA.[7] Certain biomarker tests require a doctor to biopsy the tumor, which means removing some tissue or blood for testing.*[8,9]

*If a tumor has been biopsied previously, some tissue may already be available for testing.

These tests help oncologists develop a treatment plan for their patients. Knowing what is driving the cancer can help the patient and his or her doctor choose the right treatment.[6]

1. American Cancer Society. Key Statistics for Lung Cancer. Available at: https://www.cancer.org/cancer/lung-cancer/about/key-statistics.html. Accessed February 28, 2020. **2.** American Cancer Society. What is Lung Cancer? Available at: https://www.cancer.org/cancer/lung-cancer/about/what-is.html. Accessed February 28, 2020. **3.** Drilon A, Hu ZI, Lai GGY, Tan DSW. Targeting RET-driven cancers: lessons from evolving preclinical and clinical landscapes. *Nat Rev Clin Oncol*. 2018;15(3):150. **4.** Pinheiro APM, Pocock RH, Dixon MD, et al. Using metaphors to explain molecular testing to cancer patients. *Oncologist*. 2017;22:445-449. **5.** Mulligan LM. RET revisited: expanding the oncogenic portfolio. *Nat Cancer Rev*. 2014;14(3):173-186. **6.** Gregg JP, Li T, Yoneda KY. Molecular testing strategies in non-small cell lung cancer: optimizing the diagnostic journey. *Transl Lung Cancer Res*. 2019;8(3):286-301. **7.** Committee on Policy Issues in the Clinical Development and Use of Biomarkers for Molecularly Targeted Therapies; Board on Health Care Services; Institute of Medicine; National Academies of Sciences, Engineering, and Medicine; Graig LA, Phillips JK, Moses HL, eds. *Biomarker Tests for Molecularly Targeted Therapies: Key to Unlocking Precision Medicine*. Washington, DC: National Academies Press (US); 2016: 1-21. **8.** Biopsy: what you need to know. Medical News Today. https://www.medicalnewstoday.com/articles/174043.php#what_is_a_biopsy. Accessed February 6, 2020. **9.** Cheung AHK, Chow C, To KF. Latest development of liquid biopsy. *J Thorac Dis*. 2018;10:S1645-S1651.

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