



ION BY INTUITIVE

Have a suspicious lung nodule?

Ion robotic-assisted lung biopsy
can help you get an answer sooner.

Peace of mind starts with answers.

You've been told there's a spot or shadow—called a “nodule,” “lesion,” or “mass”—in your lung. It's natural to feel uncertain or anxious and to want answers. You're not alone—and with Ion, getting those answers may be closer than you think.

Although the majority of lung nodules are not cancer,¹ getting a clear answer quickly is important when cancer is suspected.² The good news: catching lung cancer at an early stage often gives doctors more ways to treat it.³

If your doctor recommends a lung nodule biopsy, this brochure will help you:

- Understand different options for a lung biopsy
- Learn about Ion and how it works
- Find helpful resources as you plan next steps

1. Munden RF, Chiles C, Boiselle PM, Sicks JD, Aberle DR, Gatsonis CA. Micronodules detected on computed tomography during the National Lung Screening Trial: Prevalence and relation to positive studies and lung cancer. *Journal of Thoracic Oncology*. 2019;14(9):1538-1546. doi:10.1016/j.jtho.2019.05.045

2. State of Lung Cancer 2024. American Lung Association. www.lung.org/research/state-of-lung-cancer

3. Ettinger DS, Wood DE, Aisner DL, et al. Non-Small Cell Lung Cancer, Version 3.2022, NCCN Clinical Practice Guidelines in Oncology. *Journal of the National Comprehensive Cancer Network*. 2022;20(5):497-530. doi:10.6004/jnccn.2022.0025



Patient Story Joanne

How it started:

Despite Joanne's strong family history of lung cancer and a lung nodule that had been slowly growing for three years, her doctor recommended that she come back in nine to twelve months for another CT scan.

The path she took:

Joanne got a second opinion from a doctor who recommended a biopsy with Ion. Within 48 hours of her procedure, Joanne got her answer.

Her results:

Joanne was diagnosed with early stage lung cancer, and just two weeks later, she started treatment. Today, Joanne is living lung cancer free and is spreading the word with other patients about the importance of advocating for themselves to get an answer as soon as possible.

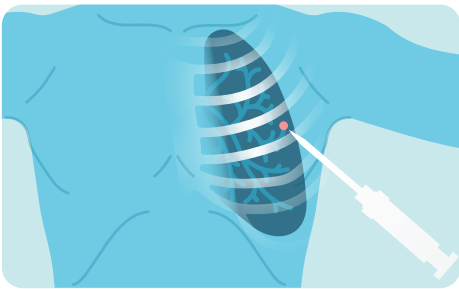
“The specialist I saw first said to wait and watch. And I want to let everybody know, with the technology we have today, there's no reason to wait.”

In the U.S., almost half of all lung biopsies are now performed with the Ion robotic-assisted bronchoscopy system.⁴

A biopsy may be your next step to knowing.

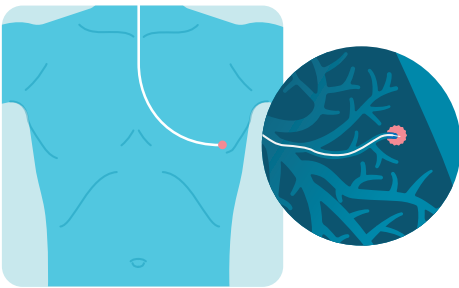
During a lung biopsy, your doctor removes a tiny piece of tissue from a nodule in your lung. This sample is then tested to find out if it's cancer.

Lung nodule biopsies are primarily performed through two methods in the U.S.:⁴



Transthoracic needle aspiration (TTNA)*

A minimally invasive procedure in which a long, thin needle is advanced between the ribs, into the lung to reach a nodule for tissue sampling. While a TTNA procedure can be quick and accurate, it is associated with a higher risk of lung collapse (pneumothorax) than other approaches.^{5,6} If you have multiple nodules that require sampling or your nodule is determined to be cancer, a separate diagnostic or staging[†] procedure may be required before starting cancer treatment.⁷



Ion robotic-assisted lung biopsy

A minimally invasive procedure that allows your doctor to reach one or more lung nodules through your airways. Small tissue samples are collected without any incisions or punctures to the lung and are sent to a lab to determine if they contain cancer cells. If cancer is found, staging[†] can be performed with standard tools during the same procedure to determine if it has spread.⁷

4. Intuitive internal data on file.

* Transthoracic needle aspiration (TTNA), transthoracic needle biopsy (TTNB), CT-guided needle biopsy, and percutaneous lung biopsy refer to the same procedure.

† Staging is a way for doctors to take small samples from lymph nodes near the main airways to determine whether cancer has spread. The resulting cancer stage helps guide the best treatment plan.

Weighing your options

Both TTNA and Ion are likely to give you an answer after your procedure,^{5,7} but other factors can help you and your doctor determine which biopsy option is right for you.

	With Ion	With TTNA
Risk of lung collapse	0–3.3% ⁸⁻¹⁰	28% ⁶
Ability to sample multiple nodules in one procedure	Yes ¹¹	No ¹²
Staging [†] can be performed during same procedure	Yes ^{7,12}	No ⁷ Requires a separate, second procedure
Sedation (anesthesia) type	General Fully asleep	Conscious sedation Relaxed and drowsy but awake
Procedure duration	40–60 min ^{8,13}	25 min ⁶

5. Balasubramanian P, Abia-Trujillo D, Barrios-Ruiz A, et al. Diagnostic yield and safety of diagnostic techniques for pulmonary lesions: systematic review, meta-analysis and network meta-analysis. *European Respiratory Review*. 2024;33(173):240046. doi:10.1183/16000617.0046

6. Lentz RJ, Frederick-Dyer K, Planz VB, et al. Navigational bronchoscopy or transthoracic needle biopsy for lung nodules. *New England Journal of Medicine*. Published online May 18, 2025. doi:10.1056/nejmoa2414059

7. Lee-Mateus AY, Reisenauer J, Garcia-Saucedo JC, et al. Robotic-assisted bronchoscopy versus CT-guided transthoracic biopsy for diagnosis of pulmonary nodules. *Respirology*. 2022;28(1):66-73. doi:10.1111/resp.14368

8. Paez R, Lentz RJ, Duke JD, et al. Robotic versus Electromagnetic Bronchoscopy for Peripheral Pulmonary Lesions: A Randomized Trial (RELIANT). *American Journal of Respiratory and Critical Care Medicine*. 2025 Sep;211(9):1644-1651. doi: 10.1164/rccm.202409-1846OC.

9. Brownlee AR, Perez C, Weiser L, et al. 1121 Shape-sensing Robotic-Assisted Bronchoscopic Biopsies: Diagnostic Yield and Surgical Implications. *The Annals of Thoracic Surgery*. Published online April 1, 2025. doi:10.1016/j.athoracsur.2025.03.043

10. Husta B, Batra H, Cheng G, et al. A prospective multicenter evaluation of shape-sensing robotic-assisted bronchoscopy with integrated mobile cone-beam CT: interim results from the CONFIRM study. Abstract presented at: AABIP; August 22, 2024;Charlotte, NC. Session 0430.

11. Chrissian AA, Khosa J, Daher N, et al. Diagnostic utility of sampling multiple synchronous pulmonary nodules during same-session robotic-assisted bronchoscopy. *Journal of Bronchology & Interventional Pulmonology*. 2025;32(4). doi:10.1097/lbr.0000000000001029

12. Fernandez-Bussy S, Valdes-Camacho S, Barrios-Ruiz A, et al. Streamlining lung cancer diagnosis: one procedure for multi-site biopsy using shape-sensing robotic-assisted bronchoscopy. *Respiration*. Published online July 4, 2025;1-22. doi:10.1159/000547174

13. Styrvoky K, Schwalk A, Pham D, Madsen K, Chiu H, Abu-Hijleh M. Procedural times with robotic-assisted bronchoscopy: a high volume single-center study. *Therapeutic Advances in Respiratory Disease*. 2024;18. doi:10.1177/17534666241277668

What is Ion?

Lung nodules often form in the outer parts of the lungs, at the end of small, twisting airways. These areas have traditionally been challenging to access from the inside of the lung because the lung's structure is complex and always moving as you breathe.

That's where Ion helps. Ion is a robotic system physicians use to guide a thin, flexible scope through the complex twists and turns of your airways. Its unique technology holds the scope steady so your doctor can guide it with great precision, allowing them to navigate directly to the nodule and feel confident that they are sampling tissue from the correct spot.

How it works



Before the procedure

The system uses your CT scan to create a detailed, GPS-like map of your lungs, providing your doctor with real-time, turn-by-turn directions to reach the nodule.



During the procedure

The map helps your doctor guide the scope to the suspicious spot in your lung. Once in place, your doctor will take a few tiny tissue samples. These samples are then examined to understand your condition and help decide the right treatment, if any is needed. When necessary, the samples may also be sent to a lab for further testing. The entire procedure usually takes 30 minutes to an hour.



After your procedure

Most patients can go home the same day and quickly resume their normal activities.*

*Most patients are able to go home the same day and get back to their usual activities soon after, unless they're staying in the hospital for another reason or receiving treatment for a different condition.



Patient Story Doug

How it started:

Doug was faced with a difficult situation. His lung nodule was located so deep in his lung that a standard needle biopsy (TTNA) was unsuccessful. With that option off the table, his doctors felt the only way to get a diagnosis was through major open-chest surgery, known as a wedge resection.

The path he took:

Instead of major surgery, his doctor used the Ion system to successfully collect all the required tissue samples through a minimally invasive procedure, completely avoiding the need for incisions or lung punctures.

His results:

Instead of potentially spending days in the hospital and weeks in recovery post surgery, Doug was able to go home with an answer the same day and start treatment soon after. His most recent CT scan was clear.

"The local hospital tried but could not get a decisive sample. They were going to go in and do surgery—open me up—and get a sample. That's when I said, 'No, I don't believe I want to do that.' We already had an appointment set up with a surgeon. I canceled that as soon as I found out about the new machine."



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Why physicians choose Ion for their lung biopsies.

Offers more in one procedure:

During a single procedure with Ion, your doctor can accomplish more. They can take samples from several nodules and, if cancer is present, can also check to see if it has spread. This comprehensive approach lowers the chance that you'll need additional diagnostic procedures later on.

Reaches further:

The majority of lung nodules—about 70%—are found in the lung's most distant and narrow airways, making them difficult to reach for a biopsy.¹⁴ Ion is designed for this challenge. Its thin scope—about the size of a phone charging cable—can move through these narrow passages with ease.

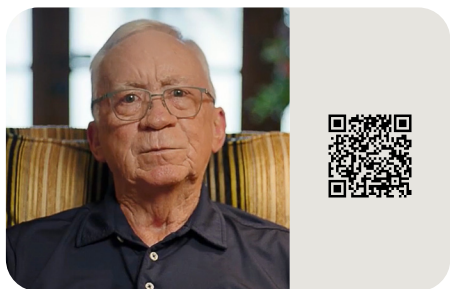
Provides confidence in results:

Ion's unique shape-sensing technology tracks the real-time location of its scope hundreds of times per second and holds it steady. This allows doctors to precisely aim their biopsy tools and confidently sample the target, even when their target is small.

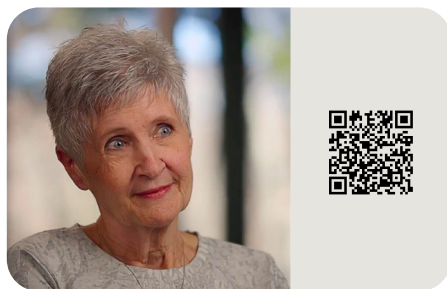
14. Horeweg N, Van Der Aalst CM, Thunnissen E, et al. Characteristics of lung cancers detected by computer tomography screening in the randomized NELSON trial. American Journal of Respiratory and Critical Care Medicine. 2013;187(8):848-854. doi:10.1164/rccm.201209-1651oc

You're not alone on this journey.

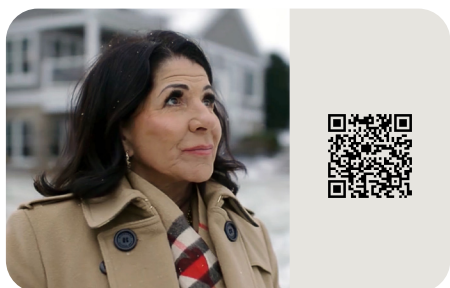
Others have been where you are now. These patients and their physicians chose Ion for their lung biopsy. Scan the QR codes below to hear their stories, in their own words.



Doug's lung nodule was deep in his lungs near critical blood vessels. Learn how Ion technology helped Doug get a diagnosis without undergoing major lung surgery.



Paula went through multiple CT scans, PET scans, and an unsuccessful needle biopsy. Four years later, she still had no answers. Then she learned about Ion.



Joanne lost her mother, two sisters, and four aunts to lung cancer. Learn how an Ion biopsy supported Joanne's determination to avoid that same future.

Intuitive is helping to transform lung cancer care with Ion.

Important safety information

Patients should talk to their physician to decide if the Ion endoluminal system is right for them. As with any bronchoscopic procedure under general anesthesia, serious complications may include bleeding, pneumothorax (collapsed lung), cardiac-related complications, respiratory failure, air embolism, or death. For summary of the risks associated with bronchoscopy refer to www.intuitive.com/safety.

For risks, cautions, and warnings and full prescribing information, refer to the associated Ion System user manual(s) or visit <https://manuals.intuitivesurgical.com/market>.

Individuals' outcomes may depend on a number of factors—including but not limited to—patient characteristics, disease characteristics, and/or physician experience.

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Take the next step to getting your answer.

Scan the QR codes below for additional resources.



Find a physician that performs Ion robotic-assisted bronchoscopy near you.



Watch a video for more information on what to expect with an Ion procedure.



Questions to ask your doctor.

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