



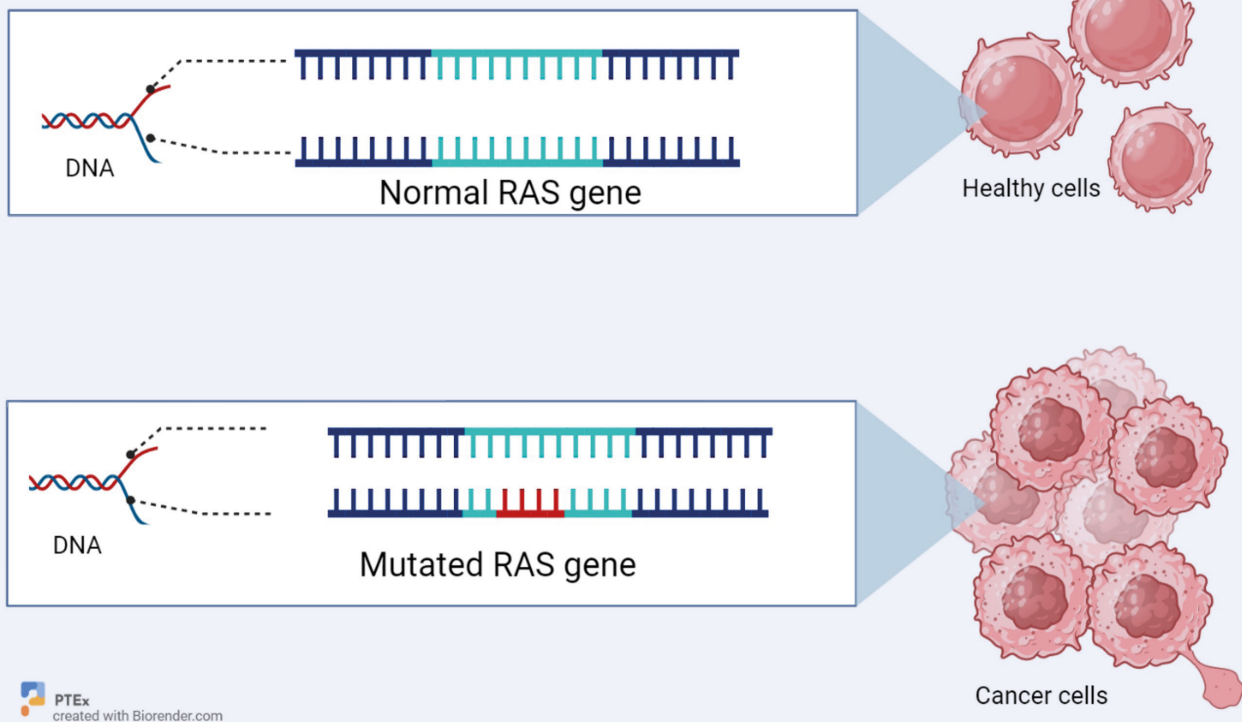
PATHOLOGY TESTS EXPLAINED

Information about pathology tests to help everyone take control of their health and make the right decisions about their care.

WHAT YOU SHOULD KNOW ABOUT **RAS GENE MUTATION TESTING**

Mutations in the *RAS* genes are linked to several cancers especially bowel, lung and pancreatic cancers. The *RAS* family of genes, which includes *KRAS*, *HRAS* and *NRAS*, encode proteins that have a key role in the lifecycle of our cells. They act as a molecular switch that turns on important processes such as cell division, increased growth, and cell survival.

If the *RAS* genes develop mutations, they have the potential to cause normal cells to grow uncontrollably, evade death signals and become cancerous. *RAS* mutations make cells resistant to most available cancer therapies.



RAS gene mutations can cause cells to grow uncontrollably forming a tumour

About half of people with bowel cancer have some of these mutations. If you have bowel cancer that has spread to nearby tissues or lymph nodes your doctor may arrange for a *RAS* gene test. The drugs cetuximab and panitumumab are usually an effective form of chemotherapy for bowel cancer but they are not effective if the cancer cells have mutations in the *KRAS* or *NRAS* genes.

About 20 to 25 per cent of people with lung cancer have mutations on the *KRAS* gene and you may be tested if your cancer is not responding to treatment such as chemotherapy. New targeted drugs are becoming available for lung cancer with *KRAS* mutations. About 95 per cent of people with pancreatic cancer also have mutations in the *KRAS* gene and targeted drugs are being developed.



What your results can tell you

When you have surgery for cancer, a small piece of the tumour or biopsy is sent to the lab where a pathologist investigates it under a microscope to look for cell changes. These can show the type of cancer. Genetic testing is also usually performed, and this can give even more detail about your cancer. This includes genetic tests that detect *RAS* mutations using DNA sequencing technology.

In these cancers, the genetic changes in the *KRAS* and *NRAS* genes are termed somatic, which means they are not inherited and have occurred at some point in your lifetime. They are typically only found in the cancer tissue and are not present in other parts of the body. When mutations in the *RAS* genes are inherited, termed germline mutations, they are present in all the cells in the body and can cause several very rare disorders.

Targeted therapies are a type of cancer treatment that target proteins which control how cancer cells grow, divide, and spread. Normal cells can survive, while the growth of cancer cells is restricted.



Bowel cancer

If you **do not** have *RAS* or *NRAS* mutations, you may be offered treatment with drugs known as epidermal growth factor receptor inhibitors such as cetuximab (Erbix) or panitumumab (Vectibix®). However, if your biopsy shows you have a mutated *RAS* gene you will not derive benefit from treatment with these agents.



Lung cancer

If you **do** have *KRAS* mutations, you can be offered a targeted therapy medication called Sotorasib. This drug is not covered by a Medicare rebate.



Questions to ask your doctor

Why does this test need to be done?

Will an abnormal result mean I need further tests?

How could it change the course of my care?

What will happen next, after the test?

For more detailed information on these and many other tests go to pathologytestsexplained.org.au



PATHOLOGY TESTS
EXPLAINED

www.pathologytestsexplained.org.au

Pathology Tests Explained is the primary national source of consumer information on pathology testing. Information is written and edited by practising pathologists and scientists, including leading experts. This ensures integrity and accuracy.

Pathology Tests Explained is managed by a consortium of medical and scientific organisations representing pathology practice in Australia. More details at:

www.pathologytestsexplained.org.au/about

Please use this QR code to access more information



My Health Record

You'll find a direct link to the Pathology Tests Explained website embedded in the pathology results pages of your My Health Record.

Click on the link to find information about what your tests are investigating or measuring and what your results can tell your doctor.