Genetics and your risk of melanoma

Patient information

How do your genetics impact your risk of melanoma?

About 95% of melanomas in Australia are caused by too much sun. However, for some people, genetic factors can raise their risk of getting a melanoma. These genetic factors include:

- **family traits:** things like fair skin, a high number of moles, or freckles can be inherited and may raise your risk.
- **family history:** having a close relative (such as a parent or sibling) with a history of melanoma can raise your risk.
- **inherited gene changes:** some people are born with specific gene changes from their relatives that raise their risk.

What is the difference between having a family history of melanoma and having an inherited gene change?

A family history of melanoma means having one or more close blood relatives who have had melanoma. People with a family history of melanoma can be at higher risk of getting the disease.

Families with a history of melanoma do not always have an inherited genetic change that is causing melanoma to develop. For most families, it's simply a mix of shared family traits (such as fair skin) and lifestyle habits (such as regular long days spent in the sun without appropriate protection) that raise their risk.

Melanoma Institute Australia

The term ‘familial melanoma’ is used to describe when melanoma happens more than average in a family. The table below shows the difference between familial melanoma and melanoma due to an inherited gene change.

Familial melanoma	Inherited gene change
A mix of genetic, environmental, and lifestyle factors raise melanoma risk.	A specific change in a gene (such as in the CDKN2A gene) raises melanoma risk.
Risk depends on shared family traits, behaviours and ultraviolet (UV) radiation exposure.	People with a gene change may get melanoma at a younger age and have more than one melanoma in their lifetime.
Generally, not due to a single inherited gene change.	Affects only a small number of people with melanoma.

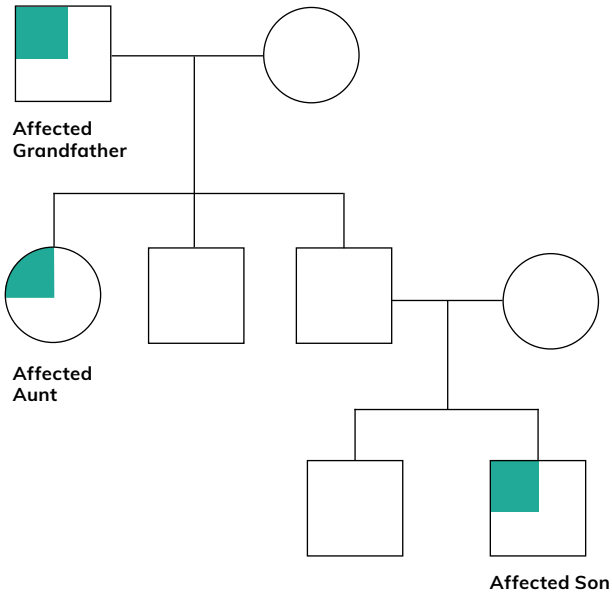
A closer look at familial melanoma

Familial melanoma is defined as melanoma that happens in three or more first- and second-degree relatives.

First-degree relatives means your parents, children and siblings.

Second-degree relatives means your grandparents, grandchildren, aunts and uncles.

The image on the right is called a pedigree. It’s a type of drawing that doctors and scientists use to map the family history of different diseases. This pedigree shows familial melanoma, happening in a grandson, his paternal aunt and paternal grandfather.



An example of familial melanoma occurring in 3 first- and second-degree relatives.

A closer look at inherited gene changes

A small number of people are born with a specific gene change that raises their risk of getting a melanoma. The most well-known gene change in melanoma happens in the CDKN2A gene.

Inherited gene changes are rare. Most people diagnosed with melanoma do not have them. Not everyone with an inherited gene change will get a melanoma.

Some inherited gene changes linked to melanoma (like CDKN2A) can also increase the risk of other medical conditions.

In addition to CDKN2A, there are other rare genetic changes that can raise a person's risk of melanoma. However, people with these changes often have a range of other severe health conditions, not just melanoma.

Inherited gene changes versus tumour genetics

Inherited gene changes are not the same are the gene changes that occur in melanoma cells, allowing them to grow and spread.

Tumour genetic changes (such as BRAF mutations) occur only in the melanoma cells and are not inherited.

Tumour genetics can influence a person's treatment options for advanced melanoma (such as the role of 'targeted therapy'). You can find out more about the treatment of melanoma at **melanoma.org.au.**

When is genetic testing recommended?

Genetic testing can tell you if you have an inherited gene change that is linked to getting melanoma. However, it's not usually recommended and it's not helpful for most people.

Genetic testing is usually saved for people with a very strong family history of melanoma and specific risk factors that suggest an inherited gene changes may be present.

Genetic testing might be for you if:

- You have a **strong family history** of melanoma (e.g., multiple close relatives with melanoma).
- You were diagnosed with melanoma at a **young age** (before 40).
- You have had **more than one primary melanoma.**
- There is a family history of **pancreatic cancer** in addition to melanoma.

Genetic testing is not typically recommended if:

- You have one melanoma diagnosis with **no strong family history.**
- The history of melanoma in your family is **not all from the same side** of the family or is in **more distant relatives.**
- Your risk is likely because of **environmental factors** (e.g., UV exposure).
- You want to get tested because you're **curious.**

How to access genetic testing

Genetic testing is best done after speaking with a genetic counsellor or healthcare professional who specialises in cancer genetics. This is because the results of genetic testing can have a range of personal, medical and insurance implications.

Currently, there are no Medicare-funded genetic tests specifically for familial melanoma. However, public Familial Cancer Services may be able to provide testing if it is clinically indicated. You can find your nearest service at **genetics.edu.au.**

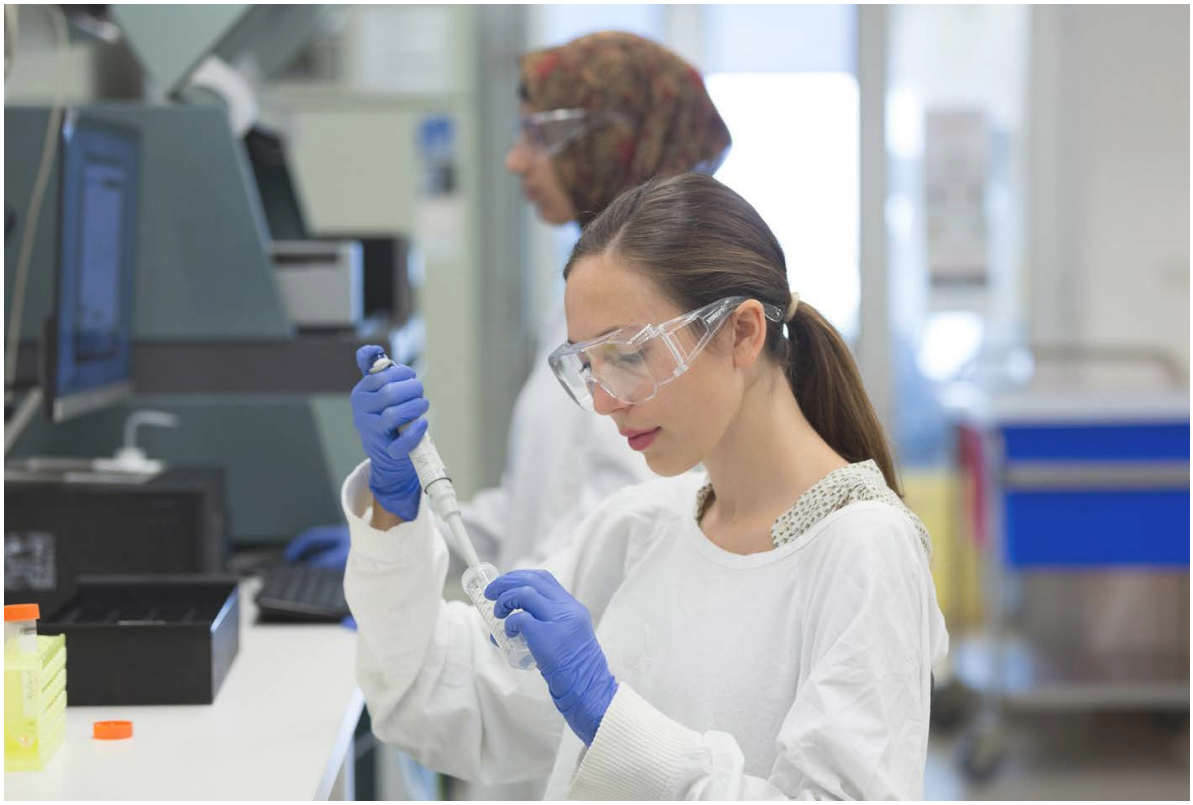
Self-funded genetic testing is also an option, but it should be done under the guidance of a professional with experience in cancer genetics.

Some Australian states have introduced blood tests called 'melanoma panels', which screen for a range of genes linked to melanoma. These may be available in certain research or clinical settings. However, for families with only familial melanoma and no other features, there is not yet enough evidence to support testing genes beyond CDKN2A. If you are considering a melanoma panel, it's important to discuss this with a medical specialist.

Did you know?

Genetic test results may not always change your recommended management plan.

In some cases, insurance companies may consider genetic test results when offering certain types of insurance, such as life insurance.



What can I do to lower my risk of melanoma?

You can lower your risk of getting melanoma by protecting your skin from the sun. There are a number of things you can do today to lower the risk of getting melanoma in the future.

Protect yourself from the sun

To protect your skin from UV damage, it is important to follow all five sun safe rules:

Seek shade.

Wear sun-protective clothing that covers your back, shoulders, arms and legs.

Wear a broad-brimmed hat.

Apply a broad-spectrum sunscreen with an SPF at least 50+ every 2 hours and after swimming or exercise.

Wear wrap-around sunglasses.

Know the skin you're in

Finding melanoma early is vital. Most melanomas can be cured if they're detected and treated early. It is important to 'know the skin you're in' and see a doctor if you notice anything new or changing on your skin.

The first sign of a melanoma is often a new spot, or a change in an existing freckle or mole.

Discuss with your doctor if and how often you should have a professional skin check based on your risk factors.

Where can I find more information and support?

For more information visit Melanoma Institute Australia at **melanoma.org.au** or Melanoma Patients Australia at **melanomapatients.org.au.** To learn more about cancer genetics, visit the NSW Government's Health Centre for Genetics Education website at **genetics.edu.au.**

Please note: The information in this brochure is of a general nature and should not replace the advice of healthcare professionals. All care has been taken to ensure the information presented here is accurate at the time of publishing (August 2025).

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