



# About Melanoma Skin Cancer

## Overview

If you have been diagnosed with melanoma skin cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Is Melanoma Skin Cancer?](#)

## Research and Statistics

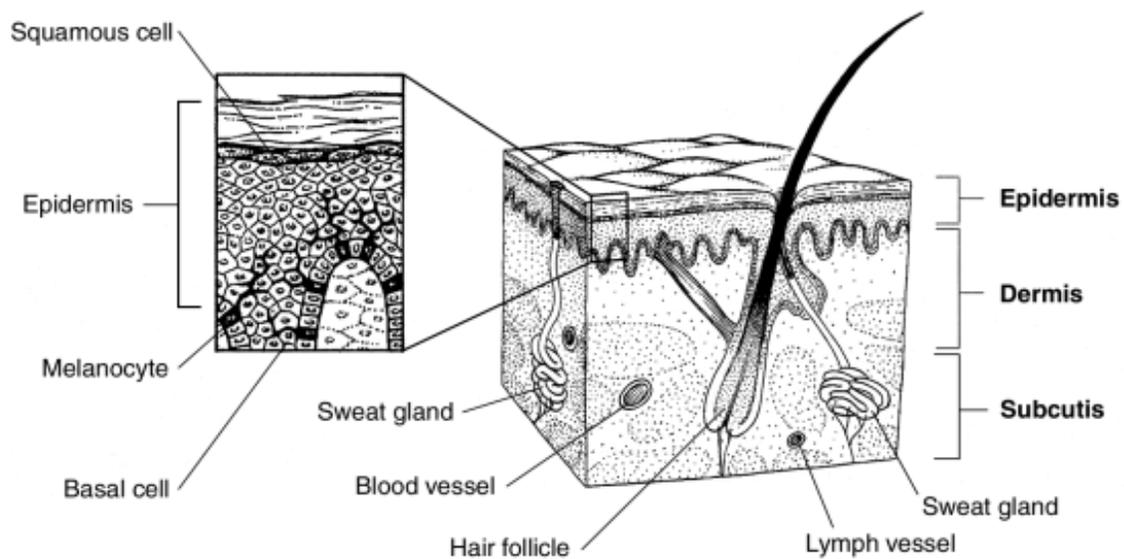
See the latest estimates for new cases of melanoma skin cancers in the US and what research is currently being done.

- [Key Statistics for Melanoma Skin Cancer](#)
- [What's New in Melanoma Skin Cancer Research?](#)

## What Is Melanoma Skin Cancer?

Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer, and can then spread to other areas of the body. To learn more about how cancers start and spread, see [What Is Cancer?](#)

Melanoma is a cancer that usually starts in a certain type of skin cell.



## Types of skin cells

The 3 main types of cells in the top layer of the skin (called the *epidermis*) are:

- **Squamous cells:** These are flat cells in the outer part of the epidermis that are constantly shed as new ones form.
- **Basal cells:** These cells are in the lower part of the epidermis, called the *basal cell layer*. These cells constantly divide to form new cells to replace the squamous cells that wear off the skin's surface. As these cells move up in the epidermis, they get flatter, eventually becoming squamous cells.
- **Melanocytes:** These are the cells that can become melanoma. They make a brown pigment called *melanin*, which gives the skin its tan or brown color. Melanin protects the deeper layers of the skin from some of the harmful effects of the sun. For most people, when skin is exposed to the sun, melanocytes make more of the pigment, causing the skin to tan or darken.

## Melanoma skin cancers

Melanoma is a cancer that begins in the melanocytes. Other names for this cancer include *malignant melanoma* and *cutaneous melanoma*. Most melanoma cells still make melanin, so melanoma tumors are usually brown or black. But some melanomas do not make melanin and can appear pink, tan, or even white.

Melanomas can develop anywhere on the skin, but they are more likely to start on the trunk (chest and back) in men and on the legs in women. The neck and face are other common sites.

Having darkly pigmented skin lowers your risk of melanoma at these more common sites, but anyone can get melanoma on the palms of the hands, soles of the feet, and under the nails. Melanomas in these areas make up a much larger portion of melanomas in African Americans than in whites.

Melanomas can also form in other parts of your body such as the [eyes](#), mouth, genitals, and anal area, but these are much less common than melanoma of the skin.

Melanoma is much less common than basal cell and squamous cell skin cancers. But melanoma is more dangerous because it's much more likely to spread to other parts of the body if not caught early.

## Other skin cancers

There are many other types of skin cancer. Skin cancers that are not melanomas are sometimes grouped as *non-melanoma skin cancers* because they develop from skin cells other than melanocytes. They tend to behave very differently from melanomas and are often treated with different methods.

## Basal cell and squamous cell skin cancers

Basal cell and squamous cell cancers are by far the most common skin cancers, and actually are more common than any other form of cancer. Because they rarely spread (metastasize) to other parts of the body, basal cell and squamous cell skin cancers are usually less concerning and are treated differently from melanoma. These cancers are discussed in [Basal and Squamous Cell Skin Cancer](#).

## Less common skin cancers

Other types of non-melanoma skin cancer are much less common than basal and squamous cell cancers and are treated differently. They include:

- [Merkel cell carcinoma](#)
- [Kaposi sarcoma](#)
- [Cutaneous \(skin\) lymphoma](#)
- **Skin adnexal tumors** (tumors that start in hair follicles or skin glands)

- [Various types of sarcomas](#)

Together, these types account for less than 1% of all skin cancers.

## Benign skin tumors

Many types of benign (non-cancerous) tumors can develop from different types of skin cells.

### Benign tumors that start in melanocytes

A **mole** (nevus) is a benign skin tumor that develops from melanocytes. Almost everyone has some moles. Nearly all moles (nevi) are harmless, but having some types can raise your risk of melanoma. See [Risk Factors for Melanoma Skin Cancer](#) for more information about moles.

A **Spitz nevus** is a kind of mole that sometimes looks like melanoma. It's more common in children and teens, but it can also be seen in adults. These tumors are generally benign and don't spread. But sometimes doctors have trouble telling Spitz nevi from true melanomas, even when looking at them under a microscope. Therefore, they are often removed, just to be safe.

### Benign tumors that develop from other types of skin cells

- **Seborrheic keratoses:** tan, brown, or black raised spots with a "waxy" texture
- **Hemangiomas:** benign blood vessel growths, often called *strawberry spots*
- **Lipomas:** soft growths made up of fat cells
- **Warts:** rough-surfaced growths caused by some types of human papilloma virus (HPV)

Most of these tumors rarely, if ever, turn into cancers. There are many other kinds of benign skin tumors, but most are not very common.

- [References](#)

[See all references for Melanoma Skin Cancer](#)

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# Key Statistics for Melanoma Skin Cancer

Cancer of the skin is by far the most common of all cancers. Melanoma accounts for only about 1% of skin cancers but causes a large majority of skin cancer deaths.

## How common is melanoma?

The American Cancer Society's estimates for melanoma in the United States for 2018 are:

- About 91,270 new melanomas will be diagnosed (about 55,150 in men and 36,120 in women).
- About 9,320 people are expected to die of melanoma (about 5,990 men and 3,330 women).

The rates of melanoma have been rising for the last 30 years.

## Risk of getting melanoma

Melanoma is more than 20 times more common in whites than in African Americans. Overall, the lifetime risk of getting melanoma is about 2.5% (1 in 40) for whites, 0.1% (1 in 1,000) for blacks, and 0.5% (1 in 200) for Hispanics. The risk for each person can be affected by a number of different factors, which are described in [Risk Factors for Melanoma Skin Cancer](#).

The risk of melanoma increases as people age. The average age of people when it is diagnosed is 63. But melanoma is not uncommon even among those younger than 30. In fact, it's one of the most common [cancers in young adults](#) (especially young women).

Also see [Survival Rates for Melanoma Skin Cancer by Stage](#).

Visit the [American Cancer Society's Cancer Statistics Center](#) for more key statistics.

- [References](#)

[See all references for Melanoma Skin Cancer](#)

American Cancer Society. *Facts & Figures 2018*. American Cancer Society. Atlanta, Ga. 2018.

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# What's New in Melanoma Skin Cancer Research?

Research into the [causes](#), [prevention](#), and [treatment](#) of melanoma is being done in medical centers throughout the world.

## Causes, prevention, and early detection

### Sunlight and ultraviolet (UV) radiation

Recent studies suggest there may be 2 main ways that UV exposure is linked to melanoma, but there is likely some overlap.

The first link is to **sun exposure as a child and teenager**. People with melanoma often have an early history of sunburns or other intense sun exposures, although not everyone does. This early sun exposure may damage the DNA in skin cells (melanocytes), which starts them on a path to becoming melanoma cells many years later. Some doctors think this might help explain why melanomas often occur on the thighs (in women) and trunk (in men), areas that generally aren't exposed to the sun as much in adulthood.

The second link is to **melanomas that occur on the arms, neck, and face**. These areas are chronically exposed to sun, particularly in men.

Tanning booths might help either kind of melanoma to develop.

Researchers are studying if melanomas that develop from these types of UV exposure have different gene changes that might require them to be treated differently.

## Public education

[Most skin cancers can be prevented](#). The best way to lower the number of skin cancers and the pain and loss of life from this disease is to educate the public, especially parents, about skin cancer risk factors and warning signs. It's important for health care professionals and skin cancer survivors to remind everyone about the dangers of too much [UV exposure](#) (both from the sun and from man-made sources such as tanning beds) and about how easy it can be to protect your skin from UV rays.

[Melanoma can often be found early](#), when it is most likely to be cured. Monthly skin self-exams and awareness of the warning signs of melanomas may be helpful in finding most melanomas when they are at an early, curable stage.

The [American Academy of Dermatology \(AAD\)](#) sponsors annual free skin cancer screenings throughout the country. Many local American Cancer Society offices work closely with the AAD to provide volunteers for registration, coordination, and education efforts related to these free screenings. Look for information in your area about these screenings or call the American Academy of Dermatology for more information.

Along with recommending staying in the shade, the American Cancer Society uses a slogan popularized in Australia as part of its skin cancer prevention message in the United States. "Slip! Slop! Slap!® ... and Wrap" is a catchy way to remember when going outdoors to slip on a shirt, slop on sunscreen, slap on a hat, and wrap on sunglasses to protect your eyes and the sensitive skin around them.

## Melanoma genetic research

Scientists have made a great deal of progress in understanding how UV light damages DNA inside skin cells and how these changes can cause normal skin cells to become cancer cells.

Some people, though, inherit mutated (damaged) genes from their parents. For example, changes in the *CDKN2A* (*p16*) gene cause some melanomas that run in certain families. People who have a strong family history of melanoma should speak with a cancer genetic counselor or a doctor experienced in cancer genetics to discuss the possible benefits, limits, and downsides of [testing for changes in this gene](#).

## Diagnosis

Some newer approaches to diagnosing skin cancer don't require the removal of a skin

sample. An example of such an “optical biopsy” is **reflectance confocal microscopy (RCM)**. This technique allows the doctor to look at an abnormal area of skin to a certain depth without cutting into the skin.

RCM is used widely in Europe, and it’s now available in some centers in the US. It may be especially useful for people with many unusual moles, as it can cut down on the number of skin biopsies these people need. RCM might also be helpful in determining the edges of a melanoma, which could help during surgery.

This technique will likely become more widely available in the coming years.

## Lab tests to help determine prognosis

Most melanomas found at an early stage can be cured with surgery. But a small portion of these cancers eventually spread to other parts of the body, where they can be hard to treat.

Recent research has shown that certain gene expression patterns in melanoma cells can help show if stage I or II melanomas are likely to spread. A lab test based on this research, known as *DecisionDx-Melanoma*, is now available. The test divides melanomas into 2 groups based on their gene patterns:

- Class 1 tumors have a low risk of spreading.
- Class 2 tumors have a higher risk of spreading.

This test might help tell if someone with early-stage melanoma should get additional treatment or if they need to be followed more closely after treatment to look for signs of recurrence.

## Treatment

While early-stage melanomas can often be cured with [surgery](#), more advanced melanomas can be much harder to treat. But in recent years, newer types of immunotherapy and targeted therapies have shown a great deal of promise and have changed the treatment of this disease.

### Immunotherapy

This type of treatment helps the body’s immune system attack melanoma cells more effectively. Some forms of immune therapy are already used to treat some melanomas

(see [Immunotherapy for Melanoma Skin Cancer](#)).

**Immune checkpoint inhibitors:** Newer drugs such as pembrolizumab (Keytruda), nivolumab (Opdivo), and ipilimumab (Yervoy) block proteins that normally suppress the T-cell immune response against melanoma cells. These drugs have been shown to help some people with advanced melanomas live longer.

Researchers are now looking for ways to make these drugs work even better. One way to do this might be by combining them with other treatments, such as other types of immunotherapy or targeted drugs.

Researchers are also studying if these drugs can be helpful for earlier-stage melanomas. For example, some might be useful before or after surgery for some melanomas to help lower the chance that the cancer will come back.

Newer immune checkpoint inhibitors with slightly different targets are now being studied as well.

**Melanoma vaccines:** Vaccines to treat melanoma are being studied in [clinical trials](#).

These vaccines are, in some ways, like the vaccines used to prevent diseases such as polio, measles, and mumps that are caused by viruses. Such vaccines usually contain weakened viruses or parts of a virus that can't cause the disease. The vaccine stimulates the body's immune system to destroy the more harmful type of virus.

In the same way, killed melanoma cells or parts of cells (antigens) can be used as a vaccine to try to stimulate the body's immune system to destroy other melanoma cells in the body. Usually, the cells or antigens are mixed with other substances that help boost the immune system as a whole. But unlike vaccines that are meant to prevent infections, these vaccines are meant to treat an existing disease.

Making an effective vaccine against melanoma has proven to be harder than making a vaccine to fight a virus. The results of studies using vaccines to treat melanoma have been mixed so far, but many newer vaccines are now being studied and may hold more promise.

**Other immunotherapies:** Other forms of immunotherapy are also being studied. Some early studies have shown that treating patients with high doses of chemotherapy and radiation therapy and then giving them tumor-infiltrating lymphocytes (TILs), which are immune system cells taken from tumors, can shrink melanoma tumors and possibly prolong life as well. Newer studies are looking at changing certain genes in the TILs before they are given to see if this can make them more effective at fighting the cancer.

This approach has looked promising in early studies, but it's complex and is only being tested in a few centers.

Many studies are now looking to combine different types of immunotherapy, which may be more effective than any single treatment for advanced melanoma.

## Targeted drugs

[Targeted therapy](#) drugs target parts of melanoma cells that make them different from normal cells. These drugs work differently from standard chemotherapy drugs. They may work in some cases when chemotherapy doesn't. They may also have less severe side effects.

**Drugs that target cells with *BRAF* gene changes:** About half of all melanomas have changes in the *BRAF* gene, which helps the cells grow. Drugs that target the BRAF protein, such as vemurafenib (Zelboraf) and dabrafenib (Tafinlar), as well as drugs that target the related MEK proteins, such as trametinib (Mekinist) and cobimetinib (Cotellic), have been shown to shrink many of these tumors. These drugs are now often used to treat advanced melanomas that test positive for the *BRAF* gene change. Researchers are now looking at whether these drugs might be helpful before or after surgery for some earlier stage melanomas.

Other, similar drugs are now being studied as well.

One of the drawbacks of these drugs is that usually work for only a limited time before the cancer starts growing again. But studies have shown that combining a BRAF inhibitor with a MEK inhibitor results in longer response times, and some side effects (such as the development of other skin cancers) might actually be *less* common with the combination.

**Drugs that target cells with changes in the *C-KIT* gene:** A small number of melanomas have changes in the *C-KIT* gene. This is more likely in melanomas that start on the palms of the hands, soles of the feet, under the nails, or in certain other places.

Clinical trials are now testing drugs such as imatinib (Gleevec), dasatinib (Sprycel), and nilotinib (Tasigna), which are known to target cells with changes in *C-KIT*.

**Drugs that target other gene or protein changes:** Several drugs that target other abnormal genes or proteins are now being studied in clinical trials as well. Some examples include axitinib (Inlyta), pazopanib (Votrient), and everolimus (Afinitor).

Researchers are also looking at combining some of these targeted drugs with other types of treatments, such as chemotherapy or immunotherapy.

- [Additional Resources](#)
- [References](#)

**American Academy of Dermatology (AAD)** Toll-free number: 1-888-462-3376 (1-888-462-DERM) Website: [www.aad.org](http://www.aad.org) Spot Skin Cancer website: [www.aad.org/spot-skin-cancer](http://www.aad.org/spot-skin-cancer)

- For information on skin cancer, a skin cancer risk assessment, a locator for free skin cancer screenings, and a dermatologist locator

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