



[cancer.org](https://www.cancer.org) | 1.800.227.2345

---

## About Melanoma Skin Cancer

Get an overview of melanoma skin cancer and the latest key statistics in the US. Melanoma accounts for only about 1% of skin cancers but causes a large majority of skin cancer deaths.

### 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?

Melanoma is a type of skin cancer that develops when melanocytes (the cells that give the skin its tan or brown color) start to grow out of control.

Melanoma is much less common than some other types of skin cancers. But melanoma is more dangerous because it's much more likely to spread to other parts of the body if not found and treated early.

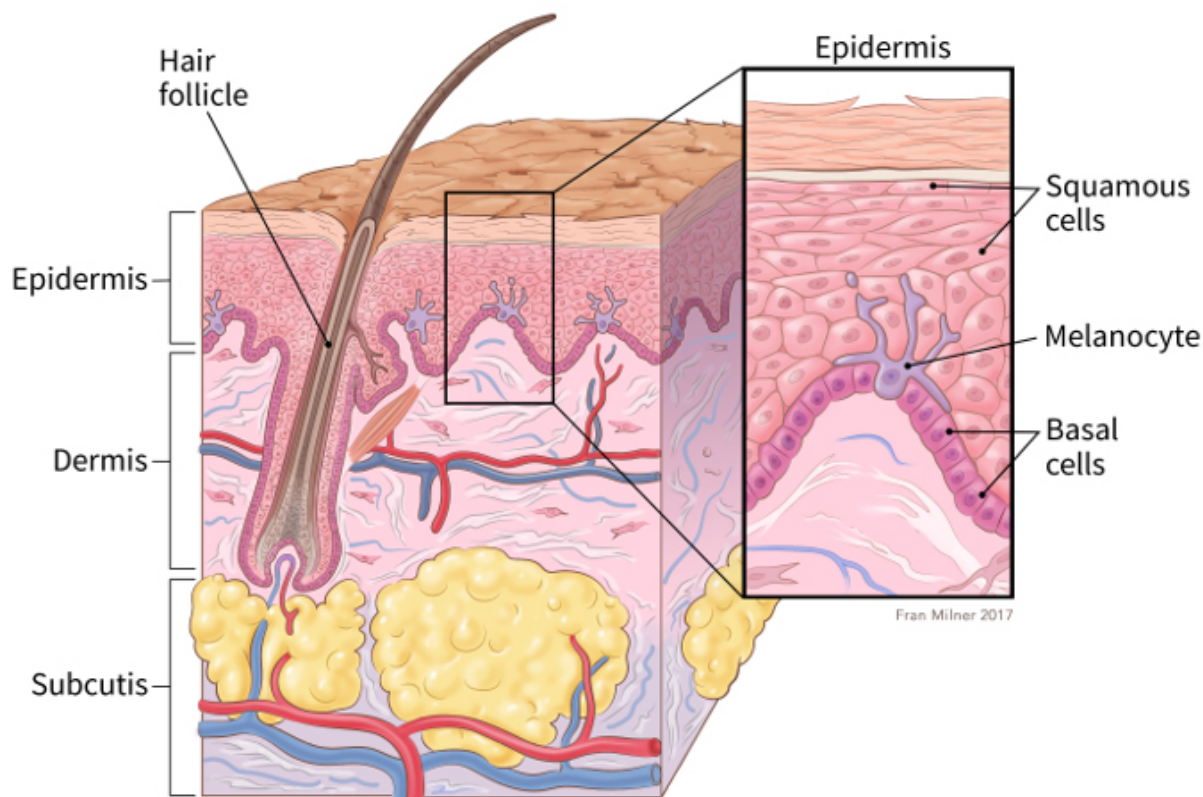
- [Where do skin cancers start?](#)
- [Melanoma skin cancers](#)
- [Other types of skin cancer](#)
- [Benign skin tumors](#)

## Where do skin cancers start?

Most skin cancers start in the top layer of skin, called the *epidermis*. There are 3 main types of cells in this layer:

- **Squamous cells:** These are flat cells in the upper (outer) part of the epidermis, which 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 normally 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.

The epidermis is separated from the deeper layers of skin by the **basement membrane**. When a skin cancer becomes more advanced, it generally grows through this barrier and into the deeper layers.



### [What Is Cancer?](#) <sup>1</sup>

Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer cells. Learn more here.

### [Anatomy Gallery: Skin](#) <sup>2</sup>

Explore our 3D interactive tour of the skin system.

## Melanoma skin cancers

Melanoma is a cancer that begins in melanocytes.

Most melanomas start in the skin. Another name for these cancers is **cutaneous melanoma**.

Melanomas can start anywhere on the skin, but in people with lighter skin color 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.

People with darkly pigmented skin have a lower risk of melanoma at these more

common sites.

## Types of melanoma skin cancer

There are different types of skin melanoma. The most common types are:

- **Superficial spreading melanoma:** This type makes up about 7 in 10 melanomas of the skin. These tumors tend to grow outward on the surface of the skin (at least at first), so they might be noticed as a dark spot on the skin that is changing shape and/or getting bigger. Some of these melanomas start in existing moles (see below), but others do not.
- **Nodular melanoma:** This type accounts for about 2 in 10 skin melanomas. These tumors often appear as a distinct, raised bump (nodule) on the skin that is often dark brown or black, but it can also be pink or red. This can make them hard to find early. Nodular melanomas tend to grow down into deeper layers of the skin fairly early, so they're often at a more advanced [stage](#)<sup>3</sup> than superficial spreading melanomas by the time they are found.
- **Lentigo maligna melanoma:** This type of melanoma tends to occur in older people. It often first appears as an abnormally shaped tan or brown spot in an area that gets a lot of sun (such as the face, ears, or arms), and it tends to grow slowly (or change in other ways) over time.
- **Acral lentiginous melanoma (acral melanoma):** This type of melanoma starts in areas that don't get a lot of sun exposure, such as the palms of the hands, soles of the feet, or under the nails. Acral melanomas make up a large portion of melanomas in people with darker skin tones.

## Melanomas in other parts of the body

Melanomas can also form in other parts of the body, such as:

- Inside the eye (known as [ocular melanomas](#)<sup>4</sup>). Most of these start in the uvea (the middle layer of the eyeball) and are known as **uveal melanomas**.
- Inside the nose, mouth, throat, genital, or anal area (known as **mucosal melanomas**)

These are much less common than melanoma of the skin.

## Other types of skin cancer

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 cancer (BCC) and squamous cell cancer (SCC) are by far the most common types of skin cancer. In fact, they are more common than any other form of cancer in the United States. These cancers (especially BCCs) are much less likely to spread (metastasize) to other parts of the body than are melanomas, so they are usually less concerning and are treated differently. These cancers are discussed in [Basal and Squamous Cell Skin Cancer](#)<sup>5</sup>.

### 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](#)<sup>6</sup>
- [Kaposi sarcoma](#)<sup>7</sup>
- [Cutaneous \(skin\) lymphoma](#)<sup>8</sup>
- **Skin adnexal tumors** (tumors that start in hair follicles or skin glands)
- [Various types of sarcomas](#)<sup>9</sup>

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](#)<sup>10</sup> for

more 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 typically 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 and a “stuck on” appearance
- **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 papillomavirus (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.

## Hyperlinks

1. [www.cancer.org/cancer/understanding-cancer/what-is-cancer.html](http://www.cancer.org/cancer/understanding-cancer/what-is-cancer.html)
2. [www.cancer.org/cancer/understanding-cancer/anatomy-gallery/skin.html](http://www.cancer.org/cancer/understanding-cancer/anatomy-gallery/skin.html)
3. [www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/melanoma-skin-cancer-stages.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/melanoma-skin-cancer-stages.html)
4. [www.cancer.org/cancer/types/eye-cancer.html](http://www.cancer.org/cancer/types/eye-cancer.html)
5. [www.cancer.org/cancer/types/basal-and-squamous-cell-skin-cancer.html](http://www.cancer.org/cancer/types/basal-and-squamous-cell-skin-cancer.html)
6. [www.cancer.org/cancer/types/merkel-cell-skin-cancer.html](http://www.cancer.org/cancer/types/merkel-cell-skin-cancer.html)
7. [www.cancer.org/cancer/types/kaposi-sarcoma.html](http://www.cancer.org/cancer/types/kaposi-sarcoma.html)
8. [www.cancer.org/cancer/types/skin-lymphoma.html](http://www.cancer.org/cancer/types/skin-lymphoma.html)
9. [www.cancer.org/cancer/types/soft-tissue-sarcoma.html](http://www.cancer.org/cancer/types/soft-tissue-sarcoma.html)
10. [www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/risk-factors.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/risk-factors.html)

## References

Curiel-Lewandrowski C. Melanoma: Epidemiology and risk factors. UpToDate. 2023. Accessed at <https://www.uptodate.com/contents/melanoma-epidemiology-and-risk-factors> on September 6, 2023.

Mitchell TC, Karakousis G, Schuchter L. Chapter 66: Melanoma. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa: Elsevier; 2020.

Ribas A, Read P, Slingluff CL. Chapter 92: Cutaneous Melanoma. In: DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 11th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2019.

Swetter S, Geller AC. Melanoma: Clinical features and diagnosis. UpToDate. 2023. Accessed at <https://www.uptodate.com/contents/melanoma-clinical-features-and-diagnosis> on September 6, 2023.

Last Revised: October 27, 2023

## Key Statistics for Melanoma Skin Cancer

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

- [How common is melanoma?](#)
- [Risk of getting melanoma](#)

### How common is melanoma?

The American Cancer Society's estimates for melanoma in the United States for 2024 are:

- About 100,640 new melanomas will be diagnosed (about 59,170 in men and 41,470 in women).

- About 8,290 people are expected to die of melanoma (about 5,430 men and 2,860 women).

Changes in the rates of new melanomas vary by age and sex. In people younger than 50, the rates have been stable among women and have declined by about 1% a year in men since the early 2000s. In people ages 50 and older, rates increased in women by about 3% per year but have stayed stable among men.

Melanoma death rates declined rapidly from 2013 to 2017, largely because of advances in treatment. Rates fell by about 6% to 7% per year.

## Risk of getting melanoma

Having lighter skin color is a major risk factor for melanoma. Overall, the lifetime risk of getting melanoma is about 3% (1 in 33) for White people, 0.1% (1 in 1,000) for Black people, and 0.5% (1 in 200) for Hispanic people. But each person's risk can be affected by a number of factors, which are described in [Risk Factors for Melanoma Skin Cancer](#)<sup>1</sup>.

The risk of melanoma increases as people age. The average age of people when it is diagnosed is 66. But melanoma is not uncommon even among those younger than 30. In fact, it's one of the most common [cancers in young adults](#)<sup>2</sup> (especially young women).

For survival statistics, see [Survival Rates for Melanoma Skin Cancer by Stage](#)<sup>3</sup>.

Visit the [American Cancer Society's Cancer Statistics Center](#)<sup>4</sup> for more key statistics.

## Hyperlinks

1. [www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/risk-factors.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/risk-factors.html)
2. [www.cancer.org/cancer/types/cancer-in-young-adults.html](http://www.cancer.org/cancer/types/cancer-in-young-adults.html)
3. [www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/survival-rates-for-melanoma-skin-cancer-by-stage.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/survival-rates-for-melanoma-skin-cancer-by-stage.html)
4. [cancerstatisticscenter.cancer.org/](http://cancerstatisticscenter.cancer.org/)

## References



American Cancer Society. *Facts & Figures 2024*. Atlanta: American Cancer Society; 2024.

Curiel-Lewandrowski C. Melanoma: Epidemiology and risk factors. UpToDate. 2023. Accessed at <https://www.uptodate.com/contents/melanoma-epidemiology-and-risk-factors> on September 6, 2023.

National Cancer Institute. Cancer Stat Facts: Melanoma of the Skin. Accessed at <https://seer.cancer.gov/statfacts/html/melan.html> on September 7, 2023.

National Cancer Institute. SEER\*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program; 2023 Apr 19. [updated: 2023 Jun 8]. Accessed at <https://seer.cancer.gov/statistics-network/explorer/> on September 7, 2023.

Last Revised: January 17, 2024

## What's New in Melanoma Skin Cancer Research?

Research into the causes, prevention, diagnosis, and treatment of melanoma is being done in medical centers throughout the world.

- [Causes and prevention](#)
- [Melanoma genetics](#)
- [Early detection and diagnosis](#)
- [Lab tests to help determine prognosis \(outlook\)](#)
- [Treatment](#)

### Causes and prevention

#### Sunlight and ultraviolet (UV) radiation

Some research suggests there are 2 main ways that exposure to [UV rays](#)<sup>1</sup> 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 (genes) in skin cells called melanocytes, which starts them on a path to becoming melanoma cells many years later. 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 **chronic sun exposure**. This type of exposure may be the cause of many melanomas that occur on the arms, neck, and face – areas that often get a lot of sun.

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

## Public education

[Most melanomas \(and other skin cancers\) can be prevented<sup>2</sup>](#). The best way to lower the number of skin cancers and the serious problems they can cause is to educate people, especially parents, about [risk factors<sup>3</sup>](#) and [warning signs and symptoms<sup>4</sup>](#). 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 the ways you can [protect your skin from UV rays<sup>5</sup>](#).

Along with recommending staying in the shade, the American Cancer Society uses a slogan popularized in Australia as part of our skin cancer prevention message in the United States. Slip! Slop! Slap!<sup>®</sup> 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 genetics

Scientists have made a great deal of progress in understanding how some of the DNA (gene) changes inside normal skin cells can lead them to become melanoma cells.

Some people [inherit gene changes \(mutations\)<sup>6</sup>](#) from their parents that raise their risk of melanoma. 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 might want to 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 \(and others\)<sup>7</sup>](#) that can increase melanoma cancer risk.

Researchers are also looking at other gene changes (or even patterns of gene changes) in melanoma cells to learn more about how they grow and how best to treat them. For example:

- Melanoma cells with certain gene changes might be more likely to spread, and therefore might need more intensive testing or treatment.
- Some gene changes make it more likely that the cancer will respond to certain treatments, such as targeted drugs or immunotherapy.

These topics are discussed in more detail below.

## Early detection and diagnosis

[Melanoma can often be found early](#)<sup>8</sup>, when it is most likely to be cured. Monthly [skin self-exams](#)<sup>9</sup> and awareness of the [possible warning signs](#)<sup>10</sup> may be helpful in finding most melanomas when they are at an early, curable stage.

The [American Academy of Dermatology \(AAD\)](#)<sup>11</sup> 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 [contact the American Academy of Dermatology](#)<sup>12</sup> for more information.

## Smartphone apps

In recent years, many smartphone apps have been developed that claim to help identify skin cancers, including melanomas. Recent advances in artificial intelligence (AI) may help make these apps better at identifying concerning areas on the skin that need to be looked at by a doctor.

While these tools may eventually prove to be helpful, it's not yet clear how accurate they are, and more research is needed before expert groups would recommend them. For now, it's best to have any area you're concerned about looked at by a trained health professional.

## Newer approaches to help determine if a tumor is a melanoma

Sometimes it can be hard for health care providers – even dermatologists – to tell if an abnormal area is likely to be a melanoma (and therefore should be biopsied) just based on how it looks. Because of this (and because of how dangerous melanomas can be),

many skin biopsies are done on areas that turn out not to be melanomas.

Some newer devices can be placed over the skin to help health care providers get a better idea if an abnormal area is likely to be a melanoma, without needing to remove it.

For example, dermatologists sometimes use a technique known as **reflectance confocal microscopy (RCM)**, in which a low-powered laser is aimed at the suspicious area. The light from the laser enters the upper layers of the skin and reflects off the structures there. This can be used to create a very detailed, three-dimensional image of the area, which can help the doctor determine if the area needs to be biopsied.

**Other handheld devices** might be especially helpful for primary care providers and other health professionals who don't usually see as many skin cancers as dermatologists do. These types of devices are typically placed over the skin, and the tip of the device sends out beams of light or electrical signals, which then bounce off the skin cells and are detected by the device. The patterns of signals from cancer cells tend to be different from those of normal cells. The device can analyze the pattern coming from the area and let the provider know if it's likely to be a melanoma (and therefore further testing is needed).

Another newer technique is **adhesive patch testing**. Instead of cutting into the skin to get a biopsy sample, a sticky patch is placed over the suspicious area. When it's removed it takes some of the top layers of skin with it, which can then be tested for certain gene changes that are often linked with melanoma. If one of those gene changes is found, a standard biopsy of the area can then be done. If no gene changes are found, a biopsy isn't needed, and the area can be watched instead.

## Lab tests to help determine prognosis (outlook)

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.

Some research has shown that certain gene expression patterns in melanoma cells can help predict if early-stage melanomas are likely to spread or to come back after treatment. A lab test based on this research, known as **DecisionDx-Melanoma**, is now available. This test can be used to divide stage I to III melanomas into 3 main groups, based on their gene expression patterns:

- Class 1A melanomas have a lower risk of spreading or coming back.
- Class 1B or 2A melanomas have an intermediate risk of spreading or coming back.

- Class 2B melanomas have a higher risk of spreading or coming back.

This test might be used (along with other information about the melanoma) to help tell if someone with early-stage melanoma should get a [sentinel lymph node biopsy \(SLNB\)](#)<sup>13</sup> or additional treatment, or if they need to be followed more closely after treatment to look for signs of recurrence.

Tests of other genes and gene patterns are now being studied as well.

## Treatment

While early-stage melanomas can often be cured with [surgery](#)<sup>14</sup>, more advanced melanomas can be harder to treat. In recent years, newer types of immunotherapy and targeted therapy drugs 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 now used to treat some melanomas (see [Immunotherapy for Melanoma Skin Cancer](#)<sup>15</sup>), and others are now being studied.

**Immune checkpoint inhibitors:** Some newer drugs block “checkpoint” proteins that normally suppress the T-cell immune response against melanoma cells. These drugs are now one of the mainstays of treatment for advanced melanomas. Researchers are now looking for ways to make these drugs work even better. One way to do this might be by combining different checkpoint inhibitors, or using them with other treatments, such as other types of immunotherapy or targeted drugs.

Researchers are also studying how useful these drugs can be for earlier-stage melanomas, as an adjuvant (additional) treatment after surgery. Some have already been shown to be useful after surgery for melanomas that have reached the lymph nodes, where they can help lower the chance that the cancer will come back. Researchers are now studying to see if these drugs might be helpful for even earlier-stage melanomas, or if they might be helpful if used before surgery (called neoadjuvant treatment) for some people.

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

**Adoptive cell therapy with tumor-infiltrating lymphocytes (TILs):** Some studies

have shown that treating advanced melanomas with tumor-infiltrating lymphocytes (TILs) can shrink tumors and possibly prolong a person's life as well. This treatment is now an option for some people with advanced melanomas, if other treatments are no longer working.

TILs are immune system cells that have entered (infiltrated) a tumor to attack the cancer cells. Once a tumor is removed with surgery, the TILs can be separated out and then multiplied in the lab, after which they can be given back to the person as an IV infusion. In studies done so far, people are usually given chemotherapy before this treatment to help the body accept the TILs. After getting the TILs, people might also be given another type of immunotherapy such as [interleukin-2 \(IL-2\)](#)<sup>16</sup>, which might help these immune cells better attack the cancer.

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 looks promising in early studies.

**Melanoma vaccines:** Vaccines to treat melanoma are being studied in [clinical trials](#)<sup>17</sup>.

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 response. 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 new forms of immunotherapy are also being studied. In addition, many studies are now looking at combining different types of immunotherapy, which may be more effective than any single treatment for advanced melanoma.

## Targeted drugs

[Targeted therapy](#)<sup>18</sup> drugs are designed to attack parts of melanoma cells that make them different from normal cells. These drugs work differently from standard chemotherapy drugs. As researchers have learned more about some of the changes in melanoma cells that make them different from normal cells, they've developed drugs that target these changes. Some of these drugs are now commonly used to treat melanomas with certain gene changes, while others are still being studied.

**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 or the related MEK proteins have been shown to shrink many of these tumors, especially when BRAF and MEK inhibitors are combined.

**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. Drugs that target cells with changes in *C-KIT* can often be helpful in treating these melanomas.

**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.

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

### [Skin Cancer ACS Research Highlights](#) <sup>19</sup>

See latest examples of how the Society conducts & funds research to help prevent, find, diagnose, treat, and live with skin cancers.

## Hyperlinks

1. [www.cancer.org/cancer/risk-prevention/sun-and-uv/uv-radiation.html](http://www.cancer.org/cancer/risk-prevention/sun-and-uv/uv-radiation.html)
2. [www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/prevention.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/prevention.html)
3. [www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/risk-factors.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/risk-factors.html)
4. [www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/signs-and-symptoms.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/signs-and-symptoms.html)
5. [www.cancer.org/cancer/risk-prevention/sun-and-uv/uv-protection.html](http://www.cancer.org/cancer/risk-prevention/sun-and-uv/uv-protection.html)



6. [www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/what-causes.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/what-causes.html)
7. [www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/genetic-counseling-and-testing-for-people-at-high-risk-of-melanoma.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/genetic-counseling-and-testing-for-people-at-high-risk-of-melanoma.html)
8. [www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/detection.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/detection.html)
9. [www.cancer.org/cancer/risk-prevention/sun-and-uv/skin-exams.html](http://www.cancer.org/cancer/risk-prevention/sun-and-uv/skin-exams.html)
10. [www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/signs-and-symptoms.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/signs-and-symptoms.html)
11. [www.aad.org/](http://www.aad.org/)
12. [www.aad.org/public/public-health/skin-cancer-screenings](http://www.aad.org/public/public-health/skin-cancer-screenings)
13. [www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/how-diagnosed.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/how-diagnosed.html)
14. [www.cancer.org/cancer/types/melanoma-skin-cancer/treating/surgery.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/treating/surgery.html)
15. [www.cancer.org/cancer/types/melanoma-skin-cancer/treating/immunotherapy.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/treating/immunotherapy.html)
16. [www.cancer.org/cancer/types/melanoma-skin-cancer/treating/immunotherapy.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/treating/immunotherapy.html)
17. [www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html](http://www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html)
18. [www.cancer.org/cancer/types/melanoma-skin-cancer/treating/targeted-therapy.html](http://www.cancer.org/cancer/types/melanoma-skin-cancer/treating/targeted-therapy.html)
19. [www.cancer.org/research/acs-research-highlights/skin-cancer-research-highlights.html](http://www.cancer.org/research/acs-research-highlights/skin-cancer-research-highlights.html)

## References

American Academy of Dermatology. Health and Wellness Apps that Dermatologists Do and Don't Recommend. 2023. Accessed at <https://www.aad.org/public/fad/digital-health/apps> on September 28, 2023.

Mitchell TC, Karakousis G, Schuchter L. Chapter 66: Melanoma. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa: Elsevier; 2020.

National Comprehensive Cancer Network (NCCN). Practice Guidelines in Oncology:



Cutaneous Melanoma. Version 2.2023. Accessed at [https://www.nccn.org/professionals/physician\\_gls/pdf/cutaneous\\_melanoma.pdf](https://www.nccn.org/professionals/physician_gls/pdf/cutaneous_melanoma.pdf) on September 28, 2023.

Ribas A, Read P, Slingluff CL. Chapter 92: Cutaneous Melanoma. In: DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 11th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2019.

Robbins PF, Morgan RA, Feldman SA, et al. Tumor regression in patients with metastatic synovial cell sarcoma and melanoma using genetically engineered lymphocytes reactive with NY-ESO-1. *J Clin Oncol*. 2011;29:917-924.

Rohaan MW, Borch TH, van den Berg JH, et al. Tumor-infiltrating lymphocyte therapy or ipilimumab in advanced melanoma. *N Engl J Med*. 2022;387(23):2113-2125.

Sosman JA. Interleukin-2 and experimental immunotherapy approaches for advanced melanoma. UpToDate. 2023. Accessed at <https://www.uptodate.com/contents/interleukin-2-and-experimental-immunotherapy-approaches-for-advanced-melanoma> on September 28, 2023.

Sosman JA. Overview of the management of advanced cutaneous melanoma. UpToDate. 2023. Accessed at <https://www.uptodate.com/contents/overview-of-the-management-of-advanced-cutaneous-melanoma> on September 28, 2023.

Sosman JA. Systemic treatment of metastatic melanoma lacking a BRAF mutation. UpToDate. 2023. Accessed at <https://www.uptodate.com/contents/systemic-treatment-of-metastatic-melanoma-lacking-a-braf-mutation> on September 28, 2023.

Last Revised: February 21, 2024

## Written by

The American Cancer Society medical and editorial content team  
(<https://www.cancer.org/cancer/acs-medical-content-and-news-staff.html>)

Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as journalists, editors, and translators with extensive experience in

medical writing.

American Cancer Society medical information is copyrighted material. For reprint requests, please see our Content Usage Policy ([www.cancer.org/about-us/policies/content-usage.html](http://www.cancer.org/about-us/policies/content-usage.html)).

**cancer.org | 1.800.227.2345**