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

What Is Melanoma Skin Cancer?

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.

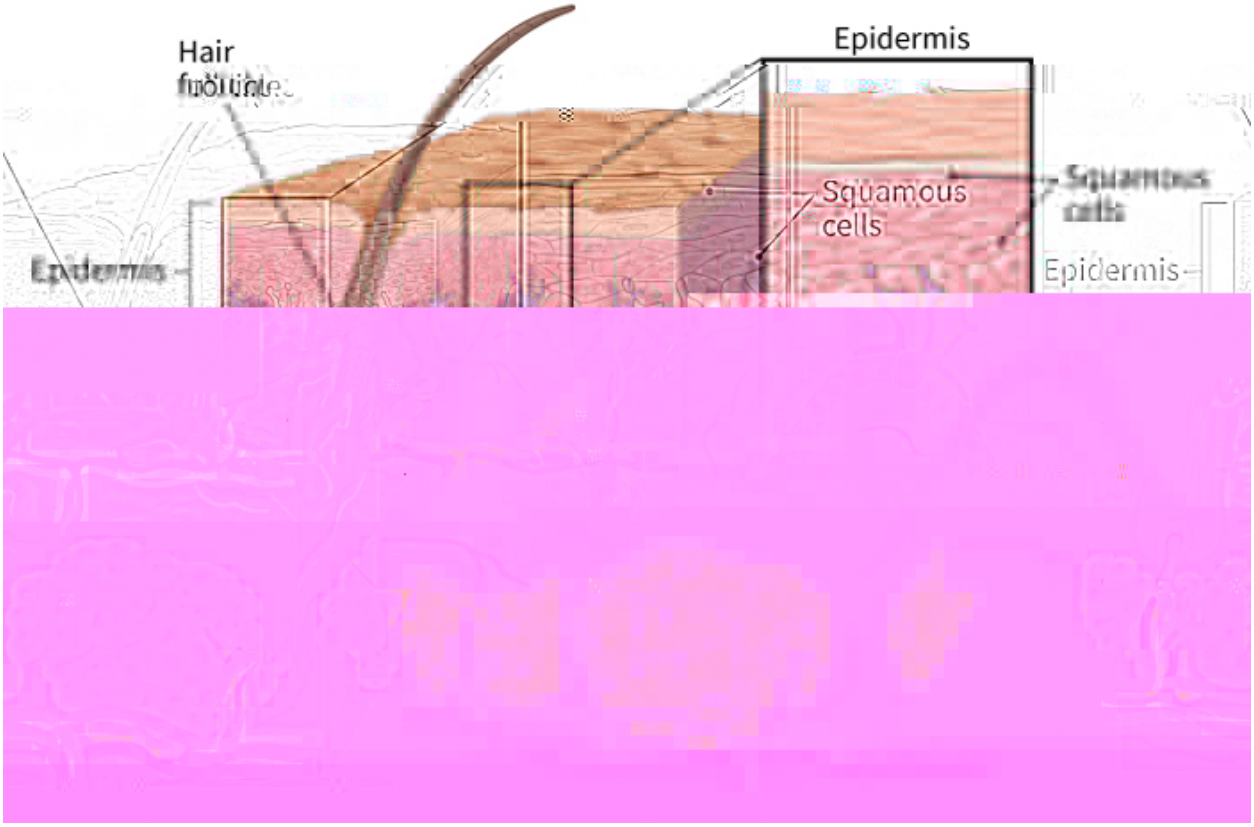
- Where do skin cancers start?
- Melanoma skin cancers
- Other types of skin cancer
- Benign skin tumors

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? [1]

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 [2]

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

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

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
2. 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
4. www.cancer.org/cancer/types/eye-cancer.html
5. www.cancer.org/cancer/types/basal-and-squamous-cell-skin-cancer.html
6. www.cancer.org/cancer/types/merkel-cell-skin-cancer.html
7. www.cancer.org/cancer/types/kaposi-sarcoma.html
8. www.cancer.org/cancer/types/skin-lymphoma.html
9. www.cancer.org/cancer/types/soft-tissue-sarcoma.html
10. www.cancer.org/cancer/types/melanoma-skin-cancer/causes-risks-prevention/risk-factors.html

References

Key Statistics for Melanoma Skin Cancer

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.

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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[1] 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.

- 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)[13] 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[14], 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[15]), 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)[16], 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[17].

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[18] 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 [19]

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
2. 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
4. 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

6. 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
8. 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
10. www.cancer.org/cancer/types/melanoma-skin-cancer/detection-diagnosis-staging/signs-and-symptoms.html
11. www.aad.org/
12. www.aad.org/public/public-health/skin-cancer-screenings
13. 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.htmlwww.aad.org/public/p

Cutaneous Melanoma. Version 2.2023. Accessed at 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.

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