

The Skin Cancer Foundation **Journal**

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The Beauty of Sun Protection



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¹IQVIA, ProVoice Survey: Latest 12 months rolling, ending Jan 2023.

REFERENCE: 1. Dumbuya H, Yan X, Chen Y, et al. Efficacy of ceramide-containing formulations on UV-induced skin surface barrier alterations. *J Drugs Dermatol.* 2021;20(4):s29-s35. doi:10.36849/JDD.2021.589E

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CREATE YOUR OWN SUNSHINE

WITHOUT THE SUN'S HARMFUL UV RAYS

FEATURES

28
10 Surprising Things About Your Skin

The more you learn about your skin, the better you can take care of it! You probably already know that it's your largest organ, it sheds and you have to protect it from the sun to avoid skin cancer. But there is so much more. For example, did you know your skin has a microbiome? Deborah S. Sarnoff, MD, president of The Skin Cancer Foundation, shares inside scoop you are sure to find fascinating.

By Krista Bennett DeMaio

34
Time to Skinnovate

Sunscreen is having a "glow up," a social media term that means makeover or transformation. Ultralight, serum-like formulas, tints that better match your skin tone and multitasking treatment sunscreens are just some of the high-tech options we're seeing. Here, dermatologists and other industry experts give us the intel on the new trends in sun protection.

By Krista Bennett DeMaio



To sun or not to sun? Cultural icons, from Cleopatra to BTS, pick a side. See page 40.



Get kids into the habit of daily sun protection, and they'll practice it for the rest of their lives. See page 48.

40
Why Do We (Still) Tan?

The answer is complicated. Those who love their tanned skin see a healthy glow. Dermatologists see DNA damage. Historians see cultural and socioeconomic influences. Here, we explore the deeper meaning behind the desire to alter your skin tone — and what we still can learn.

By Krista Bennett DeMaio

48
Teach Your Children Well

We know that sun damage is cumulative, and your risk of developing skin cancer as an adult increases with just one bad burn as a child. Getting kids on board early with sun protection is crucial — but it isn't always easy. Our expert dermatologists (and some sun-savvy parents) share their best practices to make sun care a daily habit for kids of all ages.

By Cathy Cavender

FROM TOP: JASON RAISH; NADEZHDA 1906 / ISTOCK / GETTY IMAGES PLUS
EVGENI DINEV PHOTOGRAPHY / GETTY IMAGES

ASK THE EXPERTS

11
They Have the Answers!

Are you worried about what those rough-feeling spots on your face might be? Are you overdue for a skin screening but not sure how to get one? Do you wonder if you're getting enough vitamin D? Read what our experts have to say.

Interviews by Lorraine Glennon



17
Protect Your Pets

While fur shields skin from the sun to an extent, dogs and cats can get sunburned, and they can develop skin cancer, too. As with humans, early detection is key.

By Julie Bain and Barbara Peck

22
The Bald Truth

Men, you likely know the stats: About 85 percent of you will have significant hair loss by the age of 50. (Women, you're not exempt from thinning hair, either.) The earlier you start protecting that vulnerable scalp from the sun, the better. Here's why.

By Joanna Dong, MD, and C. William Hanke, MD, MPH

24
What Everyone Should Know About Advanced Skin Cancers

New York City medical oncologist Anna C. Pavlick, DO, has been overseeing the care of people with advanced skin cancer for more than 25 years. She shares her top 10 insights to help patients and caregivers.

Interview by Julie Bain

GUIDES

8
Skin Cancer 101

One in five Americans will develop skin cancer by the age of 70. Knowledge is your greatest weapon in fighting it. This primer gives you an overview of the major types of skin cancers and precancers, so you can look at your own skin and take an active role in early detection.

54
Your Daily Sun Protection Guide

No single method of sun defense can protect you perfectly. That's why we created this roundup of advice for you. The best path to beautiful, healthy skin is to adopt as many of these steps as possible into your lifestyle and make them daily habits, all year long.

7
Message from the President: Now that We've Got Your Attention...



Why two covers this year, in opposite directions? That's easy: We hope to grab your attention. We want people to notice the bright colors from across the room, pick it up and ask, "What's that?" While we have been an influential nonprofit in our field for 44 years, we still have a lot of work to do while fighting the world's most common cancer. We want you to see the beauty in what we can accomplish — together.

Illustrations by Ben Wiseman

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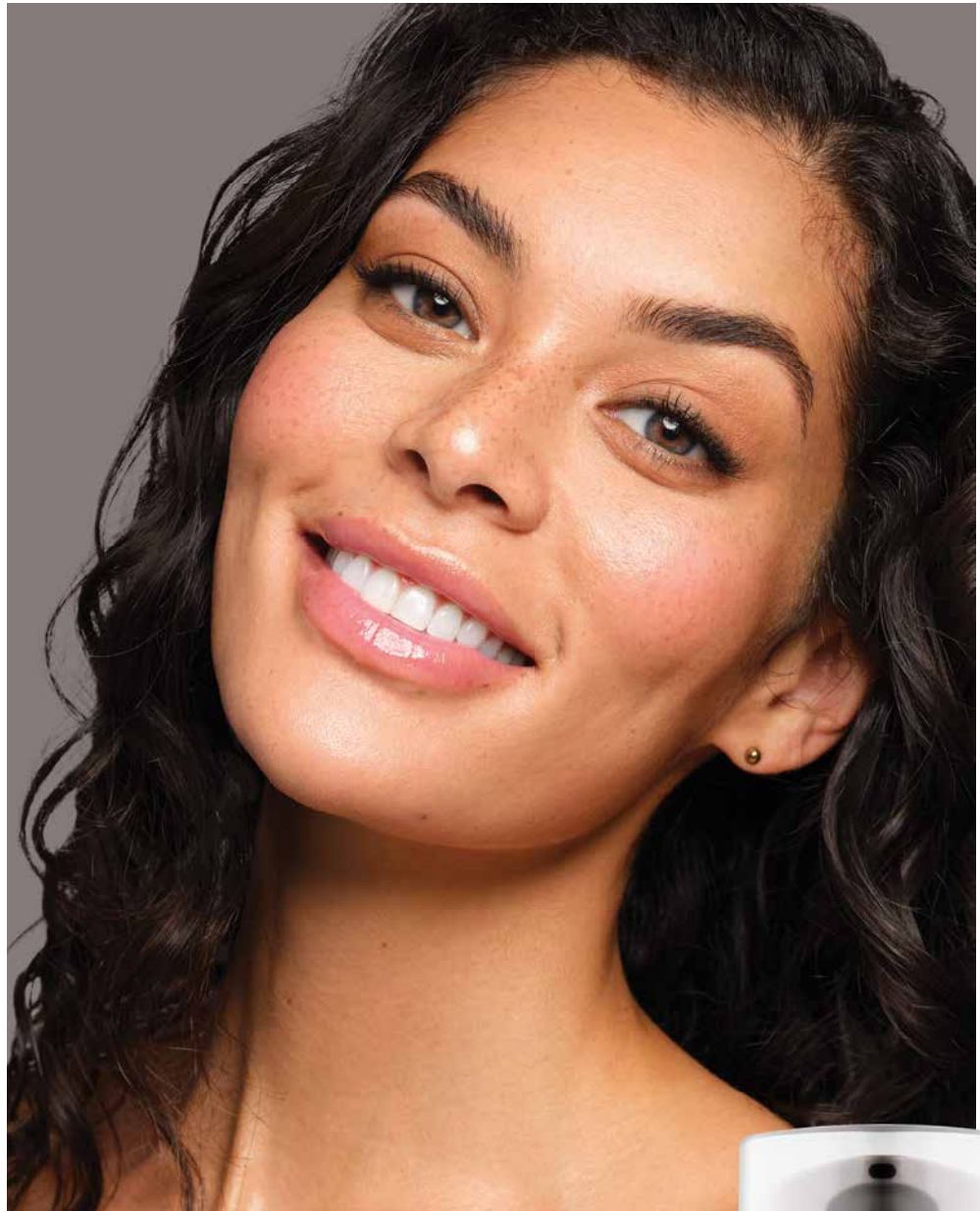
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Message from the *President*



“
While we’ve made great **STRIDES** in early detection and treatment, we haven’t yet made enough progress in the **PREVENTION** of skin cancer. This is our call to action.
”

paign called The Big See about early detection and the importance of monitoring your skin to look for anything “new, changing or unusual” have gained traction and made a difference.

Do you know where we haven’t made *enough* progress, though? In the *prevention* of skin cancer. Millions of people are diagnosed in the U.S. each year, and that increasingly includes young people, too.

Sun protection is proven to prevent skin cancer (which can take decades to develop). But many people still worship the sun and feel like they look better bronzed. Others think they’re not at risk or don’t realize that dangerous ultraviolet radiation from the sun (and indoor tanning) is causing damage on two fronts: 1) DNA damage in skin cells that can lead to cancer and 2) premature signs of aging and skin pigmentation problems. Both are true, and we will continue to try new ways to get our message across.

That’s why the theme of the cover on this side of the magazine is “The Beauty of Sun Protection.” And we mean “beauty” in every sense of the word. We have several important stories in the issue that will help you understand what’s going on, from historical, medical and cosmetic perspectives. You are guaranteed to be inspired and motivated!

Please read on. And when you get to page 56, flip this over and you’ll see me again on the other side, with a special message on what our Foundation is doing to fight the world’s most common cancer. We can all play a role — and that is a beautiful goal. ■

Deborah S. Sarnoff, MD

DEBORAH S. SARNOFF, MD
President, The Skin Cancer Foundation

**NOW THAT WE’VE GOT
YOUR ATTENTION**

HAVE YOU NOTICED that *The Skin Cancer Foundation Journal* has two covers this year? And two separate sections topsy-turvy of each other? Good. We are trying to catch your attention, start a conversation and deliver a call to action.

Since The Skin Cancer Foundation was founded 44 years ago, we have seen tremendous progress in the early detection and treatment of skin cancer. There has been an explosion of treatment options in recent years, and mortality has decreased over the past decade with the rise of immunotherapies. Our Destination Healthy Skin program and our cam-

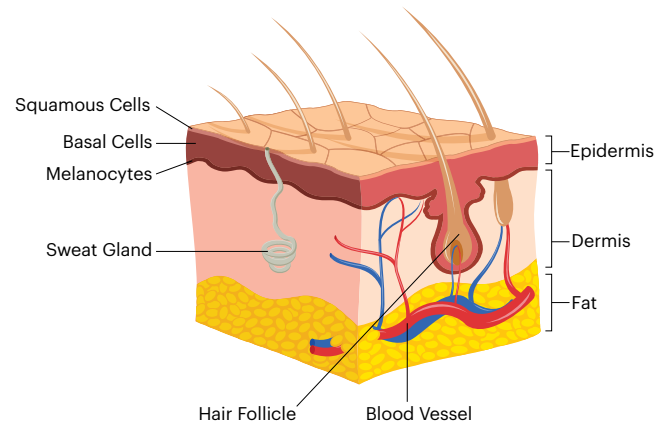
↑
Things Are Looking Up
—
“Recent innovations in cosmetic products are making sun protection trendy and easier to comply. You can get it all in one — skin care, antiaging, a tint and SPF. It’s one and done!”

Skin Cancer 101

ONE IN FIVE AMERICANS will develop skin cancer by the age of 70. Knowledge is your greatest weapon in fighting it. This primer gives you an overview of the major types of skin cancers and precancers. If you see anything new, changing or unusual on your skin, see a dermatologist.

SKIN: YOUR LARGEST ORGAN

The skin is the largest organ in the human body. It forms a waterproof, protective wrap over your entire body, serving as a barrier to infection and helping to control your body temperature.



Skin Facts

The average adult human has 2,800 square inches of skin — that's about 22 square feet of skin!

In just a square inch of skin, there are approximately:

- 60,000 melanocytes, which give skin its color
- 1,000 nerve endings
- 650 sweat glands
- 20 blood vessels

WHAT IS SKIN CANCER?

Skin cancer is the out-of-control growth of abnormal cells in the epidermis, the outermost skin layer, caused by unrepaired DNA damage that triggers mutations. These mutations lead the skin cells to multiply rapidly and form malignant tumors.

The two main causes of skin cancer are the sun's harmful ultraviolet (UV) rays and the use of UV tanning beds. The good news is that if skin cancer is caught early, your dermatologist can treat it with little or no scarring and high odds of eliminating it entirely. Often, the doctor may even detect the growth at a precancerous stage, before it has become a full-blown skin cancer or penetrated below the surface of the skin.

Basal Cell Carcinoma

This is the **most common** form of skin cancer, with an estimated 3.6 million cases in the U.S. diagnosed each year. Basal cell carcinomas (BCCs) are abnormal, uncontrolled growths that arise from the skin's basal cells in the epidermis. These cancers most often develop on skin areas typically exposed to the sun, especially the face, ears, neck, scalp, shoulders and back. Most BCCs are caused by the combination of intermittent, intense exposure and cumulative, long-term exposure to UV radiation from the sun. BCCs can be locally destructive if not detected and treated early. Occasionally these cancers metastasize (spread), and in very rare instances they can be fatal.

Basal Cell Carcinomas



A shiny bump, or nodule, that is pearly or translucent and is often pink, red, white or clear. The bump can also be brown, especially in skin of color.

An open sore that bleeds, oozes or crusts and doesn't heal for three or more weeks may be a sign of a BCC. It might also have a slightly elevated, rolled border and a crusted central indentation.

A reddish, irritated or crusty patch that may itch or hurt. Other BCCs may look like white, yellow or waxy scars.

Squamous Cell Carcinoma

This is the **second most common** form of skin cancer. Squamous cell carcinoma (SCC) is an uncontrolled growth of abnormal cells arising from the squamous cells in the epidermis. An estimated 1.8 million cases of SCC are diagnosed each year in the U.S. Cumulative, long-term exposure to UV radiation from the sun and indoor tanning causes most SCCs. They are common on sun-exposed areas such as the ears, face, scalp, neck and hands, where the skin often reveals signs of sun damage, such as brown spots. SCCs can grow rapidly and even metastasize if not detected and treated early. The number of deaths from SCC of the skin each year in the U.S. is unknown but may be as high as several thousand.

Squamous Cell Carcinomas



A wart-like growth that crusts and occasionally bleeds.

A persistent scaly patch that sometimes crusts or bleeds.

An elevated growth with a central depression that occasionally bleeds. It may rapidly increase in size.

Actinic Keratosis

The most common type of precancerous skin lesion, actinic keratoses (AKs), typically appear on skin that has been frequently exposed to the sun or to artificial UV light from tanning beds. AKs often occur on the face, lips, ears, scalp, back of the hands and forearms. They typically feel rough to the touch and look like pink, white or tan scaly or crusty patches, red bumps, protruding sores or cracks with dried blood. Left untreated, 10 percent or more may turn into squamous cell carcinomas, so treatment by a dermatologist is recommended.

SKIN CROSS-SECTION: ISTOCK; CLIPBOARD ILLUSTRATION: FEDERICA DEL PROPOSTO; MERKEL CELL DIAGRAM: COPYRIGHT PAUL INGHIERI, MD, & QUADRE MEDICAL GROUP

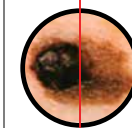
Prevention and Early Detection Reminders!

While precancers and skin cancers are usually curable when detected and treated early, the safest line of defense is to prevent them in the first place. See "Your Daily Sun Protection Guide" on page 54 for tips on how to protect your skin every day, all year long. Also, don't forget to look for anything new, changing or unusual on your skin — and see your dermatologist regularly!

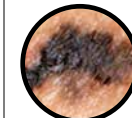
Melanoma

Melanoma is a cancer that develops from melanocytes, the skin cells that produce melanin pigment, which gives skin its color. The **most dangerous** of the three most common forms of skin cancer, melanoma is often triggered by the kind of intense, intermittent sun exposure that leads to sunburn. Tanning bed use also increases risk for melanoma. Melanomas often resemble moles and sometimes may arise from them. The disease has a very high chance of being cured if found and removed early. Nearly 187,000 cases of melanoma are estimated to be diagnosed in the U.S. in 2023, about 98,000 of them invasive. When melanoma progresses, it can spread to vital organs, and it causes about 8,000 deaths each year.

The ABCDEs of Melanoma



A is for Asymmetry
Most melanomas are asymmetrical: a line through the middle would not create matching halves. Common moles are usually round and symmetrical.



B is for Border
Melanoma borders tend to be uneven and may have scalloped or notched edges. Common moles tend to have smoother, more even borders.



C is for Color
Multiple colors are a warning sign. While benign moles are usually a single shade of brown, a melanoma may have different shades of brown, tan or black. As it grows, the colors red, white or blue may also appear.



D is for Diameter or Dark
It is a warning sign if a lesion is the size of a pencil eraser (about 6 mm, or ¼ inch, in diameter) or larger. It is also important to look for any lesion, no matter what size, that is darker than others.



E is for Evolving
Any change in size, shape, color or elevation of a spot on your skin, or any new symptom in it, such as bleeding, itching or crusting, is a warning sign to see your doctor.

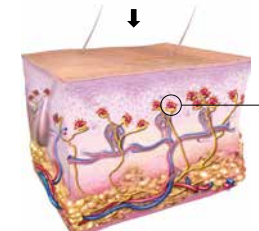
SIX MONTHS EARLIER



NOW

Merkel Cell Carcinoma

Merkel cell carcinoma (MCC) is a **rare, aggressive skin cancer** that is at high risk of recurring and spreading (metastasizing), often within two to three years after initial diagnosis. There are about 3,000 new cases of MCC in the U.S. each year, and about one-third of these patients will eventually die of MCC. Approximately 80 percent of MCCs are associated with a virus called the Merkel cell polyomavirus, while 20 percent are caused by UV radiation. These tumors often appear on sun-exposed areas of the body. They are not nearly as distinctive as other skin cancers and can appear as a pearly, pimple-like lump, sometimes skin-colored, red, purple or bluish-red, though they are rarely tender to the touch. They can advance rapidly, which is often what causes patients and doctors to take notice. Because MCC can be dangerous, it is important to take a diagnosis seriously and act quickly to find multidisciplinary care to form a treatment plan.



Merkel Cell Carcinomas



A recurrence of Merkel cell carcinoma on the forehead.



Merkel cell carcinoma on the lower leg.

More Resources

- Visit [SkinCancer.org](https://www.SkinCancer.org) for comprehensive information on all aspects of skin cancer prevention, detection and treatment.
- Read our [Sun & Skin News blog](https://www.SkinCancer.org/blog) at [SkinCancer.org/blog](https://www.SkinCancer.org/blog).
- Order our [Skin Cancer 101 poster](https://www.SkinCancer.org) and other materials at [store.SkinCancer.org](https://www.SkinCancer.org).

Atypical Moles

(also known as DYSPLASTIC NEVI)

Atypical moles are pigmented lesions that appear different from common moles and often resemble melanomas. Though the vast majority will never become malignant, they are more likely than ordinary moles to develop into melanomas. For this reason, a dermatologist should check them regularly, especially if they grow larger, change in color or shape, or take on any new traits such as itching, flaking or oozing. People with atypical moles have an increased risk of developing melanoma, whether in the mole itself or elsewhere on the body. Those with 10 or more have 12 times the risk of developing melanoma compared with the general population.



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ASK THE

Experts

Adele D. Haimovic, MD, screens a patient inside the SCF's Destination Healthy Skin RV during its 2022 stop in New York City.



Q & A

THEY HAVE THE ANSWERS!

If you're worried about the rough-feeling spots on your skin that might be precancerous, about getting your skin screened or whether you're getting enough vitamin D, read these physicians' advice.

I

How can you get a skin cancer screening if your insurance doesn't cover it?

Q: I'm worried about a spot on my skin, but my insurance won't pay for an annual screening, and I can't afford to pay for it myself. Is there a way to get my skin checked without breaking the bank?



Boris D. Lushniak, MD

YOU'VE RUN into a regrettable gap in American medical care — one that the White House Cancer Moonshot has pledged to

fill. To realize its ambitious goal of reducing cancer deaths in the U.S. by 50 percent over the next 25 years, the Cancer Moonshot has identified expanding access to cancer screening (the key to early detection) as one of the most important steps in that process.

In the case of skin cancer, several factors play into the screening gap you've encountered. One is the scarcity of dermatologists with expertise in detecting cancerous or precancerous skin lesions relative to the number of patients in need of such evaluations. It's a supply-and-demand situation. Then, of course, there's the obvious issue of compensation. Who's going to pay for these exams? Insurers, like everyone else in the medical field, are more and more focused on the return on the finite resources they have, and they're reluctant to pay for services they may believe are not just costly but maybe unnecessary.



↑ Sometimes Screenings Come to You

Anyone who has visited the lakes of northern Minnesota knows how easy it is to get sunburned. Participants lined up for free screenings when the Destination Healthy Skin RV was at the State Fair in August 2022.

This belief, by the way, is not simply a rationalization for denying care; with skin cancer, overtreatment can be a legitimate concern. The literature is mixed on whether early detection is unequivocally beneficial for all skin cancers. In the process of diagnosing skin cancer, there is a point when the physician asks, "Will this carcinoma evolve and result in excess morbidity or even mortality?" If not, do early detection and treatment make sense?

This question arises not just in dermatology but with other types of cancer screenings, too, and often leads to controversy. Not everyone responds as I do, which is to say, "If I have any kind of skin cancer on me, I prefer that it be diagnosed early so that I can decide, with my physician, what I'm going to do about it." [Editor's note: *The Skin Cancer Foundation has long maintained that regular skin cancer screenings save lives.*] To throw one more element into the mix, there's the undeniable

truth that, even though our skin is our largest organ, it has been regarded historically as less important than other organs. Our skin is not usually considered a realm where mortality happens, even though clearly people *do* die of skin cancer. But the traditional response to skin problems was, "Stop complaining and put a cream on it." That's an antiquated way of viewing such an important organ, but those attitudes linger, even today. I see our path forward as one of continuous advocacy — of convincing insurers, health-care providers and the public that the skin and its diseases should be taken just as seriously as those of any other organ. I think we are making progress in reaching that goal.

None of the above solves your dilemma, but I hope it puts it in perspective. Fortunately, there are a couple of strategies that you can pursue. If you don't have a dermatologist you see regularly, you could start with your primary

care physician, especially if you have any spots or lesions on your skin that you are worried about. Trust your instincts; one of the biggest mistakes patients make is keeping silent and waiting for a professional to discover something problematic rather than

mon yet fully treatable if detected early — and early detection brings significant cost savings.

The second strategy is one that is becoming more common as public education about skin cancer prevention has increased. During Skin Cancer Awareness Month in May, free skin cancer screenings, whether sponsored by associations of local dermatologists who donate their time, by nonprofit organizations such as The Skin Cancer Foundation, by state agencies or even by federal programs, are available at malls and schools, near beaches, sometimes via mobile medical units that travel through residential neighborhoods. Some of these programs became limited or on hold during the pandemic but are coming back.

These free screenings do not offer a full spectrum of care; they will not biopsy a lesion or provide treatment. But they make it possible for you to get a free, in-depth examination of your skin from a medical professional who will evaluate whether you need additional intervention. Essentially, the evaluation will fall into one of

“Trust your instincts and get screened. Skin cancer is increasingly common yet fully treatable if detected early — and **EARLY DETECTION** brings significant cost savings.”

bringing it up themselves. If your physician decides that you need further evaluation by a specialist, your insurance is more likely to cover that referral. (However, that may be dependent on the specifics of the insurance carrier.) Skin cancer is increasingly com-

three categories: The health-care provider will see a spot and say, "I'm really worried about that; I'll refer you to a specialist for a biopsy." Or they might say, "I see a spot I'm not worried about right now, but I want to keep an eye on it, so get screened again next

year." Or they'll say, "Your skin looks fine; I don't see anything that concerns me." The idea is to get your skin looked at by an expert and, depending on the diagnosis, put you on the pathway to further, fully insured care.

Boris D. Lushniak, MD, is dean of the School of Public Health at the University of Maryland in College Park. From 2010 to 2015, Dr. Lushniak was the U.S. deputy surgeon general and served as the acting surgeon general from July 2013 to December 2014. In the latter capacity, he was responsible for releasing the U.S. government's first ever Call to Action to Prevent Skin Cancer, in 2014.

2

Why do actinic keratoses persist?

Q: Over the years, my dermatologist has treated several precancerous spots on my face and scalp, and yet they keep coming back. Is there anything I can do to stop them?



Jennifer M. Ridge, MD

THEY'RE called actinic keratoses, or AKs, and I sympathize with your frustration. It can be both worrisome and annoying to

treat what is seemingly the same spot again and again. But such recurrences are inherent in the nature of AKs.

These precancerous lesions result from sun damage that has occurred many years before the AK appears. The original sun exposure damages the DNA, and that starts a cascade of

changes in the skin cells that may take 20 or more years to show up on the skin's surface. I always remind my patients that their sun damage didn't happen overnight; it was cumulative. So the precancerous cells I may be clearing out today are simply the ones that have reached the point where they're visible and amenable to therapy. Many others are at different stages of the cycle and haven't yet progressed to the skin's surface. In short, what you call persistence are waves of appearances of AKs resulting from the waves of sun exposure that created them.

That said, this persistence can take two forms. Sometimes, it is a specific AK that keeps reappearing, and that is a situation that demands an aggressive approach. In treating these, I usually work through a kind of hierarchy of treatments (which may include cryotherapy, topical therapies, laser or other options) until I am satisfied that the lesion has been taken care of.

More commonly, a patient has an area or "field" of skin on which different lesions recur. Typically, these fields are on parts of the body where the sun shines down and has a horizontal surface to land on. These include the top of the scalp (particularly in places with no hair to shield the sun; see "The Bald Truth," page 22), ears and nose, forearms, the back of the hands and, on former sunbathers, places like the shins or calves. I see some patients who have a lot of field effect as frequently as every two or three months. Again, it's the long-ago sun damage that keeps producing these new waves of lesions, combined with the fact that as you age, your immune system grows weaker and less efficient. Thus, these lesions crop up ever more quickly. This is especially true for



↑
Precancer Clusters

Actinic keratoses (AKs) may arise on sun-exposed areas, such as face, ears, arms and back of the hands, at different stages of their growth cycles; thus the need for multiple treatments or field therapy.

patients who are on medications that suppress immunity.

Of course, many of the keratoses that people with sun damage get as they age and as their immune systems slow down are not precancerous AKs and can be left alone. But the average person can't distinguish among the various spots, so I always urge my patients never to skip their annual skin cancer check, and if a new spot appears, to come in right away. With your dermatologist, you can decide on a course of treatment — there are many that are highly effective — that best suits your case.

Unfortunately, you can't travel back in time and undo the sun damage you got when you were younger. There are, however, some preventive measures you can take now to minimize further damage. The most fundamental of these, of course, is to protect your skin from the sun every day. Eating the recommended five servings a day of fresh fruits and vegetables that are rich in vitamins A, E and beta carotene will provide the antioxidants that aid in photoprotection.

Additionally, supplements may be helpful. I recommend to patients that two to three 500 mg doses a day of the vitamin B3 supplement nicotinamide protects against some of the damage caused by UV radiation and reduces the rate of new precancerous AKs in patients who have previously had them (as well as the rates of other nonmelanoma skin cancers).

Another supplement to consider is a compound called Polypodium leucotomos. The active ingredient (from the leaves of a tropical fern) seems to inhibit damage from current sun exposure, so it could go a long way in protecting you from AKs, not to mention other negative

UV effects, down the road. [See "Time to Skinnovate," page 34, for more on this.] It's always a good idea to talk to your doctor before starting any supplement.

—Interview by Lorraine Glennon

Jennifer M. Ridge, MD, a board-certified dermatologist in Middletown, Ohio, has been practicing dermatology for 30 years with a subspecialty in Mohs surgery.

3

Should You Take a Vitamin D Supplement?

Q: I'm one of those daily, cloudy-or-sunny users of sunscreen, and I add sunglasses, a hat and other sun-protective clothing when I'm outdoors. Given my lack of sun exposure, should I worry that I don't get enough vitamin D?



Steven Q. Wang, MD

CONGRATULATIONS on being so vigilant about sun protection, which remains the single best method for reducing the

risk of skin cancers. You're right that one effect of your vigilance is that you won't produce much vitamin D from the sun; indeed, extensive laboratory studies confirm that using sunscreen as *thoroughly and consistently* as directed can shut down the sun's production of the vitamin. However, most people don't do that. Epidemiological data show, counterintuitively, that sunscreen users have higher vitamin D levels than nonusers. Why? The

most likely reason is that even regular sunscreen users often fail to apply, and then reapply, enough sunscreen to most effectively shield them from the sun's UV rays. Consequently, believing they're protected, they may stay out in the sun longer than those who don't use sunscreen.

You're also right to be confused: The thinking about vitamin D levels and the advisability of taking supplements to raise those levels is constantly evolving. For many years, vitamin D's benefits were thought to include improving cardiac health and combating serious diseases such as multiple sclerosis, in addition to promoting bone health by aiding in the body's absorption of calcium. With that in mind, physicians routinely recommended supplements of 2,000 international units (IU) or more a day for their patients. Meanwhile, the optimal level of vitamin D in the blood was raised from 20 nanograms per milliliter (ng/mL) to 30 or above — immediately categorizing millions of Americans as deficient in vitamin D.

When a landmark 2011 study from the Institute of Medicine

found that vitamin D did *not* provide those cardiac and serious disease benefits, the study's authors recommended a more moderate (600 to 800 IU) daily dose of the vitamin, to protect against osteoporosis and bone fractures. But they also called for a larger, randomized, long-term study of vitamin D's ability to prevent disease and to improve bone health.

We now have the results of that subsequent study, called VITAL — a five-and-a-half-year federally funded clinical trial involving nearly 26,000 subjects, half of them men over the age of 50 and half women over the age of 55 — and they are eye-opening. The study concluded that not only do high-dose (2000 IU) vitamin D supplements have no significant effect on common diseases, but, more shockingly, they also do not prevent bone fractures in this age group. Publishing in the *New England Journal of Medicine*, the study authors went even further, advocating in an editorial addendum that medical providers stop routine screening of vitamin D levels (American labs currently run about 10 million such tests

↑ Sunny D-Day?

Most people get enough vitamin D from incidental sun exposure or forgetting to re-apply sunscreen. For people who are most diligent about sun protection, a D supplement can help fill the gap.

a year) and that Americans stop taking vitamin D supplements to prevent disease.

To return to your main question, these data strongly suggest that the logic of directly exposing one's skin to the sun to get vitamin D is flawed. Since vitamin D levels appear to have no appreciable effects on health, why take this risk? In my practice, I treat people with melanoma, which, like squamous and basal cell carcinomas, can result from cumulative sun damage. My cancer patients tend to be people with lighter skin, but even darker-skinned individuals with a low risk of sun-induced skin cancers can suffer negative effects from the sun, such as premature aging and hyperpigmentation. In short, the dangers of sun exposure far outweigh the benefits.

So, my bottom-line advice is to continue to seek maximum protection from the sun, full stop. As for your intake of vitamin D, the most sensible course for now is to stick with the Institute of Medicine's current recommendation of around 600 to 800 IU a day. For people whose diet is lacking in vitamin D-rich foods — fish, egg yolks, fortified juices and milk — a supplement may close the gap. But those who are currently taking a daily supplement in the still-common 2,000 IU or higher range may want to pare back their dosage to the recommended amount. ■

—Interview by Lorraine Glennon

Steven Q. Wang, MD, a board-certified dermatologist and fellowship-trained Mohs surgeon, is the medical director of dermatologic oncology and dermatologic surgery at the Hoag Family Cancer Institute in Irvine, California. One of the country's leading authorities on skin cancer detection, treatment and prevention, Dr. Wang is chair of The Skin Cancer Foundation Photobiology Committee.



EVGENI DINEV PHOTOGRAPHY / GETTY IMAGES

LANDS' END



This sun protection won't wash off.

UPF 50 swim tee – the highest value for fabric – blocks 98% of UV rays.



The Skin Cancer Foundation recommends this fabric as an effective UV protectant for covered areas.



Awareness

PROTECT YOUR PETS

While fur shields skin from the sun to an extent, dogs and cats can get sunburned, and they can develop skin cancer, too. As with humans, early detection is key.

By Julie Bain

DAN LATORE, executive director of The Skin Cancer Foundation, learned about pets and skin cancer the hard way when his 10-year-old white lab, Tundra, was diagnosed. Dan and his wife, Noël, and their two sons live on the Jersey shore, where Tundra has frolicked through the kind of idyllic outdoor life most dogs only dream of. “The first year of her life was right across the street from the bay and the beach,” Dan says. “We trained her to be off-leash, and she would swim, dig in the sand, run around with other dogs and play with our boys, who were about 8 and 10 when we got her. They all grew up together.”

JANEEN BELLAFIORE

↑ Our Canine Supermodel

Barkley, 16, above, likes to wear his doggy sun goggles, says his “mom,” New York art director Janeen Bellafiore, who shot the photo.

Tundra loved walks in the woods, too, retrieving sticks along the way, where trees provided some shade. But she also attended sunny sporting events, like the boys’ football and baseball games. She would sometimes roll over to “sunbathe” and let the pink skin of her belly feel the sun’s warmth. If she got too hot, she’d try to find a shady spot.

Pets at Risk

“**YES, DOGS WILL** seek the shade because they’re hot in their fur coats. So sometimes they’re smarter than we are,” laughs Dina Rovere, VMD, who (with her hus-

band, Marko Sima, VMD), takes care of Tundra and other animals at Happy Tails Veterinary Hospital in Shrewsbury, New Jersey. Fur is great, she explains, because it reflects the sun, but it is not perfect, and white fur like Tundra's is the *least* protective. Many dogs have fur-less areas on their bellies, so they can develop skin cancers there. And when the weather is cool or even snowy, they love to roll over and feel the warmth of the sun, while accumulating more skin damage from the year-round ultraviolet (UV) radiation.

Cats get skin cancer, too, and the tip of any pet's nose, she says, is a prime spot for sun damage — especially if they have *pink* noses. (Black noses have more melanin pigment, which helps protect the skin a bit.) Ears, particularly if they're light-colored and stick up, are also very vulnerable, says New York City veterinarian Jill Abraham, VMD, who is board certified in veterinary dermatology. "We see squamous cell carcinomas (SCCs) on the ear tips of cats, on their noses and even on eyelids."

As for dogs, Dr. Abraham says pit bulls, labs like

“
Dan knew that anything **NEW, CHANGING OR UNUSUAL** on your skin can be a warning sign of skin cancer in people. Could it be the same for dogs? Yes, it could, say veterinarians.
”

A Dog's Life

Dan says Tundra still loves walks in the woods (and looks pretty in the sun for a photo), but nearby trees provide plenty of shade.



Tundra and other breeds with light-colored fur, short coats and less hair on the belly are vulnerable to sunburn and skin cancer — “especially the ones that like to lie on their backs and sunbathe,” she says. Animals who have a condition that causes hair loss, such as certain skin diseases or allergies, or if they've been clipped short or shaved for surgery, are also at risk.

Warning Signs

DAN SAYS TUNDRA had some lumps of fat (called lipomas) under her skin that had previously been diagnosed as benign. But one day while petting her, he saw something new that looked like a shiny bump on her skin when he parted her fur. Soon he noticed a few more: on her head, shoulder and back of the neck. One seemed to be growing, and they were unusual and felt harder than the squishy, benign lumps under her skin.

He knew, from The Skin Cancer Foundation's Big See early detection campaign, that “new, changing or unusual” are warning signs of skin cancer in people. Could it be the same for dogs?

Yes, says Dr. Rovere. She explains that many people feel something on the skin while petting their dog or cat that they haven't felt before. So they come in to have it checked out. If it doesn't look serious, she might say, “Let's wait and watch it.” If it's more suspicious, she might collect a few cells with a fine needle aspiration to do a biopsy, or, if it's growing, remove the entire lesion and send it to a pathologist to check for cancer.

Dr. Abraham agrees: “Keep an eye on your pets' skin and watch for anything new, like a red spot or open sore that isn't healing within a week or two, or that is changing or growing quickly, especially in an area of less hair.” Dogs and cats can get melanoma of the eye, too, so watch for a dark or “freckle-like” spot in the eye. See your veterinarian right away, as early detection of any type of skin cancer is the key to the least amount of treatment with the highest chance of a cure.

Tundra turned out to have several mast cell carcinomas, common in dogs, and Dr. Rovere performed Tun-

←
Recuperating

Tundra resting after her surgeries for mast cell carcinoma. You can see the neat stitches and shaved areas on her scalp, back of the neck and paw. She healed well and is doing fine now!



PAUL MELIA

dra's surgeries. No further treatment was required, although after a life of unfettered freedom, Tundra was deeply offended by her cone and refused to wear it. She chewed out a few stitches on a rear paw, which Dr. Rovere had to resuture. “The stitches start to get really itchy after day three,” she explains. But once the scars healed, Tundra was fine.

“If the healing wound is on their pet's foot, I tell people to get a tube sock and put some duct tape on it. That often works.” Putting a T-shirt or, for smaller dogs, a baby onesie on them over a wound can help keep them from bothering it.

Good Outcomes

DR. ROVERE HAS found potentially life-threatening melanomas on dogs, and even recently discovered an amelanotic (colorless) melanoma inside a Yorkie's cheek. She did additional surgery to assure clean margins, and the dog is now fine. “It makes me really happy that I saved that dog's life,” she says. “We likely saved Tundra's life, too. If we hadn't taken those lesions off, they would have grown and gotten worse and probably would have killed her.”

Dan says that Tundra developed a limp from arthritis and is slowing down a bit, since she is in her mid to late 70s in dog years. “But it doesn't stop her from jumping up on beds or couches — or running into the kitchen when it's dinnertime,” he says. “If there's food involved, she's there! She can't do the long hikes she once loved, but she still likes to go outside.”

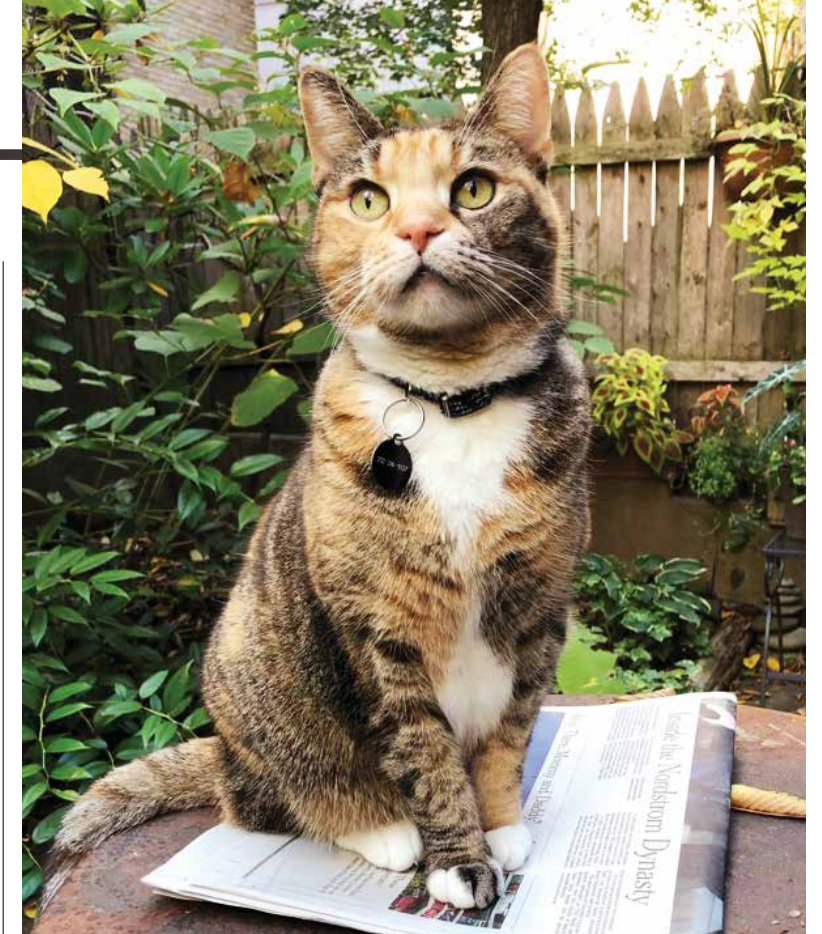
Dan's boys are in college now, but Tundra is delighted to see them when they come home to visit. “We love that she has the energy to bring a stuffed animal into the room and basically say, ‘Come on — who wants to chase me?’ She still has a bit of puppy inside her.” ■

Julie Bain, the SCF's senior director of science & education, considers herself both a dog person and a cat person.

Getting Treatment

Treatment options for dog and cat skin cancer are similar to those for people, says Dr. Abraham. Usually surgery is required, although sometimes laser surgery is an option. Radiation may be a possibility for some skin cancers. And cryotherapy, laser surgery or topical treatments are options for precancerous spots (yes, pets get those, too). And with advances in immunotherapy medications, there are veterinary oncologists saving the lives of beloved pets with advanced skin cancers, too. See our (human) Treatment Glossary on SkinCancer.org for the basics on these.

BARBARA PECK



I LOST MY CAT TO SKIN CANCER

By Barbara Peck

↑
Regal Polly

Polly loved her safe, fenced-in backyard in New York City, where she could smell the flowers, watch the birds and sit on the news, says Barbara, below.



GRIEF IS HARD. You want it to stop, but you don't know how to get closure. Almost two months after losing my beloved cat, Polly, to skin cancer, tears well up with the slightest memory. I still see her out of the corner of my eye. And I wonder if I delayed her surgery too long.

Polly was a lucky cat to land with me back in November 2018. A friend was driving a country road in the Catskills of New York when he spotted a small tortoiseshell cat among the trees. Kindhearted George pulled over, opened the car door and she jumped right in! Clearly, she'd been someone's pet, but now she was lost and needing a home.

Since there was no cat rescue group in the area, George posted on Facebook about the cat, asking if anyone recognized her — or wanted her. No one claimed her. George and his wife had two kittens and felt they didn't need another. I saw his photos and thought, “That could be my new cat!” I'd been catless for about a year, and something about this little creature spoke to me. George jumped at my offer and

even offered to drive her to my place in New York City. We bonded immediately. My vet estimated her age at 3 to 4 years and confirmed she was healthy. Lucky she was, having landed with a lifelong cat lover who even has a small, fenced backyard — in Manhattan! I didn't let her outside till spring and kept my eye on her, but once given the privilege, she never once jumped the fence. "She's a smart one," I'd say. "She knows when she's well off."

Polly loved being a city kitty with a little bit of garden. But then, in late June 2022, I noticed a swelling on her neck. Polly's vet performed a fine needle aspiration and reported "a lot of atypical cells." He suspected a squamous cell carcinoma (SCC), one of the most common malignant skin tumors to affect cats. Could sun exposure have caused the SCC? I'll never know what her Catskills life had been, but my backyard is surrounded by high-rises, so she got precious little sun there.

Surgical excision would be the most beneficial treatment, the vet told me, but first, they'd have to determine how far the tumor had spread and whether it was removable. Palliative options included a steroid shot or intralesional injection to reduce the mass, or pricey chemo or radiation therapy. He didn't say treatment was urgent. We'd planned a family trip later in the month, so we went ahead with that (leaving my son Oliver home to care for Polly).

In August, she went back to the vet. An X-ray showed the mass hadn't spread, but the ultrasound indicated a carotid artery was involved — one of two major blood vessels that send blood to the head. This wasn't a dealbreaker; if we proceeded with surgery, Polly could survive with only one carotid artery. The

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On the morning of her scheduled surgery, THE VET CALLED WITH BAD NEWS. Polly's tumor had metastasized.

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veterinary hospital sent an estimate, and I consulted with my sons, who both felt that operating was the right decision. But I thought I would put it off just a bit, as the vet had said that if she was eating and drinking well and not in apparent pain, delaying treatment was OK. It's easy to be in denial about an illness when the patient seems fine.

But the course of cancer can change quickly. One morning, we noticed the swelling on her neck had

Pet Prevention

Shade. The best protection for pets, veterinarians say, is to provide shade for them all year long, and get them out of the sun. Also, because animals don't sweat the way people do, it's harder for them to cool themselves. Don't forget lots of water for outdoor pets. "And never leave a pet in a car unattended," Dr. Abraham says.

Clothing. For pets who have to be out in the sun, consider clothing. "More companies are making rash guards and sun protection clothing for dogs," Dr. Abraham says. "There might be some that cats could fit into, if you can get them to tolerate it! Even UV-protective T-shirts that are made for people could be an option for some dogs. And I know of at least one company that makes sun-protective eyewear for dogs."

Window treatment. Remember that windows allow dangerous UV rays to penetrate, too, both at home and in your car, so you might consider getting sun protection film or shades for the windows.

Sunscreen. Dr. Rovere advises sunscreen for pets who are going to be outside a lot: "Say they're going on a long hike on the beach and it's high noon, absolutely. I tell people to put sunscreen on the nose and sun-exposed parts of the ears. Do what you can to protect them." Dr. Abraham says, "It's best to distract the animal while the product dries completely so it's less likely that they're going to ingest any of it." She recommends a sunscreen that is made for dogs and cats. Pets don't know not to eat the sunscreen!

ruptured and fluid was seeping out. Polly wasn't eating. My veterinarian's office was closed, so I cabled to an emergency pet clinic in Midtown. There, a vet cleaned up what was probably an infection and administered antibiotics and pain meds. I knew it was time to invest in surgery for my sweet girl.

On the morning of the surgery, the vet called with bad news. The tumor had metastasized and entered her throat. This development indicated that surgery would not be successful. The vet suggested it was time to say goodbye, and I knew I had to accept the inevitable. With sorrow in my heart, I held her, petted her and told her how much I loved her. I was surprised by how loudly she purred before I let the compassionate staff take over.

There's nothing good about losing a beloved pet. Friends advise adopting another cat right away; others suggest taking time to grieve. I'm in the middle as I write this. Of course, I still miss her. I've learned from this experience that even young cats can get seriously ill — just like people. If telling Polly's story encourages anyone to consult a vet when they sense something's "off" in their pet's habits or behavior — or to be more vigilant about checking their own skin — that would give me solace. ■

Barbara Peck is an editor and writer living in New York City. At press time, she is enjoying two new cats she adopted but still misses Polly dearly.

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THE BALD TRUTH

Men, you likely know the stats: About 85 percent of you will have significantly thinning hair by the age of 50, according to the American Hair Loss Association — and two-thirds of you by the time you're just 35. Women aren't exempt, either, representing 40 percent of those who suffer hair loss. The earlier you start protecting that vulnerable scalp from the sun, the better. Here's why.

By Joanna Dong, MD, and
C. William Hanke, MD, MPH

A **BALD SCALP** often reveals its history of years of sun exposure. With minimal or no hair to shield it from damaging ultraviolet (UV) rays, the skin on the scalp can develop redness, flaky patches and a rough texture (some say like sandpaper). These may signal precancerous spots or areas called actinic keratoses (or AKs). Some AKs can be so extensive, the precancerous condition affects nearly the entire surface area of the exposed scalp. About 5 to 10 percent of AKs turn into skin cancers, and some of those become large and aggressive.

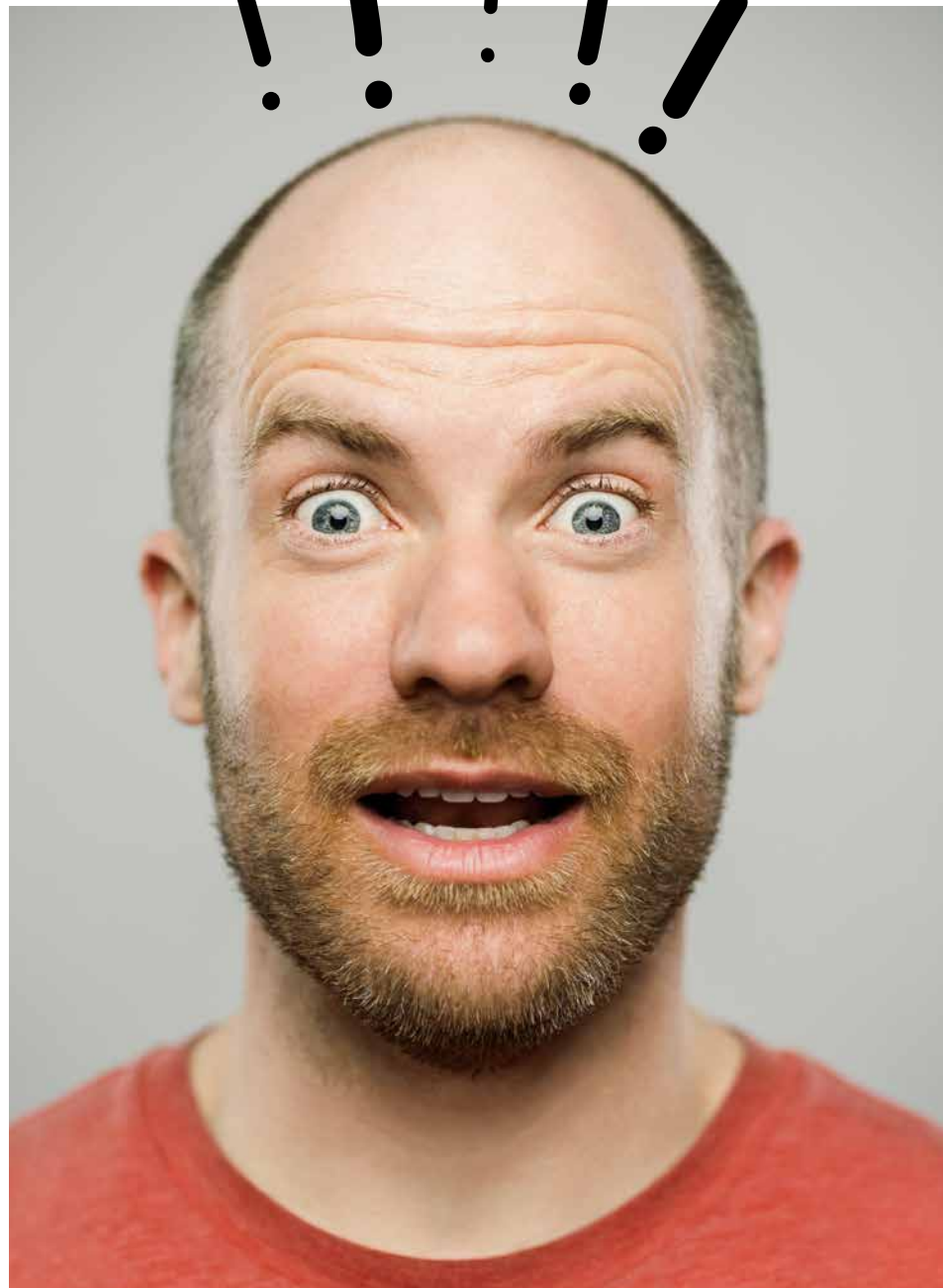
Q: How can I tell if I have precancerous spots on my scalp?

A: You may develop a change in the skin's texture, which can range from a dry feeling to numerous rough growths. You may have a tendency to pick at these rough growths, which are often elevated off the skin and may itch, cause pain or bleed easily. These are likely precancers. If not treated, AKs can become squamous cell carcinoma (SCC), the most common skin cancer to appear on the scalp. Sometimes these

cancers grow outward from the scalp like a tiny horn. (Basal cell carcinoma, or BCC, and melanoma can also develop on the scalp.) If you suspect you have precancers or skin cancer on your scalp, or notice anything new, changing or unusual, you should visit your dermatologist for a skin check.

Q: Is sunscreen on the scalp enough to prevent skin cancer?

A: Skin cancer of the scalp is more common in men than women, due to hereditary baldness in men.



SENSORSPOT / E+ / GETTY IMAGES

C. WILLIAM HANKE, MD

While sunscreen with SPF (sun protection factor) 30 provides 97 percent protection against UV rays from the sun, you need to apply a generous amount for full coverage of the scalp, and most people apply less than the required amount. For sunscreen to remain most effective, you also need to reapply it every two hours, which is not that realistic in real life. Sunscreen with SPF 50 (which filters 98 percent of UV radiation) could provide more adequate protection, but you'd still need to reapply. Therefore, hats are often the best way to protect against sun damage on the scalp. As long as you wear it, the protection is constant.

Q: I wear my favorite baseball cap when I go out in the sun. That'll protect against sun damage, right?

A: In short, no. We understand that you may prefer the style (and your team!), but baseball caps don't provide sufficient protection against sun damage. They only cover about a quarter of your head, leaving areas like the ears, back of the neck and the chest exposed. Further, if the hat has mesh fabric, it offers minimal protection for the scalp. The ideal hat for sun protection has a wide brim with a tightly woven fabric that prevents light rays from getting through. Clothing and hats often have a UPF (ultraviolet protection factor) rating, indicating the amount of sun protection the hat provides. Look for hats labeled UPF 50+, which provides similar protection levels to SPF 50 in sunscreen.

Q: I have been diagnosed with precancers and skin cancers on the scalp. Is the damage already done? Is there anything I can do now?

A: Half of patients with a first-time diagnosis of BCC (the most common overall type of skin cancer) will develop a second one within the next five years. This type of skin damage occurs after decades of sun exposure. However, you can decrease your risk of a future skin cancer even when you already have precancers or skin cancers. Treatments include photodynamic therapy ("blue" or "red" light therapy), topical chemotherapy treatments, oral nicotinamide (vitamin B3) supplementation and oral retinoids. The earlier you start and the longer you maintain these treatments, the more benefit you will receive. The texture of your skin will improve as

the AKs resolve. However, these treatments are not effective in treating existing skin cancers. Invasive skin cancer requires more extensive treatment such as curettage (a "scrape and burn"), surgical excision or, in certain cases, Mohs surgery. In some advanced cases of skin cancer, chemotherapy, immunotherapy or radiation therapy may be necessary.

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Baseball caps don't provide sufficient **PROTECTION** against sun damage. They only cover about a quarter of your head, leaving your ears, neck and chest exposed.
”

Vulnerable on Top

This 71-year-old man, one of Dr. Hanke's patients, has multiple actinic keratoses (AKs) on his scalp. "Thick AKs can often progress to invasive squamous cell carcinoma," Dr. Hanke says. "We recommend prompt treatment to prevent it from progressing."



Joanna Dong, MD, is a dermatologist who is completing a fellowship in Mohs surgery under the mentorship of C. William Hanke, MD, at the Laser and Skin Surgery Center of Indiana and Ascension St. Vincent Hospital, Indianapolis.

C. William Hanke, MD, MPH, is a Mohs surgeon at the Laser and Skin Surgery Center of Indiana. A senior vice president of The Skin Cancer Foundation and a member of its Amonette Circle, he has also served as president of 13 professional societies.

Patient Care

WHAT EVERYONE SHOULD KNOW ABOUT ADVANCED SKIN CANCERS

Our expert oncologist shares her top 10 insights from 25 years of experience treating patients with advanced skin cancers.

Interview by Julie Bain



THANKS TO THE success of prevention and early detection campaigns (like The Skin Cancer Foundation’s Big See program), most skin cancers today are diagnosed and treated in the early stage. Still, any type of skin cancer, whether common or rare, can grow, spread and become dangerous or even life-threatening.

About 8,000 people will die from advanced melanoma in 2023, and about 1,000 will die of Merkel cell carcinoma (MCC). The far more common types of skin cancer (basal cell carcinoma, or BCC, and squamous cell carcinoma, or SCC) have lower mortality rates, but because of their high prevalence, several thousand may die from them. New York City medical oncologist Anna C. Pavlick, DO, has been overseeing the care of patients with advanced skin cancer for more than 25 years. She cares deeply about patient education and encourages everyone to take a skin cancer diagnosis seriously. Here, in her own words, she shares what she wants everyone to know.

1. If you are diagnosed with advanced skin cancer, this is the best time in history for that to happen to you.

WHEN I STARTED in this field, we had almost no treatment for any type of advanced skin cancer. It

was dismal. We gave patients chemotherapy, which was not that helpful — and many died. But now, for the past 12 or 13 years, we have had an explosion of scientific breakthroughs and FDA approvals of systemic medicines. Targeted therapies and immunotherapies have changed the outcome for patients dramatically. These medications not only have slowed advanced disease but, in some cases, have cured it. This recent period of new treatments has been life changing. No physician likes to tell a patient they have advanced cancer, but it is comforting to know that yes, now we do have therapies and yes, they are highly effective.

2. It is crucial to take any suspicion or diagnosis of advanced cancer seriously and ask this important question.

IF I HAD a dime for every person who I’ve heard say, “But it was just a skin cancer,” I could retire in style! If you are diagnosed with any form of skin cancer that becomes advanced, whether it’s a BCC, SCC, melanoma or Merkel cell carcinoma, you should always ask your dermatologist, “Do you think I need to see a medical oncologist?” If it’s melanoma, for example, you probably don’t need to see an oncologist if you are diagnosed as stage I. But if you’ve got a stage II or greater tumor, you should at least have a conversation with your dermatologist about consulting with a medical oncologist to discuss the risks and potential benefits of systemic treatment.

3. The oncologist is the driver of a multidisciplinary team.

WITH ADVANCED CANCERS, I tell people that I’m driving the car. Let’s say I have a very big SUV with

↑
Infusion of Healing
—
Immunotherapy treatments for advanced skin cancer may be infused intravenously in a doctor’s office or infusion clinic. Other treatments may be taken orally or by injection.

lots of seats for dermatologists, surgical oncologists, radiation oncologists, pathologists — they all get to ride in the car, but I’m doing the driving. Patients need to know, “Who’s my go-to? If something happens, who do I call?” Patients can always start with the medical oncologist.

If it is not something that I can help you with, I’ll be able to direct you. Or I can ask you to come into the office where I can assess it, and then let’s go from there depending on what we find. You may need to go to a surgeon, you might need to get some new imaging, we may need to do a biopsy. Patients need one good contact person, and if we communicate and collaborate well, things will go smoothly and the patient will know where to go when, and what the next steps are.

4. If you want to get a second opinion, you should.

IF PATIENTS ASK about a second opinion, I tell them they should do what they’re comfortable with. Some people feel like they’ve already done their homework and just want to come in and get started. Others may feel like they need more information and options. If you or your family members want to get a second opinion, oncologists understand and are fine with that — and will even help you get a second opinion. Please make sure you get it from somebody reputable. Beyond that, you need to feel comfortable with your doctor and how they communicate.

5. Bring someone with you to your appointments, if possible.

I ALWAYS RECOMMEND that patients bring someone with them to their appointments to help them hear and understand what is said, and even take notes. It is very hard to absorb everything when newly diagnosed. If a patient can’t bring somebody, it also works to have a loved one on the phone (put it on speaker) to listen in. Sometimes people can’t leave work, get childcare or even leave their home, but they can listen. And that can mean so much to a patient.

6. Yes, treatment is urgent for any advanced skin cancer, but ...

I OFTEN SAY that “cancer doesn’t wait for anybody.” There is always a sense of urgency; the sooner that we address the issue, the better. Yes, there can be side effects from advanced skin cancer treatments (and those should be reported right away to your oncologist). But for many patients, the side effects are not

ROMAN LACHEVY / ALAMY STOCK PHOTO

terrible, so it shouldn't affect planning too much. Say a patient has their daughter's wedding three months from now. I'm going to say, "That gives us three months to get you feeling better. So why don't we start, and we can always take a break around the wedding." We can work around things that are important in people's lives. It shouldn't be all about cancer. You're taking this treatment to improve the quality of your life so you can enjoy it.

“

Don't be afraid to talk about FINANCES. It's just as important as reporting side effects to your oncologist. There are PATIENT ASSISTANCE programs for funding. Advocate for yourself.

”

7. It's important to discuss, monitor and treat side effects.

WHEN WE TALK about immunotherapy, I'm going to hand you information about the medicine I'm giving you, and you're going to read things in the brochure that are going to scare you. We must do it because it's a legal document. But then, we talk realistically about the things that are most likely to happen: Itching and rash, for example, are common and can be a sign that your immune system is doing its job to fight the cancer. These drugs are metabolized by your liver and your kidneys, so we check your liver and your kidneys often. We talk about diarrhea, and pneumonitis (inflammation of the lungs) — these are side effects that we are very familiar with managing quickly to resolve the problem. We know how to treat them, and they go away. There are also side effects that we would have to fix with medicine, sometimes for life (such as thyroid replacement), because the immune system tends to attack the organs that produce hormones. We weigh all of this information before determining the course of your treatment.

8. Ask about financial help to pay for your medicine.

DON'T BE AFRAID to talk about finances; it's just as important as reporting side effects to your oncologist. Many of the therapies we give are covered. If you are a Medicare patient, Medicare pays the 80

percent, and your secondary plan picks up the 20 percent. But some treatments may not be covered, and you may get socked with a large copay. Don't just accept that. Many of the drug companies offer patient support. There are assistance programs that have grant funding for patients, and it may greatly reduce the cost. But you should make the effort and ask your doctors and advocate for yourself. Also ask if there is a specialty pharmacy in your area that may have a negotiated discounted rate or grant program.

9. If your medicine didn't help you, it's not your fault, and there may be other things to try.

I TELL THE patient that the *treatment* failed. The patient didn't fail; they did everything they were supposed to do. It was their tumor that did not respond. It's not God punishing you. It's cancer, and it sucks. I try to frame it that our therapies are very effective, but you need to understand that they are not 100 percent effective. We don't know whose tumor is going to respond and whose tumor is not going to respond until we treat it. If your tumor is responding, we're going to keep going. But if your tumor is not responding, we have other options that we're going to go to next.

10. Research continues.

THE GREAT NEWS is that the boom in breakthroughs for advanced cancers is not over. More research and promising treatments are in the pipeline. Also, as we get better agents, we may be able to push the envelope and treat even earlier tumors with new methods. Right now, I have my eye on tumor infiltrating lymphocyte (TIL) therapy. TILs are naturally occurring immune cells that can recognize unique tumor markers on cancer cells in the body and attack and kill them. As we continue to move science toward even better options with less toxicity, we are going to push our patient successes higher and never stop until no one dies from advanced skin cancer ever again. ■

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Julie Bain is senior director of science & education for The Skin Cancer Foundation.

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10 Surprising Things About Your Skin

You know a good deal about your skin. For example, it's your largest organ, it sheds and you have to protect it from the sun to avoid skin cancer. (You're reading this magazine, so we assume you know *that one*, right?) You may even spend a lot of time looking at your skin — checking for anything new, changing or unusual. (We applaud you.) But there is more than meets the eye. Your skin has many bells and whistles and odd jobs that you may not be aware of (unless, of course, you're a dermatologist) that help it renew itself and repair some of the damage that could lead to skin cancer. We spoke with New York dermatologist and Mohs surgeon Deborah S. Sarnoff, MD, president of The Skin Cancer Foundation, to find out some little-known facts and stats about your skin — all weird wows guaranteed to make you a hit at your next cocktail party.

By KRISTA BENNETT DeMAIO



DEAGREZ / ISTOCK / GETTY IMAGES PLUS

1

One little square inch of skin is made up of 19 million skin cells.

Within that inch of skin, there are different types of skin cells, each with its own specific job. For example, that includes about 60,000 melanocytes, cells that produce melanin pigment, which gives skin its color. All humans have melanocytes (with the exception of some people who were born with albinism). The majority of skin cells are keratinocytes. These include basal and squamous cells, the two types from which the most common skin cancers can arise. According to the Cleveland Clinic, a square inch of skin also contains 300 sweat glands, 20 blood vessels and 1,000 nerve endings. And that's just scratching the surface. The average adult has 2,800 square inches — about 22 square feet of skin!

2

Your skin sheds 30,000 skin cells a minute.

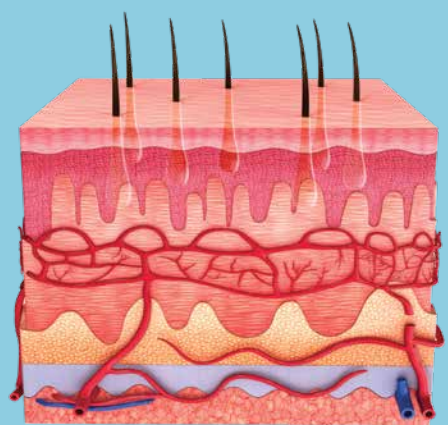
You may not see the dead, dull skin flaking off your face and body, but it's happening all day. It takes about

a month for newly formed skin cells to make their way to the surface — a timeframe that decreases with age. “Cell turnover can take as much as six to eight weeks in someone in their 60s or 70s, and that buildup of dead skin cells can make their complexion appear duller and drier,” says Dr. Sarnoff. You can speed up the process (at any age) with topical products that contains retinoids, which promote new cell growth, or alpha hydroxy acids, including glycolic acid. These loosen up the intercellular glue-like substance that holds skin cells together on the surface, allowing them to slough off sooner. You can find these ingredients in cleansers, serums, lotions or creams.

3

Skin contains 11 miles of blood vessels.

The road to healthy, radiant skin is paved with blood vessels. “These bring oxygen and nutrients to your cells, remove waste and help regulate your skin’s temperature,” says Dr. Sarnoff. When the skin gets warm, your blood vessels dilate, allowing heat to escape to the outside air. When it’s cold outside, they constrict, keeping the heat in your skin. When you come back inside for hot chocolate, the blood vessels dilate again, giving you that rosy flush.



The Ins and Outs of Skin

Your skin is a sophisticated, well-oiled machine. But to better understand its inner (and outer) workings, it helps to know what’s happening in each of the main layers of skin. What you’re looking at on the surface is your **epidermis**, the outer layer of skin that acts as a waterproof seal, holding in moisture and keeping out bacteria, fungi, viruses, allergens and irritants. New skin cells form in this layer. The epidermis contains squamous cells, basal cells and melanocytes, the latter of which produces melanin, the substance that gives skin and hair their color. DNA damage in any of these cells can lead to squamous cell carcinoma (SCC), basal cell carcinoma (BCC) or melanoma, the three most common forms of skin cancer. [See “Skin Cancer 101” on page 8 for more details.]

The next layer of skin, the **dermis**, is where you’ll find sweat and oil glands, which seep out onto the skin’s surface, controlling temperature and adding lubrication, respectively. The dermis is also home to hair follicles. Hairs sprout from these structures, growing into the epidermis and then outward. This layer is also where cells produce collagen and elastin fibers, which give skin structure and allow it to stretch. And there are nerve endings; blood vessels that bring oxygen and nutrients to cells and carry out waste; and lymph vessels, another waste system that circulates throughout the body.

The bottom layer is the **hypodermis**, aka the subcutaneous fat layer, which means fat stored under the skin. For that reason, some experts don’t consider this layer part of the skin. The fat, which attaches to bone and muscle, helps cushion and insulate the body. The blood vessels and nerves that start in the dermis extend into the hypodermis. They get larger so they can circulate blood throughout your body, deliver nutrients to other organs and transport waste.

GETTY IMAGES

4

Skin accounts for 10 to 15 percent of your body weight.



Next time you’re feeling frustrated with the scale, remember that *a lot* goes into the number you see on the screen, including the weight of your skin. It’s the heaviest of all your organs. “That 10 to 15 percent is composed of water, oils, lipids (fats), nutrients, hair follicles, blood and lymph vessels, collagen and living and dead cells,” says Dr. Sarnoff. In the average adult, that can mean 20 pounds of skin alone — about the weight of Dr. Sarnoff’s dog, Maxie.

5

Skin has its own metabolism.

You hear a lot about the body’s metabolism and how it slows with age, affecting

everything from energy levels to the way your jeans fit. But did you know that your skin has a metabolism, too? The term refers to processes within the skin that control production and breakdown of collagen and elastin. It also affects how well your skin renews its cells, repairs its damage and even how it responds to topical products you use. Like your body’s metabolism, the skin’s metabolic processes also lag with age and exposure to environmental aggressors. A review in the *Journal of Cosmetic Dermatology* showed that ultraviolet (UV) radiation causes changes in cellular metabolism, leading to visible signs of photoaging.

6

Your skin is on the clock.



You’re not the only one who runs on a 24-hour cycle. Researchers have discovered that your skin has a circadian (Latin for “about a day”) rhythm, governed by the suprachiasmatic nucleus (SCN) of the brain. That’s a mouthful, but it’s basically a group of nerve cells that act

as a master clock. During the daylight hours, your skin is in protective mode, trying to shield your cells from UV light, free radicals, pollution, etc. At night, skin’s repair processes kick into high gear, with research showing that repair peaks at night. The circadian rhythm also influences skin temperature and permeability. Both increase at night, making skin more receptive to topical ingredients. The circadian rhythm also increases transepidermal water loss (TEWL) at night, the process by which water escapes from the skin. So, before bed, it’s prime time to apply moisturizer. Research has also shown that the body’s nucleotide exci-

During the daylight hours, your skin is in protective mode, trying to shield your cells from UV light, free radicals, pollution, etc. At night, skin’s repair processes kick into high gear.

sion repair (NER) system, responsible for removing UV photodamage from DNA, is controlled by the skin’s circadian rhythm. If this system doesn’t remove the damaged DNA, these mutations may cause skin cancer. According to a recent review in the *International Journal of Molecular Sciences*, circadian rhythm disruption may be linked to the disease, with the newer research focusing on manipulating circadian clock functions and so-called clock genes within the skin to reduce skin cancer risk.

Bottom line: Get your beauty sleep at night *and* wear sunscreen during the day.

7

Your skin can flex.

You know that your skin covers your muscles, but did you know there are teeny-tiny muscles *within* the skin, too? They’re called the arrector pili muscles, and they’re located inside your hair follicles. Fun fact: “It’s these little muscles that make your hairs stand straight up when

8

Skin is an “emotional” organ.

You may have assumed your brain holds that title, but your skin is the most sensory of all the organs, says

Dr. Sarnoff. It reacts to temperature, pressure, vibration, pain and pleasure. “The dermis contains cells with nerve fibers that transmit sensations of touch to the brain,” she says. Skin is also highly reactive to emotional stress. Research has shown that inflammatory skin issues such as eczema, psoriasis and acne often flare during stressful times. And stressful situations can also trigger sweating, itching and hives. Experts have found the connection between stress and skin is bidirectional. Simply put, stress can exacerbate skin issues, but skin can also send signals to the brain, triggering a stress response.

says Dr. Sarnoff. When the skin’s barrier gets damaged (from UV exposure, harsh cleansers, over-exfoliating, etc.), microscopic tears form. This allows water to escape and gives potential irritants a fast pass into your skin, making it feel dry and sensitive.

10 Skin has a microbiome.

You’ve likely heard some buzz about the gut microbiome, a community of microbes that live in your intestines and may influence everything from immune health to how a person will respond to drug treatments, including immunotherapy for melanoma. Well, the skin has a microbiome, too, with trillions of microorganisms such as bacteria, viruses and fungi that play a role in fighting infection, controlling inflammation and even helping your immune system recognize possible threats. Researchers are working on treatments to manipulate the bacteria on the skin’s surface to treat inflammatory skin conditions such as atopic dermatitis, acne and diseases including skin cancer. ■

Krista Bennett DeMaio is senior editor, science & education, for *The Skin Cancer Foundation* and has been reporting on the inner workings of skin for over two decades.

9 The barrier is skin’s unsung hero.

Sunscreen keeps skin’s surface safe from sunburns, and its cells protected from UV damage. Your barrier, the outermost layer, plays a crucial role in protecting skin, too. Its job is to keep potential irritants, allergens and bacteria out of skin, and moisture locked inside. Even large molecules in some antiaging skin-care products can’t pass through skin’s barrier, despite what cosmetic brands claim. “The molecules in most cosmetic compounds are too large to be absorbed, so don’t believe everything you hear about absorption,”

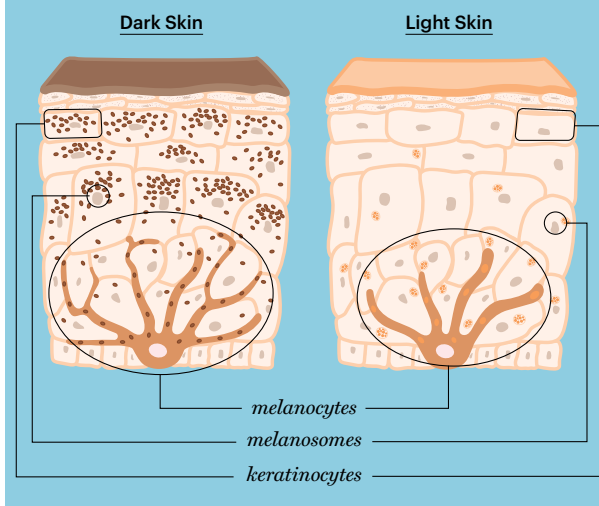
How Does Skin Get Its Color?

If you said, “from melanin,” you’d be correct, but it’s not that simple. Melanin production is a complex system that varies from person to person. The process starts inside a melanocyte, a pigment-producing cell; only it’s not the number of melanocytes you have that determines your specific skin tone. Instead, it’s partly the type of melanin these cells produce. It’s also the size and distribution of melanosomes, which are like little packages of melanin made by the melanocytes that then carry the melanin to other skin cells.

Melanocytes produce eumelanin, which gives skin and hair brown and black pigment, and pheomelanin, a type that appears red and yellow. The ratio of eumelanin to pheomelanin determines your skin color, and that can vary greatly. Those with darker skin are genetically predisposed to produce more eumelanin, the type that provides some protection against ultraviolet (UV) damage. Those with light skin typically have more pheomelanin, which doesn’t offer UV protection. Several factors influence how much melanin your cells produce, including UV exposure, hormones, genes and inflammation.

Once the melanin is made, it’s stored inside the melanosomes. The melanosomes then travel up through the melanocyte cell and transfer to keratinocytes, another type of skin cell, via dendrites (think one-way passages between cells). The newly pigmented keratinocytes then make their way to up to the skin’s surface, creating your unique skin tone.

Darker skin tones have larger melanosomes spread out inside the cell (which translates to evenly distributed melanin on the skin’s surface). People with lighter skin tones tend to have smaller melanosomes clustered together. That’s why some people get spotty bits of melanin, aka freckles, after sun exposure.



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Have You Seen the Seal?

You can find The Skin Cancer Foundation’s **Seal of Recommendation** on all kinds of sun-protective products, wherever you shop. When you buy a product with the Seal (and use it regularly and as directed), you can be confident that you are taking an important step in preventing sun damage that can lead to skin cancer.

That’s a big deal!

Why trust the Seal? We have a committee of volunteer dermatologists who thoroughly review the scientific data on each application. Only those products that meet our standards are approved to display the Seal of Recommendation.

Look for the Seal on:

- Sun-Protective Clothing – Hats – Sun-Protective Eyewear –
- Sunscreen – Personal Care and Cosmetics – Awnings – Umbrellas –
- UV-Blocking Window Film and Shades

Visit [SkinCancer.org/recommended-products](https://www.skincancer.org/recommended-products) or scan ▶



Sunscreen is having a “glow up,” a social media term that means makeover or transformation. Ultralight, serum-like formulas, tints that better match your skin tone and multitasking treatment sunscreens are just some of the high-tech options we’re seeing. Here, dermatologists and other industry experts give us the intel on the new trends in sun protection.

Time to **SKIN** **novate**

By KRISTA BENNETT DeMAIO

FLORIAN SOMMET / TRUNK ARCHIVE

If

you could prevent breast cancer by wearing something protective, you'd do it, right?

Well, the powerfully effective sunscreens on the market today can prevent the DNA damage that can lead to skin cancer. But for many people, especially the younger generation, the potentially debilitating and even deadly disease seems like a far-off and unlikely threat. So, how do we motivate people to wear sunscreen regularly?

It's a question that dermatologists and sun-care brands have grappled with for years.

After careful tracking of consumer behavior and trends, they are learning that the answer is — beauty! Turns out that using sun protection regularly helps keep your skin looking its youngest and most vibrant. In a way, it's the fountain of youth.

Yes, that means calling attention to the visible signs of sun damage — wrinkles, brown spots, broken blood vessels, enlarged pores, etc. — and the preventive powers of sun protection. “I tell my patients who are spending a lot of time and money on lasers to get rid of sun damage and neurotoxins to reduce wrinkles that if they wear sunscreen every day, they're preventing a lot of that damage in the first place,” says New York City dermatologist and Mohs surgeon Elizabeth K. Hale, MD. It also means sneaking ultraviolet (UV) filters into trendy, pretty and cosmetically elegant products that don't feel like sunscreen. Because experts know the best sunscreen is the one you'll wear daily. Featherweight, serum-like formulas, more inclusive tint ranges and makeup with SPF for oft-neglected areas are just some of the innovations we're seeing. Bonus: These high-tech options are tracking with younger people and on social media, which may mean fewer skin cancers in the future.

Sunscreen Is Trending

WHILE SOCIAL MEDIA can spread some bad skin-care advice (DIY sunscreen? Do not try that at home), there's been a bright spot for skin cancer prevention:

more attention on products that contain sunscreen. And it seems Gen Z-ers (those born between 1997 and 2012) are getting the message. According to the research firm NPD, Gen Z consumers between the ages of 13 and 24 prefer brands endorsed by a physician. Plus, a beauty report from Kyra, a global creator company that connects brands and influencers, noted that skin care is Gen Z's biggest priority, with sunscreen ranking number two in products they can't live without in their daily routine.

Dr. Hale and her sister, dermatologist Julie K. Karen, MD, who similarly specializes in Mohs surgery and cosmetic dermatology, practice together at CompleteSkinMD on the Upper East Side of Manhattan. They both have tweens who are “obsessed” with skin care, which they credit to the power of social media. (Having dermatologist moms may have something to do with it, too.) “While it's not necessarily the hottest topic for this age group, I think there's an opportunity to utilize social media and influencers to educate young people about the importance of sun protection,” says Dr. Hale.

“As dermatologists,” Dr. Karen chimes in, “we worry about social media spreading false information and kids having reactions from irritating products. But teaching younger people safe sun habits is always a good thing.”

The “Skinification” of Sun Care

THE TERM “SKINIFICATION” means using skin-care ingredients in other categories such as hair care. And while sunscreen has always been made for your skin, it's getting more sophisticated in terms of formulations, blurring the lines between what's a skin-care product and sun protection. “You can get everything in one now — moisturizing ingredients, antioxidants and repair enzymes — with a pretty high SPF level, which makes it easy to multitask,” says Dr. Hale. She prioritizes sunscreens that contain antioxidants to offer protection against free radicals, which are unstable oxygen molecules created by UV exposure that attach to healthy cells, causing damage. Research supports topical antioxidants such as vitamins C and E for neutralizing free radicals, and studies have shown they're even more effective when combined. Dr. Hale also likes sunscreens that include niacinamide, an antioxidant that also helps hydrate

Spot the Risk Factors

While everyone is at risk for developing skin cancer, those with light-colored eyes and freckles are most susceptible to the disease.



and reduce inflammation in the skin.

Dr. Karen cites another important trend in sunscreen ingredients: DNA repair enzymes. “These are enzymes such as photolyase and superoxide dismutase that recognize and repair DNA damage immediately,” she explains, “so it doesn't accumulate or progress into skin cancer.” The mechanism is different from that of antioxidants, which work by neutralizing the free radical *before* it does damage to your DNA.

Better-Feeling Formulas

SUNSCREENS USED TO have a reputation for being thick, goopy and greasy. That has changed. Now there are ultralight formulations, silky sunscreen oils, serums and gel-based options available, ideal for those with oily or acne-prone skin. “These formulas are not necessarily treating acne, but they can be noncomedogenic, which means they're not going to inflame and aggravate your acne,” says



SVETIKO / E+ / GETTY IMAGES



Dr. Karen. And it's not just beauty-savvy teens and women gravitating toward these skin-friendly formulas. "Men typically don't like the feel of a creamy moisturizer, so gel and oil-free formulations may appeal to them more than lotions," she says.

"The real innovation has been better film-forming polymers," says cosmetic chemist Perry Romanowski, "which help the sunscreen adhere to the skin." They also help eliminate that greasy feel.

So, how do cosmetic and sun-care brands make products feel nicer on your skin? Rhonda M. Davis, a cosmetic chemist who works in product development in Mobile, Alabama, and is highly sought by the media for her insight on consumer goods, points to SPF boosters and enhancers, ingredients added to sunscreen products to make them more effective

and improve the formula's wear and feel. The boosters are powders and filler ingredients coated with active ingredients in sunscreens that meet FDA regulations. Chemists then combine them with "plant-based, silicone-like materials" to make the formula glide on better and feel silky on your skin. To the naked eye, these powders look like, well, powder, but under a microscope they take different shapes that work to enhance the finish and feel. "Some are spherical and give consumers a soft, airbrushed look, while others are flat and more saucer-shaped, like blood platelets, which make the product adhere to skin better," says Davis.

The feel of a product and its performance are important to athletes and outdoor enthusiasts, who say their sunscreen sweats off too quickly. "The real innovation has been better film-forming polymers, which help the sunscreen adhere to the skin," says Perry Romanowski, a Chicago-based cosmetic chemist, renowned sun-care industry expert and founder of the blog *Chemists Corner*, where he breaks down important concepts and ingredients in cosmetic formulations. These polymers can also help eliminate that greasy feel, he says. Davis is particularly excited by a globally approved, nat-

←
Swipe Right

—
Hyperpigmentation — dark patches of skin caused by sun exposure — is a major concern for many people with skin of color. Daily sunscreen, now tinted in a broader range of shades, can help minimize the issue.

ural, film-forming polymer that's environmentally friendly and nontoxic to aquatic life but also performs like leading synthetic polymers.

The top of your head takes a beating from the sun, too, and now there are better formulas to protect it accordingly. "Your scalp is exposed every day, so people with thinning hair and men with no hair have a high rate of scalp squamous cell carcinoma, a skin cancer most correlated with chronic, cumulative sun exposure," says Dr. Karen. While hats offer the best coverage, there are now targeted scalp sunscreens that don't leave hair greasy. Look for formulas with broad-spectrum sunscreen in them. (Hint: You'll see the FDA drug facts box on the label.) There are also hair products that contain other UV filters designed to prevent your hair color from fading in the sun, but these won't do anything to protect the skin on your scalp.

Makeup Made Better



MAKEUP WITH SUN PROTECTION is not new. It's more common than not to see a foundation that lists an SPF number and/or broad-spectrum protection on the label. The UV filters in your makeup are the same ones you'll find in your beach sunscreen, but dermatologists caution against using makeup with SPF as your *sole* source of skin protection. "It's always been a pet peeve of ours, because we know you're not applying enough makeup to get meaningful protection," says Dr. Hale. (For your face, the



SUN PROTECTION:

There's a Pill for That?

You may have heard about so-called oral sunscreens or sun vitamins, ingestible capsules you can take to boost sun protection. Don't confuse these with Melanotan, the potentially dangerous drug available via injection or nasal spray that tans skin from the inside out. These oral sunscreens are antioxidant supplements that help protect your skin from UV damage. As more of them hit the market, you may be wondering if you should pop one. Our experts say, "Yes!" But not in place of your regular sunscreen. "It's equivalent to SPF 4, which means you are four times less likely to burn," says Dr. Hale. "Think of it as an extra layer of protection; it does help prevent burning."

These supplements contain botanical ingredients such as fern extract (*Polypodium leucotomos*), plucked for its ability to withstand intense sun exposure, antioxidants including nicotinamide and carotenoids, and enzymes to help repair damage. You need to take one at least 30 minutes before sun exposure. It's added insurance for those with a photosensitizing disorder or someone on medication that makes them sun sensitive, or just when you're planning on a heavy day of sun, says Dr. Hale: "I bring sun vitamins for my entire family when we go to a sunny vacation spot or ski vacation."

recommendation is a nickel-sized amount — a lot of foundation.) So, apply your regular sunscreen or moisturizer sunscreen first. Then apply your makeup with SPF as a bonus or try tinted or translucent sunscreen powders to reapply throughout the day.

However, dermatologists are excited by makeup with sun protection for two key areas most people skip with traditional sunscreen: lids and lips. New cream and powder eyeshadows formulated with sunscreen can help protect delicate eyelid skin (an estimated 5 to 10 percent of skin cancers occur on eyelids). For lip protection, Dr. Hale suggests swiping on lip color with SPF 30 or higher to shield thin lip skin. "Lip gloss that doesn't contain SPF is like applying baby oil to your lips," she says. Most pigmented lipsticks provide at least some physical protection from UV rays.

Tinted sunscreens, which many people use in place of a traditional foundation, have evolved, too. The earliest versions offered one universal shade that wasn't universally flattering or had a limited selection — think light, medium and dark. We're now seeing broader shade ranges with as many as 20 options to match various skin tones without the ashy, white cast on dark skin tones. "If you shrink the size of the zinc oxide particles small enough (what's known as micronized zinc), you can get a good dispersion and reduce the whitening effect," says Romanowski.

Iron oxides, minerals that give tinted formulas their color, aren't purely cosmetic, either. A recent study in the *Journal of Cosmetic Dermatology* showed that iron oxides enhance protection against blue light, especially when combined with zinc oxide. "We know that blue light contributes to melasma and other pigmentary disorders, so a tinted sunscreen provides an added layer of protection for at-risk individuals," says Dr. Karen. Blue light is emitted by the sun, fluorescent lighting and from electronic devices, including your computer and smartphone. That's another good reason to wear your sunscreen every day.

Changing the Game



WE'VE LONG KNOWN sunscreen works to prevent sunburn, sun damage and skin cancers, but getting people to wear it regularly has always been the challenge. By making formulas that multitask, feel good on your skin and are more inclusive of all skin tones, we're getting closer to our goal of making sun protection a daily habit. And that's a thing of beauty! ■

Krista Bennett DeMaio is senior editor, science & education, for *The Skin Cancer Foundation*.

WHY DO WE (STILL) TAN?

The answer is complicated. Those who love their tanned skin see a healthy glow. Dermatologists see DNA damage. Historians see cultural and socioeconomic influences, from Cleopatra to The Situation. Here, we explore the deeper meaning behind the desire to alter your skin tone — and what we still can learn.

By
KRISTA BENNETT
DeMAIO

ILLUSTRATION *by*
JASON RAISH



Cleopatra

BTS

Scarlett O'Hara

George Hamilton

Pamela Anderson

The Situation

B

BEING COMFORTABLE in our own skin is the ultimate goal, but one visit to the local beach or a scroll through social media suggests we've got more work to do. People are still basking in the sun in the pursuit of bronzed skin, and #tanlines has more than 430 million views on TikTok. Yes, despite the well-established risk between ultraviolet (UV) light and skin cancers, tanning is still part of the culture in the U.S. According to a recent beauty market research report from IBISWorld, tanning salons are a \$2.8 billion industry, and, unfortunately, its growth is holding steady. The self-tanner market is also a billion-dollar industry. It may be a safer way to glow, but the message is still clear: People want to be tan. Why?

Multiple studies have shown that people not only feel more attractive when they're tan but also perceive others as more appealing with a golden glow. How did it become a beauty ideal in the first place? And was it always this way? New York dermatologist and Mohs surgeon Deborah S. Sarnoff, MD, president of The Skin Cancer Foundation, has explored these questions and others throughout her decades of practice and during her worldwide travels.

BRONZE AMBITION

"IN THE U.S. and other Western countries, people still think a tan is the epitome of health and beauty," says Dr. Sarnoff. In the Western world (for the past century or so), acquiring a tan has often appealed to those with the palest skin, who may have been teased for looking "pasty" and wanted to appear healthier and wealthier. (Ironically, this is the skin type most at risk for developing skin cancer.)

"But in other parts of the world," she says, "it's the complete opposite. Throughout history, pale



GERRY CRANHAM / HULTON ARCHIVE/ GETTY IMAGES

← Reflecting on History

A sunbather (maybe circa 1930s) uses a polished collar to try to capture and magnify the sun's rays.

skin was a status symbol representing wealth, good health, beauty and privilege." Dating back to ancient Egypt, Cleopatra reportedly took milk baths to lighten her skin tone via the lactic acid in the dairy drink. During the French Revolution era in the late 1700s, Queen of France Marie Antoinette was known for her alabaster skin and matching powdered hair. (She reportedly made a DIY skin-brightening mask that included milk powder and lemon juice.) Even into the 19th century in the U.S., pale skin was an outward sign that you didn't spend your days working the land like those in the lower class did. "You were a person of leisure," says Dr. Sarnoff.

But things started to change during the American Industrial Revolution of the late 19th century, when the working class relocated to factories, so a tan was no longer a sign of manual labor outdoors. Another game-changer: In the early 1900s, light therapy was harnessed for medicinal benefits, especially for skin conditions, and people began to seek the sun's rays for their health. In 1903, Dan-

ish physician Niels Ryberg Finsen was awarded a Nobel Prize for his use of light exposure to treat disease, especially lupus vulgaris, a form of tuberculosis (TB) that attacks the skin. The same year, the first hospital to use sunlight to treat TB opened in Switzerland. Sun therapy (heliotherapy) became the go-to for treating other diseases, too (without yet fully understanding the dangers of sun exposure, of course).

But perhaps the most pivotal moment for the tan occurred in 1923 when fashion icon Coco Chanel accidentally set a new trend. Rumor has it she fell asleep in the sun while on a yacht in the French Riviera and got a sunburn. She healed and returned from the trip with bronzed skin, officially kicking off the tanning craze in the Western world. "The pendulum swung; it all shifted, almost overnight," says Dr. Sarnoff. "Suddenly, having a tan meant you had the means to travel and vacation on yachts; it became glamorous, and it stayed that way." Historians have also linked Chanel's bold move to women's liberation. Hemlines were getting shorter, and women were no longer afraid to show a (tan) leg.

Advertisements followed suit, too. In 1927, a swimsuit advertisement showed women covered up on beaches, wearing hats and holding parasols. By 1929, ads from the same company showed women

To Sun or Not to Sun

A VISUAL LOOK AT WHERE TANNING MADE ITS MARK THROUGHOUT HISTORY.



206 BC – 220 AD

The pale skin trend started in ancient China.



51 BC

Paleness symbolized wealth, good health and beauty in ancient Egypt.

ALAMY/ GETTY IMAGES



1774

Marie Antoinette became Queen of France and was known for her powdered skin and hair.



1923

Coco Chanel was famously bronzed after a trip to the French Riviera.



1927

A swimsuit advertisement shows women on beaches well protected from the sun.



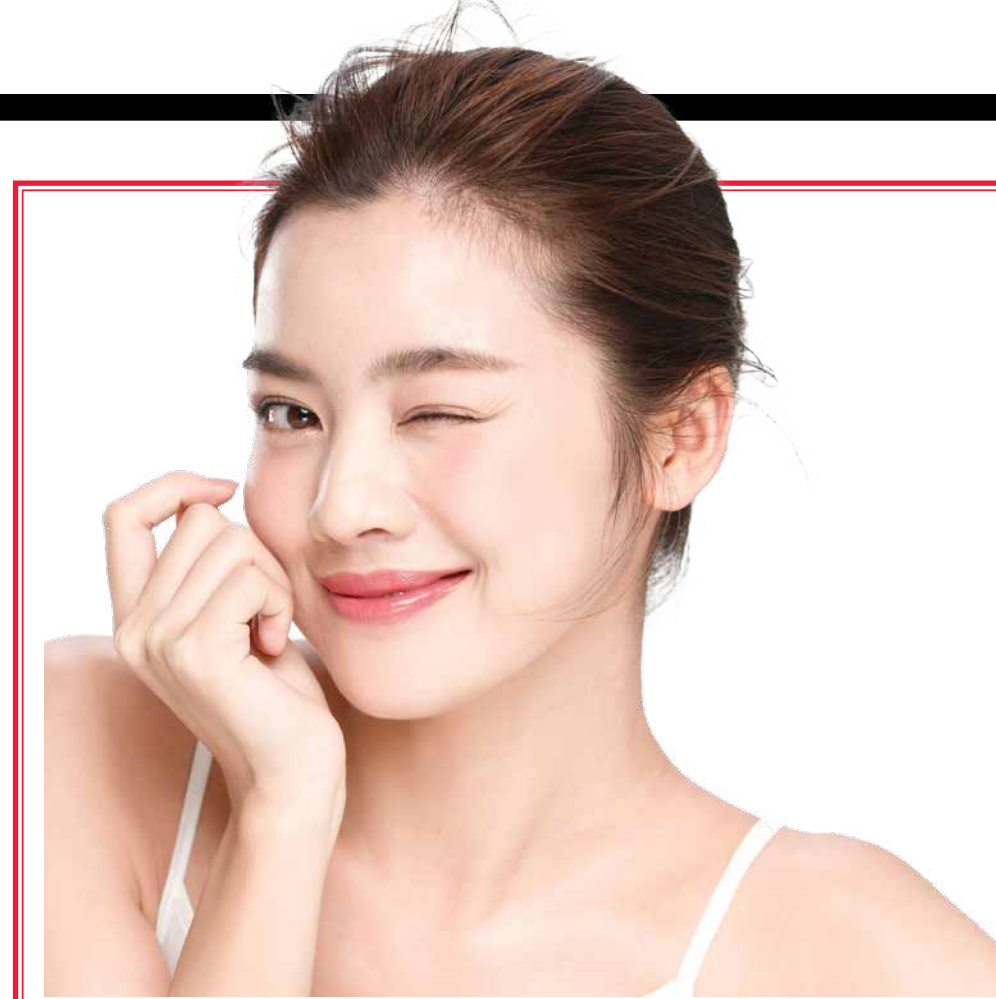
1929

The same swimwear brand begins to run ads with women not wearing any sun-protective accessories.

splashing in swimsuits without any of the protective accessories. That same year, *Harper's Bazaar* ran a story titled "Shall We Gild the Lily? There is a Technique to a Good Tan — Whether by Fair Means or Fake!" Tan skin was in.

THE TANNING BOOM

IN THE 1930S and beyond, the goal was to acquire a tan, even if you couldn't afford to spend winters on the Côte d'Azur. The aptly named "Golden Age" in Hollywood featured screen stars with radiant, golden skin. "During that time, all the actresses and actors had a deep, dark tan on and off screen," says Dr. Sarnoff. The consumer suntan industry was born. The first sunscreen was invented in 1938 by Austrian chemist Franz Greiter, who was looking for a way to protect his skin while climbing mountains along the Austrian-Swiss border. But it wasn't until the 1940s that Coppertone Suntan Cream hit the U.S., an early attempt at sunscreen that combined coconut oil, cocoa butter and a type of petroleum (UV filters came along a bit later). It was billed as a way to get a better tan without the burn. We later learned, though, that ultraviolet A (UVA), the rays mainly responsible for tanning, also contribute to skin cancer.



VIEWSTOCK / GETTY IMAGES

Pale in Comparison

While tan skin is an ideal for some Western women, lightening skin and fading dark spots have been a major focus in Asian-Pacific countries, where many women believe pale skin is the ultimate standard of beauty. "In China, hyperpigmentation and brown spots on the skin are viewed as blemishes, and they're taboo to have," says Dr. Sarnoff. "Women go to great lengths to protect their skin from the sun. They use skin-lightening topical treatments and spot-treat dark spots with lasers at the dermatologist's office," she says.

Of course, like tan skin in the U.S., the pale complexion trend in Eastern countries is more than skin deep. It's steeped in all sorts of cultural and social constructs. "In these countries, lighter-colored skin has been historically equated with beauty, racial superiority and power," says Dr. Sarnoff. While skin lighteners are still an \$8.8 billion dollar industry globally, there have been positive changes over the years with some brands opting to remove racially insensitive claims from labels.

The first bikini hit the fashion scene in the 1940s. Women were showing more skin and using various types of creams, oils and foil sun reflectors to get a deeper tan. If you couldn't achieve a golden glow from the sun, there was self-tanner, with the first one hitting the market in 1960. Dihydroxyacetone (DHA), the ingredient that temporarily darkens skin tone, was later FDA approved in 1977. DHA is still the active ingredient in self-tanners today, but it's been improved over the years to yield a more natural-looking tan, not the orange "Oompa Loompa" look of the past.

THE DARK SIDE

OF COURSE, all that sun exposure came with a serious consequence: skin cancer. Research in the *Journal of Clinical Oncology* has shown that between 1950 and 1954, the diagnosis of melanoma was rare, but incidence rates rose 17-fold in men and more than nine-fold in women between 1950 and 2007, with a big surge in the 1970s. World-renowned dermatologist and surgeon Perry Robins, MD, founded The Skin Cancer Foundation in 1979 after witnessing the sudden increase in skin cancers, and the need for awareness, prevention and treatment options.



1939

Movie audiences swoon over Scarlett O'Hara's milky skin.



1940

Coppertone launches its Suntan Cream.



1962

Actress Ursula Andress is the first Bond girl and a bronzed bombshell in *Dr. No*.



1971

Malibu Barbie hits the market — and the beach.



ALAMY / GETTY IMAGES

1979

The first UV tanning salons open in the U.S.



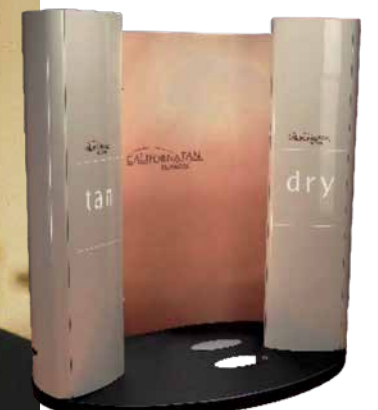
1979

Perry Robins, MD, founds The Skin Cancer Foundation to raise awareness.



1992

Actor George Hamilton reaches peak tanning addiction (he knows it's risky).



1997

The first automated spray tan booths come on the scene.

Today, in 2023, more than 186,000 new cases of melanoma will be diagnosed in the U.S., according to the American Cancer Society (more than 97,000 of them invasive). And over the past decade, the number of cases increased by 27 percent. There are also approximately 3.6 million cases of basal cell carcinoma (BCC) and 1.8 million cases of squamous cell carcinoma (SCC) diagnosed in the U.S. every year. Research has shown that about 90 percent of them are associated with UV exposure from the sun.

Knowing these severe risks, why is tanning *still* popular? “It’s often not until someone gets a skin cancer themselves, or knows someone who did, that they wake up and start using sun protection regularly,” says Dr. Sarnoff. And while the visible signs of sun damage, including wrinkles, brown spots, redness, etc., can be a deterrent, many continue to seek the sun’s rays. “When people see brown spots, they think getting tan will make their skin tone look more even and less blotchy,” she says. “Of course, it only creates further damage — and the potential for skin cancer.”

A BRIGHT LIGHT

WHILE TANNING CULTURE is still very much a thing in the U.S., there are hopeful signs of change.

In 2015, the FDA proposed a rule that would prohibit minors from using tanning beds and booths. Eight years later, experts are optimistic the rule will be finalized this year. Currently, 44 states and the District of Columbia either ban or regulate the use of indoor tanning beds by minors. And tanning bed use, even among adults, has been declining over the

“IT’S OFTEN NOT UNTIL SOMEONE GETS A SKIN CANCER THEMSELVES, OR KNOWS SOMEONE WHO DID, THAT THEY WAKE UP AND START USING SUN PROTECTION REGULARLY.”

years. Other countries, including Brazil and Australia, have instituted a total ban on indoor tanning. This is where Dr. Sarnoff hopes the U.S. is heading. “It’s not enough to impose age restrictions; indoor tanning is dangerous at all ages,” she says.

Skin-care products with sunscreen are becoming the norm. According to the market research firm Spate, the number of online searches for sunscreen from spring 2019 to spring 2021 increased

Dangerous Extremes

Whether the goal is tan or pale skin, there are sketchy, dangerous and downright life-threatening ways to achieve it. Topical skin lightening treatments in Asian-Pacific countries have been known to include potentially harmful ingredients such as arsenic, lead and mercury. Some women get intravenous (IV) infusions of the antioxidant glutathione, which deactivates tyrosinase, a key enzyme involved in the production of pigment. “While it’s promoted as a safe alternative to topical bleaching agents, there have been reports of thyroid function impairment, kidney dysfunction and long-term risk of cancer,” says Dr. Sarnoff.

It’s not just lightening treatments that are dangerous. There are also drugs to promote a deeper tan that can have deadly affects, such as Melanotan II, an injectable drug and nasal spray dubbed the “Barbie Drug.” The injectable is a synthetic version of the naturally occurring melanocyte-stimulating hormone, which spurs your pigment-producing cells to pump out more melanin, creating a tan skin without UV exposure. Sounds safer than the sun, right? Not at all. “It has the potential to turn moles and lesions into skin cancers and melanomas, and it has been documented to cause muscle damage,” she says. It’s banned in many countries including the U.S. and Australia, but it’s often sold illegally. It’s not to be confused with melatonin, the naturally occurring hormone that’s also available as an over-the-counter supplement. However, Dr. Sarnoff says melatonin has also been linked to skin darkening.

by 210,000, making it the skin-care product with the highest search growth. The younger, social media-obsessed generation is especially interested in multitasking skin care that includes broad-spectrum sunscreen (see “Time to Skinnovate,” page 34). “These products make it easier to comply,” says Dr. Sarnoff. “It’s one and done; and I think that’s become trendy now.”

Also, in recognizing the outdated stereotypes and targeted marketing surrounding the tanning industry (and skin-lightening; see “Pale in Comparison” on page 45), there’s been a greater emphasis on celebrating your natural skin tone. We’re even seeing more celebrities bucking the tan trend and embracing their natural skin tone: light, medium or dark. And as more research emerges, we’re learning that although risk can vary, *all* skin tones need UV protection, not just the fairest of all.

So where does this all leave us? Hopeful. Maybe it will take another *it* girl to be photographed on a yacht wearing head-to-toe sun protection, but if history has taught us anything, it’s that the pendulum will swing again, and tan skin will be, well, history. ■

Krista Bennett DeMaio is senior editor, science & education, for *The Skin Cancer Foundation*. She still regrets the one time she tried to tan for prom and got burned.



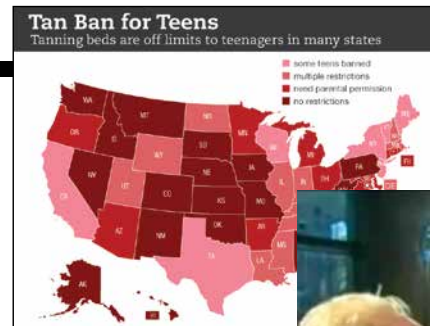
2007

A landmark study in the *International Journal of Cancer* confirms the association of indoor tanning with risk of melanoma and squamous cell carcinoma.



2008

The Skin Cancer Foundation launches its “Go with Your Own Glow” campaign, encouraging women to embrace their natural skin tone.



2009

California becomes the first state to ban indoor tanning for minors.



2010

In season 2 of *Jersey Shore*, cast member Mike “The Situation” Sorrentino coins the acronym GTL for “gym, tan, laundry.” Dr. Sarnoff sits down with the cast on the prime-time show *Extra* to discuss the dangers of tanning.



2011

The Foundation adds a stringent standard for UVA protection to the Seal of Recommendation requirements, after it was discovered that UVA rays penetrate the skin deeply, contributing to the development of skin cancers.



2012

New Jersey-based Patricia Krentcil, dubbed “Tan Mom,” is arrested for and charged with child endangerment for taking her 5-year-old daughter to use a tanning bed.




2013

Actor Hugh Jackman is diagnosed with his first basal cell carcinoma, bringing skin cancer awareness, sun protection and the dangers of tanning into the mainstream. He reportedly has had five more since then.



2023

Social media skinfluencers, such as Julian Sass, PhD (@scamander14 on Instagram), are changing the conversation from tanning to sun protection for all skin tones. Sass tests sunscreens, used as directed, to find those that blend well on skin of color.



TEACH YOUR CHILDREN WELL

By CATHY CAVENDER

We know that sun damage is cumulative, and your risk of developing skin cancer as an adult increases with just one bad burn as a child. Getting kids on board early with sun protection is crucial — but it isn't always easy. Our expert dermatologists (and some sun-savvy parents) share their best practices to make sun care a daily habit for kids of all ages.

NADEZHDA1906 / ISTOCK / GETTY IMAGES PLUS

Parents have the power to instill many health life lessons in their children, such as brush their teeth twice a day, eat their veggies, always buckle up and never smoke. One more vital action to add to these basics: protect their skin from the sun.

Research has shown that 90 percent of the two most common types of skin cancer, basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), are associated with ultraviolet (UV) exposure, and they can be serious and disfiguring. Just one blistering sunburn in childhood or adolescence more than doubles a person's chances of developing melanoma, which has a higher chance of spreading than other types of skin cancer. Indoor tanning increases the risk of all three main types of skin cancers. Getting kids into the habit of daily sun protection, including sunscreen, clothing and seeking shade, helps ensure that they'll practice it for the rest of their lives. And the best time to start is ... right at the start.



Newborns to 6 Months



What do they need? Babies need to be kept out of the sun, period. Sunscreen isn't advised in the early months of life because newborn skin is so sensitive, says Brooke Jackson, MD, a board-certified dermatologist and owner of Skin Wellness Dermatology Associates in Durham, North Carolina. "You don't want to introduce a rash, or risk ingestion," she explains. Instead, practice sun avoidance and physical protection. A hat, sunglasses and sun-protective clothing are musts, says Dr. Jackson. "Pull the awning down over the stroller, look for an overhead shelter at the park and put a pop-up tent in your trunk to use if you go to the beach with an infant, which I'd prefer you *not* do."

The challenges: You'll never encounter less resistance to sun-protective measures from your child than you will at this stage of life. Enjoy it! Challenges may come from outside pressures — going on an annual family beach vacation, for instance, or attending outdoor events.

What You Can Do

Be vigilant! Remember that newborn skin can't tolerate sunburn, which can be very painful and damaging, and that rays are strongest between 10 AM and 4 PM. Protect your baby with the steps mentioned above.

Let them watch you. Start laying the groundwork for a lifetime of sun protection by wearing sunscreen and taking other sun-protective measures *yourself* every single day. It's never too early to start setting a good example.

FROM TOP: JOSE LUIS PELAEZ INC / DIGITALVISION/ GETTY IMAGES; JG/JAMIE GRILL / TETRA IMAGES / GETTY IMAGES

Toddlers to Tweens



RANPLETT / E+ / GETTY IMAGES

What do they need? Once babies hit 6 months, it's time to apply sunscreen to exposed areas of their bodies, year-round. "You might *feel* UV light more on warm, sunny days, but it also comes through on cool, cloudy days," says Allison Zarbo, MD, a pediatric dermatologist at Henry Ford Health in Detroit. "Even on days when you're not getting as much, you're still getting *some*, and it all adds up." For young children, Dr. Jackson recommends using physical sunscreens, with the mineral active ingredients titanium dioxide and zinc oxide, rather than chemical sunscreens, which are likelier to cause a reaction.

"Kids may have unexpressed allergies or sensitivities," she says. Eliminate guesswork by looking for fragrance-free formulas made for children, which may have fewer potential irritants. "If you have a child with eczema or who breaks out easily, you're better off using a true physical block, such as rash guards with ultraviolet protection factor (UPF), a hat, sunglasses, an awning or shade."

The challenges: At this age, kids can be squirmy or downright resistant when you try to apply sunscreen. It's often a battle of wills. "Toddlers don't have control of what's going on in their world,

but they have opinions," observes Dr. Zarbo. Also, if kids are in outdoor activities at day care, preschool or camp, caregivers may not be as vigilant about reapplying sunscreen as you would like.

What You Can Do

Make it routine. "Introduce sun protection just as you would any other element of daily hygiene — brushing your teeth, flossing, washing your face," says Dr. Jackson. "My kids knew that before they went outside, they put their sunscreen on. It becomes part of the process; there should be no question about it."

Get them involved. Offering young children choices and letting them help with application gives them that sense of control they crave. Sunscreen sticks can be big enough for toddler hands to grasp and apply (you can smooth out the sunscreen later). "If kids don't like things being put on their skin, some of my patients get a foundation brush for their toddlers to use to apply sunscreen," says Dr. Zarbo. "And sprays can be fun, but we worry about little kids inhaling it. Spray it into their hands and let them apply it to their skin."

Repeating cute, easy-to-remember mantras can help reinforce the habit and educate children. "I like to say, 'If you can see, then there's UV!,'" says Elizabeth Buzney, MD, a dermatologist at Brigham and Women's Health in Boston and Chestnut Hill, Massachusetts, and a mother of two children, one in elementary school and one in middle school. "Teach your child that UV stands for ultraviolet light from the sun and that you need to protect the skin from it during the daylight hours," she says.

Make it fun. When you have a squirmy toddler on your hands, practice the art of distraction. When Becky Kamowitz, senior director of marketing communications at The Skin Cancer Foundation, is applying sunscreen on her active 3-year-old, she has to be quick and silly. "We sing 'Mr. Sun' (by children's singer Raffi), and I distract her with tickling." And for the really resistant kid, a little

magic goes a long way. Add a drop or two of food coloring to tint sunscreen a fun shade or a pinch of super-fine sparkles, suggests Dr. Jackson.

Enlist help. When children are ready for day care or preschool, investigate how caregivers handle sun protection. Dr. Zarbo, pregnant with her first child at the time of this writing, had already signed him up for day care and was excited to receive a form asking if it's OK for the school to apply sunscreen. But don't take sun protection awareness for granted, she says: "Some of your interview questions for day care are, 'Will teachers remind or assist kids with wearing hats and reapplying sunscreen? Do they have outdoor shelter from the sun?'"

Renee Browne, the mother of two preteen girls in Patterson, New York, sends her oldest daughter to day camp with sunscreen in her bag, labeled with her name on it. "I make sure my daughter puts on sunscreen every morning before she leaves and, thankfully, the counselors are very good about reminding them to reapply after they go kayaking or get sweaty or wet," she says. "No kid is going to remember that."

As children get a bit older and start outdoor sports, make sure that coaches provide shelter and remind them to reapply sunscreen. "Kids are out on the field in the sun for two or three hours. That's not OK," says Dr. Jackson. The American Academy of Dermatology (AAD) awards grants of up to \$8,000 through their Shade Structure Grants Program for public schools and non-profits to build sun-protective structures in recreational areas. Proactive parents can get the ball rolling.

Model smart sun behavior. Sun protection also means wearing UPF clothing and accessories such as rash guards, hats and sunglasses, and seeking shade. Last summer, when Jen MacNeil Danenberg, a writer and mother of 6-year-old Clara in Newtown, Connecticut, joined a pool, she bought a UPF swimsuit for Clara and a long-sleeved pullover for herself to wear while sitting on the side of the pool. With sunglasses, a hat (and sunscreen on exposed skin), she also felt well protected, if barely recognizable. But the image is one Clara will likely remember.

Teenagers



TRACKS / GETTY IMAGES

What do they need? Dr. Zarbo recommends SPF 30+ sunscreen for kids. They also should reapply every two hours, or after getting wet or sweating (that's tougher to enforce). Teenagers also need to know why wearing sunscreen and taking other sun-protective measures is important, and they need to be armed with enough self-esteem to stand up to peer pressure that says a tan from UV light is healthy or sexy.

The challenges: Unfortunately, the idea that tanning is attractive still has a deep hold and can be tough for even a committed parent to combat. When Michelle Stacey's daughter, Anna, was a teenager, Michelle, who lives in Beacon, New York, was working on a story for a major magazine about a young woman's battle with melanoma. Michelle herself had had several suspicious atypical moles (also called dysplastic nevi) removed and was very conscious of wearing sunscreen and protective clothing. Even so, Anna went to a tanning salon with her friends on multiple occasions, much to her mom's dismay. "She was such a creature of her peers as she got into her teens," remembers Michelle. "At a certain point, they have independence and their own money and there was only so much I could do to dissuade her."

And it's not just peers who may be pressuring teens to tan. Dr. Jackson remembers a young patient whose cheerleading coach suggested the squad go to a tanning salon before a competition. "That's criminal," she observes. "It's like telling your kid to go over in a corner and smoke a cigarette." In fact, it's worse: More people develop skin cancer from indoor tanning than develop lung cancer from smoking. No wonder the practice is banned in Australia and Brazil, and it is outlawed for people under 18 in 11 other countries and 20 states (plus Washington, D.C.).

Boys can feel pressured to tan as well. "My son was told at sleepaway camp that he looked good when he was tan," remembers Amy Wechsler, MD, a New York City dermatologist and psychiatrist. Teens of both sexes (and adults) who are into outdoor sports have the

challenge of keeping exposed skin protected for hours at a time. Dr. Jackson, herself a 10-time marathoner, observes that in the running community, it's popular to run with fewer clothes. "You're doing great things for your body and your mental health, but years of being outdoors adds up," she says.

Boys can feel pressured, too. "My son was told at sleepaway camp that he looked good when he was tan," says Dr. Wechsler.

What You Can Do

Give it to them straight. "The phrase 'a healthy tan' is an oxymoron," says Dr. Wechsler. Make sure your kids know that, by talking to them about the dangers and by practicing what you preach. If, after direct conversations and a lifetime of instilling good skin-care habits, you still have a teen who wants to tan, it's time to address the underlying self-esteem issues that may make them susceptible to outside pressure. "Teenagers are affected by pop culture, and unfortunately, a lot of celebs are still tanning and promoting being tan," says Dr. Wechsler. "I like to think about aspiring to the skin you're born in."

Keep it real with social media. "Remind kids that social media is fake; it's all photoshopped. It's not what normal people look like," says Dr. Zarbo. "Focusing on self-confidence at home can make a big difference." While social media can be a source of negative pressure and misinformation, it can also be a place where teens can follow board-certified dermatologists for accurate info. Teach them how to identify the real experts on social media.

Make sun care cool. There's nothing wrong with using a teenager's natural interest in beauty and fashion to help make the case for sun protection. There are tons of cosmetic and skin-care products that contain broad-spectrum

sunscreen. (Check out "Time to SKIN-novate" on page 34 to learn more.) "Kids have to like the product, the way it feels and smells, or they're not going to wear it," says Dr. Buzney. Cute rash guards, cover-ups, sunglasses and wide-brimmed hats are also easy *and* fashionable ways to sneak in sun protection.

Talk about skin care. "When I see my teenage patients for acne and notice a tan line, I make that part of the discussion. I find that they respond more to the threat of photoaging than to melanoma. Melanoma seems more abstract," says Dr. Zarbo. In other words, protecting your skin from the sun can keep wrinkles, sagging and brown spots at bay.

Fake it. If a special occasion is coming up and your teen wants a tan, self-tanner is a valid and safe option. "I'm a big fan of self-tanner," says Dr. Buzney. "I tell my patients to get it before the beach vacation, so they don't feel the need to sit out in the sun to get a tan," she says, while reminding them that a fake tan provides minimal protection from UV rays. Sunscreen is still a must.

Bottom line: Since people acquire approximately 25 percent of their lifetime UV damage before age 18, you can't start teaching kids about sun protection too soon. "When I was growing up, my parents felt very strongly about not smoking and always wearing a seatbelt in a car, and I've never smoked and never not worn a seatbelt," says Dr. Wechsler. "With my kids, I added helmets for biking and skiing — and sun protection." Chances are, those are lessons her kids will take to heart. ■

Cathy Cavender is a longtime women's magazine editor who always keeps a bottle of sunscreen in her tennis bag.

Your Daily Sun Protection Guide

The sun sustains life and feels good, but it can be your skin's worst enemy. While every sunburn can increase your risk of skin cancer, it's not just those big days at the beach or ballgame that cause trouble. Each time you run out to get the mail, walk the dog or commute to work without sun protection also adds to the damage that can lead to skin cancer (as well as leathery skin, dark spots and wrinkles).

No single method of **SUN DEFENSE** can protect you perfectly, though. That's why we created this roundup of advice for you. The best path to **BEAUTIFUL, HEALTHY SKIN** is to adopt as many of these steps as possible into your lifestyle and make them daily habits everywhere you go, all year long.

HOW THE SUN'S RAYS HARM YOU

- ▶ The sun produces two main types of ultraviolet (UV) rays that can hurt your skin. The ones called **UVB** cause sunburn, while those known as **UVA** can also lead to sunburn, as well as tanning, wrinkles and skin aging.
- ▶ When either type of UV light reaches your unprotected skin, **damage to the DNA** in your skin cells starts within minutes. Your immune system will repair some of this damage, but not all of it.
- ▶ Over time, the remaining DNA damage can cause **mutations that lead to skin cancer.**



1 Cover It Up

Clothing can provide a great barrier against the sun's UV rays. Its protection is consistent over time and doesn't wear off like sunscreen does. Many new fabrics offer high-tech protection and breathability, too. The more skin you cover (high neck, long sleeves, pants), the better, and a hat with a wide brim all the way around (three inches or more) is best because it helps shade your eyes, face, ears and neck. Also wear UV-blocking sunglasses to protect your eyes and the skin around them.

What Does UPF Mean?

Look for UPF, which stands for ultraviolet protection factor, on labels for clothing, hats and fabrics. The number indicates what fraction of the sun's UV rays can penetrate the fabric. A shirt labeled UPF 50, for example, allows just 1/50th of the UV radiation to reach your skin.

The pitfall: Any clothing leaves some skin exposed, so you need sunscreen, too. Don't forget to apply it to your hands, especially after washing them.

2 Play in the Shade

When you are outside, think of shade as your refuge, especially between 10 AM and 4 PM, the peak hours of sun intensity. Walk on the shady side of the street, sit under an awning or sun-protective umbrella, duck onto the covered porch at a pool party or even under a tree.

The pitfall: Shade isn't a perfect shield. Some UV rays can still reach your skin. They can pass through leaves and branches, hit your skin from the side and reflect off water, sand, glass and concrete.

3 Know Your Sunscreen

Sunscreens come in many formulations and delivery methods, and it can take trial and error to find the one you like best. Whether it's a sport spray, an easy-to-use stick or a rich moisturizer with antiaging ingredients, the best sunscreen is the one you will use every day.

Broad Spectrum.

The words "broad spectrum" on a label indicate that the sunscreen contains ingredients that effectively protect against UVA rays as well as UVB.

Water Resistance.

While sunscreens can't claim to be waterproof, they can be labeled water resistant for either 40 or 80 minutes. Yes, you can burn even when you're in the water, so reapplying is key!

The pitfall:

Most people don't apply sunscreen exactly as directed. They may not apply it liberally enough, might miss spots and may forget to reapply regularly. Slather it on!

SPF stands for sun protection factor.

The number tells you how long the sun's UVB rays would take to redden your skin when using a particular sunscreen compared with the amount of time without sunscreen. So if you use an SPF 15 product exactly as directed (applied generously and evenly, and reapplied after two hours or after sweating or swimming), it would take you 15 times longer to burn than if you weren't wearing sunscreen.

Sensitive Skin.

Products containing zinc oxide and titanium dioxide, sometimes referred to as mineral or physical formulas, may be less likely to cause skin irritation in people who have sensitive skin.

The Skin Cancer Foundation advises everyone to use a broad-spectrum sunscreen with an SPF of 15 or higher every day. For extended outdoor activity, use a water-resistant, broad-spectrum sunscreen with an SPF of 30 or higher. Reapply every two hours or after swimming or sweating.

4 Shield the Wee Ones

Infants: It's best in the first 6 months to keep infants out of the sun rather than use sunscreen on their sensitive skin. Clothing should cover baby's vulnerable arms and legs, and don't forget to use hats, sunglasses and stroller sunshades. **Toddlers:** In addition to providing a protective hat and clothing, you can apply sunscreen to children starting at 6 months.

The pitfall: Unexpected exposure can happen, for example, with a babysitter. Be prepared; talk to caregivers in advance about sun protection.



5 LOOK OUT FOR WINDOWS

- ▶ While glass blocks UVB rays pretty well, it **allows UVA rays** to pass through. This is true of your windows at home as well as on the road.
- ▶ Car windshields are treated to shield drivers from most UVA, **but side, back and sunroof windows** usually aren't. When you're in your car, protect yourself and your family with hats, clothing, sunglasses and sunscreen. Another option is to have UV-protective **window film** applied to windows, in your car or at home. Local laws may apply.
- ▶ The windows on **airplanes, trains and buses** also allow UVA rays to pass through. That's why airline pilots, crew members and even frequent travelers may get more skin cancers than other people do.

The pitfall: You need to plan ahead before traveling and make sure you have sunscreen on and protective clothing with you.

6 Say No to Tanning Beds

It's simple: Don't use a tanning bed — ever. Indoor tanning (even one time) raises the risk of all kinds of skin cancer, including melanoma. In fact, using a tanning bed before age 35 increases your risk of melanoma by 75 percent.

The pitfall: We applaud the 20 states (and the District of Columbia) that currently prohibit people younger than 18 from using indoor tanning devices. Other states, however, have not taken this important action that can save lives. Peer pressure to be tan can affect your better judgment at any age. Say no!



7 Seek the Seal

You need several types of sun protection to safeguard your skin. Our Seal of Recommendation is recognized by consumers worldwide as a symbol of safe and effective sun protection. Our volunteer Photobiology Committee ensures that every product that earns the Seal meets or exceeds our scientific criteria. Look for the Seal on clothing, hats, eye-wear, awnings, umbrellas, window film, glass and sunscreen. Visit SkinCancer.org/recommended-products.

Head to Toe: We've Got You Covered!

Skin cancer can happen anywhere on the body, from the top of the scalp to the bottom of the foot. We're here to help!

THIS SECTION FEATURES useful content on everything from how to recognize precancers on a bald scalp to what you should do if you're diagnosed with an advanced cancer. And did you know your pets can get skin cancer, too?

But the heart of this side of the issue is our multi-part primer on your skin and how to protect it — and that is a beautiful theme! It's the best way to prevent skin cancer in the first place, and it comes with other benefits, too. You'll learn things about the largest organ of your body that will amaze you, and how to find sun protection that is personalized for your skin type. We'll show you how to model good behavior and teach your kids how to make sun protection a daily habit. And in our comprehensive story on tanning, we reveal the historical and modern-day influences and influencers that led to change, for better or worse. You'll flip for it!



The Skin Cancer Foundation **Journal**

Every person makes a difference.

The Beauty of Giving



**We
Don't
Care
If You
Use
Ours.**

**Just Use
Sunscreen.**



The Skin Cancer Foundation **Journal**

2023



OUR SUPPORTERS

08 **The 2022 Champions for Change Gala**

Our guests had a ball at our signature fundraising event on May 12, 2022, giving \$625,000 to support our lifesaving programs.

26 **Community Fundraisers**

Core Values: By combining her fitness expertise with her firsthand knowledge of skin cancer, California personal trainer and melanoma survivor Danielle Frankl created a community event (below) to raise awareness and money for a cause close to her heart.
By Krista Bennett DeMaio



29 **Our 2022 Donors**

These 384 companies, brands, individuals, couples, families, groups, foundations and a school district helped us keep going last year. Their gifts enabled us to continue our vital programs and reach millions of people with information to prevent, detect and treat skin cancer.

32 **Our Physician Members**

These physicians have donated their time, resources and expertise to The Skin Cancer Foundation to ensure that skin cancer patients have access to tangible programs and credible information.

34 **Our International Alliance**

These physicians, representing 29 countries, help us disseminate vital information in many languages and support conferences around the world.

37

Our Corporate Council

The 121 member companies that make up our Corporate Council are committed allies in our mission, especially in the arena of sun protection. Since 1981, their annual membership dues have helped sustain the Foundation.

WHAT WE DO

12

Wherever You Are, We're There for You

No matter what you're searching for, The Skin Cancer Foundation is there for you with the information, guidance and resources you need.

16

Beyond the RV

Destination Healthy Skin provides free skin screenings and sun-protection samples for patients around the country, but it also does much more. The program teaches people about early detection and what to look for on their own skin and, for many, helps spur them to see a dermatologist and get the treatment they need.
By Ali Venosa

22

Get to Know Our 2022 Research Grants Awardees

Each year, The Skin Cancer Foundation awards grants to three early career investigators whose work shows promise in helping to prevent, detect or treat skin cancer. Previous recipients have become some of the brightest stars in their fields. Allow us to introduce you to our most recent winners and learn what motivates them professionally and personally.

39

Where Can You Find Our Seal? Everywhere!

It's not hard to find our Seal of Recommendation. It's on hundreds of sun-protection products, all carefully vetted by the volunteer physicians on our Photobiology Committee. Look for the Seal in your favorite stores.

WHO WE ARE

05 **Message from the President**

The Power of Inner Beauty
By Deborah S. Sarnoff, MD

07 **Message from Our Founder**

Turning Things Upside Down
By Perry Robins, MD

25 **From our Executive Director**

I Thought I Understood
By Dan Latore

↑
One of our 2022 DHS volunteers got creative with chalk and literally expanded our message beyond the RV! See page 16.

Regeneron is proud to support The Skin Cancer Foundation and the patients it serves.

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#SAVE OUR SKIN

LA ROCHE-POSAY IS ON A MISSION TO SPREAD SUN SAFETY

SINCE 2010, LA ROCHE-POSAY HAS ACTIVELY SUPPORTED SKIN CANCER PREVENTION THROUGH EDUCATION ON SUN SAFE BEHAVIORS, SMARTER SUN PROTECTION, AND ACCESS TO FREE SKIN CHECKS.



SOS

SAVE OUR SKIN

JOIN OUR MISSION AGAINST SKIN CANCER

- 1 PROTECT YOUR SKIN
- 2 CHECK YOUR MOLES
- 3 PLAY SAFE IN THE SUN

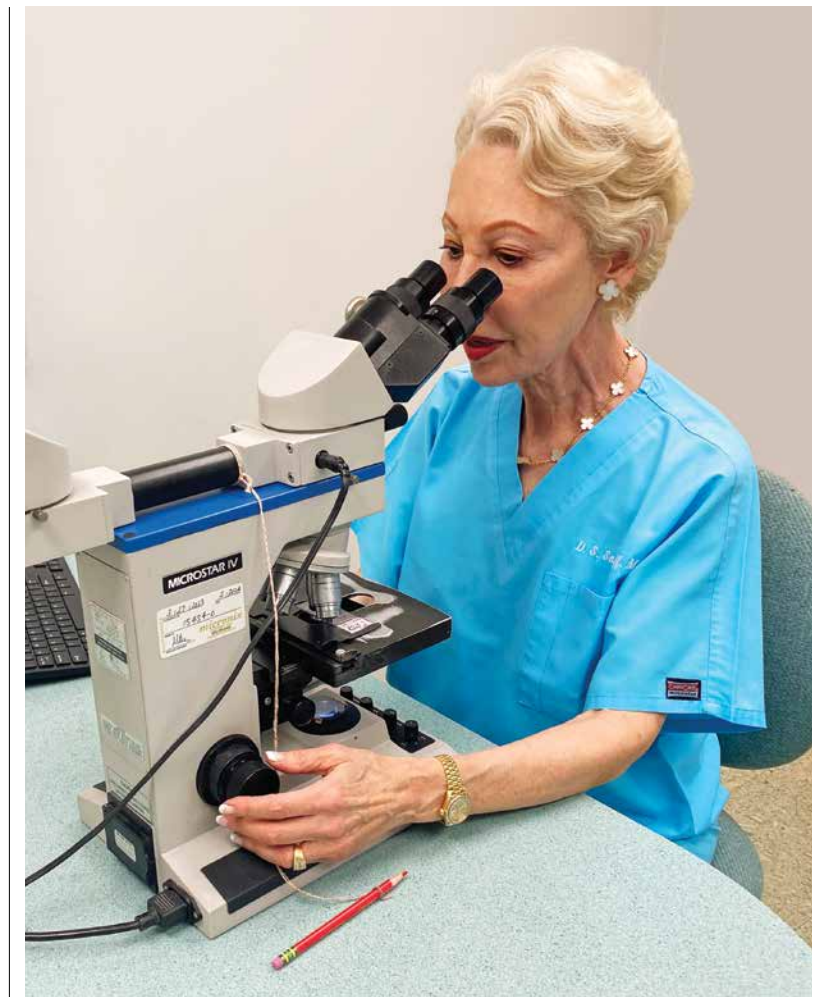
Message from the *President*

THE POWER OF INNER BEAUTY

I HOPE YOU ENJOY the fun twist (pun intended) we put on this year's *Journal*. We are always in search of creative ways to draw attention to The Skin Cancer Foundation and the important work that we do. As a dermatologist and Mohs surgeon who practices full time, I don't experience every situation or detail that the staff does, but I do get to see how it all comes together. Creativity, hard work, passion and lots of people are involved, and that is what this side of the magazine is all about.

If you've already read through the *other* side, you know that (spoiler alert!) the theme is "The Beauty of Sun Protection." Well, this side is about the unseen part – the *inner* beauty that is the recipe for the Foundation's success. Here, we showcase the programs and people that define our existence. They are thoughtful, effective, durable and real. New or old, big or small, we need every piece of the puzzle to bring it all together to complete the picture.

When I look at all the Foundation accomplishes in a year, I can't help but recognize beauty in everything we do. It's beautiful to hear a fellow dermatologist tell a patient that a free screening at one of our Destination Healthy Skin events may have saved her life. It's beautiful to read a renowned dermatologist's post on how he was inspired by the research grant we awarded him early in his career, so he is now raising money to give back and help support our work. It's beautiful to see people sharing their skin cancer stories on social media, and it's beautiful to hear that our website provided someone with peace of mind during a scary time. It's beautiful to see our Big See early detection commercial on TV, because I know how it went from an idea to a national campaign. And I feel, in my soul, the beauty when a donor looks me in the eye and says, "Yes, I believe in what you are doing and want to help."



↑ Mohs Surgeon at Work

If you saw me on the flip side on page 7 in my gown at the Gala, you will notice the contrast of me here, in scrubs, examining slides of a tumor under the microscope, a crucial part of performing Mohs surgery.

The ultimate beauty is in the magic that brings thousands of individuals and companies together in support of a common goal, to save and improve lives. As you read this section (then be sure to flip it over and catch the other side), I hope you feel the way I do and consider joining us. ■

DEBORAH S. SARNOFF, MD
President, The Skin Cancer Foundation

To learn more about how you can give, scan here.



› Changing the way patients are diagnosed and managed

We provide more than just a test result - our gene expression profile tests provide **accurate, objective, and personalized answers** that can help guide informed decisions and improve care for patients with melanoma or squamous cell carcinoma.

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›Melanoma

Decision Dx
›SCC

MyPath
›Melanoma

11,500+

ordering physicians

136,000+

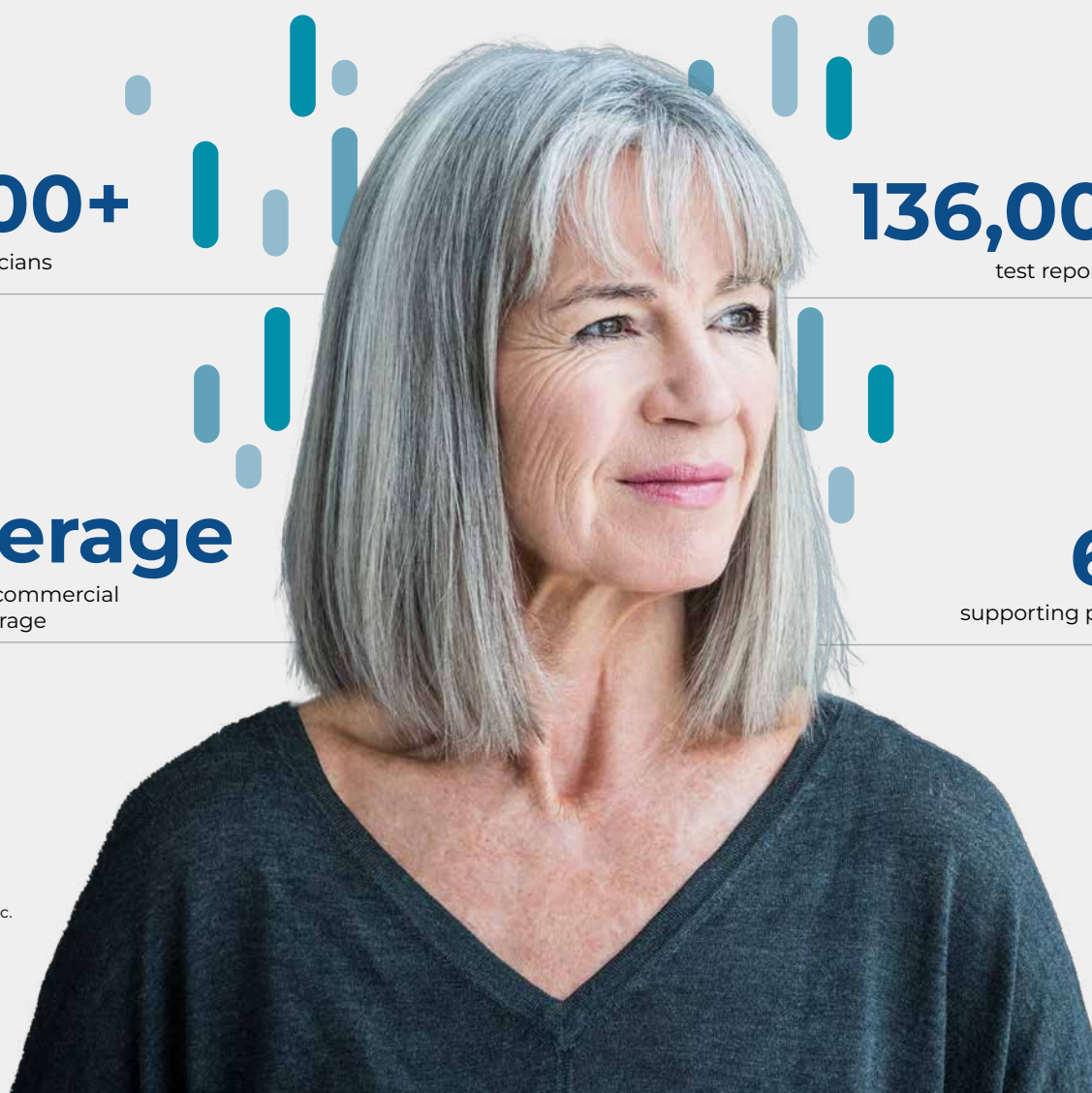
test reports delivered

Coverage

Medicare and commercial insurance coverage

65+

supporting publications



Learn more



CB-0016v1-022023

Message from Our *Founder*



TURNING THINGS UPSIDE DOWN

NOTICE ANYTHING unusual about this edition of *The Skin Cancer Foundation Journal*? It doesn't look like most magazines or annual reports, does it? Well, sometimes you just need to shake things up a little — try something different, because why not?

I've always known that, and I still do, as I approach my 93rd birthday in June. I knew it when I was the first in my family to go to college, despite my undiagnosed dyslexia and lack of funds. I managed to thrive after being drafted into the Army by honing my creative, entrepreneurial skills. In the 1950s, when I dreamed of becoming a doctor, this poor boy from Newark managed to do just that, but by attending medical school in Heidelberg and being forced to learn the curriculum in *German*.

The concept continued to serve me well. While I did my residency in dermatology, I wondered, *Why couldn't dermatologists also be surgeons?* With a little training from Frederic E. Mohs, MD, and a lot of chutzpah, I helped pave the way for dermatologists to practice what would become the gold standard for treating many skin cancers. That led to the establishment of the first formal training program for Mohs surgery and provided me with the opportunity to teach it in more than 50 countries all over the world.

↑
In 1980 while in Belgium, my dear friend, French dermatologist Robert Baran, MD (right), and I took an unconventional approach to promoting our latest issue of *The Journal of Dermatologic Surgery* with a willing statue.

Then, in 1979, I founded The Skin Cancer Foundation to fight the long-held belief that tanning was healthy. Some of my patients donated money to educate the public about skin cancer and the dangers of sun exposure. Almost no one understood the risks back then, so the Foundation created this magazine in 1982 to help spread the word about our work. This journal and our projects have evolved quite a bit since then — but always supported by the generous donations of people like you.

This magazine embodies the ideas I hold dear. Sometimes you have to shake it up and challenge conventional wisdom to make a difference. At The Skin Cancer Foundation, we are educating the public and implementing programs with innovative approaches that can change people's actions and save lives. There is power, satisfaction and, yes, beauty, in giving back. There is also plenty of fun to be had along the way. We encourage you to join in! ■

PERRY ROBINS, MD
Founder, The Skin Cancer Foundation



1

THE 2022 SKIN CANCER FOUNDATION CHAMPIONS FOR CHANGE GALA

THE PLAZA
NEW YORK CITY | MAY 12, 2022

OUR SIGNATURE ANNUAL EVENT RAISED \$625,000 FOR THE FOUNDATION'S LIFESAVING PROGRAMS.

1 Skin Cancer Foundation President **Deborah S. Sarnoff, MD**, welcomed everyone back to the ballroom, adding: "It feels so good to be back at The Plaza with The Skin Cancer Foundation family."



2

2 Skin Cancer Foundation Senior Vice President **C. William Hanke, MD**, President **Deborah S. Sarnoff, MD**, and her husband, **Robert Gotkin, MD**.
3 Comedian **Wali Collins** served as emcee and kicked off the event.

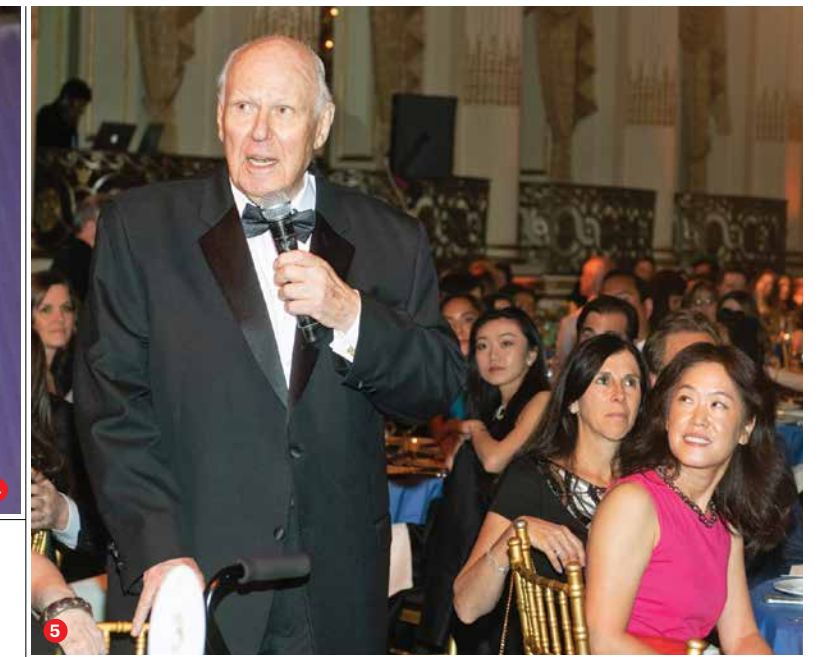


3



4

4 Guests enjoyed a performance by **Carter Rubin**, season 19 winner of NBC's *The Voice*. 5 Skin Cancer Foundation Founder **Perry Robins, MD**, addressed the crowd and thanked the Foundation's leadership for their support.



5



6



7

6 Gala Co-chair **Susan Manber** with friends, family and coworkers.
7 Gala Committee member **Shelley Tanner** applauds one of the program speakers.



8



8 Special guests **Taye Diggs** and **Troy Brookins**. 9 **Beth Goldstein, MD**, her daughter **Elianna Goldstein** and **Carol Trakimas, DO**.



10 Eric Loesch, MD, April Franzino, Jeremy A. Brauer, MD, Anate Brauer, MD, Kim Campbell, Ali Kinnie, Matt Miller and Kristin Miller, MD. 11 Gala Physician Co-chair Jesse M. Lewin, MD, addresses the crowd. 12 Gala Co-chair Adam Schweitzer invited his daughter Alexis Schweitzer up to the stage as he spoke about her support for the Foundation.



16 Ric Mango, Carter Rubin's grandfather and member of musical group Jay and the Americans, joined his grandson onstage for a duet. 17 David Shafer, MD, and Dendy Engelman, MD.



18 Skin Cancer Foundation Senior Vice President and Gala Committee member Elizabeth K. Hale, MD, and Gala Committee member Julie K. Karen, MD.



14 Skin Cancer Foundation Senior Vice President and Gala Committee member Elizabeth K. Hale, MD, Gala Physician Co-chair Ariel Ostad, MD, Alaleh Ostad, and Gala Committee member Mary L. Stevenson, MD. 15 2019 Champions for Change honoree and longtime supporter Sandy Klein and his wife, Eva Klein.



18 2022 Gala Committee members, front row from left: Skin Cancer Foundation President Deborah S. Sarnoff, MD, and Honorary Chair Marcia Robbins-Wilf, EdD. Second row: Joseph A. Dussich, Jennifer Dussich and Kim Campbell. Third Row: Brian Underwood, Co-chair Susan Manber, Skin Cancer Foundation Senior Vice President Elizabeth K. Hale, MD, and Shelley Tanner. Back row: Physician Co-chair Ariel Ostad, MD, Julie K. Karen, MD, Adele D. Haimovic, MD, Jesse M. Lewin, MD, and Mary L. Stevenson, MD. Not pictured: Co-chairs Adam and Stephanie Schweitzer, Co-chairs Ophelia and Bill Rudin, Jacqueline Flam, April Franzino, Celine Mactaggart, Kim Nichols, MD, and Maral K. Skelsey, MD.

THANK YOU!

We are grateful to the individuals and sponsors who came together to support our work.

2022 CHAMPIONS FOR CHANGE GALA SPONSORS

Glow Guardians

DermTech
L'Oréal Dermatological Beauty
Regeneron Pharmaceuticals, Inc.
Sanofi

Wellness Warriors

Annapath, Inc.
Castle Biosciences
Digita Health
EvolveMKD
Eau Thermale Avène
HeartBeat
PlowShare
Procter & Gamble
Publicis Health Media
Saatchi & Saatchi Wellness
Shiseido
RazorFish Health

Skin Savors

Banana Boat®
EltaMD Skin Care
Merck & Co., Inc.
Novartis
StrataDx

Shade Seekers

Checkpoint Therapeutics, Inc.
Coolibar Sun Protection You Wear
Garnier
The Lynne Waxman Foundation
Mustela
SanovaWorks
StriVectin
SurvivorNet
Vacation® Inc
VersaSpa

Wherever You Are, We're There for You

WITH SKIN CANCER INFORMATION YOU CAN TRUST



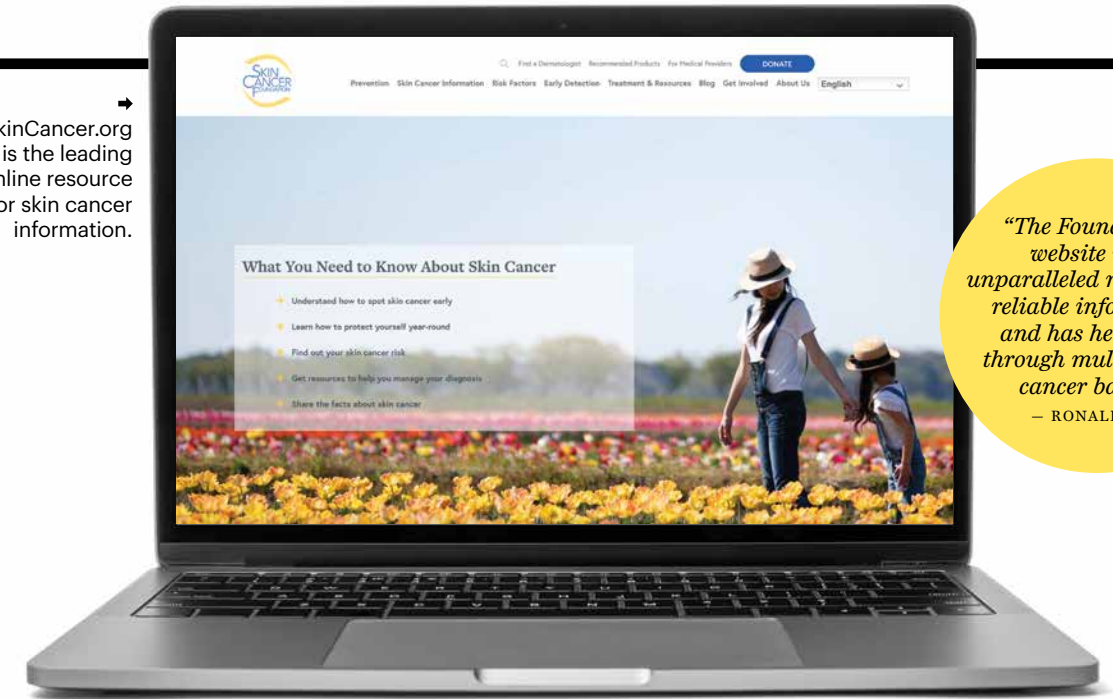
"The Skin Cancer Foundation has been a constant throughout my journey as a stage III melanoma warrior. This organization offers a variety of information and resources for anyone struggling through a skin cancer diagnosis or searching for prevention tips."
— CHRISSY C. —



Imagine this: You're on your way home from work when your dermatologist calls with bad news. You have a skin cancer called basal cell carcinoma, and you need to schedule surgery to remove it. Once the news sinks in, the questions start popping up and you go online. What is basal cell carcinoma? Is skin cancer dangerous? Does skin cancer spread? What happens during skin cancer surgery? You want credible answers, and you want them fast.

That's where we come in. No matter where you are — on the way back from work searching for quick answers, in your dermatologist's office reading educational brochures or at home looking for support on social media — The Skin Cancer Foundation is there for you with the information, guidance and resources you need.

→ SkinCancer.org is the leading online resource for skin cancer information.



"The Foundation's website is an unparalleled resource for reliable information and has helped me through multiple skin cancer battles."
— RONALD L. —

SkinCancer.org: Your First Stop for Skin Cancer Information

Each year, nearly **9 million people** visit SkinCancer.org. That's about 25,000 web visitors a day! It is often the first stop for people newly diagnosed with skin cancer. And while visitor motivations may differ, at the heart of it all, people go to our website for trustworthy, accurate skin cancer information, presented in a clear, easy-to-understand manner.



138 web pages: SkinCancer.org shines a spotlight on all aspects of the world's most common cancer, with comprehensive clinical content written and medically reviewed by experts. Whether you're looking for warning signs and details about specific types of the disease, skin cancer photos, guidance on risk factors, early detection, sun protection and recommended products or treatment information, we've got you covered.



300+ blog posts: Part of SkinCancer.org, our **Sun & Skin News** blog explores every healthy skin-related topic under the sun, answers lifestyle questions about sun protection and skin health and includes patient stories, celebrity interviews and advice from our physician experts.

"I especially enjoy the Sun & Skin News blog for the courageous and inspirational stories of survival."
— CHRISSY C. —



Patient support resources: Our Robins Nest online support program helps patients and caregivers find help for specific needs related to health-care access, medication safety, coping support and other services. Our goal is to point you in the right direction and connect you with a carefully curated collection of internal and external resources. That helps to empower you to make the right decisions for your situation.

Wherever You Are, *We're There for You*

"As a Mohs surgeon, I commend The Skin Cancer Foundation on the rich educational content that it produces both on the website and social media!"
— VITALY TERUSHKIN, MD —



Social Media: Creating Community for You

Beyond the education we offer, people follow us on social media because they want to connect with other skin cancer warriors, caregivers and healthy skin champions. Our active, engaged communities share the Foundation's posts, graphics, images, videos and survivor stories to help us reach more people and save more lives. Our community thrives on skin cancer education. Followers from all over the world support one another, participate in polls and provide feedback on topics ranging from sun protection to survivorship.

Connect with Us:

Facebook: @SkinCancerFoundation
Twitter: @SkinCancerOrg
Instagram: @SkinCancerOrg
TikTok: @SkinCancerOrg

LinkedIn: @TheSkinCancerFoundation
Pinterest: @SkinCancerOrg
YouTube: /SkinCancerFoundation



Translated in seven languages: Whether you speak Chinese, English, French, German, Italian, Portuguese or Spanish, the content is available in the language that serves you best.



Optimized for accessibility: Our site uses the principles of inclusive design. This allows content to be accessible for people who have vision or hearing impairment, and those who use voice control for navigation.

"Without this guidance, I would have continued to flounder in my quest to find the focused medical treatment that I needed."
— ROBINS NEST PATIENT —

"The skin cancer information you share is very helpful. I like the preventive posts because I always learn something new."
— JUDY E. —



The Skin Cancer Foundation Newsletter: Monthly Skin Health News and Tips

Our monthly e-newsletter delivers the latest skin cancer news and updates, including everything you need to know about prevention, early detection, warning signs and treatment right to your inbox. Each issue focuses on a trending topic and includes recent and relevant blog posts, skin health news, tips and shareable content.

Patient Education Brochures: Easy-to-Understand Print Materials

Every day, the Foundation's print education materials are shipped to medical offices, health clinics, schools and community centers across the country. Doctors rely on the Foundation's



brochures and posters to help explain the basics of skin cancer to patients. To reach specific audiences, we offer a range of informative posters showcasing skin cancer detection and prevention. We work closely with member dermatologists to break down confusing medical terminology so we can provide you with helpful and digestible information.



"The quality of the content and layout is amazing. There are so many articles I liked, but the one that stood out to me was Skin Cancer 101. You are the trusted source!"
— ERIN P. —



"Our dermatology practice ordered posters to go in each of our exam rooms. I particularly liked the modern graphic design of the poster and the relevant educational information for patients."
— ALICIA COOL, MD —

The Skin Cancer Foundation Journal: An Annual Magazine Focused on You

THERE'S A REASON that you'll find a copy of *The Skin Cancer Foundation Journal* in the office of every dermatologist in the U.S. This content-rich magazine is written for patients like you, who care deeply about skin health. As you flip through the *Journal*, you'll see feature articles about skin cancer prevention, detection and treatment, advice from top experts, interviews with celebrities and public figures and personal stories from everyday people who have experienced skin cancer. The magazine also highlights the Foundation's programs and events, as well as our members and donors who support us in the fight against the world's most common cancer. This year, we're shaking things up with two covers and two themes: One on the many benefits of recent innovations in sun protection; the other on the many benefits of giving back!

Beyond the RV

Destination Healthy Skin provides free skin cancer screenings and sun-protection samples for people around the country, but it also does much more. The program teaches everyone about early detection and what to look for on their own skin and, for many, helps spur them to see a dermatologist and get the treatment they need.

By Ali Venosa



City streets, boardwalks, suburbs, country fairs and mountain towns; our RV goes everywhere!

EACH SPRING, The Skin Cancer Foundation's Destination Healthy Skin RV hits the road, traveling coast to coast and stopping in dozens of communities along the way. Our crew teams up with local volunteer dermatologists to provide free full-body skin cancer screenings inside private exam rooms onboard the RV. We know these screenings have saved lives:

Since the program began, more than 11,000 suspected skin cancers have been identified. While we hope the program will grow in the future, we are proud that we provide an average of 1,500 free screenings annually. The impact of Destination Healthy Skin, though, goes beyond the physical exams the dermatologists provide.

For many people, seeing our RV, whether on the road or at an event, is the push they need to rethink their sun protection strategy or simply consider their skin health for the first time. The participant who swings by to pick up a tube of sunscreen is that much more likely to apply some that day. The person who glances at a brochure with self-exam instructions might look a little more closely at the unusual mole on their arm. The program inspires thousands of people to make healthier decisions, even if they never step aboard the RV.

With the help of our volunteer dermatologists, sponsors and donors, Destination Healthy Skin makes a difference in people's lives everywhere it goes. Whether our team is sending a mother home with a UPF-rated hat for her child or identifying a suspected melanoma, we hope to leave each community more aware, educated and protected against skin cancer than they were before.



↑ The dermatology team in Lander, Wyoming, traveled about three hours from Jackson to provide screenings to an underserved community.



↑ There were plenty of sun protection samples and education materials for these Los Angelinos to take to their next destination.



↑ A participant in Atlanta took home a copy of our Journal in her new tote bag, courtesy of our program partner DSM.



↑ C. William Hanke, MD, DHS event manager Amy, SCF Executive Director Dan Latore and Michael K. Crider, MD, in Indianapolis.

Stories from the Road, 2022

WHILE THE EVENT TEAM was setting up our event at the Sundance Mountain Resort in Utah, the back bolts of the RV came off. Volunteer dermatologist Jessica Collins, DO, thought quickly and called her husband, a welder. He fixed the problem, and the RV was able to get back on the road without any downtime.

IN WYOMING, Afton Cobb, MD, and Tyler Quest, MD, made the three-hour drive from Jackson to Lander to perform screenings. Dr. Cobb suggested the event location — she reported seeing a lot of advanced skin cancers on patients who had driven several hours to visit a dermatologist, so she wanted to volunteer in a more rural area. It was our first DHS event in Wyoming!

PETER GRAYLIN STUMBLED upon our Destination Healthy Skin RV outside his office in New York City. Volunteer dermatologist Jane Yoo, MD, performed a skin exam on Peter and immediately identified a spot on his leg as a potential melanoma. After convincing Peter to visit her office for a biopsy the next day, Dr. Yoo called Peter with the results — melanoma in situ. Dr. Yoo removed the cancer with excisional surgery, and Peter is grateful for the chance encounter that may have saved his life. Check out the video interview with Peter and Dr. Yoo on [SkinCancer.org/blog](https://www.skincancer.org/blog).



↑ The waiting room was packed in Tampa, which kept volunteer doctors busy with screenings all day. The Big See PSA plays on the waiting room monitor, reminding participants to look for anything new, changing or unusual on their skin.



↑ Colts mascot Blue stopped by to visit during our event at the Indianapolis Colts Training Camp.



↑ At the Minnesota State Fair, even attendees preoccupied with trying the latest deep-fried treats couldn't miss our RV, and plenty of fairgoers stopped by to take advantage of our service.



↑ The event team demonstrates their sun safety smarts by wearing hats and sunglasses during our Dallas event.

Our Destination Healthy Skin 2022 Program by the Numbers

ON THE GROUND:

12,000+ miles traveled by our custom RV with two private exam rooms.

24 communities visited to deliver free screenings and skin cancer education.

1,414 free skin cancer screenings provided by 50 volunteer dermatologists.

513 potential skin cancers and precancers identified, including 33 suspected melanomas.

7,500+ people received free educational materials and sun protection products.

ONLINE:

We promote Destination Healthy Skin on our website and social media channels throughout the program. By sharing stories from the road online, we ensure that every member of our audience is exposed to the lifesaving benefits of Destination Healthy Skin — even if they can't make it to an event in person. **More than 32,000 people visited Destination Healthy Skin content on our website in 2022.**



YOUR COMMUNITY NEEDS YOU

The Skin Cancer Foundation is looking for licensed dermatologists to join our team of Destination Healthy Skin volunteers. As a volunteer, you'll perform free, full-body skin cancer screenings in our customized, air-conditioned RV, equipped with two private exam rooms.

2023 FREE SCREENING EVENTS

Events are 10 AM – 4 PM. Volunteers may sign up for morning (10 AM – 1 PM), afternoon (1 PM – 4 PM), full-day or two-day shifts.

MAY

New York, NY
Washington, DC
Charlotte, NC
Raleigh, NC
Atlanta, GA
Orlando, FL

JUNE

Palm Beach County, FL
Tampa, FL
Dothan, AL
Dallas, TX
Houston, TX
Austin, TX
Tucson, AZ

JULY

Phoenix, AZ
Encinitas, CA
Newport Beach, CA
Seattle, WA
Kennewick, WA
Jackson, WY
Sundance, UT

AUGUST

Kansas City, KS
Chicago, IL
Indianapolis, IN
Detroit, MI
Buffalo, NY
Pittsburgh, PA
Columbus, OH

SEPTEMBER

Louisville, KY
Nashville, TN
Rockford, IL

▶ TO VOLUNTEER, CONTACT: ALI VENOSA | AVENOSA@SKINCANCER.ORG | 646.583.7979 ◀



LEARN MORE ABOUT VOLUNTEER BENEFITS AT [DESTINATIONHEALTHYSKIN.ORG/VOLUNTEER.](https://www.skincancer.org/destinationhealthy-skin/volunteer)

Plenty of people learn about the program on their local news and head down to the RV for a screening. But we're confident that for many more viewers, news coverage of Destination Healthy Skin prompts them to examine their skin or make a perhaps overdue appointment with their dermatologist.



2022 DESTINATION HEALTHY SKIN VOLUNTEERS

Every year, dozens of dermatologists donate their time and expertise to perform skin cancer screenings at Destination Healthy Skin events. Without their generosity, the program wouldn't be possible. We extend our thanks to last year's volunteers:

- Morayo Adisa, MD
- Jeremy A. Brauer, MD
- Michelle Bussmann, MD
- Lisa A. Carrol, MD
- Mimi Cho, MD
- Christopher Chu, MD
- Afton Cobb, MD
- Jessica Collins, DO
- Michael P. Conroy, MD
- Michael K. Crider, MD
- Julie Cronk, MD
- Natalie Curcio, MD
- Elle de Moll, MD
- Annette M. Dinnen, MD
- Jessica Donigan, MD
- Susan E. Dozier, MD
- Adolfo Fernandez-Obregon, MD
- Rutledge Forney, MD
- Adam J. Friedman, MD
- Michelle Goedken, DO
- Steven Greene, MD
- Carin Gribetz, MD
- James Griffith, MD
- Daniel Gross, MD
- Adele D. Haimovic, MD
- Elizabeth K. Hale, MD
- Carsten R. Hamann, MD
- Dathan Hamann, MD
- Erum Ilyas, MD
- Helena Jenkinson, MD
- Jesse Jensen, DO
- Julie K. Karen, MD
- Ivy Lee, MD
- Jesse M. Lewin, MD
- Sean McGuire, MD
- Rajiv Nijhawan, MD
- Christopher I. Obeime, MD
- Maritza I. Perez, MD
- Tyler Quest, MD
- Amy Ross, MD
- Joseph Shaffer, MD
- Farah Shah, MD
- Nahid E. Sharooz, MD
- Aleta Simmons, MD
- Maria Sotomayor, MD
- Mina Swofford, MD
- Mohiba Tareen, MD
- Carol Trakimas, DO
- Jane Yoo, MD

The 2022 Destination Healthy Skin program was made possible by generous support from CVS Pharmacy; EltaMD Skin Care; DSM; Coolibar; EMD Serono and Pfizer; Genentech, A Member of the Roche Group; an independent grant from Merck & Co., Inc.; and The Lynne Waxman Foundation.

What Our Participants Have to Say

"I am so relieved that your service is available – I struggle with health-care processes. Your RV makes it easy."
— Raleigh, North Carolina —

"Important, thanks for doing this. Four members of my family have had skin cancer."
— Tampa —

"It's wonderful that you provide this to the community for free."
— Tucson —

"There is a misconception within the African American community that we can't get skin cancer. I know it's not true, so I wanted to get examined."
— Seattle —

"I want to set a good example for my daughters."
— Tempe, Arizona —

"I've been putting off my dermatologist visit for a while, and I was just riding my bike right by you and it was a sign!"
— Sundance, Utah —

"Great service for people without health insurance! Thank you!"
— Nashville —

"So grateful for this screening!"
— Venice, California —

"This could potentially save my life"
— Raleigh, North Carolina —

The DermTech melanoma test is a clinician-ordered laboratory developed test (LDT) and is regulated under the Clinical Laboratory Improvement Amendments (CLIA). DermTech's laboratory is qualified to perform high complexity testing, developed and analytically validated the LDT in accordance with CLIA standards, and is also accredited by the College of American Pathologists and New York Dept. of Health. The test is not reviewed or approved by the FDA.

This sticker could help save a life.

The innovative DermTech Melanoma Test uses Smart Stickers™ to non-invasively lift skin cells from the surface of an uncertain mole to test for select genomic markers found in most melanomas.

If you want to find a specialist who offers the DermTech Melanoma Test visit: dermtech.com/find.



DermTech

Get to Know Our 2022 Research Grants Awardees

Each year, The Skin Cancer Foundation awards grants to three early career investigators whose work shows promise in helping to prevent, detect or treat skin cancer. Previous recipients of this long-standing program, headed by Committee Chair David Polsky, MD, PhD, have become some of the brightest stars in their fields. Allow us to introduce you to our most recent winners and learn what motivates them professionally and personally.



Dr. Marcia Robbins-Wilf Research Grant Award

\$25,000

AWARDEE: Bilal Fawaz, MD, *Assistant Professor of Dermatology, Boston University*

TITLE OF PROJECT: Combination of 5-Fluorouracil and Calcipotriene in the Treatment of Superficial Basal Cell Carcinomas and Squamous Cell Carcinomas in Situ

Dr. Fawaz's research will determine the clearance rate of these superficial skin cancers by combining two topical creams twice daily for 7 to 14 days. "By offsetting the cost of the participation in the study," he says, "the grant enabled us to aim for a larger sample size and to recruit more patients, thereby strengthening the quality of evidence obtained from the study."

AT WORK: "My main passion is education. Being involved in training the next generation of dermatologists motivates me to constantly improve as a clinician-educator and as a researcher. I also enjoy participating in clinical research that directly impacts patient care."

AT PLAY: "I love outdoor activities, including snowboarding, kiteboarding and cycling – with broad-spectrum, SPF 30, water-resistant sunscreen, of course, as well as ski goggles and face masks (for snowboarding) and a wetsuit or clothing with ultraviolet protection factor (UPF) for kiteboarding."



Ashley Trenner Research Grant Award

\$50,000

AWARDEE: Aditi K. Sahu, PhD, *Senior Research Scientist, Memorial Sloan Kettering Cancer Center, New York City*

TITLE OF PROJECT: Single-Cell Profiling for Identifying Markers of Melanoma Invasion

"The grant is helping to uncover markers associated with aggressive melanoma," says Dr. Sahu. "Using noninvasive imaging and high-resolution RNA sequencing, we're investigating novel markers specific for invasive melanomas that will improve diagnosis and prognostication."

AT WORK: "The prospect of impacting patient lives is the main motivation. The possibility of discovery at any given moment while doing research always keeps it engaging and interesting. As my mentor often says, there's never a dull moment in science!"

AT PLAY: "When I'm not in the lab, my favorite things to do are culinary experimentation in the kitchen, dancing and vegan activism."

Todd Nagel Memorial Research Grant Award

\$50,000

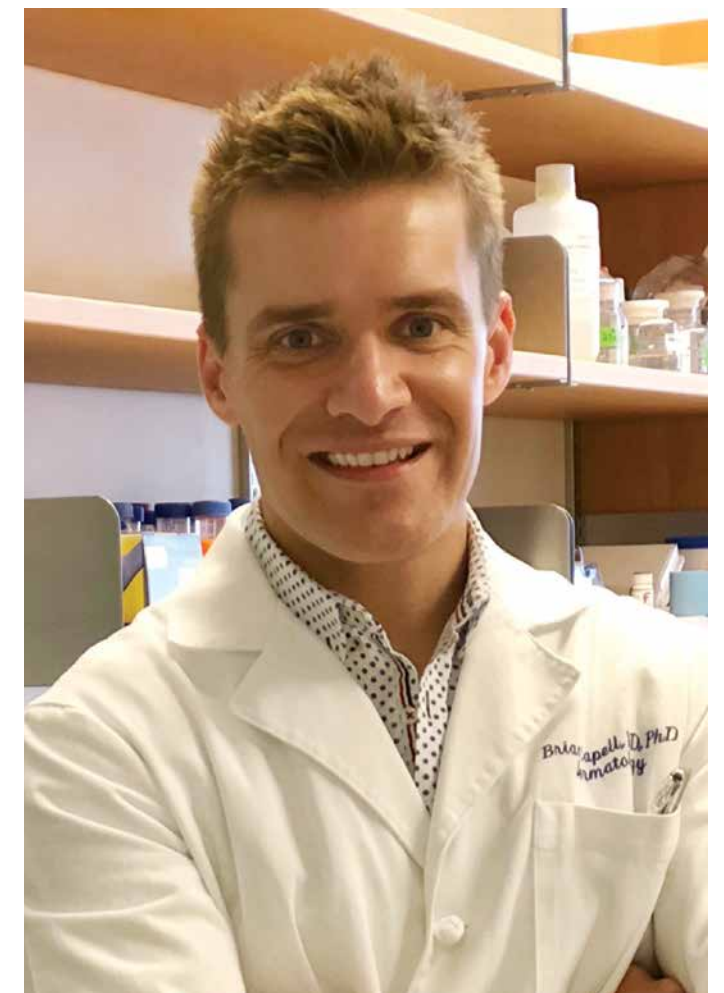
AWARDEE: Brian C. Capell, MD, PhD, *Assistant Professor of Dermatology and Genetics, University of Pennsylvania Perelman School of Medicine, Philadelphia*

TITLE OF PROJECT: Elucidating Epitranscriptomic Mechanisms to Inhibit Keratinocyte Cancers

The goal of this research, Dr. Capell says, "is to test a new approach for treating and preventing nonmelanoma skin cancers using RNA epigenetics or epitranscriptomics, a realm of gene regulation that can be targeted with novel drugs."

AT WORK: "The chance to discover something new that can change science or impact patients' lives makes going to the lab exciting each day and highly motivating. I feel very lucky to have this job and to be able to pursue new and exciting questions and be surrounded by brilliant colleagues and trainees."

AT PLAY: "By far, my biggest passion is spending time with my family, especially with my two daughters (ages 4 and 6). Beyond that, I enjoy working out, sports, visiting museums and studying piano."



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APPLICATION PERIOD OPENS
MAY 2023

Recipients are awarded in September 2023
For more information, criteria and to apply online, go to:
SkinCancer.Org/Research



Many people think skin cancer's no big deal. The reality is, more than 2 people die from skin cancer every hour. See something new, changing or unusual? It could be skin cancer. Check yourself for The Big See today.

TheBigSee.org



← Dan says that losing a friend to cancer has changed his perspective on life and the work we do at the Foundation.

I THOUGHT I UNDERSTOOD

From our Executive Director, Dan Latore

IN MY 16 YEARS with The Skin Cancer Foundation, I've seen questions about everything from freckles to stage IV melanoma, and I've heard many stories of tragedy and hope. I've learned the perspectives of dermatologists and oncologists, as well as researchers at institutions and pharmaceutical companies. I've seen family members diagnosed with skin cancers, and I believed I had a handle on everything we are doing here. I thought I understood.

Then in March 2022, one of my closest friends called to tell me he had been diagnosed with cancer. I was one of the first people he called. It wasn't skin cancer, but it doesn't matter. I did everything I could to be there for him and his family. Together, we searched for information about his condition. We shared links to websites with details about treatments. We gathered articles about other people with similar experiences. We researched specialists and looked into the best foods to eat. I even shared our story from our 2021 *Journal* that explained how immunotherapies work, as it was written in a way that everyone could understand, no matter what their diagnosis. Information can be fuel to continue the fight.

I watched him battle, with everything he had, to be a good father, husband, brother and friend while he quietly endured chemotherapy, radiation, surgery and immunotherapy. It didn't seem possible we could lose him, but in December, we did. Over those all-too-few nine months, my view of organizations like The Skin Cancer Foundation came full circle.

I couldn't be prouder of the people who are involved in our mission and the work that we do. Our president, Dr. Deborah Sarnoff, and our founder, Dr. Perry Robins, along with our board, officers and committee members, lead the organization and set the path forward. Our staff works passionately to deliver our programs and make sure we connect our audience with accurate, up-to-date and easy-to-understand information, across all platforms. Our work is trusted and reaches millions. People in the media who reach out to us also help our message reach millions more.

The physicians who donate their time and money are essential for us to achieve our goals. So are the sponsors and partners who weave our mission into theirs and provide the funds to keep us going. And, of course, our donors' gifts come from the heart, as every dollar has a story that lives on through our programs. To all of you, I say thank you. Let's keep working together, so fewer people have to see loved ones suffer or die and say, "Now, I understand." ■

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For a list of The Skin Cancer Foundation's Physician Members, visit page 32.



Community

Core Values

By combining her fitness expertise with her firsthand knowledge of skin cancer, California personal trainer and melanoma survivor Danielle Frankl created a community event to raise awareness and money for a cause close to her heart.

By Krista Bennett DeMaio

WHEN DANIELLE FRANKL returned from a college semester abroad in Italy, her aunt noticed something different about her. No, it wasn't her fresh-from-Europe radiance. Instead, something was not exactly *new* but was changing and unusual on the then-21-year-old's face: It was a mole that didn't look the same as when she had left for her trip a few months earlier. On her aunt's insistence, Dani made an appointment with a dermatologist to get the mole checked. After a biopsy, the diagnosis came back as stage II melanoma.

↑
A Team Effort
—
Dani, right of the dog, had a great turnout of participants and supporters for her plank challenge fundraiser.

While highly upsetting, it wasn't entirely surprising to Dani, who grew up in Corona, California. "I used to let my fair skin get sunburned in the hopes of getting a golden tan," says the now 25-year-old fitness trainer. A light skin tone, multiple sunburns as a child and a family history of melanoma put Dani at a higher risk for developing skin cancer. She underwent surgery to remove the tumor and a sentinel lymph node biopsy to check if cancer had spread to nearby lymph nodes. Fortunately, it hadn't. "The incision ran from my eyebrow to the top corner of my forehead and down to my earlobe," she

Recovery
—
Dani shows the extensive reconstruction after her surgery. She says she could feel the nerves regenerate about a year later, and she has since regained full feeling on that side of her face.



describes. The surgery left her with numbness in the area that lasted about a year, and a lengthy scar. The experience left Dani feeling grateful to be cancer-free, with a newfound appreciation for her skin and the passion to raise awareness for skin cancer. In the fall of 2021, Dani landed a job at Recoup Personal Training, a family-owned fitness studio in Costa Mesa, California. The owners told Dani that giving back to the community is a big part of their mission, and they would gladly support any causes she felt strongly about. That got her wheels turning, and in March 2022, Danielle put together a community planking challenge, a core move that involves holding your body parallel to the floor in a position similar to a push-up, to benefit The Skin Cancer Foundation. "I found the Foundation's website and liked how much of the donations go toward prevention and research." Danielle reached out to The Skin Cancer Foundation, who provided her with tools to make her event a suc-

MATTISON FETTERS



↑
Support System
—
Dani's father, right, had the important task of keeping his daughter motivated, correcting her plank form and stopping the timer when she needed a break.

cess, including educational resources and sunscreen samples from a corporate partner. The event was called PPP, for "potluck, plank and party." "We wanted to make it fun, so we put a water cup on the participants' backs. If the cup fell, their timer went off and they were out." The winner was a 67-year-old woman who held a plank for a whopping six minutes and 32 seconds. Recoup Personal Training set up a sponsorship page for participants where friends, family and community members could donate. There were also raffle prizes. The event raised about \$6,000 for The Skin Cancer Foundation. At press time, Dani and Recoup Personal Training were gearing up for their second annual potluck party. This time, participants will be rowing in the gym (using machines borrowed from a local CrossFit) not planking. For Dani, it's less about the specific exercise and more about getting her community together for a cause. "Many of us probably know someone who has had skin cancer," she says. "So it's an amazing opportunity to get together and raise awareness and money toward something so profound and important." ■

Want to Create Your Own Community Event?
Let's chat! The Skin Cancer Foundation can help make your fundraiser a success. Send us an email at development@skincancer.org or call us at 212.725.5176 to get the ball rolling.

Dear Dermatologist,
Do you know where
your patients go
when they leave
your office?

We do.

They come to The Skin Cancer Foundation. Every day, 25,000 people visit our website to learn more about their skin cancer. We work closely with our member dermatologists to deliver programs that help your patients and ultimately save lives.

Join us on our mission.

[SkinCancer.org/membership](https://www.skincancer.org/membership)

Become a member and extend your reach beyond your office.

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We are grateful for our donors, who are committed to advancing our lifesaving mission. Their gifts enable us to continue our vital programs and reach millions of people with information to prevent, detect and treat skin cancer. We are honored to recognize these individuals, corporations and foundations for their generosity and goodwill.

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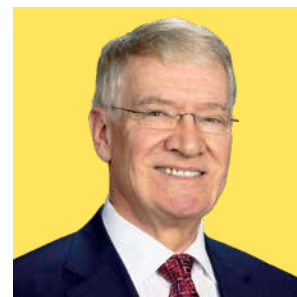


Rex A. Amonette, MD



Johnnie Amonette

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“

I am proud to be chair of this outstanding — and growing — group of physicians who have demonstrated their commitment to **SAVING AND IMPROVING LIVES**. These physicians have donated their time, resources and expertise to The Skin Cancer Foundation to ensure skin cancer patients around the country, and the world, have access to tangible programs and credible information when they are most in need.

”

— C. WILLIAM HANKE, MD,
SENIOR VICE PRESIDENT AND
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The Skin Cancer Foundation's founder, Perry Robins, MD, was a pioneering practitioner of Mohs surgery, which today is considered the most effective technique for treating many non-melanoma skin cancers. Members of the Robins Fund are physicians who are fellowship-trained and/or board-certified Mohs surgeons. They support our educational initiatives focused on Mohs surgery along with our early detection programs.

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 THE NETHERLANDS Kai Munte, MD Hendrik A.M. Neumann, MD	 UKRAINE Olga Bogomolets, MD, PhD	

MAY IS SKIN CANCER AWARENESS MONTH.
Remind your patients to treat their AKs now.

People 51 years or older with ≥10 AK lesions have 3 times the risk of a prior SCC incidence.¹
SCC, squamous cell carcinoma.

Visible actinic keratoses (AKs) often indicate the presence of subclinical lesions.²

DANGER LURKS BELOW THE SURFACE

AMELUZ[®] (aminolevulinic acid HCl) topical gel, 10% with BF-RhodoLED[®] is the first and only combination product for photodynamic therapy (PDT) approved for field-directed treatment of AK of mild-to-moderate severity on the face and scalp,³ which allows subclinical lesions to also be addressed.^{2,4}

AMELUZ[®]
[aminolevulinic acid & BF-RhodoLED[®]
HCl] topical gel, 10%

INDICATION

AMELUZ[®] (aminolevulinic acid hydrochloride) topical gel, 10%, in combination with photodynamic therapy (PDT) using BF-RhodoLED[®] or RhodoLED[®] XL lamp, a narrowband, red light illumination source, is indicated for lesion-directed and field-directed treatment of actinic keratoses (AKs) of mild-to-moderate severity on the face and scalp.

IMPORTANT SAFETY INFORMATION

AMELUZ[®] (aminolevulinic acid hydrochloride) topical gel, 10% with BF-RhodoLED[®] or RhodoLED[®] XL lamp

AMELUZ[®], containing 10% aminolevulinic acid hydrochloride, is a non-sterile gel formulation for topical use only. Not for ophthalmic, oral, or intravaginal use.

AMELUZ[®], in conjunction with lesion preparation, is only to be administered by a health care provider. Photodynamic therapy with AMELUZ[®] involves preparation of lesions, application of the product, occlusion and illumination with BF-RhodoLED[®] or RhodoLED[®] XL. The application area should not exceed 20 cm² and no more than 2 grams of AMELUZ[®] (one tube) should be used at one time. Lesions that have not completely resolved shall be retreated 3 months after the initial treatment. Refer to BF-RhodoLED[®] or RhodoLED[®] XL user manual for detailed lamp safety and operating instructions. Both patient and medical personnel conducting the PDT should adhere to all safety instructions.

AMELUZ[®] shall not be used by persons who have known hypersensitivity to porphyrins or any of the components of AMELUZ[®], which includes soybean phosphatidylcholine. AMELUZ[®] should also not be used for patients who have porphyria or photodermatoses.

Hypersensitivity reactions have been reported with the use of AMELUZ[®] prior to photodynamic therapy (PDT). AMELUZ[®] should be washed off and appropriate therapy instituted. Inform patients and their caregivers that AMELUZ[®] may cause hypersensitivity, potentially including severe courses (anaphylaxis).

Transient Amnesic Episodes have been reported during postmarketing use of AMELUZ[®] in combination with photodynamic therapy (PDT). If patients experience amnesia or confusion, discontinue treatment. Advise them to contact the healthcare provider if the patient develops amnesia after treatment.

Eye exposure to the red light of the BF-RhodoLED[®] or RhodoLED[®] XL lamp during PDT must be prevented by protective eyewear. Direct staring into the light source must be avoided. AMELUZ[®] increases

photosensitivity. Patients should avoid sunlight, prolonged or intense light (e.g., tanning beds, sun lamps) on lesions and surrounding skin treated with AMELUZ[®] for approximately 48 hours following treatment whether exposed to illumination or not.

AMELUZ[®] has not been tested on patients with inherited or acquired coagulation disorders. Special care should be taken to avoid bleeding during lesion preparation in such patients. Any bleeding must be stopped before application of the gel. AMELUZ[®] should not be used on mucous membranes or in the eyes.

Local skin reactions at the application site were observed in about 99.5% of subjects treated with AMELUZ[®] and narrow spectrum lamps. The very common adverse reactions (≥10%) during and after PDT were application site erythema, pain/burning, irritation, edema, pruritus, exfoliation, scab, induration, and vesicles. Most adverse reactions occurred during illumination or shortly afterwards, were generally of mild or moderate intensity, and lasted for 1 to 4 days in most cases; in some cases, however, they persisted for 1 to 2 weeks or even longer. Severe pain/burning occurred in up to 30% of treatments.

There have been no formal studies of the interaction of AMELUZ[®] with other drugs. Concomitant use of the following photosensitizing medications may increase the phototoxic reactions after PDT: St. John's wort, griseofulvin, thiazide diuretics, sulfonyleureas, phenothiazines, sulphonamides, quinolones, and tetracyclines.

There are no available data on AMELUZ[®] use in pregnant women to inform a drug associated risk. No data are available regarding the presence of aminolevulinic acid in human milk, the effects of aminolevulinic acid on the breastfed infant or on milk production. Safety and effectiveness in pediatric patients below the age of 18 have not been established as AK is not a condition generally seen in the pediatric population. No overall differences in safety or effectiveness were observed between elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

Please read the US Full Prescribing Information for AMELUZ[®] and/or US User Manual of BF-RhodoLED[®] and/or RhodoLED[®] XL lamp available together at <https://www.ameluz.com/PI>.

You are encouraged to report side effects of AMELUZ[®]. Please contact Biofrontera Inc. at 1-844-829-7434 or FDA at 1-800-332-1088 or www.fda.gov/medwatch.

References: 1. Flohil C, van der Leest R, Dowlatshahi E, Hofman A, de Vries E, Nijsten T. Prevalence of actinic keratosis and its risk factors in the general population: the Rotterdam Study. *J Invest Dermatol.* 2013;133(8):1971-1978. 2. Berman B, Amini S, Valins W, Block S. Pharmacotherapy of actinic keratosis. *Expert Opin Pharmacother.* 2009;10(18):3015-3031. 3. AMELUZ[®] [prescribing information]. Woburn, MA: Biofrontera Inc; 2021. 4. Reinhold U. A review of BF-200 ALA for the photodynamic treatment of mild-to-moderate actinic keratosis. *Future Oncol.* 2017;13(27):2413-2428.

Please see brief summary of full Prescribing Information on adjacent page.

Biofrontera

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AT [AMELUZ.COM/HCP](https://www.ameluz.com/HCP)



BRIEF SUMMARY OF PRESCRIBING INFORMATION

This Brief Summary does not include all the information needed to use AMELUZ safely and effectively. See full prescribing information for AMELUZ.

AMELUZ® (aminolevulinic acid hydrochloride) topical gel, 10% with BF-RhodoLED® Lamp or RhodoLED® XL Lamp

INDICATIONS AND USAGE

AMELUZ, in combination with photodynamic therapy (PDT) using BF-RhodoLED® or RhodoLED® XL Lamp, a narrowband, red light illumination source, is indicated for lesion-directed and field-directed treatment of actinic keratoses (AKs) of mild-to-moderate severity on the face and scalp.

DOSAGE AND ADMINISTRATION

AMELUZ, in conjunction with lesion preparation, is only to be administered by a health care provider. AMELUZ, containing 10% aminolevulinic acid hydrochloride, is a non-sterile gel formulation for topical use only. Not for ophthalmic, oral, or intravaginal use.

Photodynamic therapy with AMELUZ involves preparation of lesions, application of the product, 3h occlusion and illumination with BF-RhodoLED or RhodoLED XL. The application area should not exceed 20 cm² and no more than 2 grams of AMELUZ (one tube) should be used at one time. Lesions that have not completely resolved shall be retreated 3 months after the initial treatment. Refer to BF-RhodoLED or RhodoLED XL user manual for detailed lamp safety and operating instructions. Both patient and medical personnel conducting the PDT should adhere to all safety instructions.

CONTRAINDICATIONS

AMELUZ is contraindicated in patients with:

- Known hypersensitivity to porphyrins.
- Known hypersensitivity to any of the components of AMELUZ, which includes soybean phosphatidylcholine.
- Porphyrria. AMELUZ use may cause uncontrolled phototoxic effects.
- Photodermatoses. PDT may worsen the phototoxic or photoallergic reactions.

WARNINGS AND PRECAUTIONS

Hypersensitivity

Several cases of hypersensitivity were reported during postmarketing use of AMELUZ prior to PDT illumination. If allergic reactions occur, clean the area of skin where the product was applied and institute appropriate therapy. Inform patients and their caregivers that AMELUZ may cause hypersensitivity, potentially including severe courses (anaphylaxis).

Transient Amnestic Episodes

Transient amnestic episodes have been reported during postmarketing use of AMELUZ in combination with photodynamic therapy. Inform patients and their caregivers that AMELUZ in combination with photodynamic therapy may cause transient amnestic episodes. Advise them to contact the healthcare provider if the patient develops amnesia after treatment.

Risk of BF-RhodoLED or RhodoLED XL Lamp Induced Eye Injury

BF-RhodoLED or RhodoLED XL Lamp may cause eye irritation, glare, or injury. Before operating the lamp, personnel must refer to the user manual for specific warnings, cautions, and instructions. Eye exposure to the BF-RhodoLED or RhodoLED XL light must be prevented. Protective eye equipment must be used by patient, healthcare providers and any person present during the illumination period. Avoid staring directly into the light source.

Increased Photosensitivity

AMELUZ increases photosensitivity. Avoid sunlight, prolonged or intense light (e.g., tanning beds, sun lamps) on lesions and surrounding skin treated with AMELUZ for approximately 48 hours following treatment, whether exposed to illumination or not. Concomitant use of AMELUZ with other known photosensitizing agents may increase the risk of phototoxic reaction to PDT.

Risk of Bleeding in Patients with Coagulation Disorders

AMELUZ has not been tested on patients with inherited or acquired coagulation disorders. Special care should be taken to avoid bleeding during lesion preparation in such patients. Any bleeding must be stopped before application of the gel.

Ophthalmic Adverse Reactions

Eye/eye lid edema has occurred with AMELUZ application. AMELUZ can cause ophthalmic adverse reactions. AMELUZ is intended for topical use only. Do not apply AMELUZ into the eyes. Rinse eyes with water in case of accidental contact.

Risk of Mucous Membrane Irritation

AMELUZ can cause mucous membrane irritation. AMELUZ is intended for topical use only. Do not apply AMELUZ to the mucous membranes. Rinse with water in case of accidental contact.

ADVERSE REACTIONS

The following adverse reactions are discussed in greater detail in other sections [see Warnings and Precautions]: Hypersensitivity, Transient Amnestic Episodes, Risk of BF-RhodoLED or RhodoLED XL Lamp Induced Eye Injury, Increased Photosensitivity, Risk of Bleeding in Patients with Coagulation Disorders, Ophthalmic Adverse Reactions, Risk of Mucous Membrane Irritation.

Clinical Trial Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

The clinical program for AMELUZ included three double-blind and placebo-controlled trials (Trials 1, 2, and 3), enrolling a total of 299 subjects that were treated with narrow band light. Trial subjects were adults greater than or equal to 49 years of age, and the majority had Fitzpatrick skin type I, II, or III. No subjects had Fitzpatrick skin type V or VI. Approximately 86% of subjects were male, and all subjects were Caucasian.

For all trials, the enrolled subjects had mild to moderate AKs (Olsen grade 1 and 2) with 4 to 8 lesions on the face and scalp. Overall, 87 placebo-treated subjects (n=16, n=32, n=39) and 212 AMELUZ-treated subjects (n=32, n=55, and n=125) were illuminated with BF-RhodoLED or similar narrow spectrum lamps.

Local skin reactions at the application site were observed in about 99.5% of subjects treated with AMELUZ and narrow spectrum lamps. The most frequent adverse reactions during and after PDT were application site erythema, pain, burning, irritation, edema, pruritus, exfoliation, scab, induration, and vesicles.

Most adverse reactions occurred during illumination or shortly afterwards, were generally of mild or moderate intensity, and lasted for 1 to 4 days in most cases; in some cases, however, they persisted for 1 to 2 weeks or even longer. Severe pain/burning occurred in up to 30% of subjects. In one case, the adverse reactions required interruption or discontinuation of the illumination.

The incidence of common (\geq 1%, <10%) and very common (\geq 10%) adverse reactions in randomized, multicenter trials at the application site are presented in Table 1.

Table 1: Incidence of Adverse Reactions Occurring at \geq 1% of the AMELUZ Group and More Frequently than the Vehicle Group in the Actinic Keratosis Trials at the Application Site

Adverse reaction	Vehicle n=87	AMELUZ n=212
Adverse reactions at the application site		
Erythema	34 (39%)	195 (92%)
Pain/Burning	26 (30%)	195 (92%)
Irritation	17 (20%)	153 (72%)
Edema	3 (3%)	75 (35%)
Pruritus	14 (16%)	72 (34%)
Exfoliation	4 (5%)	41 (19%)
Scab	2 (2%)	41 (19%)
Induration	0 (0%)	26 (12%)
Vesicles	1 (1%)	25 (12%)
Paresthesia	2 (2%)	18 (9%)
Hyperalgesia	0 (0%)	13 (6%)
Reaction	2 (2%)	8 (4%)
Discomfort	0 (0%)	7 (3%)
Erosion	0 (0%)	6 (3%)
Discharge	0 (0%)	4 (2%)
Bleeding	0 (0%)	3 (1%)
Pustules	0 (0%)	3 (1%)

Common (\geq 1%, <10%) adverse reactions not at the application site for AMELUZ were headache, skin exfoliation, chills and eyelid edema. Less common (\geq 0.1%, <1%) adverse reactions at the application site for AMELUZ were hemorrhage and swelling. The adverse reactions not at the application site were blister, feeling hot, pruritus, pyrexia, scab, nervousness, pain, petechiae, rash pustular, skin erosion and ulcer. In a clinical trial designed to investigate the sensitization potential of aminolevulinic acid with 216 healthy subjects, 13 subjects (6%) developed allergic contact dermatitis after continuous exposure for 21 days with doses of aminolevulinic acid that were higher than doses normally used in the treatment of AK.

Postmarketing Experience

The following adverse reactions have been reported during post-approval use of AMELUZ. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

Skin and subcutaneous tissue disorders: allergic dermatitis, application site inflammation, application site discoloration.

Eye disorders: eye irritation, diplopia, ocular hyperemia, photophobia, and blurred vision.

General disorders and administration site conditions: fatigue.

Immune System disorders: hypersensitivity.

Nervous system disorders: dysaesthesia, transient amnestic episodes.

DRUG INTERACTIONS

There have been no formal studies of the interaction of AMELUZ with other drugs. It is possible that concomitant use of other known photosensitizing agents such as St. John's wort, griseofulvin, thiazide diuretics, sulfonyleureas, phenothiazines, sulphonamides, quinolones and tetracyclines may enhance the phototoxic reaction to PDT.

USE IN SPECIFIC POPULATIONS

Pregnancy

There are no available data on AMELUZ use in pregnant women to inform a drug associated risk. Animal reproduction studies were not conducted with aminolevulinic acid. Systemic absorption of aminolevulinic acid in humans is negligible following topical administration of AMELUZ under maximal clinical use conditions. It is not expected that maternal use of AMELUZ will result in fetal exposure to the drug. The estimated background risk of major birth defects and miscarriage for the indicated population are unknown. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2% to 4% and 15% to 20%, respectively.

Lactation

No data are available regarding the presence of aminolevulinic acid in human milk, the effects of aminolevulinic acid on the breastfed infant or on milk production. However, breastfeeding is not expected to result in exposure of the child to the drug due to the negligible systemic absorption of aminolevulinic acid in humans following topical administration of AMELUZ under maximal clinical use conditions. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for AMELUZ and any potential adverse effects on the breastfeeding child from AMELUZ or from the underlying maternal condition.

Pediatric Use


Safety and effectiveness in pediatric patients below the age of 18 have not been established. AK is not a condition generally seen in the pediatric population.

Geriatric Use

Of the 384 subjects exposed to AMELUZ in randomized, multicenter clinical trials, 83% (318/384) of the subjects were 65 years old and over. No overall differences in safety or effectiveness were observed between these subjects and younger subjects, but greater sensitivity of some older individuals cannot be ruled out.

Please read the US Full Prescribing Information for AMELUZ® and/or US User Manual of BF-RhodoLED® and/or RhodoLED® XL lamp available together at <https://www.ameluz.com/PI>.

You are encouraged to report side effects of AMELUZ®. Please contact Biofrontera Inc. at 1-844-829-7434 or FDA at 1-800-332-1088 or www.fda.gov/medwatch.

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WORKING TOGETHER TO FIGHT SKIN CANCER

The member companies that make up our Corporate Council are committed allies in our mission to empower people to take a proactive approach to daily sun protection and the early detection and treatment of skin cancer. We are grateful to these members for the strong relationships we have forged with them. Their annual membership dues help us to continue to provide our unparalleled skin cancer education programs and content.

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Corporate Council members that manufacture or market sun protection products are eligible to apply for the Seal of Recommendation.

Sunscreen brands may also participate in our International Corporate Council: ‡‡ U.S. and International. ‡ International outside of U.S.

All other brands are members of the U.S. Corporate Council. Members as of March 1, 2023.

Wherever you are, we're there for you, with the latest, most accurate skin cancer information available online.



[SkinCancer.org](https://www.SkinCancer.org)

(featuring *Sun & Skin News*)

[Provider.SkinCancer.org](https://www.Provider.SkinCancer.org)

(featuring *The Melanoma Letter* and *Carcinomas & Keratoses*)

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WHERE CAN YOU FIND THE SEAL? EVERYWHERE!

It's not hard to find our Seal of Recommendation. It's on hundreds of products at your favorite stores. All you have to do is look for it.

YOU'LL FIND IT at a luxury beauty counter and your local drugstore. It's at outdoor and sports stores, hotel gift shops and that swanky resort clothing boutique. You'll see it in a big box store, a small sunglass shop and even at a window film installer. It's online and it's in the media. What is it exactly? It's The Skin Cancer Foundation's Seal of Recommendation, and it's been helping people confidently navigate sun protection for more than four decades.

Broad-Spectrum Protection

ONCE YOU KNOW where to look for it, you'll see our Seal on almost everything under, well, the sun. It's displayed on hundreds of sun protection products: clothing and hats with ultraviolet protection factor (UPF), eyewear, sunscreens, personal care and cosmetic products, awnings and umbrellas, and even UV-blocking window film and shades. For a complete list of our recommended sun protection products, visit [SkinCancer.org/recommended-products](https://www.SkinCancer.org/recommended-products).

Setting the Standard

THE SEAL HAS been in existence since 1981, thanks to the dedication and expertise of our Photobiology Committee. This group of practicing dermatologists from top research institutions specialize in the science of ultraviolet (UV) light. Collectively, they have decades of clinical experience diagnosing and treating skin cancers. The committee develops appropriate testing protocols, sets safety and efficacy criteria and reviews each applicant's scientific data. What does this mean for you? That when you buy a product that carries the Seal (and use it as directed), you can trust it will protect against the sun's harmful rays and damage that can lead to skin cancer. ■



Our Photobiology Committee

These committee members work closely with the Foundation on our Seal of Recommendation program. They developed the criteria for the Seal and review each application submitted. They also share their expertise with the public by contributing to our educational content and publications, as well as serving as media spokespersons for the Foundation. We appreciate their time and commitment to our mission.



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Toe to Head: We've Got You Covered!

The foundation of our Foundation is the people who support it.

—

ON THIS SIDE of the issue, we show you how the seeds planted by those who contribute and support the Foundation blossom upward into ideas and programs that can change the trajectory of skin cancer. This cover symbolizes how every person is like a flower who helps makes a beautiful garden grow and flourish. When a flower is plucked, it could symbolize a soul that was lost to skin cancer, or a gift given from the heart. It takes passion and compassion, from physicians, corporate and pharmaceutical partners, volunteers and just regular people who donate because they believe our cause is worthy. That's a beautiful thing!

