



**Institute for Women's Health Research**  
*Putting Women's Health First*

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Dear Friend,

The official start of summer is only a few weeks away, and we thought it was a good opportunity to discuss the impact of sun exposure. Despite a lack of federally mandated comprehensive sunscreen standards, there are some measures we can take to protect ourselves, but it is up to the individual to make choices about how they want to balance fun in the sun, with some degree of safety.

Enjoy the summer,

The Institute Staff



INSTITUTE FOR  
**WOMEN'S HEALTH**  
RESEARCH™  
AT NORTHWESTERN UNIVERSITY

**Skin Anatomy**

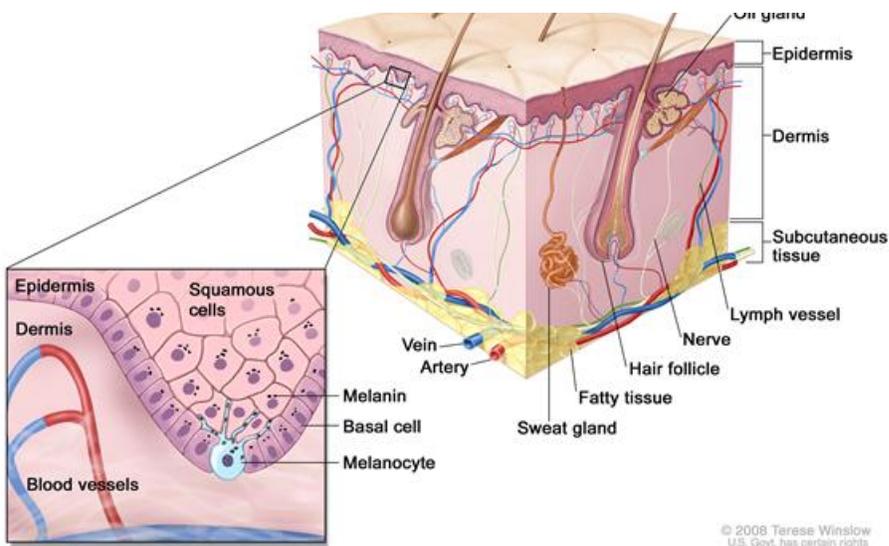
The skin is the body's largest organ. It protects us against heat, sunlight, injury and infections. Skin also helps control body temperature and stores water, fat and vitamin D. The skin has several layers, but the two main layers are the epidermis (outer layer) and the dermis (lower layer).

The epidermis is made up of 3 kinds of cells:

- **Squamous cells** are the thin, flat cells that make up most of the epidermis
- **Basal cells** are the round cells under the squamous cells
- **Melanocytes** are found throughout the lower part of the epidermis. They make melanin, the pigment that gives the skin its color. When skin is exposed to sun, melanocytes make more pigment, causing the skin to tan, or darken.

The dermis contains the blood and lymph vessels, hair follicles and glands. Some of these glands make sweat, which help cool the body. Other glands make sebum which is an oily substance that helps keep the skin from drying out. Sweat and sebum reach the surface of the skin through tiny openings called pores.





**Anatomy of the skin, showing the epidermis, dermis, and subcutaneous tissue. Melanocytes are in the layer of basal cells at the deepest part of the epidermis.** Source: [www.cancer.gov/cancertopics/pdq/prevention/skin/Patient/page2](http://www.cancer.gov/cancertopics/pdq/prevention/skin/Patient/page2)

### Skin cancer

Every day skin cells grow old and die and new cells take their place. Sometimes this orderly process goes wrong and new cells form when the skin does not need them, and old or damaged cells do not die when they should. These extra cells can form a mass of tissue, called a growth or tumor. These tumors can be benign or malignant.

Skin cancers are named for the type of cells that become cancerous, the most common being basal cell cancer and squamous cell cancer and these are most often formed on the head, face, neck, hands, and arms but can appear elsewhere on the body. Basal cell cancer is the most common and it is rarely fatal, but can cause severe disfigurement if allowed to grow. Squamous cell cancer is the second most common and results in 2500 deaths a year in the US.

Melanoma is the most serious type of cancer of the skin. Each year in the US, more than 53,600 people are diagnosed with melanoma. It is becoming more common every year, with the percentage doubling in the U.S. over the past 30 years. Melanoma accounts for about 3% of skin cancer cases, but it causes more than 75% of skin cancer deaths(1).

### Sex Differences

Skin cancer affects more than 1 million Americans each year. It accounts for more than 10,000 deaths annually. The majority of people diagnosed with melanoma are white men over age 50 (2). Between 1980 and 2004, the annual incidence of melanoma among young women increased by 50%, from 9.4 cases to 13.9 cases per 100,000 women(3). Until age 39, women are almost twice as likely to develop melanoma as men. Starting at age 40, melanoma incidence in men exceeds incidence in women, and this trend becomes more pronounced with each decade(4).

### Risk Factors

According to the National Cancer Institute, studies have found the following risk factors for skin cancer:

- Ultraviolet (UV) radiation- A person's risk of skin cancer is related to lifetime exposure of UV radiation which is present even in cool, cloudy weather.
- Scars or burns on the skin; chronic skin inflammation or ulcers
- Infection with certain human papillomaviruses
- Exposure to arsenic at work
- Diseases that make the skin sensitive to the sun
- Radiation therapy and medical conditions/drugs that suppress the immune system
- Personal history of one or more skin cancers
- Family history of skin cancer
- Actinic keratosis -- a type of flat, scaly growth on the skin most often found on areas exposed

to the sun that may appear as rough red or brown patches or appear as cracking or peeling of the lower lip that does not heal(5).

### **UVA vs UVB Rays**

The sun produces two types of harmful rays: ultraviolet A (UVA) and ultraviolet B (UVB). UVA rays can pass through glass and penetrate deep into the dermis. UVA rays can cause suppression of the immune system, interfering with the body's ability to protect you against the development and spread of skin cancer. UVA exposure is known to cause premature aging of the skin. UVB rays are the sun's burning rays that do not penetrate glass and are the primary cause of sunburn. Excessive exposure of both rays can cause skin cancer. SPF stands for "sun protection factor" and is calculated by comparing the amount of time needed to produce a sunburn on skin covered with a sunscreen compared to skin without sunscreen. The higher the number, the longer the skin is protected from burning(6).

### **Sunscreen Controversy**

During the research for this edition we found out that after 30 years of developing reports, there is no final ruling from the Food and Drug Administration (FDA) that mandates enforceable standards on sunscreen safety and usage. There have been a series of recommendations over the years that approved active ingredients in sun protection products, but they only urge manufacturers to follow them voluntarily. For now, companies are free to determine how they test their products and how they market them. Due to Congressional, consumer and activist pressure a final ruling is expected in October of this year.

The good news is that most sunscreens do protect from UVB, the burning radiation, and that higher SPFs indicate greater protection. However, fewer sunscreens contain products that block UVA which may actually be more harmful. There has been a drop in the use of oxybenzone, a hormone disruptor approved as an active ingredient in sunscreens. Other findings in the Summary of 2009 Sunscreen Analysis produced by the Environment Working Group, a national advocacy organization, reported that sunscreens break down in the sun and that the U.S. lags behind other countries when it comes to products that work and are safe(7).

1. *The Burden of Skin Cancer*, National Center for Chronic Disease Prevention and Health Promotion. 13 May 2008
2. National Cancer Institute, SEER Database, 2008
3. Perdue M, Increase in Melanoma Cases among young American Women. *J Investigative Dermatology* 2008
4. Cancer Statistics, 2008. *CA Cancer J Clin* 2008 58: 76
5. <http://www.cancer.gov/cancertopics/wyntk/skin>
6. American Academy of Dermatology website. [www.aad.org/media/background/factsheets/fact\\_sunscreen.htm](http://www.aad.org/media/background/factsheets/fact_sunscreen.htm)
7. Environmental Working Group Website. <http://www.ewg.org/cosmetics/report/sunscreen09/investigation/summary-of-findings>

### **Upcoming Events**

June 9, 2010 5:30-6:30pm

[Wellness Wednesday: Skin Health](#)

*Complimentary Medicine and Your Skin*

Location: Prentice Women's Hospital, 250 E Superior St, 3rd Floor Conference Center

June 16, 2010

[Wellness Wednesday: Skin Health](#)

*Cosmetic Procedures for Your Skin*

Location: Prentice Women's Hospital, 250 E Superior St, 3rd Floor Conference Center

June 22, 2010 Noon-1 pm

IWHR Monthly Research Educational Forum

[The Use of Technology for Medical and Surgical Education](#)

Location: Prentice Women's Hospital, 250 E Superior St, 3rd Floor Conference Center

## Health Tip:

The best way to prevent skin cancer is to protect yourself from the sun. Guidelines vary by organization, but generally:

- Use a broad spectrum (both UVA and UVB protection) sunscreen, minimally a SPF of 15-30, higher with sun-sensitive skin. Apply at least 1 ounce to entire body 30 minutes before going outside and reapply every two hours.
- Avoid midday sun (10 am to 3 pm).
- Do not let your skin burn.
- Cover up with close weave clothing, wide brim hat, and UV-blocking sunglasses.
- Avoid sun lamps and tanning beds.

Please join the [Illinois Women's Health Registry](#). To date, more than 4,400 female Illinois residents are participating, and 1,028 have been contacted for possible study participation.

### Why should you join?

To gain **access** to groundbreaking research studies and clinical trials.

To help improve **prevention** and **treatment** of certain diseases and health conditions.

To **improve** women's healthcare by making you more aware of your own health issues.

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