

# 100

# QUESTIONS & ANSWERS

What is psoriasis?

○○○○

What causes  
psoriasis?

○○○○

Who gets  
psoriasis?

○○○○

Are there  
different types  
of psoriasis?

○○○○

How can I decide  
what treatment is  
best for me?

○○○○

How do I select a  
dermatologist?

*About*  
**Psoriasis**  
*Second Edition*



*by*  
Kendra Gail Bergstrom, MD  
Alexa Boer Kimball, MD, MPH

**More Praise for *100 Questions & Answers About Psoriasis, Second Edition***

“[If] you are a person who is educated and informed about psoriasis, you will be more satisfied with your treatment and your doctor, and will have greater confidence in your future. We are grateful to Drs. Alexa Kimball and Kendra Bergstrom for helping to generate awareness and understanding about this chronic, lifelong disease.”

**Gail Zimmerman**

*Former President and CEO, National Psoriasis Foundation*

“Psoriasis is a common skin disease that affects millions of people around the world. In recent years, a revolution has occurred in treatment options available for psoriasis. Drs. Bergstrom and Kimball have given us a clearly written guide to help psoriasis patients understand these options and select the appropriate treatment for this life-crippling disease.”

**Fred F. Castrow II, MD**

*Past President, American Academy of Dermatology*



# **100 Questions & Answers** **About Psoriasis** *Second Edition*

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Dr. Kimball was an investigator and consultant for Galderma, Centocor, Amgen, Neostrata, and Abbott and an investigator for Stiefel within the year that this edition was revised.

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Psoriasis is one of the most common skin diseases in the United States. As many as 7.5 million people are affected by psoriasis and psoriatic arthritis in the United States alone. Approximately 1 out of every 50 adults will be affected by this disease at some point, and of these people, 1.5 million will suffer from moderate or severe psoriasis. Every year, approximately 200,000 new cases of psoriasis are diagnosed.

Psoriasis is not simply a disease of the skin. Although psoriasis does not cause life-threatening problems for the majority of patients, the effect on people's lives can be substantial and is often underestimated. This very visible disease can cause patients to feel self-conscious and ashamed about their appearance, which can lead to social isolation, psychological stress, or depression.

At present, psoriasis is a lifelong illness without a permanent cure. However, new therapies are being developed and innovative research continues in hopes of finding a cure. With an arsenal of topical steroids, topical and systemic immunosuppressants, novel biologics, and other treatments, patients now have a wider range of options than ever before. Even in the 5 years since the publication of our first edition, new therapies have been approved worldwide, and others have entered the pipeline. Many of these treatments are highly effective in controlling psoriasis and psoriatic arthritis and can alleviate the suffering often associated with this immune-mediated disease. Substantial progress has been made in understanding the complicated genetics and immunology that drive this disease, as well as identifying the other medical conditions that may be relevant for patients.

This book is designed to provide you with answers to many of the common questions we have found patients and their families ask about psoriasis. Although patients may feel overwhelmed at



first by the experience of psoriasis, we hope that this book will offer information to alleviate some of that frustration. The most powerful weapon in the battle against any disease is understanding it, and we hope that this book will provide an initial step toward gaining knowledge.

Kendra Gail Bergstrom, MD  
Alexa Boer Kimball, MD, MPH

Psoriasis is unpredictable. The person with psoriasis does not know when his disease will worsen or improve. He searches for patterns, but the stress of not being able to control his health can lead to anger and even hopelessness.

Psoriasis often carries a social stigma. The psoriasis patient may hide her skin to avoid stares and comments, wearing long sleeves and pants to summer picnics, and avoid photographs. Sometimes even family and friends make thoughtless comments.

Psoriasis is mysterious. Although it is the most common autoimmune disease, few people know about psoriasis and even fewer understand that it is a genetic, noncontagious disease affecting 7.5 million Americans.

Psoriasis and psoriatic arthritis are often undertreated. Research shows that more than 55% of people with psoriasis do not receive any treatment or their treatment does not do enough to relieve their symptoms. Many do not know that their psoriasis is also associated with increased risk of heart disease, hypertension, diabetes, and other serious conditions.

Psoriasis and psoriatic arthritis are serious and often debilitating diseases. The people who deal with them day in and day out need information, support, and action.

The National Psoriasis Foundation is a volunteer-driven non-profit organization dedicated to improving the lives of people with psoriasis and psoriatic arthritis. In 2009, we created a new strategic plan outlining five major ways we will work to meet our mission.

Our highest priority is to find a cure for psoriasis. Hundreds of thousands of members, their families, and doctors are joining our community and working toward this goal.

Over the next 5 years we will increase the foundation's role as a catalyst in scientific discovery by investing in and encouraging

research toward a cure. We will also continue to strengthen our presence as advocates by urging the passage of important legislation to increase research funding and improve access to care for people with psoriasis.

One of our most important strategic priorities is to increase the capacity of individuals and healthcare providers to effectively manage and treat psoriasis and psoriatic arthritis and improve overall health. This book, now in its second edition, has already helped countless patients, their families, and their doctors better understand this disease. We are grateful to Drs. Alexa Kimball and Kendra Bergstrom for providing an important resource for people with psoriasis.

Reading this book will help you understand your disease and take charge of your own health. Many more resources—including how to join us in our quest for a cure—are available from the National Psoriasis Foundation by calling (800) 723-9166 or visiting [www.psoriasis.org](http://www.psoriasis.org).

Randy Beranek  
*President and CEO*  
*National Psoriasis Foundation*

# *The Basics*

What is skin?

What is psoriasis?

How common is psoriasis?

*More . . .*

**Skin**

The largest organ of the body, acting as a physically protective covering, site of the sense of touch, and a border of immune surveillance.

*The skin is the largest organ in the body, covering 1.8 square meters of surface area.*

**Mucous membranes**

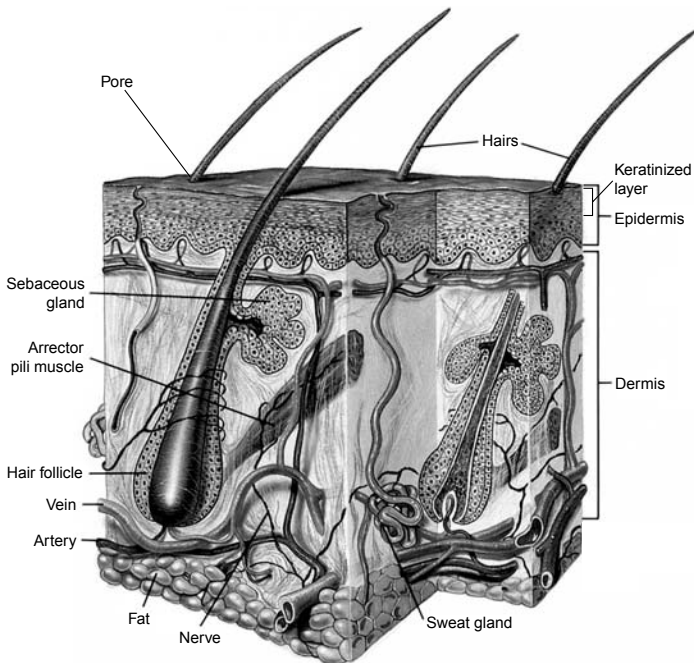
The linings of the mouth, nose, vagina, and urethra (inside of the penis). These moist skin areas secrete mucus to keep the surfaces moist.

**1. What is skin?**

The **skin** is the largest organ in the body, covering 1.8 square meters of surface area. Over that area the skin senses temperature, pressure, and pain; conserves water; sweats to cool the body; and heals itself if injured or infected.

While many diseases such as acne or eczema primarily affect the skin, skin can also change because of diseases that affect other body systems. Before many of the present diagnostic tests were developed, physicians looked at the skin for information about the health of the entire body (**Figure 1**).

In addition to protecting, preserving water, and sensing for the body, the skin is presented to the world. Composed of the skin, hair, nails, and **mucous membranes**, the skin is a



**Figure 1** The structure of human skin.

tremendously important part of how we see ourselves and how others view us.

In a social environment, the skin is a large part of the interface between ourselves and the world. The skin gives signals about youth or age, and, along with the muscles of the face, expresses feelings. Because visual input is a significant part of communication, the skin's appearance can have a large impact on how people interact with each other.

The skin is organized into layers, and each level has a different function. The most superficial upper layer is called the **epidermis**, which contains **cells** that constitute the uppermost skin layer and cells that make pigment. This self-regenerating layer develops into the top layer of "skin cells" and the pigment that gives the skin its color. Pigment cells, or **melanocytes**, reside in the bottom layer of the epidermis, and when they are grouped together can appear as moles. The function of the epidermis is to be the front line of protection against water loss, physical stress, and **ultraviolet (UV) radiation**. The epidermis is especially thick on the palms and the soles of the feet and is often thickened in skin affected by psoriasis.

Deeper in the skin, the **dermis** contains the skin's blood vessels, nerves, hair follicles, sweat glands, and immune cells. The dermis provides nutrients to support the epidermis and nerves to sense physical contact and trauma. When a cut, scrape, burn, or crack breaks through the epidermis, the nerves, immune cells, and supportive parts of the dermis sense this break and cooperate to repair it. Blood vessels bring nutrients that feed the skin, and immune cells both fight infection and, in the case of psoriasis, cause skin inflammation.

### **Epidermis**

The outermost layer of skin. It is the non-vascular (without blood vessels) layer that covers and protects the dermis.

### **Cell**

The basic structural and functional unit in the human body; the building blocks of each organ and tissue.

### **Melanocyte**

The skin cell that produces melanin (the primary pigment that gives skin its color) and is found in the basal layer of the epidermis.

### **Ultraviolet (UV) radiation**

Invisible rays that are part of the energy that comes from the sun. It is made up of two types of rays: UVA and UVB.

### **Dermis**

The layer of skin just underneath the epidermis that contains the skin's nerve endings, blood vessels, hair follicles, sweat glands, and immune cells.

**Systemic**

Something that reaches or affects the entire body.

**Immune system**

The immune system is a collection of cells and proteins that works to protect the body from potentially harmful or infectious microorganisms such as bacteria, viruses, and fungi. The immune system plays a role in the control of cancer and other diseases, but can also cause autoimmune diseases, allergies, and rejection of transplanted organs.

**White blood cell**

A specialized type of cell present in the blood that works to fight against infection.

**T cell**

A type of white blood cell that attacks foreign and infected cells to protect the body.

**B cell**

A type of white blood cell in the blood and bone marrow that makes antibodies.

Although treating skin and the diseases that affect it can be particularly challenging, the treatment options are exceptionally varied. Unlike most organs, skin can be treated with locally acting topical medicines such as creams or ointments (see Question 34) that minimize **systemic** effects.

**2. What is the immune system?**

The **immune system** works to protect the body from infection. It monitors the body constantly and springs into action when it senses a foreign presence such as bacteria, a virus, or a fungus. In some situations, such as a cut or scrape, physical injury by itself is sufficient to set the immune system into action to protect against possible infection.

The immune system is comprised of a specialized group of cells and organs. Among the blood cells, the **white blood cells** are active in the immune system. Specialized white cells like **T cells**, **B cells**, and **neutrophils** (cells that make up pus) are important parts of the immune system. The immune system also has specialized locations in the body, including the lymph nodes and organs such as the spleen, thymus, tonsils, and appendix. The communication between these many cell types and organs is remarkable, and it occurs throughout the body through signals in the blood.

When the immune system is functioning properly, it guards against both external infections and internal damage. For example, the immune system watches for cells that could become cancer and tries to stop them. At times, however, the immune system is not watching closely enough and may miss a precancerous cell that later turns into cancer. At other times, though, the immune system may be watching too closely and decides that some part of the body—skin cells, or

**keratinocytes**, in the case of psoriasis—is not healthy or does not belong and may become activated.

### 3. *What is psoriasis?*

Psoriasis is a chronic, lifelong skin disease characterized by skin with white scale, redness, swelling, and itching or pain. It appears without a trigger or warning in the teens to 30s (for most people) and waxes and wanes in severity for life. Psoriasis is almost never fatal but can cause severe discomfort, disfigurement, and disability for sufferers. It can also be associated with a destructive form of arthritis.

Although the name psoriasis was not introduced for many years, the description of psoriasis and the beneficial effects of sunlight (which can ease psoriasis) were noted in the ancient Greek world. References to this skin disease are found in writings by the Greek physician Hippocrates, who lived from 460 to 377 BC. The English dermatologist Robert Willan, who lived from 1757 to 1812, was the first to recognize psoriasis as an independent disease. He described the scaly **plaques** of psoriasis as *leprosy graecorum*, an active, severe disease like *psora leprosa*, although there is no connection between psoriasis and leprosy.

In 1841, Ferdinand Hebra, a Viennese dermatologist working from Dr. Willan's notes, was the first to use the word "psoriasis" to describe the disease. Dr. Hebra first described the clinical picture of psoriasis that is used today. Hereditary associations in psoriasis had been established by this time.

The word psoriasis comes from the Greek *psora*, meaning itch or rash, and *-iasis*, a suffix that indicates a condition characterized or produced by an itch or

#### **Neutrophil**

The most common type of white blood cell in the bloodstream, it helps defend against bacterial infections. When these cells accumulate in large areas, pus is formed.

#### **Keratinocyte**

A skin cell of the epidermis that makes keratin, a protein that gives strength to skin, hair, and nails.

#### **Plaque**

In psoriasis, an area of skin affected by the disease.



rash. Over the last century physicians have considered it a disease of skin differentiation (the way skin forms complete layers) and have developed therapies against scale and thickness. Recent research into the disease and therapy points toward an immune cause for the thickness, redness, and scaling of psoriasis. The immune system, when it is overactive in the skin, appears to cause changes in skin differentiation that lead to scaling and thickening. This new understanding of immune disruption in psoriasis has led to targeted therapies for the disease.

A formal description of psoriasis, developed by psoriasis experts at the American Academy of Dermatology, is “[a] chronic skin disease that is classically characterized by thickened, red areas of skin covered with silvery scale.” In psoriatic skin (skin changed by psoriasis), plaques become red, thickened, or scaly and may be itchy or painful. The characteristics of a typical skin plaque depend on the type of psoriasis and body location affected. Psoriasis frequently affects the elbows, knees, scalp, and trunk. It may rarely appear on the hands and feet, mouth, skin folds, or genitals.

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*Psoriasis frequently affects the elbows, knees, scalp, and trunk.*

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When compared to other common skin diseases, such as eczema, psoriasis shows less swelling or oozing and a dry, white, shiny scale. Other skin diseases that can look similar to psoriasis include seborrheic dermatitis, pityriasis rosea, lichen planus, and skin forms of lupus.

#### **Auspitz's sign**

A skin phenomenon, often seen in psoriasis, where pinpoint spots of blood appear when a scale is lifted off of the skin.

A few characteristics of psoriasis have historically been used to diagnose the disease. These signs may be visible, especially in untreated psoriasis. **Auspitz's sign** is positive when the skin bleeds in pinpoint locations after peeling off a piece of scale from the skin. A positive Auspitz's sign is considered characteristic for

psoriasis because it does not occur after removing scale from other skin diseases. The **Woronoff ring** is seen in a ring of skin around the edges of a psoriasis plaque, when the surrounding unaffected skin becomes a paler, whiter color than the rest of the unaffected skin (see color plate A).

Some types of psoriasis appear different than the classic description. Other varieties include **inverse psoriasis** (affecting the skin folds), **guttate psoriasis** (in small spots all over the body; see color plate C), **palmar-plantar psoriasis** (on the hands and feet), **erythrodermic psoriasis** (where the entire body may turn red; see color plate D), and **pustular psoriasis** (with sterile, noninfected pustules). These varieties of psoriasis are caused by the same processes but appear as distinct forms of the disease. Because their locations and appearance are different, they may require different treatments for effective control.

#### 4. *What causes psoriasis?*

The exact cause of psoriasis is still unknown. Two processes—rapid skin growth and inflammation—combine to cause the skin changes that lead to psoriasis. The initiating trigger for these processes—what makes the process begin in a particular person—remains obscure, and active research is ongoing to identify these events.

Under the microscope, skin affected by psoriasis is thicker than normal skin, with dramatic thickening of the epidermis (**hyperkeratinization**) and inflammation caused by a type of white blood cell called T cells. These T cells react against parts of the skin where the disease is active. The T cells and other immune system cells make cytokines, immune-system chemicals with names like TNF $\alpha$  (tumor necrosis factor alpha) and IL 23

##### **Woronoff ring**

A ring of pale-appearing skin that may be visible at the edge of a psoriasis plaque.

##### **Inverse psoriasis**

Psoriasis that affects skin folds, intertriginous areas, and/or genitals.

##### **Guttate psoriasis**

Psoriasis that appears as little drops scattered all over the skin (instead of fewer large plaques), sometimes associated with an infection.

##### **Palmar-plantar psoriasis**

Psoriasis on the hands and feet. This psoriasis may appear different from other types. (Also called palmoplantar psoriasis.)

##### **Erythrodermic psoriasis**

Full-body redness caused by psoriasis.

##### **Pustular psoriasis**

A type of psoriasis where sterile (uninfected) pustules appear on the skin.

##### **Hyperkeratinization**

Skin thickened in the outermost layer, caused by the overactivity of keratinocytes in psoriasis.

(interleukin 23), that aid in their communication and activation. Chronic inflammation in these areas causes skin cells to divide and turn over much more rapidly, up to four to five times as quickly as in normal skin. The rapid buildup of these skin cells, called keratinocytes, can lead to thick white scales on top of psoriatic skin. Over time, new, small blood vessels develop in the deeper layers of the skin. These blood vessels support the actively developing psoriatic plaques and may cause a persistent reddening of affected skin even after treatment. It is not yet clear why the T cells become activated in the skin in psoriasis and other immune diseases, but once the process starts, it seems to persist for life. How to inactivate or “turn off” these particular T cells permanently without impairing the immune system as a whole or causing serious **side effects** is a significant treatment challenge and is the focus of active immunology research.

#### **Side effect**

An undesired effect of a medication.

#### **Gene**

The segment of DNA on a chromosome that contains the information necessary to make a protein. A gene is the unit of biologic inheritance.

Studies of people and their relatives with psoriasis show that there is a genetic or familial predisposition to the disease, but not all people with certain **genes** or affected siblings will get the disease (discussed in Question 25). So far, most of the possible genes associated with psoriasis are part of the immune system. Different genes and groups of genes are more common in people with psoriasis, but most people with these genes do not develop psoriasis, and many people with psoriasis do not have these genes. Some researchers have found that you need to have a group of relatively common genes to be susceptible. One gene that seems consistently important, however, is called HLA-C. For these reasons, genetic testing is only used for research at this point and cannot offer useful information about psoriasis diagnosis, treatment, or prognosis.

Active research into the cause of psoriasis has shown that certain immune system genes are associated with this and other immune processes. The next step, using this information to develop new therapies, is underway.

### **5. How common is psoriasis?**

Statistics vary, but current estimates indicate that 2% to 3% of the U.S. population, or around 5 to 7 million adults, have some psoriasis on their skin. Approximately 200,000 people are newly diagnosed with psoriasis each year. The prevalence rate varies in different ethnic groups and is higher in Caucasians than in blacks, Hispanics, Asians, and Native Americans. The reasons for different prevalence rates are not known but are believed to be due to the association with certain genetic backgrounds (discussed in Question 25).

Because psoriasis appears for the first time in the majority of people while in their 20s, it is found less often in children, and new diagnoses are even rarer in older people. Because psoriasis is less common in children and older people, a psoriasis diagnosis in these individuals may not be immediately clear.

Among people who have psoriasis, **psoriasis vulgaris** (vulgaris meaning common), or **plaque psoriasis**, is the most common form, found in over 85% of people with psoriasis (see color plate G). The other types of psoriasis comprise around 15% of cases, though people may have more than one type at the same time. One type of psoriasis, guttate psoriasis, is more commonly found in children after a throat, skin, or other infection and sometimes resolves after the infection is treated. Because these rarer types of psoriasis look different than the common type, they may be undiagnosed or misdiagnosed in some individuals for a period of time.

#### **Psoriasis vulgaris**

The most common form of psoriasis, it usually appears as scaly, red plaques on the elbows, knees, and scalp.

#### **Plaque psoriasis**

The most common form of psoriasis, also called psoriasis vulgaris.