

► Strand by strand

Hair loss afflicts millions of men and women.

BY JULIE L. McDOWELL

Hair grows almost everywhere on the human body—except for the lips, palms of the hands, and soles of the feet. In fact, the average person has approximately 5 million hairs on his or her body. A certain amount of hair loss accompanies normal growth—approximately 100 hairs on the scalp fall out every day.

Hair growth starts in papillae, specialized structures embedded in the skin. Tiny cups called hair follicles surround the papillae. At the base of each follicle is the hair root, where cells are produced at a rapid rate. These cells eventually die and become incorporated into the hair shaft, which is a layered structure located outside the body. Growth occurs in two cyclical phases: the growth phase and the resting phase. At any time, about 90% of hair located on the scalp is in the growth phase, while the remaining 10% is in the resting phase. The hair follicle's growth phase lasts about 4–5 yr. Then the follicle enters a 2–4-month resting phase, after which the hair falls out and is replaced by new growth.

Researchers do not completely understand the causes of common baldness, although diet and medication might play a role. For instance, certain medications taken for gout, arthritis, depression, hypertension, and heart conditions have been shown to have hair-thinning side effects. Similarly, chemotherapeutic drugs, such as methotrexate, cyclophosphamide, bleomycin, and mitomycin, can also cause hair loss, according to the American Academy of Dermatology (AAD). A low-protein diet and low levels of iron in the bloodstream can also cause significant hair loss, which is why people who suffer from malnutrition or an eating disorder are particularly vulnerable

to hair loss. Fortunately, a diet adjustment can curb or halt hair loss, and chemotherapy patients often experience hair regrowth once the treatment is completed.

Hormones and heredity

Baldness can be caused by hormonal changes in the body, particularly when there are higher levels of hormones called androgens. This type of baldness is called androgenetic alopecia, or male pattern bald-

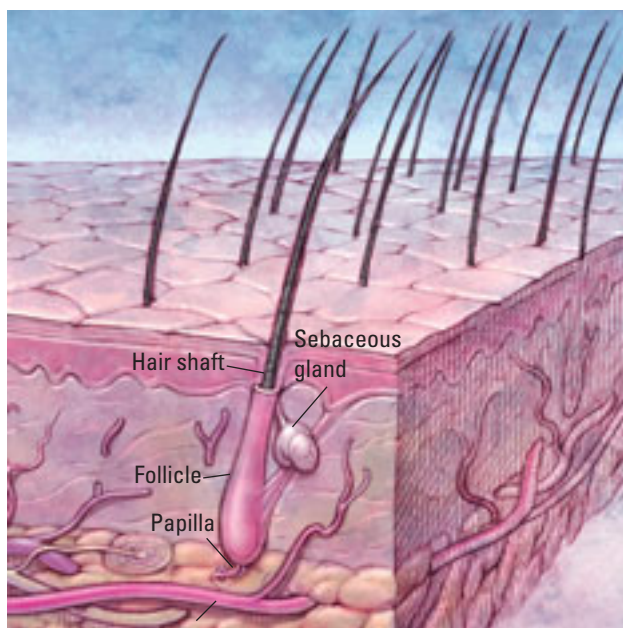


Figure 1. Hormones can play a significant role in hair loss by shrinking hair follicles.

ness, and it affects approximately 40 million men in the United States. Although testosterone and dihydrotestosterone (DHT) help to widen the hair follicles of the beard and underarm during puberty, they also shrink the follicles in the scalp later in life.

Aside from its hormonal origin, baldness also results from hereditary factors, and the speed, pattern, onset, and degree of balding are all largely determined by genetics. In general, the earlier the onset of balding, the higher the degree of hair

loss, according to the American Medical Association (AMA). Hormones can also interplay with genetics to influence hair loss. For example, because the size of hair follicles is genetically determined to some degree, some men might inherit follicles that are likely to shrink in the presence of androgens.

Despite the condition's name, male pattern baldness can also occur in women. Women experiencing hair loss caused by hormonal imbalances can take supplements to help regulate these levels. Even after the underlying hormone problem is treated, however, hair loss may improve slightly or not at all, according to the AAD.

Immune influence

One medical cause of hair loss is an autoimmune disorder known as alopecia areata, which often begins in childhood and affects an estimated 4 million men and women of all ages and ethnic backgrounds in the United States. One out of five alopecia areata patients has a family member with the disease, which suggests the presence of a genetic component, but researchers also believe that some kind of trigger, such as illness or something environmental, causes hair loss.

In the early stages of alopecia areata, many patients notice small, round patches of balding, approximately the size of a quarter. For some patients, hair loss will be limited to these occasional patches. If the disease progresses, however,

a patient might experience total hair loss on the head, which is known as alopecia areata totalis. In more extreme cases, hair might disappear from not only the head but also the face and body, which is known as alopecia areata universalis.

When someone has alopecia areata, the body's white blood cells mistake the cells growing in the hair follicles as a foreign antigen, and therefore go on the attack in an effort to rid the body of these cells. As the hair root cells are attacked by the white

blood cells, the hair follicles shrink, which causes hair production to slow down or stop.

Treatments

Despite the glut of miracle lotions and creams featured in television and magazine advertisements that promise to reverse common baldness, there is no cure. Although hair loss is more socially acceptable in men than women, it can be traumatic to both when they are anxious about the effect it will have on their appearance and self-image. Pharmaceutical treatments are available that promote hair growth, but none that prevent patches and cure the underlying disease, particularly in the case of alopecia areata.

Many treatments for baldness and hair loss were originally approved for other purposes but have been found effective in boosting hair growth. A widely used topical hair loss treatment, minoxidil (Rogaine), was originally used to treat high blood pressure. This lotion works to improve the blood supply flowing to the skin's follicles and papillae, stimulating cell production and hair growth. In general, however, minoxidil only produces moderate results. Another treatment, a daily pill called finasteride (Propecia), stimulates hair growth by inhibiting the conversion of testosterone to DHT. This decreases the DHT level in the blood and scalp, which helps to block hair follicle degradation. Although these are

the most effective medications in treating male pattern baldness, they have adverse side effects. The AMA reports that approximately 2–5% of patients in clinical trials reported a loss of sex drive while taking these medications. Finasteride has also not been approved for use by women because it may cause birth defects.

For patients suffering from alopecia areata, one treatment avenue is corticosteroids. One delivery method for this drug is through local injection directly into patches on the scalp, brow, or beard areas.

For patients suffering from alopecia areata, one treatment avenue is corticosteroids, anti-inflammatory medications that behave similarly to the cortisol hormone in the body and are often used to combat autoimmune diseases. One delivery method for this drug is through local injection directly into patches on the scalp, brow, or beard areas. Because the steroid is delivered directly to the affected area, it removes the immune cells that inhibit hair growth. Once the cells are eradicated, new hair growth typically appears in one to two months. Injections have to be repeated monthly, however, to counteract the effects of new immune cells.

Two treatments for psoriasis have also shown effectiveness in treating alopecia areata patients. Anthralin (Psoriatec) is a topical medication applied to the affected area for only 20–60 min—a treatment known as “short-contact therapy”—to avoid skin irritation. The second treatment, a sulfa drug called sulfasalazine (Azulfidine), has also been used because of its immune suppression abilities.

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The hair net

Several organizations offer information about hair loss and treatments on their websites, including:

- ▶ American Academy of Dermatology, www.aad.org.
- ▶ American Hair Loss Council, www.ahlc.org.
- ▶ American Medical Association, www.ama-assn.org.
- ▶ National Alopecia Areata Foundation, www alopecia areata.com.
- ▶ National Institute of Arthritis and Musculoskeletal and Skin Diseases, www.niams.nih.gov.
- ▶ Regrowth.com, www.regrowth.com.