

# Hair (not the Musical)

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**Hair** is a protein filament that grows from follicles found in the dermis. It is one of the defining characteristics of mammals. The human body, apart from areas of glabrous skin, is covered in follicles which produce thick terminal and fine vellus hair. Most common interest in hair is focused on hair growth.

The **functions** of hair include: protection, regulation of body temperature and facilitation of evaporation of perspiration. Hairs also act as sense organs.

**Hair fibres** have a structure consisting of several layers, starting from the outside: the cuticle, the cortex and the medulla.

The diameter of human hair varies from 0.017 to 0.18 mm.

Hair follows a specific growth cycle with three distinct and concurrent phases: **anagen**, **catagen**, and **telogen** phases. All three occur simultaneously - while one strand of hair may be in the anagen phase, another may be in the telogen phase. Each phase has specific characteristics that determine the length of the hair. The body has different types of hair, including vellus hair and androgenic hair, each with its own type of cellular construction. The flatter the hair shaft becomes, the curlier hair gets, because the shape allows more cysteines to become compacted together resulting in a bent shape that, with every additional disulfide bond, becomes curlier in form.

### The functions of hair

**Scalp and body hair:** the hair found on the head and the body serve primarily as a source of heat insulation and cooling (when sweat evaporates from soaked hair) as well as protection from ultra-violet radiation exposure.

Hairs can sense movements of air as well as touch by physical objects and they provide sensory awareness of the presence of ectoparasites.

Some hairs, such as eyelashes, are especially sensitive to the presence of potentially harmful matter.

**Eyebrows and eyelashes:** help to protect the eyes from dust, dirt, and sweat. The eyebrows also play a key role in non-verbal communication by displaying emotions such as sadness, anger, surprise and excitement.

**Facial hair** is typically a secondary sex characteristic of human males. Women are also capable of developing facial hair, especially after menopause, though typically significantly less than men. Men may style their facial hair into beards, moustaches, goatees or sideburns; others completely shave their facial hair.

**Pubic hair:** Most sources agree that pubic hair and underarm hair relates to **pheromones** are scents that the body produces that can be sexually stimulating to others.

### Hair loss disorders

**Scalp** can be divided broadly into three categories: patterned, diffuse, and, localised or patchy.

**Androgenic alopecia** (male pattern hair loss in men or female pattern hair loss in women) is an age-related change in hair growth that affects people with a genetic predisposition. By the age of 70 years, around 80% of Caucasian men and 60% of Caucasian women are affected.

Exogenous steroids (e.g. danazol, dehydro- epiandrosterone [DHEA]) or androgens (e.g. testosterone) can also accelerate androgenetic alopecia.

If an exogenous steroid is suspected to be contributing to the condition, stop the drug.

**Treatment** Androgenetic alopecia is a natural part of ageing, and does not need treatment. However, many affected people seek treatment for cosmetic reasons, especially if their appearance causes significant psychosocial dysfunction. Men may take topical minoxidil or oral finasteride. Women may take topical minoxidil and/or oral spironolactone. For severe androgenetic alopecia, use **topical minoxidil** and **oral spironolactone** as a combination therapy..

**Alopecia areata** is a complex polygenic auto-immune disorder, and unknown environmental triggers cause its expression. Alopecia areata is characterised by unpredictable remission and relapse.

A patch may: re-grow hair spontaneously, stay the same for many months, enlarge and coalesce with other patches. Hair loss that involves the entire scalp is called alopecia totalis.

**Chronic telogen effluvium** is defined as excessive hair shedding lasting more than 6 months. In many cases it can last for a few years before resolving spontaneously. Identifiable causes of chronic telogen effluvium include: metabolic disorders (e.g. thyroid disease, severe liver or kidney impairment), malnutrition (e.g. severe iron deficiency, hypoproteinaemia, severe zinc deficiency), drugs, severe infections, connective tissue disorders or malignancy. Most patients with chronic telogen effluvium are healthy and do not need extensive investigation.

**Trichotillomania** is an impulse control disorder characterised by compulsive hair pulling or plucking. In most children, it is a benign habit that resolves with age, but sometimes it is a response to stress at home or school. It may require psychological counseling.

**Scarring alopecia:** some conditions that affect the scalp (e.g. chronic cutaneous [discoid] lupus erythematosus, lichen planopilaris, frontal fibrosing alopecia) cause scarring alopecia.

All forms of scarring alopecia are difficult to treat. While the condition is active, treatment aims to reduce hair bulb inflammation, to prevent permanent scarring alopecia.

Refer patients with suspected scarring alopecia for expert advice promptly, as treatment is often futile after end-stage scarring. Expert treatment includes intralesional corticosteroids, hydroxychloroquine, retinoids and immunosuppression.

**Tinea capitis** If tinea of the scalp is suspected, take scrapings and pluck hairs for cultures before starting therapy, to confirm the diagnosis. Although treatment may start before culture results are available, these results guide optimal therapy. Topical therapy is ineffective, so start with an oral antifungal drug.

For empiric therapy and *Trichophyton tonsurans* infection, take terbinafine or griseofulvin orally.

Tinea of the scalp does not usually cause permanent alopecia.