

## Science and the Creator

### The hairs of your head are all numbered

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**T**HE SCRIPTURES are full of comfort for faithful believers concerning the care that God exercises over them as a loving Father. The Lord Jesus described it as extending to the smallest detail: “Are not two sparrows sold for a farthing? and one of them shall not fall on the ground without your Father. But the very hairs of your head are all numbered. Fear ye not therefore, ye are of more value than many sparrows” (Mt. 10:29-31).

Although most of us see to it that our hair is clean and well groomed, we give little thought to the *number* of strands of hair, unless it grows in places where it is not wanted or, with advancing years, it ceases to grow where it is wanted! In fact, in society at large, huge sums of money are spent by both men and women in attempting to deal with one or other of these problems. It is in response to this demand that scientists have been conducting intensive research into the process of hair growth, and over the past five years have made considerable strides in understanding the molecular processes which control hair development.<sup>1</sup>

#### Our hairy covering

The follicles from which hair grows develop fully while the child is still in the womb, and we are born with around five million of them in genetically determined patterns all over the body. No new ones are formed after birth. They cover virtually all of our skin, with the exception of the palms of the hands and the soles of the feet. Areas that seem to be hairless actually produce many short, fine hairs. This is borne out by the Scriptural description of Esau, who at his birth “came out red, all over like a hairy garment” (Gen. 25:25).<sup>2</sup>

The mature hair follicle is a surprisingly complicated structure (see Fig. 1). The permanent root section is located just below the epidermis,

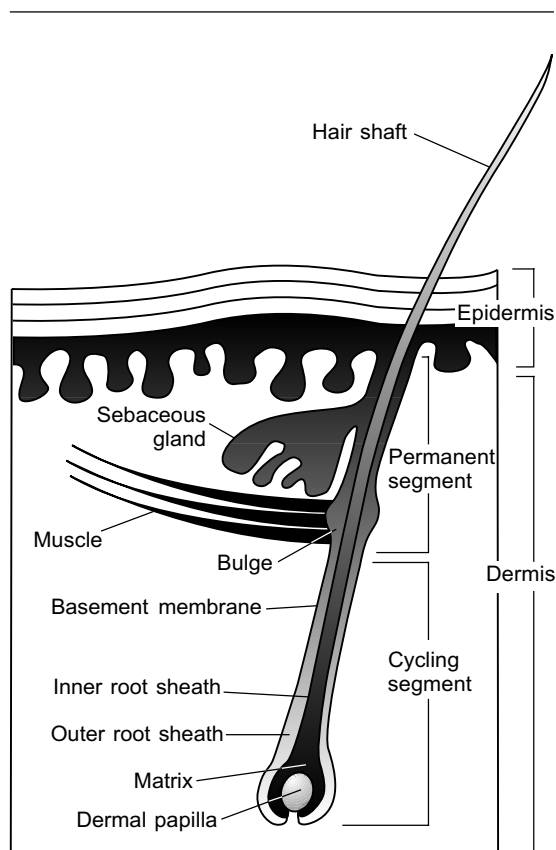


Figure 1: Cross-section of skin with hair follicle

1. “Hair: Why it grows, why it stops”, Ricki L. Rusting, *Scientific American*, Jun. 2001, pp. 55-63; “Keep your hair on”, Douglas Fox, *New Scientist*, 13 Oct. 2001, pp. 28-35.
2. Esau’s excessive hairiness plays the main part in the record of Jacob’s deception (Gen. 27:11,23). It is significant that the Hebrew words for ‘hair’, ‘goat’ and ‘Seir’, the country of Esau, are closely related.

and is attached to a sebaceous gland<sup>3</sup> and a tiny muscle. The contraction of these muscles in unison gives rise to the familiar sensation of our hair 'standing on end',<sup>4</sup> as described by Eliphaz the Temanite in the account of his vision (Job 4:15). Below the root bulge is the basement membrane and the dermal papilla, the remarkable structure which controls the growth of the hair shaft.

Throughout life, the follicles pass through a three-stage growth cycle:

**Stage 1** The dermal papilla instructs the cycling segment to grow and begin producing hair. Hair grows at the rate of about one inch (2.5 centimetres) in two months, and the follicle can remain active for up to eight years.

**Stage 2** Cells in the cycling segment die and the basement membrane pulls the dermal papilla up to the bulge, so that the hair shaft loses its anchor. The hair may fall out during this or the next stage.

**Stage 3** The follicle rests, typically for three to six months, before returning to stage one.

During the growth stage, the papilla causes the cells of the matrix directly above it to multiply rapidly and produce cells that are rich in the fibrous protein keratin. As these cells are pushed upwards, they die and become the virtually indestructible fibres which we call hair.

The current research is beginning to unravel some of the molecular signals<sup>5</sup> issued by the dermal papilla that trigger hair growth or cause it to cease. This may lead to the development of drugs able to mimic these control functions. It is known that baldness in men and hair thinning in women happen, not because the follicles disappear, but because they cycle more and more rapidly, and also shrink progressively, eventually producing only small, colourless hairs.

#### **Not an hair of your head shall perish**

As with many other features of our marvellous bodies, which are "fearfully and wonderfully made" (Ps. 139:14), the design fitness and com-

plexity of the hair follicle speaks of the wisdom of the great Creator. Not only does hair provide protection and insulation for the most important organ of our bodies, the brain, it has also been designed to enhance our appearance and, in the case of woman, to be a glory to her (1 Cor. 11:15). Hair featured prominently in the vow of the Nazarite, especially in the case of Samson, the uncut hair probably being intended to imitate the crown of the high priest and the consequent dedication to the service of God.

The problem of baldness, which was shared by the prophet Elisha (2 Kgs. 2:23), appears to be just one more of the signs that at this present time we are subject to age and decay. At least those who are afflicted by it are not subject to the kind of temptation to vanity which was experienced by Absalom, whose annual growth of hair amounted to two hundred shekels weight (2 Sam. 14:26). Appropriately, it was ultimately involved in his death, caught by his head in the oak tree (18:9).

In contrast, for those who are the chosen of God and whose lives are in His hands, not only do they have the assurance that "the very hairs of your head are all numbered", but the Lord Jesus Christ has also promised that, for those who endure to the end, "there shall not an hair of your head perish" (Lk. 21:18). Our heavenly Father's care of His children is not limited to this age, but will extend into the age to come, when, in the resurrection, their bodies will be changed to be "fashioned like unto his [Christ's] glorious body" (Phil. 3:21) and they will be granted eternal life.

3. This gland discharges sebum onto the skin surface (which we assiduously shampoo away!). Sebum is a fatty, mildly antiseptic material that protects, lubricates and waterproofs the skin.
4. Otherwise referred to as 'goose-pimples' or 'goose-bumps'.
5. Those so far identified include a group of molecules known as Wnt proteins, the protein beta-catenin and a regulatory protein known as lymphocyte enhancer factor 1 (LEF1).

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