

GREY HAIR: A STRESS, A DISEASE, AND A BRACHA

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People often define themselves by their hair color. Folklore tells us that redheads are hot-tempered and blondes like to have more fun. These old adages seem to imply that a person's hair color is determined by their personality. The color of the 100,000 plus hairs on a person's body is determined by the amount of melanin contained in the cortex. The cortex is a layer of the hair that is made up of cells containing the protein keratin. Since melanin is a black or brown pigment, more melanin means darker hair. Hair with a small amount of melanin produces a blonde color. If a person's hair contains trichosiderin, an additional pigment that contains iron, he or she will be a redhead. As people age there is a decrease in the amount of melanin in the cortex of their hair. This lack of pigment causes the hair to appear grey [1].

Why does our hair lose pigment and turn grey as we age? A *midrash* in *Baba Metz'ia* (87a) relates that as Yitzchok Avinu grew older, people would mistake him for his father, Avraham, because they looked exactly alike. Avraham realized that the trouble distinguishing between youth and old age was a problem. He pleaded with Hashem to "make a visible distinction between a youth and an old man, so that the old man may be honored by the youth." Genesis (24:1) relates, "V'Avraham zakein ba ba'yamim." "And Avraham became old." The midrash explains that this verse means Avraham took on the appearance of an old man, and his hair turned grey. When Avraham complained about his new grey locks, Hashem responded that the grey hair was a gift.

The Torah views grey hair in a positive light. The word "*seiva*," which translates to "a hoary head", is frequently used to describe an old person. In fact, Malbim explains (Tehilim 71: 18) that "*seiva*" is a more complimentary term than *zikna*, another word for old age. In Proverbs (20: 29), the phrase "*tiferes bachurim kocham v'badar zakeinim seivah*," was interpreted by Malbim to mean that grey hair, which comes from old age, is a crown, just as strength is the crown of a young man. Another way the Torah expresses its view that grey hair is something positive is that it depicts Hashem as having grey hair. When Daniel had a vision of Hashem (Daniel 7:9), Hashem appeared to him in the form of an old man with white hair. As stated in the *Anim Zemiro*s prayer,

"They saw You, now old, then young, Your head with grey, with black hair hung; oldness on the day of judgment, blackness at a time of war." Grey hair is thus associated with wisdom and judgment.

Although the Torah views grey hair positively, many people wince at the first sign of grey hair. Sometimes people react with dismay, and believe that they have acquired grey hair overnight. There is a famous legend about Marie Antoinette which states that the doomed queen turned grey the night before her execution. According to this tale, the stress the queen felt over her hopeless fate caused her hair to turn grey. Similarly, newspapers and magazines are quick to point out the increase in grey hair that is usually visible on a President from one term to the next. Apparently, the trigger that causes this change of hair color is the high stress level associated with being President. The question of whether there is a connection between stress and grey hair has become a scientific debate.

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According to dermatologist Dr. Jack Green, there is "not a shred of scientific research" to support such an assertion that stress and grey hair are connected. The age at which we go grey is determined by genetics, and stress cannot cause hair to suddenly lose pigmentation [2]. Even if stress did stimulate the production of grey hair, the effect of the stress on hair color would not be seen immediately. Hair grows in a cycle. This cycle starts with the production of follicles, which surround the root of a hair. Thereafter, the cells that produce keratin and melanin are gathered from stem cells. Stress hormones may cause the destruction of melanocyte stem cells. However, since it takes time for hair to fall out and new hair to grow in, the hair that would lack melanin would not be immediately visible [3]. Additionally, there is no conclusive evidence linking stress hormones to a reduction in melanocyte stem cells. Dr. Robert Lefkowitz, the 2012 recipient of the Nobel Prize for Chemistry, along with other scientists, suggested that the

production of “flight or flight” hormones caused by stress decreases the supply of protein p53. This can cause chromosomal rearrangements leading to DNA damage. The damaged DNA may cause grey hair to grow [4].

While stress is not proven to cause graying, a medical condition called alopecia areata may cause someone to appear to have grayed overnight. This condition causes hair loss. For some unknown reason grey hairs that are already present on a person who has alopecia areata do not fall out. Rather, only pigmented hairs are affected. The loss of pigmented hair causes the grey hair to become more noticeable. Alopecia areata is a reversible condition. However, the hair of someone with alopecia areata may initially grow back grey or white. This is usually temporary and eventually the hair will regain its original color [5].

Another condition called vitiligo is also associated with hair greying. Vitiligo causes the cells that produce melanin either to die or to stop producing melanin. The lack of melanin causes white patches to appear on a vitiligo patient’s skin and their hair to turn grey. Vitiligo, which has no cure [6], was a relatively unknown medical condition until 1993, when superstar Michael Jackson went on the *Oprah Winfrey Show* and gave an interview in which he attributed his lightening skin tone to vitiligo. Jackson was diagnosed with vitiligo in the mid-1980s [7].

The Gemara (Taanis 5b) recorded a case of early hair greying. When Shaul’s reign was almost over, Shmuel HaNavi asked that he not live to see Shaul’s demise. Shaul was Shmuel’s student, and Shmuel could not bear to witness his precious student’s downfall. Hashem “debated” how to honor Shmuel’s request. Surely Shmuel would not want to see Shaul die, but as Shmuel was only fifty-two years old, it would be a disgrace for him to die so young. Therefore, “*kafzā zikna*”, “old age” sprang upon him. Rashi explains that Shmuel’s hair became prematurely grey [1]. The stress that Shmuel went through as a leader could have contributed to his hair’s early graying. Alternatively, Shmuel may have suffered from some form of alopecia areata, which would have eliminated his pigmented hairs and thus make his grey hair more noticeable. Vitiligo is another possible explanation. Vitiligo, a related condition, causes loss of pigmentation in hair *and* skin. Shmuel’s skin did not lose pigmentation—only his hair. While the Navi does not state how Shmuel died, at least one study shows a correlation

between grey hair and heart attacks. In this study, it was found that men with grey hair had a greater chance of suffering a heart attack than men who were not grey. However, there was no significant difference in the instances of heart attacks suffered by women with grey hair as compared to women without grey hair [8].

Perhaps the most famous case of hair graying in Jewish history is the saga of Rabbi Elazar ben Azarya. The Talmud related that when the second Rav Gamaliel was disposed as head of the Sanhedrin, Rabbi Elazar was chosen to be his replacement. Rabbi Elazar was only eighteen years old. His wife thought that no one would accept a mere teenager as their leader and that he would not be able to garner the respect of the people. She let him know her feelings by pointing out to him that “you have no white hair.” The next morning, however, Rabbi Elazar woke up with eighteen rows of white hair on his beard. Rabbi Elazar and his wife took this as a sign that he was destined to take the position he was offered (Brachos 27b-28a).

The Rambam (Pirush Mishnayus, Brachos 1:5) explained that Rabbi Elazar must have exerted himself so much when he was learning that his hair turned white from stress. As discussed above, scientifically this explanation is unlikely. Perhaps Rabbi Elazar had been strenuously studying for years and over time the stress hormones caused his hair to lose pigmentation. However, the Talmud notes that the grey hairs suddenly appeared, so this explanation does not seem to fit. Alternatively, Rabbi Elazar’s graying hair could have been caused by alopecia areata. However, this condition is characterized by hair loss, and there is no mention here that Rabbi Elazar experienced any loss of hair. Vitiligo is a better explanation. However, if Rabbi Elazar suffered from vitiligo, he would have most likely also seen light splotches on his skin. Again, there is no mention in the Talmud of this occurring. Perhaps the simplest and most likely explanation for Rabbi Elazar’s sudden hoariness is Rashi’s contention. Rashi states that Hashem wanted to give a message to Rabbi Elazar to show that he was worthy and needed for the job. Thus, Hashem made a miracle and turned his hair white. Hashem was giving him and his wife the message that it is wisdom and righteousness, not age, which renders someone worthy of obtaining respect. ■

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