7 Ways Your DNA Affects How You Age

LifeBalance

The healthy aging market is a multi-billion dollar industry affecting millions of people each year. With the market being in a highly developmental stage, led by experimental studies and customer acceptance, it's no surprise there is much consumer skepticism towards the market's services and products. While some skepticism is to be expected, recent advancements in genetic science are showing us that finding a customized healthy aging solution no longer has to be a guessing game of trial and error. Thanks to this research, we now know that the way an individual ages is highly affected by that person's unique genetic profile.

Most people are aware that our genes determine things like our eye color, hair color and whether or not we have dimples. But our genes also reveal many things about our health, including how our bodies age physically and mentally. By analyzing these particular genetic markers, it is then possible to develop a healthy aging program that is designed for a person's unique genetic profile. This process — collecting and analyzing DNA, and developing recommendations based on what it reveals — is what GxRenew does, and it has the potential to change some long held beliefs about aging. So, let's take a deeper look at these seven components and the particular genetic markers that influence them.

Your genes determine:

1. How your facial skin ages
2. How your impulse control and taste preferences change with aging
3. If you are likely to live into your 90s or 100s
4. How your body's skin ages over time
5. If you are more or less likely to experience age-related hearing loss
6. If you are more or less likely to experience mental acuity decline with aging
7. How well your body is able to effectively absorb calcium

1

Your genes determine how well your face ages.

Specific Genes Analyzed: STXBP5L

This gene has been shown in studies to have significant associations with a person's susceptibility to visible signs of facial aging. As is the case with all of our organs, our skin, especially that on our face, ages over time. Visible signs of facial aging include wrinkling, especially around the eyes and mouth; creases or frown lines in the forehead, and thinning and sagging or folding of your skin, particularly around your eyes, mouth and jawline.

Some amount of visible facial aging is inevitable with the passage of time. However, there are certain lifestyle behaviors that accelerate and/or exacerbate it such as smoking, poor nutrition and sun damage. Genetics also plays a role, especially in the case of Caucasians. In the first ever genome-wide association study of its kind, researchers examined more than 500 middle-aged French Caucasian women to identify the factors that may affect the severity of skin aging. They found that those who carried a certain copy of this gene showed less aging, particularly skin wrinkling and sagging, over time.

2

Your genes determine your levels of impulse control and taste preference.

Specific Genes Analyzed: FTO

This gene has been shown to have significant associations with a person's impulsivity and taste preference for fatty foods as they age. Impulse control, especially in the presence of an abundance of calorie-dense, fatty foods is essential for maintaining a healthy, portion-controlled diet. So called "mindless" eating, or eating just because it's there, is a common problem in our society where food is present everywhere you turn. Even small things, such as the size of the food container and being around others can lure you into impulse eating. Fatty rich foods are also easy to overeat once you start eating them because they stimulate powerful pleasure centers in your brain.

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Though we tend to think of resisting impulsive eating as an act of "willpower," it takes a good deal of mindfulness to avoid slipping into impulse eating behavior and there also appears to be a genetic component underlying some of this behavior. Results from the Baltimore Longitudinal Study of Aging (BLSA) indicate that people who carry a certain copy of the FTO gene are not only at a 67% higher risk for becoming obese, but also for having reduced activity in the region of the brain that dictates impulse control and taste preference, leaving them more susceptible to consume—and overeat—high calorie, fatty foods, which, of course, is likely an underlying factor behind their being overweight.

3

Your genes determine if you are likely to live into your 90's or 100's.

Specific Genes Analyzed: FOXO3, APOC1

These genes have been shown to have significant associations with a person's likelihood of extreme longevity—living into one's 90s or 100s. To live a long, healthy life is a very common human goal. Life expectancy from birth hovers in the mid- to late-70s for men and the early to mid-80s for women around the world. For those who reach age 65, life expectancy is above average. For decades scientists have studied human lifespan and why some people live 100 years and beyond while others fall short. The answers are, of course, complex and multifactorial, including geography, culture, lifestyle and much more.

Genetics are also known to play a key role, especially in our later years. The genetic contribution to longevity in humans overall has been widely estimated to be about 25 percent. The older you get, the more genes come into play. Scientists now know that genetic factors have an increasing impact, particularly after 60 and profoundly from age 85 onwards. A growing body of research on thousands of the "oldest of the old," those in their 90s and 100s, show that these two genes and are strongly associated with one's likelihood for extreme longevity, while other gene mutations appear to reduce that likelihood by up to 50 percent. Interestingly, previous research has shown that long-lived families carry as many genetic mutations that put them at risk for disease as the general population. These other gene variants just appear to promote healthy aging and protect them from disease.

4

Your genes determine how your skin ages over time.

Specific Genes Analyzed: IRF4, SPATA33, RALY/ASIP, BNC2

These genes have been shown in studies to have significant associations with a person's susceptibility to visible symptoms of skin aging, particularly lentigines, pigmented patches of skin more commonly called "age spots." Lentigines are brown lesions that form on the skin from chronic sun exposure and other factors. They generally appear on the face, hands, forearms and upper chest. Though they take years to develop, these tan or brown spots seemingly appear out of nowhere and are very common in adults over the age of 50.

Age spots are primarily caused by years of prolonged sun exposure as melanin

becomes concentrated in small patches. Unsurprisingly, fair skinned people are more at risk for age spots. Age spots are also caused by an underlying genetic component that is independent of melanin production, however, according to a study of more than 2,800 men and women of North European ancestry, which identified four genes with strong associations to age spots that were at least partially independent of skin color. Women also seem to be at a higher risk, though those findings are inconclusive and the reasons why are still unclear.

5

Your genes determine if you are susceptible to hearing loss as you age.

Specific Genes Analyzed: GRM7

This gene has been shown to have significant associations with a person's risk for developing age-related hearing loss. Hearing loss is the most prevalent sensory impairment as we get older. About 20 percent of Americans report some degree of hearing loss, and by age 65 one in three of us has at least some trouble with our hearing. Hearing loss can be isolating since we use this sense as one of our primary forms of conversation. Age-related hearing loss happens as the tiny hair cells in your inner ears slowly break down and can't pick up sound vibrations as well as they used to. The loss of these cells often happens with aging itself, but there are numerous contributing factors such as exposure to loud noise, health conditions like heart disease and diabetes, certain antibiotics and other medications and heredity.

We've long known that people who have family members with hearing loss are more likely to have hearing loss themselves as they age. A recent study of 3,434 men and women from six different countries identified people with certain gene variations as having a much greater risk for age-related hearing loss. Other variations were connected to even greater risk for hearing loss over time, though the age of onset, the rate of decline and the type of hearing loss they experience—e.g., whether it's mostly certain pitches or tones or trouble with word recognition—varies from person to person.

6

Your genes determine how likely you are to experience decline in mental acuity as you age.

Specific Genes Analyzed: APOE, BDNF

These genes have been shown to have significant associations with age-related mental acuity decline. Brain-derived neurotropic factor (BDNF) is a protein that helps you grow new brain cells and helps keep your existing neurons alive. It's vital for learning, short and long term memory and higher thinking. It is encoded by the BDNF gene. It also appears to be an important marker of cognitive health and memory in women (though for reasons not yet clear, the association is not strong in men).

BDNF is a protein that helps you grow new brain cells and keep your existing neurons alive.

One study of 369 older adults, average age of about 73, found that women who had one of two minor variations of this gene had an increased risk of poorer cognitive performance (memory and perceptual speed, how quickly your brain interprets and organizes information) as compared with their peers who carried major forms of the gene. The more minor variations of these genes they carried, the greater their risk of decreased cognitive function, especially regarding memory and perceptual speed. Other research shows that the interaction of BDNF with another genotype (APOE4) increases the likelihood and magnitude of mental acuity decline.

7

Your genes determine how well your body is able to effectively absorb calcium.

Specific Genes Analyzed: CASR, DGKD, GCKR, LINC00709, CARS, LOC105370176, CYP24A1

These genes have been shown to have significant associations with a person's blood calcium levels. Calcium is the most plentiful mineral in the human body and is used by nearly every cell in the body. It's well known that the mineral is essential for maintaining skeletal and dental health, as your bones and teeth are where the lion's share of calcium is stored. Calcium also is required for nerve function, muscle contraction, hormone release and heart health. Your body keeps the amount of calcium circulating in your bloodstream within a certain range to allow all your specific cells to have what they need to perform their jobs. When those levels dip below that range, your body pulls what it needs from your skeleton. Over time that leads to weakened bones.

Your calcium levels are influenced by your diet, how well your intestines absorb the calcium you take in, levels of phosphate in the body, your vitamin D levels and by levels of certain hormones like parathyroid hormone, calcitonin and estrogen. Emerging research also shows that your genotype may influence blood calcium levels. In one very large study of 39,400 men and women, researchers found variations in these genes had a significant impact on blood calcium levels, which echoes findings from previous animal research as well as a study of 1,747 twins that estimated heritability to be 33 percent for blood serum calcium levels.

Conclusion:

As you can see, healthy aging entails much more than just applying a magic skin cream — it's unique to your specific genotype. It doesn't mean these products and services won't help you combat the signs of aging, but genetic science does suggest that the speed and way in which you age can be decelerated and optimized based upon your proper understanding of your specific genotype. The only way to know is to have your DNA tested so you can see what these genes say about you. GxRenew can help — when you purchase GxRenew, our groundbreaking, science-based healthy aging solution, you will get a comprehensive report detailing your genotype in the seven traits listed areas above — and 21 more! The report also provides a set of recommendations that will help you achieve your healthy aging goals, based exclusively on your genetic results. Today, it is possible to understand and act upon the healthy aging roadmap our bodies naturally give us. Let GxRenew chart it for you.