


# the TELOMERE TREATMENT



Feed your  
cells to slow  
the aging  
process and  
resist disease

By Jack Challem

People have sought the fountain of youth for millennia, trying everything from ancient potions to vitamin supplements. In recent years, scientists have zeroed in on the actual causes of cellular aging. After all, the body consists of an estimated 37 trillion cells, and as these cells collectively age, so does the rest of the body. But one detail might just influence the aging process more than others. It's the length of a tiny bit of genetic material called a telomere. And it's one aspect of our genes that we can change.

To explain, each cell of our bodies contains a suite of genes, our hereditary information and instructions for how those cells function. The genes are organized into 46 groups called chromosomes. Telomeres wrap around the tips of these chromosomes, sort of how you might wrap a ribbon around a fingertip. The telomeres shorten each time a cell divides to make another cell, which happens during normal growth and healing throughout our lives.

It turns out that the length of a person's telomeres correlates with her biological (not chronological) age and risk of developing disease. That means telomeres don't shorten at the same rate in all people. And considerable research indicates that certain eating habits, lifestyles, and supplements can help people maintain the longer telomeres associated with being younger.



## GENETIC INSTABILITY UNRAVELS OUR HEALTH

Although telomere is far from being a household word, the science has garnered true respect. In 2009 researchers were awarded the Nobel Prize for discovering how telomeres protected chromosomes and our genetic material. Telomere research is serious science.

Consider the lives of two people. One is a 58-year-old man who works long hours, eats poorly, and lives a stress-filled life. Tests showed that he had the telomeres of an 80-year-old man—and the health of one as well, including a recent stroke. The other person is an energetic 60-year-old woman who relishes her life and family, enjoys creative pursuits, and maintains a healthy diet. Her telomeres were those of someone 50 years old.

The difference between these two people comes down to what scientists call genetic stability or, conversely, genetic instability. When our genes and chromosomes are relatively stable, they do their jobs. When they show a higher level of instability—think of the genes as unraveling threads—genetic instructions are more likely to get garbled. When that happens, the aging process accelerates, and people have a greater risk of developing serious diseases such as heart disease and cancer. Longer telomeres protect genes, whereas shorter telomeres increase genetic instability.

## DIETARY INFLUENCES ON TELOMERES

We know that hazardous molecules called free radicals can damage fats and proteins in cells. They also damage

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telomeres. Because antioxidants such as vitamins C and E neutralize free radicals, they can also slow damage to telomeres. But there's more to the story. Recent research has highlighted how particular eating habits and individual nutrients can help preserve telomeres and increase the activity of telomerase, the enzyme that actually lengthens telomeres.

In fact, several recent studies have noted a strong relationship between eating a Mediterranean-style diet—high in olive oil, vegetables, and fish—and longer telomeres. Researchers at the Harvard Medical School studied 4,676 nurses who completed dietary question-

naires and had laboratory tests to measure the telomere length in chromosomes obtained from white blood cells. Using a nine-point scale to reflect more or less adherence to the Mediterranean diet, the researchers calculated that each point on the scale correlated with 1.5 years of faster or slower telomere aging. Women who most consistently ate a Mediterranean diet earned nine points, and they had telomeres 13.5 years younger than women who did not eat a Mediterranean diet at all.

In a similar study, Italian doctors reported that people who consistently ate a Mediterranean diet had longer

telomeres and higher telomerase activity. Furthermore, shorter telomeres were associated with more inflammation and free-radical activity.

Meanwhile, a study of 2,006 men and women in Hong Kong found that drinking at least three cups of either green or oolong tea daily was associated with longer telomeres. In fact, those longer telomeres were equivalent to being biologically five years younger. Green tea is rich in epigallocatechin gallate (EGCG), a powerful antioxidant with established health benefits. No other foods, at least in this particular study, were linked to longer telomeres.

## SUPPLEMENTS THAT ENHANCE TELOMERES

In addition to a healthy diet and lifestyle, certain nutrients appear to protect telomeres.

**Omega-3s.** These healthy fats are an important part of the traditional Mediterranean diet, and they may be one of the reasons why this diet is associated with longer telomeres. Australian researchers studied 33 men and women 65 years of age and older. All had been diagnosed with mild cognitive impairment, a prelude to Alzheimer's disease. The subjects were given one of three different supplements each day for six months: (1) 1,670 mg of eicosapentaenoic acid (EPA) and 160 mg of docosahexaenoic acid (DHA), (2) 1,550 mg of DHA and 400 mg of EPA, or (3) 2,200 mg of linoleic acid, an omega-6 fat found in corn and soybean oils.

The researchers reported a trend toward telomere shortening in all three groups, probably because all of the subjects were older. However, high blood levels of DHA were associated with the least telomere shortening. In contrast, telomere shortening was greatest in people receiving linoleic acid, an omega-6 fat found in corn and soybean oils.

In fact, the ratio of omega-3 and omega-6 fats could be a major influence on telomere length. Researchers from The Ohio State University College of Medicine, Columbus, asked 106 subjects to take one of three



supplements daily for four months. Some received either 2,500 mg or 1,250 mg of omega-3s, while others got placebos containing the proportion of fats found in the typical American diet. In people taking omega-3 supplements, the relative proportion of omega-6s decreased, and their telomeres increased in length.

Another study, published in the *Journal of the American Medical Association*, examined telomere shortening in 608 people with stable heart disease. After five years, people with the highest levels of EPA and DHA had the slowest rate of telomere shortening, whereas those with low levels of EPA and DHA experienced the most rapid rate of telomere shortening.

**Vitamin D.** This vitamin, which is actually a pre-hormone, appears to protect telomeres. Researchers at Georgia Regents University, Augusta, asked 37 overweight African-Americans to take the equivalent of 2,000 IU of vitamin D or placebos daily for 16 weeks. People taking the vitamin D had almost a 20 percent increase in the activity of telomerase, the enzyme that lengthens telomeres.

**B Vitamins.** This family of vitamins has diverse roles in health, including a biochemical process called methylation, which helps regulate gene activity. Telomeres appear to be regulated in part by methylation. In a one-year study, doctors at the Saarland

University Hospital, Germany, gave 60 seniors supplements containing folate and vitamins B6 and B12 (all of which are involved in methylation) or vitamins not involved in methylation. By the end of the study, people with low levels of B vitamins were more likely to have reduced methylation and shorter telomere length.

**Magnesium.** Laboratory studies using human cells have found that low levels of magnesium shorten telomeres and accelerate the aging process. The consequences are potentially significant because two-thirds of Americans lack sufficient magnesium, perhaps speeding the aging process of millions of people.

While a healthy diet and supplements can help preserve youthful telomeres, smoking, alcohol abuse, stress, and consuming too much sugar may shorten them. And adequate sleep is essential—it's good for your telomeres and every other part of the body as well.

### PRODUCTS



**New Chapter Green & White Tea Force** uses a natural extraction technique that guarantees the fullest spectrum of beneficial phytonutrients.



**Source Naturals Telomeron** delivers research-backed ingredients, including green tea and vitamin D, to support telomere length and enhance telomerase activity.



**Nordic Naturals DHA Xtra** provides 900 mg of DHA—a highly concentrated amount of the omega-3—in just 2 softgels per day.



**Life Extension Two-Per-Day Tablets** provide high levels of B and D vitamins, as well as nicotinamide riboside, shown in studies to support mitochondrial health and promote pathways of longevity.



**The Vitamin Shoppe Magnesium Citrate 200 mg** provides this essential mineral as magnesium citrate, more easily digested and better absorbed than some other forms of magnesium.

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