

HOW LONG ARE YOUR TELOMERES?

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I was inspired to write this article after reading about the Nobel Prize in Medicine being awarded to Elizabeth Blackburn, a genetics researcher at UCSF, and two of her colleagues, for their discovery of *telomeres*, the part of our genes that helps cells to create exact copies of themselves, and *telomerase*, the enzyme that assists in this process.

Telomeres are the tips of the strands of DNA on the ends of our chromosomes, which naturally shorten with each cellular replication. When they get too short, the cells become defective or die, which leads to disease and aging.

There's a lot of research being done on the causes of aging, and how to reverse or slow it down. And of course, there are lots of people who are trying to make money from anti-aging products. I read about a company that's developed a product, taken in pill form, which acts on telomeres and telomerase, in hopes of halting the aging process. However, they don't guarantee it'll actually work, and it'll cost you \$14,000 a year to try it!

Shorter telomeres are associated with greater biological age and disease. Now, genetics probably determine the length of your telomeres to begin with, but recent research has indicated that stress may shorten them prematurely. This fits with what we already know about stress accelerating both the disease and aging processes.

The question is, can we reverse or slow telomere shortening? Dr. Blackburn is currently part of a research team with Dr. Dean Ornish, the guy who's written the diet books, who are trying to determine whether "lifestyle changes" (exercise, a low-fat diet high in fruits and vegetables, and yoga or meditation) can counteract telomere shortening in men with prostate cancer. Their initial findings look promising. In another study at UCSF, cardiac patients who took Omega-3 fish oil had significantly less shortening of their telomeres over a five-year period than those who didn't.

Exercise in particular seems to have a positive effect on telomeres. Several studies have found that the fitter a person is in middle age or onward, the younger their cells - and the longer their telomeres. One study compared exercising twins vs. couch-potato twins - after just one year, the telomeres of the exercising twins appeared 10 years younger than those of their more sedentary siblings!

So, while getting older is inevitable, it may be that aging is optional - to an extent. Best practices for keeping your telomeres long and your cells healthy: 1) exercise daily (the more the better); 2) eat a healthy diet (low in fat and sugar, high in whole grains, fruits and veggies); 3) add Omega-3 fish oil capsules (or eat lots of salmon and sardines); 4) keep your alcohol consumption to a minimum (less is more); 5) don't smoke; and 6) find a "mind-body" practice like yoga, Tai Chi, or meditation to help you let go of stress.