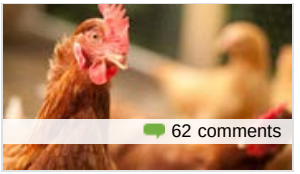
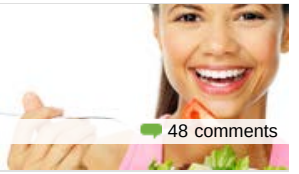
4 Meditation Myths, Busted

Products You Thought Were GMO-Safe



The Risks and Benefits of Backyard Chickens



5 Tips to Spring Clean Your Body

How to Slow Down Your Genetic Clock

Dr. Michael Murray | March 31, 2013 | 8:28 am | 85 comments

There has been a great deal of study in recent years about what causes us to age, and whether it's possible to slow down our genetic clock.

For many years it was thought that cells were immortal if given an ideal environment. This long-held belief was discarded in the early 1960s when Dr. Leonard Hayflick observed that human fibroblasts, a type of cell in tissue culture, would stop dividing after about fifty times, a phenomenon that became known as "the Hayflick limit." As these cells approach fifty divisions, they begin looking old. They become larger and accumulate an increased amount of lipofuscin, the yellow pigment responsible for "age-spots"—those brownish spots that appear on the skin as the result of cellular debris and lipofuscin clumping together.

Your Genetic Clock Is Ticking

Based on the Hayflick limit, experts on aging have theorized that there is a genetic clock ticking away within each cell that determines when old age sets in. The latest, and most likely, theory of aging is the

telomere-shortening theory. Telomeres are the end-cap segments of DNA (our genetic material). Each time a cell replicates, a small piece of DNA is taken off the telomere and gets shorter. The shorter the telomere gets, the more it affects gene expression. The result is cellular aging.

In addition to serving as a clock for aging, the telomere is also involved in protecting the end of the chromosome from damage—controlling gene expression and aiding in the organization of the chromosome. In short, the telomere not only determines the aging of the cell, but our risk for cancer, Alzheimer's disease, and other degenerative diseases associated with aging.

Factors that Slow Down Your Clock

The key to extending the human lifespan will ultimately involve preserving or restoring telomere length to the DNA. Until then, there are steps we can take now. It is well known that lifestyle and dietary factors that can slow down telomere shortening. Let's look at these more closely.

Lifestyle Factors. The ideal lifestyle for prolonging the life of telomeres and cells includes:

- Stress management.
- Regular exercise.
- Getting a minimum of 8 hours sleep per night.
- Maintaining ideal body weight. Perhaps the biggest cause of premature telomere shortening in North America is resistance to the hormone insulin that occurs in obesity, prediabetes, and type 2 diabetes, as recent studies have documented that insulin resistance is associated with shorter telomeres. Achieving ideal body weight and utilizing strategies to increase the sensitivity of the body cells to insulin is a critical goal to preventing telomere shortening. (See: 7 Tips to Tame Your Sweet Tooth)

Dietary Factors. Dietary factors that are known to slow down aging include:

- Eating a low-glycemic diet. As mentioned above, the best easy to prevent insulin resistance that speeds up the aging process is to each foods that are low on the glycemic index. Type "low glycemic foods" into your search engine to learn the best foods to eat.
- Consuming a diet rich in fresh vegetables and fruit.
- Taking a multiple vitamin and mineral formula. Research has shown that many nutrients help fight telomere shortening, especially B vitamins like folic acid, vitamin B12, and niacin; zinc; magnesium; and vitamins C and E. The best way to insure adequate intake of these and other nutrients to prevent telomere shortening is to take a multiple vitamin and mineral supplement.

Nutritional Supplements. There have been lots of studies showing the positive effect of certain nutritional supplements on cell longevity. These include:

- Omega-3 fatty acids from fish and fish oil supplements—Higher levels of the omega-3 fatty acids EPA and DHA in the blood have been shown to reduce telomere shortening in a long-term study. The recommended dosage of fish oils is based upon providing a daily intake of 1,000 mg EPA+DHA.
- Vitamin D— at least 2,000 IU daily. In one study, scientists studied the effects of vitamin D on the length of telomeres in white blood cells of 2,160 women aged 18 to 79 years. The higher the vitamin D levels, the longer the telomere length.
- Polyphenols and flavonoids—from grape seed, pine bark, and green tea. These substances are not only associated with reducing markers of inflammation, but also preventing telomere shortening in experimental studies. The recommended dosage from extracts providing at least 90% polyphenols is 150 to 300 mg daily.