

Anti-Aging

Can Telomeres Tell Your Age?

by Margy Squires

There are multiple theories on how we age from genetics to free radicals. **Could the secret of youth be found in your chromosomes?** Do you know what your telomeres are talking about? **Listen – they might be telling your age!**

All life starts with a single cell. From conception to birth, cell replication is the biological unit that propagates life. One cell becomes two and so on and so on, with an estimated 60-90 trillion cells at adulthood. There are more than 200 different cell types including cardiac, nerve and muscle. Some are short-lived like red blood cells (120 days) and others in the brain may survive a lifetime. High energy organs like the heart and liver have a low turnover rate. Keeping cells healthy and alive to support every tissue, organ and system is what anti-aging is all about.

A cell is only as strong as the multiple components which impact its survival. Mitochondria are the “power plants” that “burn” fuel, generating energy but also waste byproducts that requiring “clean up” and free radicals that need neutralizing. The mighty mitos also like a constant supply of nutrients to stay operational. The nucleus houses the chromosomes containing genetic material which defines the cell type and function (am I a bone cell or a skin cell?). A strong cell membrane both facilitates optimal nutrient transport and protects internal operations.

Cell structure aside, replication itself may hold another longevity key. Normally cell division, lifespan and death occur as genetically “programmed”. At some point, most cells “turn off” the replication mechanism. Telomeres are involved in the “turn off”. These tiny “end caps” to chromosomes (the genetic carriers) stabilize them through replication by protecting DNA structure. Cells only replicate a given number of times because with each successive copy, a portion of the telomere end of the chromosome is lost. Scientists think once the telomere gets too short, the cell dies. By measuring telomeres, scientists can tell what makes them shorter and discover ways to keep them longer and us “biologically younger”.

Studies show shorter telomeres reflect acceleration in biological aging and are associated with age-related diseases and higher mortality. There is tissue-specific telomere shortening in cardiovascular disease, rheumatoid and osteoarthritis, type II diabetes, auto-immune disorders, Parkinson’s and Alzheimer’s. Many factors contribute to telomere shortening and cell damage; inflammation, insulin resistance, poor elimination or processing of toxins, oxidative damage, physical and mental stress and loss of restorative sleep.

But if telomeres shorten with disease could preventing the risk of those diseases keep telomeres longer? Studies indicate that the very things we do to stay healthy – good diet, exercise, not smoking, stress reduction, restorative sleep – are the same things that help keep our telomeres long, too. Since everything starts with the cell, let’s look at ways to keep both the cell happy and healthy and your telomeres from telling your age.

First, take a high quality multivitamin to provide a nutritional foundation with a full spectrum B complex to support daily stressors. Data analyzed from the *Sister Study* (586 women, ages 35-74) showed those who took a daily multivitamin had 5.1% longer telomeres than those who did not. The published findings suggested

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a multivitamin “represents a source of micronutrients which may affect telomere length by modulating oxidative stress and chronic inflammation”. Interestingly, those who did not take a multi but took higher dietary intakes of beta carotene, folate, magnesium and vitamins A, C and E also had longer telomeres.

Reduce the inflammatory response and damage to telomeres with omega-3 fish oils – molecularly distilled to minimize toxins. These helpful lipids are known “brain food”, and protect nerve cells, improve cell to cell communication and cognition, plus support cardiovascular health. Systemic enzymes help control the COX-2 enzyme involved in the inflammatory cascade as well.

Consider adding alpha lipoic acid (ALA) to your antioxidant profile. ALA supports liver detox and metabolizes fats and sugars to lower your risk of type II diabetes. ALA recycles vitamins C and E, and also raises glutathione levels to enhance immunity. CoQ10 is another antioxidant to counteract free radicals and is a mitochondria co-worker, especially to brain, heart and muscle cells. By keeping mitochondria “efficient”, CoQ10 helps the cell and telomeres stay energized and functioning.



Phosphatidyl serine (PS) protects the lipid cell membrane for nutrient transport and enhances cell communication. More than 3,000 studies report on PS's effectiveness in improving memory, thinking and concentration. PS also has the ability to bind cortisol to decrease the stress response. Acetyl L-carnitine (ALC) is another brain nutrient that facilitates short-term memory and learning. Plus ALC protects and repairs mitochondria, reducing potential oxidative damage to telomeres from free radicals.

Vitamin D supports longevity on many levels. An adequate D level helps calcium absorption for bones and restricts calcium deposits in arteries to decrease heart disease and stroke risk. As a prohormone, D offers protection against breast, colon, prostate and skin cancers. A study of 2160 female twins (ages 18-79) in England found a higher vitamin D level correlated with longer leukocyte telomeres and decreased c-reactive protein, a marker of systemic inflammation.

Proanthocyanidins (PCOs) are the colorful ingredients in fruits and berries. Resveratrol has been studied for its ability to enhance the SIRT1 longevity gene. Plus, grapeseed and Pycnogenol® are known to strengthen blood vessel stability and reduce inflammation. Most PCOs are high in vitamin C and bioflavonoids as well.

Finally, I'd be remiss if I didn't remind you about magnesium, a co-factor in regulating more than 300 cellular reactions and required nutrient for mitochondria. Low levels are found in hypertension, heart disease, and chronic pain – the same

Get with the Program™ ANTI-AGING

DAILY BASICS

Multi-Gold™

Omega-3 Fish or Flax

Alpha Lipoic Acid 100 mg

CoQ10 100 mg

Vitamin D3 2000 IU

CONSIDER

Fibro-Whey™

Acetyl L-Carnitine or

Phosphatidyl Serine

Resveratrol



disorders with telomere shortening. Know your red blood cell magnesium status! Ask your doctor for the simple blood test.

There are many other nutrients that improve health and longevity. The few profiled nutrients specifically target free radicals, oxidative damage and reduce the inflammatory response to maintain telomere length. With a little preventative care, you'll like what those telomeres are telling about your age.

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Recommended Reading

- ◆ *The Immortality Edge* by Fossel, Blackburn & Woynarowski
- ◆ *The Official Anti-Aging Revolution* by Klatz & Goldman
- ◆ *The Gene Makeover* by Giampapa, Buechel & Karatoprak
- ◆ *Longevity* by Cowden, Akbarpour, DiCarlo & Goldberg
- ◆ *Orthomolecular Medicine for Everyone* by Hoffer & Saul