

# TELOMERE EFFECT ON HEALTH

**WE KNOW THAT BIOLOGICAL AGING AT A CELLULAR LEVEL IS CAUSED BY THE SHORTENING OF TELOMERES.**

Telomeres are the protective caps on the end of our DNA strands that preserve the integrity of our DNA through the countless divisions and re-combinations that occur with cell growth and reconstruction. They keep the code intact.

Telomeres shorten with each cell division. This is associated with how fast your cells age and when they die, depending on how quickly they wear down.

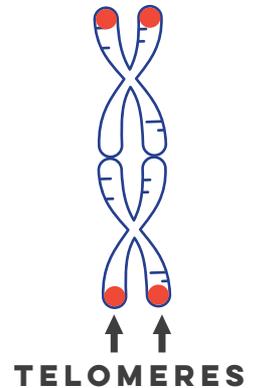
When telomeres shorten to a critical point, the cell becomes senescent - it is still alive but senile and sends out pro inflammatory substances that make you more vulnerable to pain and disease and eventually it will die. Its the reason we become less healthy as we become elderly because more and more cells have died or are senescent compared to the healthy ones.

**NORMAL HUMAN CELLS HAVE A LIMIT ON THE NUMBER OF DIVISIONS THEY CAN MAKE:**

Its called the Hayflick limit, and it is about 50 divisions, but some of our cells can continue to divide and renew. These include immune, gut, bone, lung, skin, liver, pancreatic, skin and hair cells that line our cardiovascular systems. They can continue dividing because of telomerase, an enzyme that rebuilds and maintains telomeres. Its function is to lengthen and protect the telomeres. This was first discovered by Dr Elizabeth Blackburn in 1980 and she was awarded the Nobel Prize for this discovery in 2009.

Research over the last decades since the initial discovery of telomeres and telomerase has shown that the end of our chromosomes can actually lengthen and that biological aging is a dynamic process that can be accelerated or slowed depending on lifestyle or environment factors. We will all age but how we age is very much dependent on our cellular health.

This is because our cells are “listening to us”, absorbing the instructions you give them. The foods you eat, your response to emotional challenges, the amount of exercise you get, whether you were exposed to childhood stress, the quality of your relationships and even the level of trust and safety in your neighborhood - all of these factors influence your telomeres and can prevent aging at a cellular level.



# TELOMERE EFFECT ON HEALTH

## **WE CAN THINK OF OUR LIFE AS A HEALTH SPAN AND A DISEASE SPAN.**

We want to live our lives as healthy vibrant individuals for as long as possible free of the diseases of aging (our health span) and ensure our disease span is as short as possible.

Many research studies have now shown that there are things you can do to stabilise your telomeres and protect them, lengthening your lifespan - just as there are factors that can prematurely age us and increase our risk of disease.

## **WHAT IS PARTICULARLY IMPORTANT IS UNDERSTANDING HOW OUR RESPONSE TO STRESS IMPACTS OUR TELOMERES.**

We now know that people who see difficult situations as a threat and who ruminate or carry around stressful thoughts long in to the future, are keeping the stress response alive and have shorter telomeres. Conversely, if we learn to have a more positive approach to stress and use techniques such as meditation and mindfulness to reduce mind wandering and rumination, we can protect and lengthen our telomeres.

## **THE TOP THINGS YOU CAN DO TO PROTECT YOUR TELOMERES:**

1. Eat a healthy diet of non processed foods and high in omega 3's
2. Get adequate sleep
3. Get enough exercise
4. Maintain healthy supportive relationships
5. Reframe your perception of stress - some of us respond to difficult situations by feeling highly threatened - learning to frame your view of situations to a more positive one assists us to protect our telomeres
6. Use mind body techniques like meditation, yoga and QiGong to calm our systems
7. Become more compassionate towards yourself and others
8. Connect with nature more

### **FOR MORE INFORMATION:**

The Telomere Effect

Dr Elizabeth Blackburn and Dr Elissa Epel, Hachette Group, 2017

The Telomere Effect, A Revolutionary Approach to Living Younger, Healthier, Longer

Dr Elizabeth Blackburn and Dr Elissa Epel in Conversation with Anahad Oconnor - [https://www.youtube.com/watch?v=nki\\_hHbIDP4](https://www.youtube.com/watch?v=nki_hHbIDP4)

What do telomeres tell us about longevity?

Dr Calvin Harley and Dr Elissa Epel - <https://www.tedmed.com/talks/show?id=7252>

