

## WHAT ARE TELOMERES AND TELOMERASE?

Every cell in our bodies has a nucleus, and every nucleus has a strand of DNA, the genetic information from our parents. The DNA strand has a tail, and this tail region is called a telomere.

The telomere is like the tip of a shoelace. The function of the tip is to protect the shoelace.

It has been discovered that when the telomere is long, the cell is healthy. When the healthy cell replicates, it replicates into healthy daughter cells. When the telomere is short, the cell ages. Aging of the cell causes disease. When the aged cell replicates, it gives birth to ugly, sick daughter cells. When the telomere disappears, the cell dies.

The discovery that was awarded the 2009 Nobel Prize in Medicine showed us that we now have the scientific ability to lengthen the telomere. We also now have the ability to keep **any** human cell **perpetually alive**. In other words, we have found “the fountain of youth.”

Scientists have also found that telomerase itself is controlled and activated by bio-identical hormones (as differentiated from designer hormones). Therefore, in order to keep ourselves healthy and have quality of life, we must maintain all our age-declining bio-identical hormones at optimal levels. Letting those hormones drop is to let the telomeres get short. When the telomeres get short, the cells age. Aging causes disease, and death follows.

If we keep our telomeres long, our cells and bodies remain healthy. When the cells replicate, they give rise to healthy, young daughter cells, and we successfully avoid age-related diseases. Longevity naturally and logically follows.

One example that demonstrates the work of telomerase is to compare the skin cells of a 90-year-old woman with those of a 10-year-old child. The facial cells of both have a life span of approximately 90 days, after which they are shed and replaced by new skin cells. Question: If the cells on both of their faces have the same life span, why do those of the 90-year-old look so wrinkled, and those of the 10-year-old look so beautiful and healthy?

The answer is the work of the telomere. In the 90-year-old, the telomeres in the skin cells are short, so they give birth to diseased new daughter cells and wrinkled skin. In the 10-year-old, the telomeres in the cells are long, so the cells give birth to healthy daughter cells and beautiful skin.