

COSMIC CONSCIOUSNESS —

A JOURNEY TO WELL-BEING, HAPPINESS, AND SUCCESS PART IX: IMMORTALITY^{A,B}

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**"I don't want to achieve
immortality through my work.
I want to achieve it through not dying."
Woody Allen**

KEY CONCEPTS:

- Scientists believe recent research results on telomeres—small threads of DNA within the nucleus of your bodily cells—can lead to a significantly longer lifespan. Some even speak of “directed immortality.”
- In addition to eating and sleeping well and avoiding genetic toxins such as smoking and environmental pollutants, avoiding physical abuse, bullying and other forms of domestic violence can provide a longer lifespan.
- Happiness and lasting fulfillment diminish chronic disease and have a positive influence in slowing down the aging process.
- Exercise has been shown to slow down the ageing process and increases overall long-term health.

I doubt that Woody Allen was really serious. Who would want to live forever? But, as I will describe in this article, technology appears to be moving us in the direction of a much longer lifespan.

In Greek mythology, three goddesses called the Fates determined at birth the length of time each person would spend on earth. Life span was said to be directly proportional to the length of a thread spun by the Fates for each person born. It now appears from recent discoveries in genetics that this mythological tale may be a good metaphor for the actual mechanism for longevity. Perhaps even more important, new scientific data suggest that your level of happiness or the lack of it may have a profound impact on how long you live. Some scientists even speak of genetic immortality, a kind of “directed immortality” (Figure 1)¹. Allow me to explain.

WHY WE AGE

Your body is made up of approximately 50 trillion cells. Inside each of these cells is a nucleus and inside each nucleus there are 23 pairs of chromosomes which determine not only your sex, but also all of your physical and many of your personality traits. These microscopic chromosomes are long threads of DNA, and at the very end of each of these threads are specialized tighter stretches of DNA called telomeres, basically caps on the ends of the DNA threads (Figure 2). These telomeres play a critical role in your body because they protect your DNA from unraveling when exposed to toxins, carcinogens and other genetically damaging agents.² Otherwise you would likely die shortly after birth. Some scientists describe a telomere as not unlike the plastic tip at the end of your shoe laces. If you don't have that little tip, then the end of your shoelace will fray away and it will not work properly. It will not thread easily through the eyelets in your shoes. This is exactly like the ends of your chromosomes; if they don't have a telomere tip on the end, they too will fray away.³

In order for you to achieve healthy growth from birth to an adult your cells must replicate, i.e., reproduce themselves. When they replicate throughout your lifespan, they cannot copy their DNA all the way to the very end of the capping telomeres. Therefore, with each replication of a cell, its telomeres grow shorter and shorter. Eventually over many years, when the telomeres become too short, the DNA unravels and the cell can malfunction and die. Unraveling the ends of the DNA also causes them to become very sticky. Using the shoelace analogy, the shoelace ends become stuck together and this dramatically changes the genetic material which can have disastrous consequences for you. It's a bit like your shoelaces from both shoes becoming stuck or tied together, which can make you fall.

Scientists have found that the elderly have much shorter telomere caps than young people, and therefore they believe that telomere length is a marker for longevity and general cellular health. All research results with telomeres support this conclusion. Dr. Carol Greider, a molecular biologist at Johns Hopkins University, who shared the 2009 Nobel Prize in Medicine points out that, “When the telomere gets to be very, very short, there are consequences,” leading to a significant increased risk for age-related diseases.⁴ Another

way of saying this is that if we could maintain the telomere length on the chromosomal part of the DNA in our cells, we would likely suffer much less bodily degradation with time and live much longer.

SIGNS OF IMMORTALITY

Molecular biologist Dr. Elizabeth H. Blackburn, who shared the Nobel Prize in 2009 with Professor Greider has for some years studied single-cell river creatures called *tetrahymena*, which have an enormous number of chromosomes.⁵ She discovered something quite amazing. Dr. Blackburn determined the structure of the telomeres in *tetrahymena* and found that they were not getting shorter with time as is the case for all other living species.⁶ In fact, DNA was adding on to the ends of the telomere caps; they did not wear away with each replication as is the case for other living species. The cells could replicate endlessly—they were immortal!⁷ This had never been seen before for any other living creature on the planet. The relevant question therefore is, “If we can determine the mechanism for maintaining telomere length, could this be applied in people, and if so, would they live a much longer lifespan? Some scientist thinks, yes.

HAPPY PEOPLE LIVE LONGER

In my latest book, *BALANCE: The Business-Life Connection*, I report on scientific findings which indicate that 40 percent of your level of happiness appears to be genetically set, but the other 60 percent is determined by the environment in which you choose to live and function and the activities you choose to practice.⁸ All in all you have significant control over your long-term happiness and fulfillment—60 percent!

^A EDITOR'S COMMENT – This is the eighth article in a series based on the author's book, “Cosmic Consciousness – A Journey To Well-being, Happiness and Success.” In this book, published in both the Czech and English languages within one volume, and with an introduction by internationally-acclaimed author, Dr. Deepak Chopra, Dr. Cusumano explains in simple terms, the connection between Eastern Philosophical Wisdom, consciousness and quantum physics. His new book, *BALANCE: The Business – Life Connection* is based on three decades of personal experience on how to achieve success and fulfillment in both your personal and professional lives, and will be published in April by SelectBooks in New York City.

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Figure 1: My Search For The Holy Grail of Immortality¹—New technology has set the stage for “Directed Immortality” in humans.



Now studies at Duke University have shown that experiences in childhood, perhaps even later in life as well can affect the telomere length on your DNA—essentially nature’s impact on nature. In this study, researchers followed 1,100 British families with twins who were born in the 1990s. They took DNA samples from the children at 5 and 10 years of age.⁹ Over the years, the researchers also conducted in-depth interviews with the twins’ mothers. Those children who experienced during their youth, some form of negative event, such as domestic violence, frequent bullying or physical maltreatment by an adult, had significantly more telomere loss than other children who did not have these experiences. Since shorter telomere length has been connected to poor survival rates and chronic disease, this does not look good for those children. It suggests that negative events foster the onset of chronic disease and a shorter lifespan, while happiness and fulfillment support a health and longevity.

In another study at Brigham and Women’s Hospital of over 5,000 nurses, scientists found that middle-aged and older women with phobic anxiety tend to have shortened telomeres, a condition that is considered to be a sign of accelerated aging and has been linked to an increased risk of cancers, heart disease, and dementia. The study found that highly phobic women tend to have telomere lengths similar to non-phobic women who are six years older.¹⁰

Exercise appears to be one way to counter the negative effects of stress, anxiety and violence. In a research program carried out in Germany, scientists studied large numbers of elderly men and women who had been runners much of their lives and compared their telomere lengths with young adults and also with an elderly group that had been relatively sedentary and had not exercised throughout their lives.¹¹ The runners had telomere lengths comparable to young adults and overall the elderly runners had telomere lengths that were 75 percent longer than the elderly non-runners. As these researchers noted, “At the molecular level, exercise has an anti-aging effect (Figure 3)¹²”

LIVING A LONGER HEALTHIER LIFE

The implications of these studies are that if you want your children to live a longer, healthier and more fulfilled life, then you might consider the following:

- In addition to eating and sleeping well and avoiding genetic toxins such as smoking and environmental pollutants, you might want to be sure they avoid physical abuse, bullying and other forms of domestic violence.
- In fact, consider the converse, happiness and lasting fulfillment have a very positive influence in preventing or slowing down the shortening of those little telomere tips and hence the aging process.
- Exercise slows down the loss of telomere length which is why in the German study, elderly people who had been runners not only looked much younger on the surface, but were also younger genetically beneath the surface.

Finally, I would like to revisit the point that I discuss in my book **BALANCE: The Business-Life Connection**—fulfilled people live longer, healthier, and happier lives. They may not be immortal, but they have discovered that true long-lasting health and happiness come about from the following process.

You first must identify your true **ESSENCE**, that capability that you came into this world with and that sets you apart from others around you, and which you love to practice and pursue. Then you must connect that capability with a **NEED** in this world that makes it a better place in which to live. I don’t care if you work in a beer company or a biotech firm, there is always a means to improve on the world with your chosen profession. In doing so, you will have discovered your **LIFE PURPOSE**. I can assure you that this will generate deep **PASSION** and result in high levels of emotional and physical **ENERGY** enabling you to accomplish incredible progress in a short period of time. This energy and passion will open up your **CREATIVITY** and enable you to address difficult challenges, leading the way to **INNOVATION** in both your personal and professional lives. This inevitably brings a **RETURN**—financial, psychological, emotional, or spiritual—or some combination of them. The result is a deep sense of **GRATITUDE** which is always the basis for long-lasting **HAPPINESS** and **FULFILLMENT**.¹³ Isn’t that what you’re really after?

You don’t have to live forever, but you surely can live a longer, healthier and more fulfilled life,

Figure 2: Chromosomes with telomeres in pink.²

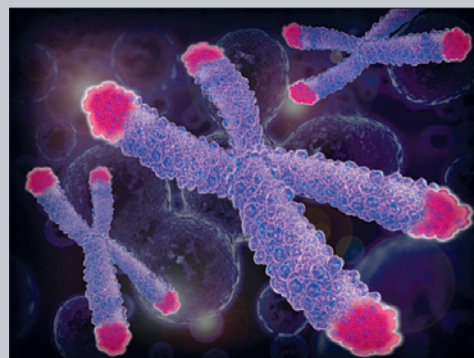


Figure 3: The tree of Immortality¹³: The molecular level, exercise, happiness and fulfillment seem to lengthen the human lifespan.



and at the same time leave this world a little better place in which to live. Although if science has it way, your children and grandchildren may have the option to improve their health and extend their lifespan by quite some measure!

Enjoy the journey!

James A. Cusumano, PhD ■

¹ emeagwali.com

² Lee J. Siegel, <http://learn.genetics.utah.edu/content/begin/traits/telomeres/>.

³ Joseph Stromberg, *Smithsonian Magazine*, January 2013, p. 14.

⁴ Carol Greider, <http://www.greiderlab.org/>.

⁵ Elizabeth H. Blackburn, <http://biochemistry.ucsf.edu/labs/blackburn/index.php?Itemid=3>.

⁶ <http://en.wikipedia.org/wiki/Tetrahymena>.

⁷ Op. cit., Stromberg.

⁸ James A. Cusumano, *BALANCE: The Business-Life Connection*, SelectBooks, New York, April 2013.

⁹ Katherine Rowland, “Childhood Stress Leaves Genetic Scars,” *Science Now*, April 24, 2012; <http://news.sciencemag.org/sciencenow/2012/04/childhood-stress-leaves-genetic.html>.

¹⁰ http://www.brighamandwomens.org/about_bwh/publicaffairs/news/pressreleases/pressrelease.aspx?pageid=1215.

¹¹ <http://well.blogs.nytimes.com/2010/01/27/phys-ed-how-exercising-keeps-your-cells-young/>.

¹² www.Rahimz.DeviantArt.Com

¹³ Op. cit., Cusumano.

James A. Cusumano is Chairman and Owner of Chateau Mcely (www.ChateauMcely.Com), chosen in 2007 by the European Union as the only “Green” 5-star luxury hotel in Central and Eastern Europe and in 2008 by the World Travel Awards as the Leading Green Hotel in the World. He is a former Research Director for Exxon, and subsequently founded two public companies in Silicon Valley, one in clean power generation, the other in pharmaceuticals manufacture via environmentally-benign, low-cost, catalytic technologies. While he was Chairman and CEO, the latter – Catalytica Pharmaceuticals, Inc. – grew in less than 5 years, to a \$1 billion enterprise with 2,000 employees. He is coauthor of **Freedom from Mid-East Oil**, released by World Business Academy Press (www.WorldBusiness.Org) and the author of **Cosmic Consciousness – A Journey to Well-being, Happiness and Success**, published in English and Czech by Fortuna Libri, 2011. His new book, **BALANCE: The Business – Life Connection** will be published in April by SelectBooks in New York City.