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For the last several years, Klein has provided consulting services to life insurance general agencies and independent marketing organizations. He holds two graduate degrees, an MS in science and an MBA from the University of Connecticut.

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## You have Two Ages, Chronological & Biological, - And How They Differ Matters!

We've all met someone who appears to be much younger — or older — than they really are. Essentially, everyone has two ages: a chronological age, and a phenotypic or biological age. Chronological age refers to the actual amount of time a person has been alive, or how old the calendar says you are through years that have passed since your birth date. Biological age, on the other hand, refers to how old a person *seems*. Your biological age, aka physiological age, takes into account beneficial family DNA history and lifestyle factors, including diet, exercise, and sleeping habits, to name a few. This is the age of how your body functions compared to average fitness and health levels.

How we age biologically is partly due to nature (genetics) and partly under our control. While genetics is an important factor, recent research sheds light on how aging can be impacted by external factors, including stress and smoking. This is why many gerontologists believe chronological age to be an incomplete figure. Since this type of numerical age doesn't take external factors into consideration, it's not as likely to accurately represent overall wellbeing. See graph illustrating mortality ranges compared to calendar age curve.

### A Tale of Two Celebrities

We age at different rates, and so people of the same chronological age aren't all at the same risk in developing cardiovascular disease or cancer or even death. What biological age does is give us a better perspective of relative age.

In 1959, Hollywood screen legend, Errol Flynn, age 50, came to Vancouver to finalize the sale of his 118-foot luxury Yacht. After starring in over 45 pictures, he was broke, and his new movie was a flop. He was in trouble with the IRS and had a succession of ex-wives demanding back alimony.

Chain-smoking Flynn offered up an endless supply of gossip and anecdotes to his Vancouver fans. His stories included dodging shellfire during the Spanish Civil War, and hanging out with rebel leader Fidel Castro. Eighteen years before, Flynn tried to enlist during World War II, but was rejected. Four-F, due to several ailments including venereal disease, enlarged heart and a benign lung tumor. This was in stark contrast to the image he projected as a trim, athletic, swashbuckling figure.

During his Vancouver visit, a massive heart attack laid him up at a Canadian autopsy table, which revealed a body ravaged from the excesses of drinking, smoking, and drug use. Flynn died from heart failure, but his other organs were so shot that the coroner ruled his death due to "natural causes." His Vancouver hosts would later say they were shocked at Flynn's haggard, bloated appearance.

Errol Flynn died early compared to his chronological age. His biological age was dramatically shortened by his behavior, including the drug abuse such as cocaine that causes tremendous damage to the abuser's heart.

At the other end of the spectrum, Tony Bennett's longevity and active career is the stuff of legends. The son of an Italian immigrant grocer, Anthony Benedetto was born in 1926, in Astoria Queens, NYC. As an artist, singer and entertainer, his career has spanned almost 70 years. This year, at the age of 92, Tony Bennett released a new album, a duet with a much younger talent, Diana Krall, entitled, "Love is Here to Stay."

Given his Mediterranean descent, Tony may well be a good example of what is referred to "Blue Zone." A group of scientists, researching longevity, studied small isolated populations where a surprisingly large number of men routinely live to 100 years or more. They called these sites "Blue Zones," also the title of their book.

One of these sites is the island of Sardinia. They discovered a village atop one of the mountains where a disproportionate percentage of men lived to 100 years or older. In their book, they discuss Sardinian men whose temperament allowed them to shed stress. Other factors include genetics, lifestyle, diet and nutrition, and social structures. They also found certain shared values, such as reverence for family, which was one of the more important elements in their lives.

### Determining True Biological Age

Now this comparison is probably an over exaggeration but it does make the point. In the future, medical advances will allow for better control of biological aging; a higher chronological age may not deem to represent the same setbacks as experienced today. Research has shown that telomeres play a major role in the aging process. Telomeres keep the ends of chromosomes from deteriorating and fusing with a nearby chromosome. Essentially, telomeres dictate how quickly cells age and die, and the higher a person's chronological age, the shorter their telomeres. Consequently, people with shorter telomeres (due to DNA methylation) were more likely to have an early death or develop a disease or neurodegenerative disorder. Scientists speculate, DNA methylation can be a determining factor in biological aging, while studies suggest that maintaining a healthy lifestyle can actually reverse aging by lengthening telomeres.

There are anti-aging physicians and specialized companies who can clinically test you to provide some measure of biological aging, but here are some tests you can conduct in your own home:

**Skin elasticity:** Lay your hand down on a desk or table, palm down. Pinch the skin at the back of your hand for five seconds. Let go and time how long it takes your skin to go back to its smooth appearance. When young, it should snap back immediately. An average 45-year-olds' skin will take 3–5 seconds. At age 60, it takes 10–15 seconds on average. By 70, it usually takes 35–60 seconds to crawl back. So if you are 60 and it takes 3–5 seconds, this test indicates your biological age is closer to 45.

**Reaction time:** Reaction time is another indicator of biological age. It involves catching a ruler and measuring the distance it takes.

**Static balance:** Testing for how many seconds you can stand without opening your eyes or moving your supporting foot. Seconds scored compared to time ranges age groupings provides relative performance.

**Vital lung capacity:** Measuring length of time you can hold your breath, compared against age related ranges.

You can get a detailed list and explanation of these tests from this and other websites: <https://ieet.org/index.php/IEET/more/kekich20150521>

Recent studies have shown that genetics (DNA) only accounts for 25–35% biological aging impact, while other studies suggest it's greater than 35%, and so the rest is up to us. We can now measure biological age objectively from a simple blood tests. It's not precise, but it does give you a measure of how effective your anti-aging program maybe. Bio-markers including blood sugar, kidney and liver, and immune and inflammatory levels (e.g. C Reactive Protein) can provide additional perspective. People with a low biological age are less likely to develop diseases associated with higher chronological age. The great feature of these tests is that, unlike genetic testing results, doctors can take bio-markers information to provide feedback and empower patients to make changes in lifestyle, diet, exercise, and sleep habits to improve their baseline biological age.

### Carrier Underwriting & Biological Age

A majority of my advanced underwriting cases involve men, including some very successful hard charging executives. They typically have a greater disparity between their biological age compared to their chronological age. These men live under great stress, don't acknowledge their medical vulnerability, and often don't follow the advice of their doctor, and so are more likely to experience a shorter biological age compared to chronological years.

Recently, Life insurance companies have bolstered their underwriting capabilities. They are very good at getting a clear portrait of who they will insure—and that means looking at the applicant from every angle to determine life insurance premiums. Underwriters look at lifestyle, occupation, medical record, family history, financial history, and driving records to



determine applicant's risk class, and appropriate charge for life insurance coverage.

Effectively, life insurance underwriting can provide a means to evaluating the executive's biological age compared to chronological age. For an insured, being told that his biological age varies from his chronological age is different from being told that his premium is more expensive or cheaper by being in a preferred class.

I have used the underwriting process to conduct a biological age evaluation for certain clients. The typical civilian has no perspective about their longevity. They tend to be either too optimistic, ignoring warning signs or they are fatalistic about their long-term health. By using information collected in combination with using specialized labs in California to test for markers, I can provide a client a better perspective on their biological age.

Alternatively, individuals whose biological age are lower could be offered insurance products with incentives to change their life style habits for the better. There are now several carriers that offer product pricing that incents the insured, linking premiums to exercise. The insured agrees to be measured by Fitbit tracking devices to facilitate the remote measurement of exercise and conditioning of insured, as technology makes it easier to assess individual health. The insured's participation and cooperation can lead to substantially lower premium charges.

### Using Biological Age for Retirement Planning

Most people plan how much they'll spend in retirement based on their chronological age or use their parent's lifespan to estimate their

longevity. With advances in medicine, a person's true age doesn't move in lockstep with calendar time.

Retirement plans should focus on biological life expectancy (LE). How much of a client's assets should be allocated to generating guaranteed income streams, versus how much should be allocated to long term investments such as stocks and bonds is the first part of a two-fold assessment. A person with a long LE may elect to rely to a greater degree on annuities which can provide a source of income that cannot be outlived. Plus, annuities offer a further advantage in allowing income earned to be accumulated tax free.

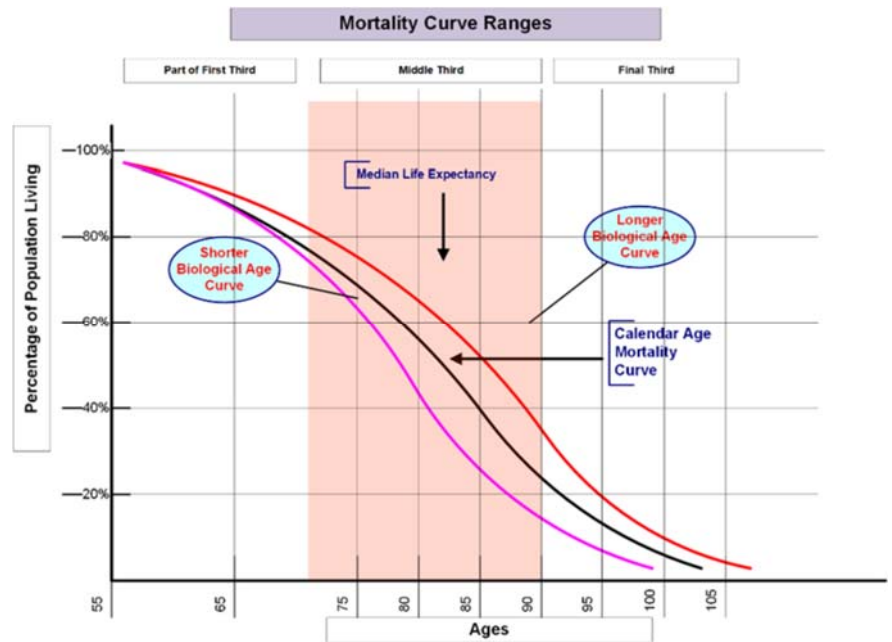
Basic daily expenses can better be secured by utilizing annuities in combination with social security payments. Using annuities, a guaranteed cash flow investment product, to meet basic needs allows an investor to take a less conservative approach to investing remaining funds. Another potential benefit of an annuity is it can be made judgment proof in case of legal disputes with creditors, although this will depend on your state of residency and the length of time you own the annuity. For someone dependent upon investment income from a sum of money this could be an important feature. Moreover, tax deferred annuities can bypass probate proceedings and go directly to named beneficiaries, without any cost or delay.

Furthermore, life expectancy can assist a financial advisory in properly assessing all of the client's assets, including life insurance policies, which in some cases can be sold to more efficiently allocate a client's assets towards guaranteed cash flow while eliminating premium expenses. The combination of selling a negative cash flowing asset while using the proceeds to generate positive cash flow creates a dramatic cash flow swing factor for the good.

### Third Party Applications

I have also done biological assessments for third parties. For example, commercial lenders rely heavily on the operating CEO to meet their debt obligations and loan covenant requirements. The sudden or untimely death of a CEO can be devastating to the future of a company and its ability to repay debt.

For company boards as well as creditors, this is vital information in determining credit risk and succession risk.



### Conclusions

Advances in science and medicine offers the opportunity to living longer and some cases significantly longer. But this is largely available to people who are disciplined, have an objective understanding of their family medical history, know how to access a passive healthcare system, and are able to engage their medical care providers into offering an organized preventive care program.

A good illustration of this is Prince Philip, Queen Elizabeth's husband. At age 97, he is the longest-serving royal consort in history. His recent health-related issues include a respiratory infection in 2017, a pre-planned hip replacement 2018 and prior to that, he had a coronary stent installed, but he continues to be an active sportsman, including hunting, fishing and horse carriage driving.

With no signs of any major medical problems, you may wonder how good Prince Philip's genes are? Prince Philip's father, Prince Andrew of Greece and Denmark died in 1944 at age 62 living in exile in Monte Carlo. His mother, Princess Alice of Battenberg, passed away in 1969 at age 84. The prince had four siblings, all sisters and they passed away from natural causes at ages 63, 76, and 87. He has outlived all family members.

The insurance industry has witnessed consistent improvement in mortality factors from VBT 2008 tables to VBT 2015 tables. Alternatively, we are seeing a drop in average US

lifespans over the last several years not because we're hitting a cap in lifespans for people in their 80s, rather younger generations in their 20s and 30s are dying more frequently. The audience for life insurance represents a distinct group of people different from the population at large. People who are responsible enough to get coverage are also more likely to be responsible in managing their health and personal affairs.

We must learn to differentiate between relative age versus calendar age. It's not just how many birthdays you've celebrated. Only then can we make the right decisions for our financial future, and that of our loved ones. We need to realize we have more control over our wellbeing and longevity than ever before and should celebrate the prospects of living like centenarians around the globe.

**David Rockefeller**, philanthropist, billionaire, and chairman & executive of Chase Manhattan Corporation passed away on March 21, 2017. Rockefeller died in his sleep in his suburban home in Pocantico, NY. He was the last living grandchild of Standard Oil co-founder, **John D. Rockefeller**. David became the guardian of his family's fortune and expanded his business both family, and philanthropy.

David underwent six heart transplants. His first heart transplant was in 1976 after suffering a heart attack following a car accident. He was 99-years-old at the time of his sixth heart transplant.

David Rockefeller died at age 101.

