ONE-STOP DESTINATION FOR TAXMAN AND TAXPAYER

Death in AI-driven world is NOT inevitable! Hallelujah!

TIOL - COB(WEB) - 851
JANUARY 19, 2023

By Shailendra Kumar, Founder Editor

IN
1789, Benjamin Franklin had said - Nothing is certain in this world except for death and taxes. None at that time would have imagined that the wheel of time, at some stage in future, can also be rotated anti-clock-wise! But only for death! Certainly not for taxes! Defying death in today's AI-driven scientific world, has emerged as a multi-billion-dollar business! Silicon Valley nerds no longer treat death as inevitable! It is merely a problem to be solved! ***Hallelujah***
! The challenge is to find sure-shot bio-tools to stave off mortality by delaying ageing. What is ageing? It is a degenerative process that results in tissue dysfunction and eventually death!

This definition of ageing has carved out the turfs for tech companies - neurodegeneration and tissue dysfunction. If tissues are regrown or rejuvenated and neurodegeneration is stymied by a few years, partial triumph over death can be said to have been scored! You may swoon but the tech-driven scientific world is indeed tantalisingly very close to grabbing the 'elixir of life'
! The AI-driven horse is out of the barn and would not get back without the baggage of success riding its back! Are you digesting it with a grain of salt? Are you thinking that overstaying your welcome on the earth is morally or perhaps religiously not right? This calls for a separate round of ado! Meanwhile, let me facilitate you a roving glimpse through the belly of scientific research done thus far on the issue of delaying death or even bids to attain eternal life!

Fired by mankind' craving for a fountain of youth, dozens of billionaires - tech ***tsars***
, Saudi royals and even crypto millionaires, have poured in billions of dollars in anti-ageing start-ups. Flush with cash to burn, investors had pumped in close to USD 850 mn into longevity start-ups in 2018. One start-up Altos Labs sprang out of its embryo with USD 3 billion seed-fund! In 2013, Google had set up a new outfit called Calico Life Sciences with USD 2.5 bn in funding. Biosplice Therapeutics Inc, a company that works on stem cells to regenerate hair, skin, and bones, has mopped up USD 650 mn and is now valued USD 12 bn. Amazon's Jeff Bezos has also pumped in millions in Altos Labs. And the global anti-ageing market is projected to be close to USD 270 bn by next year!
For the netizens' convenience, the start-ups can be split into two groups - longevity scientists (also called healthspanners) and immortalists
. What is healthspan? Scientists describe it as that part of a person's life during which one is generally in good health. Ergo, healthspanners simply laser-focus on delaying the ageing process - allowing for much longer quality existence. They are striving to barricade the causes of terminal diseases and ensure a painless death when the ***fait accompli*** arrives!

Immortalists, on the other hand, strongly believe that they can use technology to prevent death. Like AI, they think that they can programme the human body. They are eyeing to control evolution of mankind, not leaving anything to be regulated by nature! From a biological perspective, the only technical job a man or a woman has to do on this planet is to pass on one's genes. After that, we are simply cramming the space! Though there is abundance of research on understanding the ageing process but scientists are also not sure whether longevity is an outcome of our genes or our lifestyles or even environment
. However, we all know that senescence, the process of deterioration with age, takes us closer to the Grim Reaper! Anyway, what nourishes the latest crop of hope among the investors is the presence of some drugs in the market like Metformin, a diabetes drug, but it has proven its efficacy in helping people live longer. Rapamycin is another which has extended the lifespan of worms, mice and yeast and is now being contemplated for clinical trial of humans. In addition, stem cell and gene therapies are also doing the magic!

Yet another hope popped up in the anti-ageing firmament when the FDA approved two drugs (one in 2021 and another in last November) to treat Alzheimer's disease. It is a nasal vaccine. Although one may hear high-decibel rumblings and much ado about its efficacy but no scientist has denied its modest success in arresting the cognitive decline in patients
. The new drug, Lecanemab, has shown evidence of slowing cognitive decline in clinical trials. However, these drugs do not target disease progression but aim at removing a toxic protein called beta amyloid that piles up in the brains of patients. Of course, it is thus far very expensive and also triggers unsavoury side effects. The second drug is Aducanumab which has not yet proven to arrest the loss of cognitive

ability but is claimed to be moderately effective in battling out the 'zombie' cells which stop working in the brain, yet act stubborn to die!

A major chunk of fresh investments has gone mainly into three buckets - organ regeneration, gene editing and epigenetic programming. Scientists believe that these three tools can indeed extend life. In 2021, three major companies - Cambridge Epigenetix, Tempus and Chroma Medicine, raised funds to focus on epigenetic editing. Epigenetics is one therapy that influences gene expression instead of editing genetic code itself. A good number of start-ups are focussed on regenerative medicines and organ replacement. Pittsburgh-based start-up LyGenesis uses lymph nodes to regrow organs inside bodies. It has got FDA nod for its first human trial. Its focus is on last stage of liver disease. Altos Labs is working on biological reprogramming to rejuvenate cells in the lab. It intends to apply the technology to entire animal bodies to halt biological ageing and then extend the human longevity.

Now, the question is - What is biological ageing? Management guru Peter Drucker had said that what gets measured gets well-managed. So, for age-related disease, rolling back the clock would require obtaining sharper understanding of earliest indications of problems gripping our mind and body so that more serious problems down the road could be warded off. To standardize biological age indexing, many bio-tools have been developed to know our age not in chronological terms but in biological ones. Such indexing reveals how fast we are ageing! Our chronological age may be 55 but if our vital organs are healthy and we have been taking healthy diet, our biological age may be 44. Dozens of start-ups have joined the bandwagon to come up with new tools and it has indeed become a lollipop-grab for health-fashionistas in the rich countries. Although the FDA has not yet approved it, but it is not illegal in many States in the USA and individuals in large number are going for such a test.

The richest start-up Altos Labs in which Jeff Bezos has also chipped in funds, is also pursuing the biological age technology, invented by anti-ageing researcher Steve Horvath. This technology accurately measures the age of cells or even whole organisms. Scientists believe that ageing biomarker would help in developing age-reversal therapies. Altos Labs is focussed on biological re-programming, a tool developed by scientist Shinya Yamanaka in 2006. His work had revealed that by adding merely four proteins, now popularly known as Yamanaka factors, cells can be soaked with the quality of an all-rounder - that is - it can become any cell in the body. A Spanish scientist, in 2016, used this technique on mice and succeeded in extending their lifespan by six weeks. It is hoped that this technique would soon work well on human bodies as well and it may amount to a smack in the face of death!

Thanks to speedy improvement in medicines and medical science, life expectancy between 1900 to 2020 has doubled to above 73 years but ageing remains the biggest risk for diseases like cancer, heart disease, Alzheimer's and diabetes type 2. With ageing emerging as a major challenge, the FDA is mulling over sustained demand to treat it as a disease. If that happens, more billions would be poured into research to develop products which would promise El Dorado for the pharma industry worldwide! After all, the age of grandparents is catching up fast. From 50 Cr in 1960s it has jumped to 150 Cr by 2020 as per ***The Economist*** and the market-size would never shrink for decades to come!

Till the day these billion-dollar investments yield tangible results, let's us follow what researchers at Harvard have to say after analysing decades of data from 1.23 lakh adults - five habits may jack up life expectancy by 14 years in women and 12 years in men and they are - good diet, limited drinking but no smoking, healthy weight and regular exercise. Another study done by the Yale University reveals that positive views of old age are associated with a lower risk of Alzheimer's and people with strong beliefs about ageing live an average of seven and half years longer than those caught in the whirlwind of numbingly bland views! Let's all hold our breath for quicker breakthroughs by a number of sprinting start-ups diving for a frantic churn and also stick to positive beliefs about a chirpy, energetic and joy-soaked grandparental days to live a bit longer before we embark on a voyage beyond life and confront technology-scared death! After all, life and death is a game of chicken! ***Amen!***