

Nobel laureates are our lifelong teachers

Every October Alfred Nobel Foundation announced Nobel Laureates and the award ceremony are held in Stockholm, Sweden on the 10th of December. New Laureates in Physics, Chemistry, Physiology or Medicine, Literature, Peace, and Economics are new teachers of Mankind.

According to Nobel Laureate Albert Einstein, the optical lights have associated photons mass: $m_{\text{light}} = \frac{h\nu}{c^2}$. Roger Penrose was inducted as Nobel Laureate October 2020 for his “space-time trapped surface (in Phys. R.L. 1965)” implicated the existence of massive gravitational black hole (BH) attractor as the singularity of Einstein Field Equations (EFE). Experimentally, Reinhard Genzel of Germany and Andrea Ghez of the US have utilized the Laser Interferometer Gravitational-Wave Observatory (LIGO) to locate where the explosion quadruple waves were generated by the collision of two BHs at the center of Milky Way. There was a dilemma that whether the universe is expanding or stationary or even oscillating. Similarly, earlier Henry Poincaré argued against Ludwig Boltzmann about the irreversible thermodynamics, by pointing out the time-reversal invariant of Newtonian equation. The gray yard head stone of Boltzmann carved his immortal formula entropy $S = k \log W$. The dilemma resolution came from another two Nobel Laureates C.N. Yang and T. D. Lee that the irreversibility located not in the dynamics equations but at the initial and boundary conditions. We wonder likewise whether the initial and boundary conditions of ten degrees of freedom of EFE could predict the irreversible universe. Of course, Laureates Yang & Lee were awarded by their prediction of weak interaction of radioactive decay of two particles, tau and theta, which had the same masses, lifetimes and scattering behaviors, but decayed differently in experiments violated the parity conservation.

Physiology and Medicine have been awarded early with Nobel Laureates, e.g. Crick & Watson discovered double helix by X-ray crystallography: billions pairs of digital genes: “C-G” & “A-T,” having a minutia amount of energy gap to be thermodynamically protected by an error-correcting proof reading (John Hopfield) for millions years. Yet, these billions pairs genes about 6 feet or 3 meter long must be

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packaged along small protein balls (like garden hoses on wheels) the spooling are called Histones & furthermore tagged with CH_3 called the Methylation. This tagging information is analog so-called the epigenome (Lifespan: Why We age & Why we don't” book David Sinclair & Mathew LaPlante).

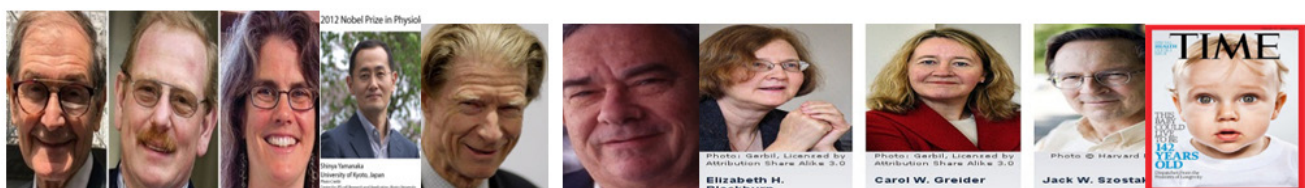


Figure 1 (a) Laureates Roger Penrose, Reinhard Genzel and Andrea Ghez Physics 2020; (b) Sir John Gurdon (egg cell of a frog is reversible) together with 2012 Laureate Shinya Yamanaka did for human being were jointly awarded the 2012 Nobel Prize for Physiology or Medicine for the discovery that “mature, specialized cells can be reprogrammed to become immature cells capable of developing into all tissues of the body;” (c) 2009 Nobel Laureate Elizabeth Blackburn, Carol Greider, Jack Szostak addressed: Nonstop Production of Telomerase Enzyme at Chromosome organization; (d) Leonard Hayflick (UCSF) defines chromosome tail has 60 turns before stop cell differentiations; (e). Time Magazine wishes young new born can live to 142 years old.

In order to make some pairs of genome explicitly available at the reproduction reading, they must be neatly wrapped after epi-genome furthermore into the chromosome XX pairs for female or XY pairs for male. The inevitable aging is due to losing the analog epi-genome information.

We are considering the slow down aging could extend children born recently to live to 142 years old. Then, reverse aging must be recovering the lost analog information. Some Nobel Laureates have considered a fascinating slow down aging toward a reverse aging. A review in System Biology at the cellular levels (cf. General review

("Cells, Embryos and Evolution," by John Gerhard and Marc Kirschner, 1997).

Our cellular have 23 pairs DNA chromosomes in (XX female; XY male) composed of 3 Billion C-G & A-T double helix base pairs. They must be separated to be read off and then recombined neatly level at the end of every pairs of chromosomes there is a knot tied them together neatly in so-called Hayflicks turns managed by "Telomerase", which is an enzyme that repairs telomeres and is present in various cells in the human body, especially during human growth and development. As cells replicate, telomeres shorten at the end of chromosomes, which correlates to senescence or cellular aging. Moreover, there are about a dozen of small co-evolution partner's cells called Mitochondria having their own 37 genes within each of our cell as energy production power factories could be damaged by Free Oxygenated Radicals.

Recently, Human Subject Protocol: TAME (Target Aging METformin) study by Dr. Nir Barzilai at Albert Einstein Med Sch. NY, NY, (using 1 gm per day) conceivably providing the timing of releasing Insulin to digest glucose, energize neuro-glia (alias: house cleaning servant cells, ten time smaller but ten times more, than 10 billion neurons) and cleansing brains at sleep hours (1/3 8 hours of

our days) for better memory, e.g. "Proc. Nat. Acad. Sci. Feb. 10 2003: Brain-Derived Neuro-trophic Growth Factor can slow down Disease Progression and Increases Survival in Huntington Mice".

Macroscopic scale depends on "Dietary Restriction" P. Mattson's (former Dir. Of NIH/Nat. Int. Aging) and Normalizes Glucose Metabolism. For example, common folklore said that one shall Eat 3 meals; breakfast like king, lunch as prime ministers and beggar at dinner.

Human stress emotion can mess up the analog information of 50 Hick turns resulted in the premature aging. On the other hands, 6 healthy macroscopic habits can enhance the robustness of maintain our current brain and body healthy, namely: "Exercise daily, Eat right, Sleep tight, as well as Social often, Stimulate brain, Relax mind" which can collectively slow-down the aging. The public shall harvest new "Nobel Teachers" to broaden our minds!

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