

Title: Translational Astrobiology, Wellness, and Longevity

Summary: life cycle longevity, wellness, personal satisfaction, and contribution to society can be notably enhanced with A) a translational astrobiology and protocell research framework that illuminate gaps in medical sciences to reveal systems biology skills for life cycle health. B) An arts-humanities-sciences-anatomy and physiology (A&P) framework, i.e. health literacy and the arts. And C) An interpretation of research in piezo receptors and electricity. These combine to create a novel, next generation life cycle skill set.

This initiative broadly targets prevention, and specifically targets high cost, high impact, catalytic psycho-physiology contributors to life cycle illness, disability, and increased risk of mortality. Specifically, A) Inflammatory responses. B) cerebral-vascular cardiac events. C) Nocturnal glymphatic clearing, system and central nervous system dopamine systems, and down regulation of the systemic vectors of Parkinson's disease, stroke, and cerebral and metabolic dementia. D) Volitional attention regulation of interoception and interogenesis skills to enhance existing fitness and behavioral health tactics.

90% of the 4.3 trillion dollar health economy is composed of adults with chronic health conditions. This is costly to the individual, the families, to insurance companies, and to the healthcare system. I am one of those adults. Professionally, I am an integrated health, somatic, massage and trauma therapist, supporting adults with stress and trauma related illness. My clients range from in utero trauma to hospice. I personally and professionally understand the burden of illness, life changing disability, and the increased risk of mortality from illness. The practical implementation scenario is driven by case studies from over 10,00 hours of client therapeutic sessions in my private practice.

This solution framework is supported with an extensive scoping review across medical, health, and arts, humanities, and sciences. A vast global historical review of global and euro American medical arts from the 1500's, including the Flexner Report on Medical Education of 1910 (and the 100 year Lancet journal article at the 100 year anniversary, i.e. 'systems'), supports this initiative. Translational astrobiology is a novel and critical organizing framework. .

This solution translates an information theory and scaling law model that is identified and established in the National Academy Consensus Study Report: Origins, Worlds, and Life; A Decadal Strategy for Planetary Science and Astrobiology 2023-2032 (2023). From this, a novel, historically significant arts-humanities-science model of A&P is proposed. It is proposed that this astrobiology/protocell A&P model illuminates essential structures, and mechanisms of action for volitional, generative biological health that are clouded and distorted in the prevailing siloed/hyper disciplined model of US healthcare. It is a A&P system design solution to cultivate a poorly established, intrinsic therapeutic force from preconception, birthing ,pediatrics, life cycle resilience, to hospice.

Dr. Dzau, Pres, NAM: An early version of this initiative was discussed in person for 15 minutes with Dr. Victor Dzau, President of the National Academy of Medicine. We strolled through the arts exhibit during a NAM workshop of the Action Collaborative on

Clinician Well-Being and Resilience. (2017). Dr. Dzau requested to be kept informed on this research. This document is that update. Please forward to Dr. Dzau if appropriate.

This solution is a systems biology, preventative, psycho-physiology, critical counter balancing point to precision medicine. Arising from astrobiology, origin of life, and the protocell model to promote patient empowerment across scale, across the life cycle.

Scientifically, the model identifies A) An undervalued, poorly organized biological force within the protocell model. This reflects a primordial force of cellular function, and structural energy, information and functional capacity of biological systems. This is proposed as a therapeutic force to translate into a practical life cycle skills set.

B) A gap in biological measurement science, and the opportunity to establish a novel 'unit of measurement'. This helps organize and implement the initiative; creating a critical systems biology container for precision medicine applications. Whereas, hyper precision measurement, without a systems biology A&P container can contribute to lifecycle illness.

C) Undervalued communication and signalling structures relating to piezo electricity and piezo receptors in the body, targeting, such as: mitochondria; nocturnal, glymphatic cerebral sleep detoxification cycle, specifically to improve the N3 sleep phase; general vascular and lymphatic system; brainstem and hippocampus; endocrine system, specifically molecular switching at the hypothalamus; whole body and midbrain dopamine system; broad visceral organ stimulation; integrated layers memory from the hippocampus to birthing, to epigenetic generational transfer.

D) Training of the immune system and specifically the thymus gland memory structures and process to enhance learning and regulation of inflammatory responses.

E) Skills to reduce oxidative stress, and other stress to support telomere replication caps.

F) A proposed concept termed 'Signal Amnesia', a biological information theory concept, with specific application, to resolve systemic biological shock, and the effect upon the hippocampus, and other signalling and memory structures of the body. This systemic information and signalling dysregulation can arise from a combination of generational epigenetic trauma transfer, in utero stressors and trauma, early childhood, and life cycle stress and trauma. This can contribute to fundamental signal dysregulation and signal amnesia at the core of multiple bodily systems, such as inflammation. This retards life cycle wellness and reduces longevity.

G) A research inquiry method to support rare diseases, and other health mysteries.

Implementation and engagement: Patient empowerment is the core of this initiative. This initiative proposes a testable hypothesis driven by a curriculum, and a novel design for an astrobiology STEM infused, medical/health-entertainment animation of A&P. (i.e. the animation of life) The design scales the curriculum from applications for research inquiry, to healthcare workers, to business employees, to the public. Because the A&P model is fundamental and structural to many demographics it is proposed as a health economics/labor economics stimulus. Clues from the arts and humanities, especially film animation, during the Great Depression of 1929, are a novel source reference. In development is an initiative to implement this solution into music and dance festivals in the San Francisco Bay Area; a business & industry, healthcare industry, innovation and creativity, public health initiative.