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How Telomerase biology affects cancer biology, chemotherapy and aging

Telomerase is a potential antiaging supplement, as well as a target against cancer. In a perfect world, cancer drugs would target, kill, and prevent reoccurrence of cancer without harm to normal cells. Referenced recent major advances in telomerase biology reveal tissue, cell, nuclear, cytoplasmic and mitochondrial functions by the telomerase subunit protein, TERT. How TERT modulates metabolism, cell death, immunity, mitochondrial function, stem cells, proteostasis, and epigenetics that impact carcinogenesis, health and diseases will be documented. TERT is promiscuous with multiple “associations,” in addition to TERC, that provide unique therapeutic targets for selective intervention against specific cancers with reduced interference in other regenerative effects of telomerase in normal cells. The “associations” as anti-cancer targets will be identified. Although 90% of cancers exhibit telomerase dysfunction, new research suggests that there are “evil” TERT mutations, epigenetic overexpression, and splice variants that protect and promote cancer progression. The difference between cancer and normal TERT, may be exploited to target only “evil” TERT. Studies with GV1001, a TERT derived vaccine developed against cancer, shows promise multiple disorders. While most research targets telomerase regulation by transcriptional intervention, evidence of translational control may be effective brain cancer. The explosion of popular TERT supplements “to extend telomeres” and epigenetic modifications by diet hold promise as antiaging agents, but the limited data on supplements’ potential interference with chemotherapy, or effects on cancer growth signals requires caution.

Biography

Joan Smith Sonneborn interest in telomerase as an anti-aging and disease intervention agent has been heightened the possible integration by of telomerase functions in senescence, cancer, and rejuvenation can advance disease treatment and advance disease resistance. Smith Sonneborn is a Fellow in The Gerontological Society of America GSA and served on the Alliance for Aging Research, Advisory Board, Food and Drug Administration, Advisory Board, NIA Ad Hoc Committee for Cell Resources, Public Policy Committee GSA, and Chair of Biology of Aging Gordon Conference. She has given over 130 scientific presentations and 69 refereed publications. She had Sabbaticals at UCLA Center for Aging, and at Monash University, Australia. She has given over 130 scientific lectures in US, England, Germany, Sicily, Italy, Japan, Malaysia, Canada, Monte Carlo, Mexico, and Argentina. She is also a member of the New York Academy of Sciences, and National Strength & Conditioning Association.

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