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Stem Cell Research in Human Longevity

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The life expectancy or longevity is the number of years a person is expected to live. It depends on various factors including genetics, gender, individual life style and socio-economic factors. According to the United Nations, the global life expectancy as of 2023 was 70.8 years for males and 76.0 years for females, for an average of 73.4 years. Longevity, vary significantly by region as well as by country. Various scientific discoveries in the recent decades, in the area of human health, have contributed towards improvement in longevity. Biologically, human aging is associated with reduced tissue regeneration, increased degenerative disease, and cancer. Stem cells persist throughout life in numerous mammalian tissues, replacing cells lost to homeostatic turnover, injury, and disease. With the aging process, stem cell function declines in numerous tissues as a result of gate-keeping tumor suppressor expression, DNA damage, changes in cellular physiology, and environmental changes in tissues. Like all cells, stem cell aging is determined partly by the accumulation of damage over time. Declines in stem cell function during aging can be attributed to telomere shortening, DNA damage, and mitochondrial damage. Mitochondrial activity, tissue growth, and metabolic rates during development can also influence life span and the rates of cellular aging at later stages of life. The criticality of normal mitochondrial function, required for embryonic stem cell proliferation, regulating differentiation, and preventing the emergence of tumorigenic cells during the process of differentiation, was demonstrated by GIOSTAR Chairman Dr Anand Srivastava in his work at UCLA. The author showed that by arresting the mitochondrial function the cell division ability of stem cells were enhanced. This was a significant finding as the role of genes associated with pluripotency were linked to the mitochondrial function. Indirectly, it was observed that aging can be controlled by modulating the mitochondrial function.

Biography

Mr. Deven Patel, the CEO, President and Cofounder of Global Institute of Stem Cell Therapy and Research (GIOSTAR) is based in San Diego, California, U.S.A. GIOSTAR was formed with the vision to provide affordable stem cell based therapies to the masses around the world suffering from many incurable degenerative diseases. He was honored with USA Congressional Recognition for his efforts in spreading the advancement of stem cell science around the world. He was also bestowed upon Asian Heritage Award for his business leadership in the field of stem cell science. GIOSTAR under the leadership of Mr. Patel has developed several stem cell research and treatment facilities around the globe including USA, Mexico, India, Costa Rica plus few more in near future in China, Thailand, Greece , Bahamas, Dubai and Australia. GIOSTAR, in collaborations with Govt. of Gujarat, India, developing world's largest Stem Cell Treatment Hospital in India.