

Stem Cell Research 2017-Differential Transcriptomic and Proteomic Analysis between Embryonic Cells and Aged Cells Confirms that Embryo is a Plethora of Rejuvenating Molecules- Sivarama Prasad Darsi-Gitam university

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Introduction

Age of atoms on the earth is almost equivalent to the age of early earth and these age-old atoms constitute evolutionarily wide verity of organisms as well as many of number organisms of same species. Elemental a unity of all living organisms confirms that all living organisms are alike but their molecular composition reflects the evolutionary rank and life span of the organisms. It is also confirmed that organisms life span equal to the age of so many macromolecules in that organism. The continuity of life is an evolutionary necessity which lasts for millions of years, in two different ways. One way is evolving into other forms of living organisms by modifying their complexity and another way is the continuation of life through the process of reproduction. The process of gametogenesis, fertilization and embryogenesis are natural mechanisms of undoing aging. The entire process of rejuvenation mechanism of an organism starts at the gametic stage and continues up to the embryonic stage with some exceptions. Interestingly, fertilization capacity of gametes even after the middle age is also a promising aspect. Birth and death are more chemically simplified as death is a matter of decomposition of macromolecules and redistribution of elements" and birth is a matter of refreshment with existing elements, this broader understanding may help in finding a solution for senile complications as well as the expansion of life. Although there are some apparent variations in anatomical resemblance, a wide range of lifespans ranging from few days to 5000 years. Even though different species have variable metabolic rates, there is also a

numerable number of unifying features like Chemical unity of living organisms, the universality of genetic code and continuity of life as a whole through billions of years. In fact, all living organisms work under the ambit of physical and chemical laws of nature. All these unifications inspire to achieve longer lifespan like bristlecone tree lifespan over 4500. Years in plant kingdom and Arctica Islandica clam for more than 400 years in the animal kingdom. These many thousands of years of the longevity of different organism underscore the emerging hope for an extension of the current life span. There are a number of aging theories based on age-related molecular changes and structural changes are identified only in adult cells. Polyunsaturated fats replaced with monounsaturated fats changes in telomeres length, decreased mitochondrial efficiency debilitation of cytoskeleton function. DNA damage and decrease of gene expression there is no appropriate way to combat against aging complications. All current theories have limitations. Every organism from its early young age to late middle age produces gametes these gametes after fusion and fertilization in the female organism after embryogenesis gives birth to new offspring. This entire process occurs in certainly aged organism, which can also redefine as a matter of natural rejuvenation. During these activities, so many factors are involved and get expire at different phases that are required for cell division, tissue differentiating and growth. These three process more pivotal for tracing both signaling pathways as well as molecules responsible for growth and rejuvenation. Current studies have focused only on the adult organism at

which there may be unavailability of tissue-specific differentiating and growth factors of all somatic cells.

First comparative experiment by Hozumi. N and Tonegawa. S between embryonic cell DNA and adult lymphocyte DNA has established first direct evidence for rearrangement of genes that codes antibodies result in combinatorial diversity between the constant chain and variable chain that leads to antibody diversity. Recent fundamental experiments show Comparative transcriptomic analysis between mesenchymal stem cells and stem cells of adipose tissue of human confirms the availability of various growth factors. This experiment paved a way to extend the comparative transcriptomic and proteomic analysis between cells of the embryo at different stages and cells from different tissues of the aged organism. Our hypothesis is analogous and more comprehensive to these studies. In our study, we are about to compare the embryonic cell with aged to identify the factors involved in the embryo at different stages of development, where all tissue differentiation and organogenesis occurs. Production of a new organism in the adult organism itself is an anti-aging mechanism. Transcriptomic and proteomic comparative study help in tracing the molecules that are active in the process of tissue differentiation, organogenesis, and development in the embryonic stage. Tissue differentiation and organogenesis, not a lifelong process that occurs only at the embryonic stage that follows specific gene signatures. These determined molecules studied proteomic analysis will also be useful for the restoration of age-associating enervated organs. Organ function restoration is in-turn an elongation of life span.

Conclusion

Parabiosis circulatory connection experiment between young and aged organism confirms that the aged organism's organs recovered from senility to some extent. If the young blood restores the aged organism tissue functions, then embryo would also be the precious source for rejuvenating molecules, as it is still in the formative stage for all organs. In the aged female, a newly fertilized egg develops into the zygote. This zygote further develops into an embryo, then embryo further develops into the fetal stage and then into a young organism. Tissue differentiation and organ development start in the embryonic stage; hence, we have to consider the whole mechanism of

embryogenesis as a natural process that restarts the young features. Mitotic division in the embryonic stage is unique, as the differentiation of tissues occurs, but whereas the mitotic division in adult tissues results in the same type of tissues.

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