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Perspective

Lifespan is written in the DNA

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INTRODUCTION

All living being are born to die, nevertheless, living a long, healthy life is at the top of most people's wish list. Every living being continues its life's by making its own kind. It seems that there is a compromise between reproduction and age; however, evolution of parental care is multi factorial. Programmed senescence theory suggests that cellular senescence occurs when cells stop dividing and growing, but don't die, this causes aging. Body aging is associated with increased DNA methylation. All tissues undergo changes to DNA methylation as they age, and this may contribute to structural and functional decline with aging. These changes to begin with are seen at sub-cellular level affect all organs and finally whole body. Excess inflammation is a problem in aging.

DESCRIPITION

It is possible to delay aging in cells and animals experimentally, for humans, the best way to delay aging is to eat a balanced diet and do regular exercise. Reversing aging would mean making an old organism young again. A new study suggests that stopping or even reversing the aging process is impossible. It was concluded that aging is inevitable due to biological constraints. To have a specific metabolic signature associated with pathology is one thing. To be able to manipulate it is another thing. To be able to manipulate it and reverse the pathology is an incredible sequence of events.

Aging timeline

The theory of programmed death which proposed that aging evolved to the advantage of the species, not the individual, and that there must be an evolutionary advantage to having only a limited lifespan. The human aging timeline is governed by a balance between aging and the repair process in the body, as well as environmental factors and genetic variants. The genes could be responsible for up to 25% of longevity but there are many other factors which contribute to human life expectancy. For example, smoking can reduce lifespan, whereas lowering the calorie intake and doing regular exercise may extend it. Over time, telomeres shorten, which is associated with disease and aging. Because of aging there is decline in responsiveness of growth hormone on cartilage and thymus, thereby thymus attenuates after certain age and bones and cartilage stop growing.

The factors for reversing age

Drink plenty of water. Most of the hydration should come from water only; however, people can also take tea and coffee in limited quantity. Take a moment to show gratitude before a meal. The blue zones diet means eat meatless meals. The meals should be mostly plant based, and beans are often the main protein source (or tofu in Okinawa, Japan). Phytoestrogen rich vegetables such as cruciferous veggies (Broccoli, cauliflower, and cabbage and nuts) should be included in the diets. People in the blue zones eat beans regularly. Beans (such as black, garbanzo, soya and white) are an inexpensive source of plant based protein and they're loaded with fiber, a nutrient that's linked to lower risk of disease and good for gut health. The blue zone centenarians eat about 2 ounces of nuts a day. One can vary the kind nuts among pistachios, walnuts, peanuts and almonds. Eat less sugar. People in the blue zones eat just a fifth of the added sugar we eat in other parts of the world. Instead of having sugary foods and drinks throughout the day, they tend to eat sugar "intentionally" for special occasions. Beverages like soda are the No. 1 source of added sugar for most adults and most sugary drinks are void of other nutrients anyway. Take alcohol in moderation, or not at all; although red wine is popular in some blue zones. In a study of women 40 and over, researchers found that sexual satisfaction improved with age older women may have sex less often than when they were younger, but apparently they make it count. Women over 80 were more likely than those between 55 and 79 to say they were satisfied during sex. Exercising, even when started later in life, can help to keep skeletal muscles more youthful, by holding back epigenetic aging. Six to eight hours of sleep per night is very essential for healthy aging. Do not smoke or if smoke give it up an active social life play well with others show gratitude and eat with loved ones and ideally, enjoy your meals in the company of family and friends. You're more in tune with other people's emotions in

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your 40 s than at any other time in your life. That insight into how others think and feel can make living with your loved ones easier and help you get along better with your co-workers, too.

Stopping aging

Ageing, which happens over time in humans can be extended to some extended. In hydra and planarian worms, it is indeed possible for a creature to be biologically immortal, however, it is not known if it will be possible for humans in the near future. Reverse aging technology is still a way off, even though clinical trials involving regenerative stem cell therapy for diseases such as heart failure are underway. But even then, there are concerns that reversing aging in cells could lead to the uncontrollable reproduction of cells, resulting in cancer. However, the good news is that there are certain aspects of our own life which we can take control of and that can help to increase our lifespan. Leading a healthy lifestyle incorporating plenty of exercise, a healthy diet, and good sleep can all go a long way to increase our productivity and health long into old age. Programmed senescence in living organisms is purposely caused by evolved biological mechanisms to obtain an evolutionary advantage. Senescence is a process by which a cell ages and permanently stops dividing but does not die. Over time, large numbers of old (or senescent) cells can build up in tissues throughout the body. Senescence consists of these manifestations of the aging process. Programmed longevity theory is the idea that aging is caused by certain genes switching on and off over time. Fasting indeed, has been shown to exert a series of beneficial effects on health span by minimizing the risk of developing age related diseases, such as neurodegeneration, cancer, or cardiovascular diseases, in animal models and, possibly, humans. Fasting boosts the body's metabolism which makes it easier for the body to break down food and burn calories which in turn leads to weight loss, and a much younger appearance. It was found that fasting did indeed increase lifespan and it also improved offspring performance in terms of reproduction, when offspring themselves were fasting. However, fasting reduced offspring performance when the offspring had access to unlimited food. Fasting for 2-3 days straight every several months (done a couple times a year). This method could be doable for some. Fasting for 3-5 days once to a few times a year. Consume about 50% of normal calorie consumption for those couple of days (short term) and then return back to normal caloric intake. An experimental vaccine successfully eliminated aging cells from the bodies of mice, helping to prolong the rodents' lives and reverse some signs of age-related disease. The researchers say the experiment is a step on the road to a similar vaccine for humans, but could it really work the new vaccine targets senescent cells, which are cells that have stopped multiplying due to damage or stress, but don't die when they should.

Transplant technology

Stem cells: Stem cells can play a crucial role in delaying the aging process. With our current knowledge of stem cells technically feasible to delay aging and improve both health and lifespan. Stem cells, in combination with anti-aging genes, can create a sophisticated shield, which can prevent the effects of aging. Conditional on surviving the first 2 to 5 years after allogeneic Blood or Marrow Transplantation (BMT), the 10 years overall survival approaches 80%. Nonetheless, the risk of late mortality remains higher than the age and sex matched general population for several years after BMT.

Organs

Human to human: How long transplants last: Living donors, 10 to 13 years graft half-life; deceased donors, 7-9 years. Longest reported: 60 years. On record following 32 patients who were transplanted over 30 years ago, including one living patient who received his transplant 44 years ago. Modest catch-up growth often occurs after renal transplantation. Nevertheless, patients remain short due to the effects of steroids used for immune suppression.

Xenotransplantation (animal to human): So far pigs are preferred for xenotrasplant, because they mature very quickly, produce large litters and have organs of comparable size and function to human organs in both infancy and adulthood. They also can be bred to high health standards in microbiologically controlled environments. Pigs offer advantages over primates for organ procurements, because they are easier to raise and achieve adult human size in six months.

CONCLUSION

All tissues undergo changes to DNA methylation as they age, and this may contribute to structural and functional decline with aging. Xenoplantation aims to increase organ availability. While the transplantation of human organs depends on the use of toxic immunosuppressive agents, the use of pig organs will make it possible to, at least in part, alleviate rejection by genetic modification of the animal. Pig heart valves are routinely transplanted into humans, and some patients with diabetes have received porcine pancreas cells. Recently heart and kidneys were also transplanted in human.