Newsletter:

Are Telomeres The Missing Piece To Increasing Longevity and Health?

- **This is what the Israel Space Bio-Medical Experiment, scheduled to land tomorrow on-board NASA's Space Shuttle Atlantis, will try to determine.**
- **The Experiment analyses the effect of microgravity conditions on Telomere Length which will be analyzed by US Nobel prize founded Innovated Company**
- As the American manned space mission comes to an end, an Israeli space experiment conducted by the Fisher Institute for Strategic Air and Space Studies is due to land Thursday on-board NASA's Space Shuttle Atlantis unfolding the mystery of Longevity and Health.
- The experiment examined the effect of microgravity conditions on telomere length. Telomeres are DNA sequences protecting chromosomes from erosion. Our genes are located on twisted, double-stranded molecules of DNA called chromosomes. At the ends of the chromosomes are stretches of DNA called telomeres, which protect our genetic data, make it possible for cells to divide, and hold some secrets to how we age.
- Expanding our understanding and knowledge about telomeres may lead to a better capability of dealing with cellular ageing processes and their harmful products.
- The samples' analysis, upon their return to Earth from Space, will be carried out by Telome Health, Inc. Scientists. Telome US company specializing in measuring telomere length using advanced methods funded by Prof. Elizabeth Blackburn 2009 Nobel prize for her work on Telomre.
- In human blood cells, the length of telomeres ranges from 8,000 base pairs at birth to 3,000 base pairs as people age and as low as 1,500 in elderly people. Each time a cell divides, an average person loses 30 to 200 base pairs from the ends of that cell's telomeres.

Dr. Eran Schenker ,Head of the Aerospace Medicine Research Center at the Fisher Institute, explains that "telomeres are an important element in protecting chromosomes from erosion. If we can better understand how they do that in different conditions, perhaps we can use this in the future to deal with ageing at the cellular level".

Prof. Elizabeth Blackburn who shared in 2009 the Nobel prize for her work have expresed already in the past that Telomeres are stretches of DNA at the ends of chromosomes that protect them against degradation. Checking your telomere length is a bit like weighing yourself: you get this single number which depends on a lot of factors. Telomere length gives a sense of your underlying health. We see telomere shortening in diseases of ageing - like heart disease and cancer.

Brig. Gen. (Res.) Asaf Agmon, Head of the Fisher Institute, attaches great importance to Israel's participation in experiments conducted in space, adding that "As the final Shuttle lands, it is a nice summary to Israel activity in the shuttle program, to be bringing back an experiment which has been circling the Earth." Major-General (Ret.) Herzle Bodinger adds that "at the closing of 30 years of Shuttle activity, it is an Israeli achievement that we are bringing back to Earth an experiment with a lot of future research potential on board the last NASA space Shuttle".

The Fisher Institute for Air and Space Strategic Studies was founded by the Israel Air Force Association with an aim to develop aviation and aerospace thinking and public discourse in Israel. The Institute's activities include research and publication of articles and position papers. The institute is primarily known for its annual international space conference held in memory of Ilan Ramon and his team, which is conducted under the auspices of the Institute, Ministry of Science, and Israel's Space Agency. The Fisher Institute is chaired by Major-General (Ret.) **Herzle Bodinger** and headed by Brigadier-General (Res.) **Asaf Agmon**.

The **Aerospace Medicine Research Center** at The Fisher Institute fosters ties with space agencies around the world and corresponding research institutes. Institute people collaborate with leading researchers in academic institutions nationwide. The **Aerospace Medicine Research Center** is headed by **Dr. Eran Schenker,** an aviation physician trained by NASA as an aerospace physician. Since the Nineties he has served as chief researcher of Israel's medical and biological experiments on NASA's space shuttles.