Is aging or age-related diseases treatable?

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Cellular Senescence
What it is and Why it is important.

Cellular senescence is the result of aging of cells leading to a loss of function at the molecular, cellular, and ultimately, the organismal level. This is a natural phenomenon that is irreversible and inevitable.

Cells do not retain their same capabilities and strength the more they replicate and the older they grow. In humans, this results in aging as well as many aging diseases that are neurodegenerative (Alzheimer's and Parkinson’s), cardiovascular, progeria, and many more.

Aging intervention is already being done to slow down or reverse diseases.

Hansen's Disease (Leprosy)

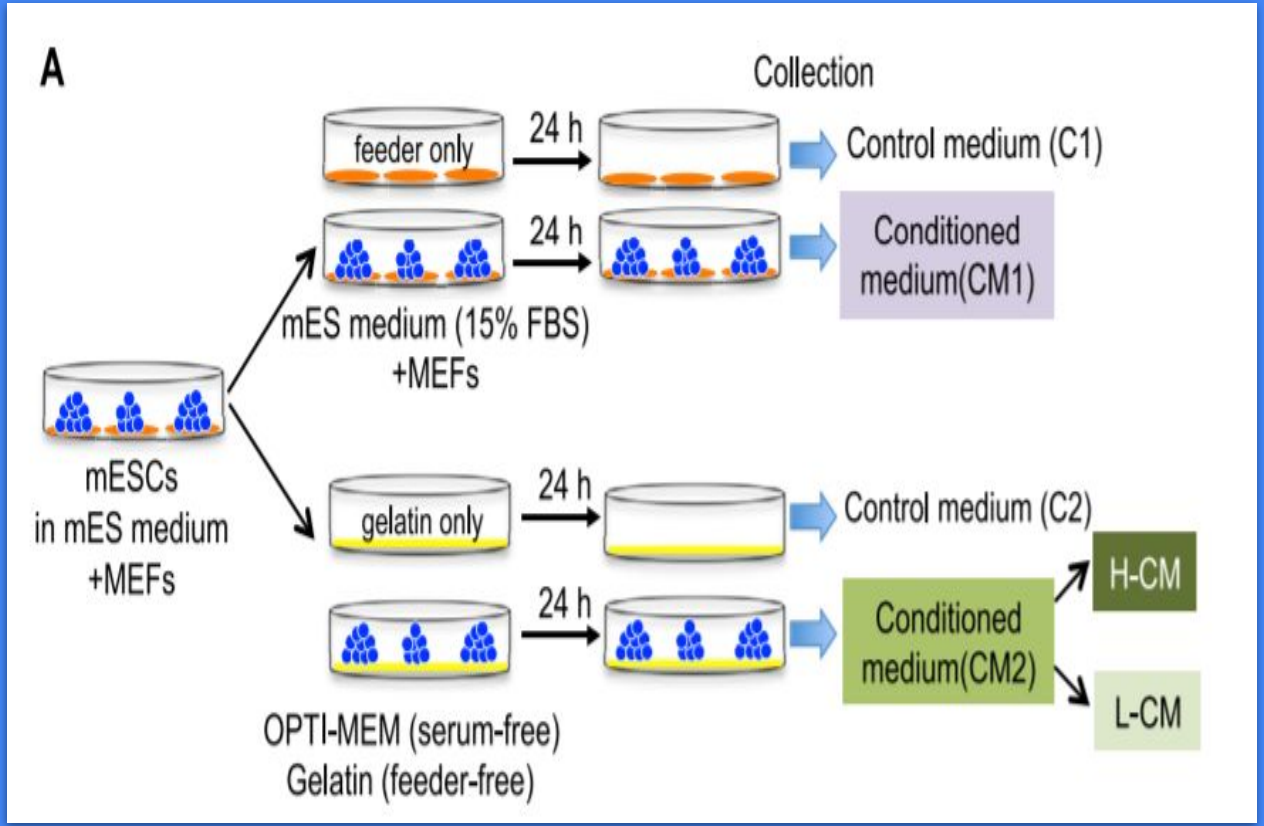
- Bacterial infection that left untreated, results in nerve and skin damage.
- Could result in blindness and paralysis.

Rapamycin, resveratrol, and SRT1720 are all all drugs utilized to reduce or reverse the aging process in animals, furthermore, a treatment for Hansen’s.

Are there more/alternate methods to interfere with aging?

Although senescence is inevitable, there are suggestions in research that aging and age-related diseases may be treated through secretory factors as well as molecules. Bae et al. attempted to utilize secretory factors to mediate cellular senescence within the PDGF/FGF pathway.

Bae et al. prepared an experiment to condition mice cells to to mediate Cellular Senescence.



Real-time PCR Analysis: How are p53 and p21 mRNA levels affected?

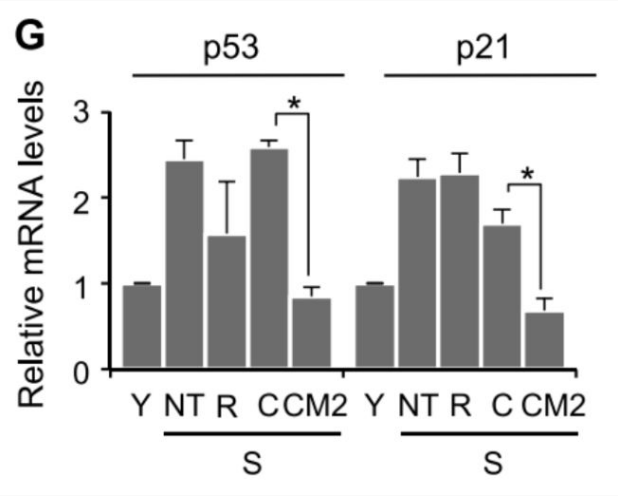


Fig. 2D.) Analysis of mRNA levels in p53 and p21

They found earlier that S, M, and G2 phases were promoted while G1 and G0 phases within the cell cycle.

These results support their finding that their CM exhibited antisenescence activity.

What relative factors play a role in this antisenescence activity?

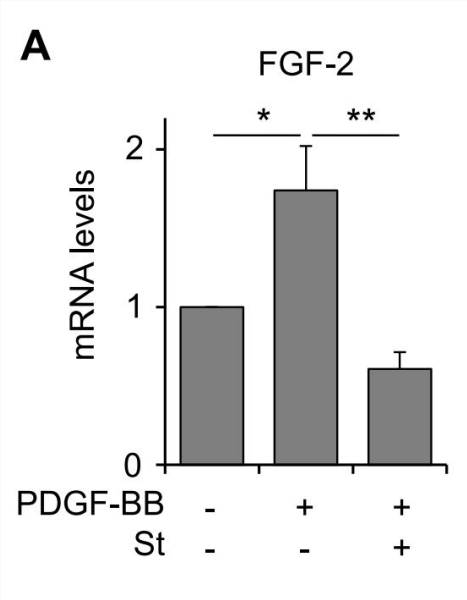


Fig. 5A.) PCR analysis for FGF 2 with or without treatment of PDGF BB or Sunitinib. Treatment with sunitinib was to further examine the relationship between FGF and PDGF.

FGF -2 is the inducing effect of PDGF within the PDGF/FGF pathway.

PDGF -BB exhibits its antisenescence effects by upregulating FGF -2.

All of these results support that CM exhibited this antisenescence activity through the PDGF/FGF pathway.

This experiment was performed through conditioning mice cells. Antisenescence activity would have to be evaluated within human stem cells for further development in novel therapeutics. Some secretory factors already represent an substitute for aging intervention found in various models.