Shared Knowledge Conference

Nov 12th, 4:00 PM - 5:00 PM

Who Wants to Live Forever?

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Who Wants to Live Forever?

PRESENTED BY BLAISE MARINER, UNIVERSITY OF NEW MEXICO

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Video link: https://youtu.be/rcPWWVfIj0A

When humans get older, organs fail, disease ensues, and the inevitability of death follows. Aging increases the likelihood of the onset of age-related diseases such as Alzheimer’s, heart disease, and cancer. Aging is commonly not seen as a disease, but as an untreatable, natural process. However, aging has recognizable causes on the molecular level, and many argue for its classification as a disease. Utilizing these known molecular pathways of lifespan extension, we have found drugs that significantly increase the lifespan of single-celled yeast and tiny roundworms. These drugs act in the way of increasing the expression of a protein whose human version is ATF4. If this gene is removed, these drugs no longer extend lifespan. These drugs increase autophagy levels in the cell. Autophagy is a process your cells undergo to recycle damaged proteins to replace them with better functioning proteins. If we block autophagy, similarly, these drugs do not increase lifespan. We believe that these drugs act through the ATF4 gene to increase autophagy. Having had confirmed this in worms and yeast, testing the drugs’ activity in mammalian cells is the next step. Understanding how these drugs act in mammalian cells will give us insight into if and how they extend healthspan in mammals, which would provide further information into how the aging pathway works in humans. Delaying aging could not just extend the human lifespan, but delay the onset of many mortifying age-associated diseases and improve the quality of life for everyone.