Extending Lifespan

*Caenorhabditis elegans (C. elegans)*, a microscopic worm shown in Figure A, is a model organism that is ideal for many research projects because it is easy to grow in the lab and has a surprising number of similarities to humans. The news was released on January 8, 2020, that Mount Desert Island (MDI) Laboratories in conjunction with scientists in China and California discovered how to increase *C. elegans* lifespan by 500% (from their typical lifespan of 2-3 weeks). According to an MDI scientist, in human years, that would mean we would live to 400 or 500 years old. *C. elegans* are valuable to work with for aging research because they share a lot of their genes with humans. MDI used double mutant worms where their insulin signaling (IIS) pathway and mammalian target of rapamycin (mTOR) pathway have been genetically changed. The mTOR pathway serves as a central regulator of cell metabolism, growth, and survival. Insulin signaling pathway links levels of nutrients like glucose to metabolism, growth, and behavior. The modification of the IIS pathway alone allows for an increase in the worms’ lifespan by 100%, and the changes made to the mTOR pathway alone results in the life span increasing by 30%. Taken together, we would expect their lifespan to be boosted by 130%. Instead, it unexpectedly grew to 500%.

Once scientists figure out if this same effect can be seen in humans and how exactly to translate the increased lifespan from worms to humans, we will need to decide if it is ethical. For example, if someone has a disease such as Alzheimer’s or Parkinson’s, would we want to prolong their life?

Alzheimer’s is significant to me because my grandfather died from complications from Alzheimer’s and vascular dementia. He passed away in early January of this year. We visited him about a week before he died at his memory care facility. It’s amazing how fast he declined. When we spent time with him, he could not walk and had to be in a wheelchair.
There are benefits and drawbacks to living longer and we need to remember to consider both of these. We want to live longer because we live to experience the world and having a longer lifespan will help us fulfill that desire. Unfortunately, living longer may also lead to some negative side effects such as overpopulation, climate change, and extensive health care requirements and costs. In addition, people may need to make more money for it to last in a longer retirement. An important question that will need to be addressed if we find a way to increase human lifespan is whether we can also increase healthspan, the time during which a person is healthy. While it may not be helpful for problems like overcrowding and pollution, maybe increasing healthspan would lead to longer time working in your career before retirement to better prepare financially for a longer retirement. It would also increase the time that individuals can lead active lives, travel, and best experience the world.

I believe it is too long to live to 400 or 500 years old. Ideally, we would want to remain healthy long into our increased lifespan. As such, 200 years is more easily adaptable because we would not have to worry as much about the drawbacks while it would still give us a little more time with the people we love.


Main website source: https://newatlas.com/biology/worm-lifespans-extended-500-percent/