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Aging is undoubtedly one of the greatest human fears. And many people seek to delay it with different products or surgeries.

The global anti-aging market generates millions of dollars in profits. According to data by Statista, in 2018 it was estimated to be worth about $50.2 billion. Moreover, it is expected to enjoy a 5.7 percent compound annual growth rate until 2023.

That could be explained by several factors. One of those is the increased aging of the world’s population. Others have to do with social pressure that makes people want to look younger and social networks.

“The market has been shaped by constantly changing customer demands. Since the majority of the customer base in the market has become social media savvy, awareness about anti-aging solutions has been on the rise. Hence, providing innovative and effective products & services has become imperative for market players,” Grand View Research, business consulting firm, published in a report.

While anti-aging products and procedures continue the rise, so does scientific research. Recently molecular biologists and bioengineers at the University of California, San Diego have unraveled the key mechanisms behind the mysteries of aging. They discovered two distinct pathways that cells travel during aging and designed a new way to genetically create a third path.

“Studies have shown that people are deeply concerned about aging. There is a growing demand for anti-aging treatments. The scientific community is working hard to understand the underlying mechanisms of aging and develop effective interventions,” said Lev Tsimring, Lorraine Pillus and Nan Hao, researchers at the University of California San Diego.

Understanding aging is crucial for developing effective treatments. The researchers studied aging in the budding yeast – the champion of many biological experiments. They used cutting-edge imaging technologies to track how the molecules and components inside each cell change in real-time during each step of their lives and as they near death.

By discovering the different ways in which the same cells can age, researchers found out that they could manipulate and ultimately optimize the aging process. Computer simulations helped them to reprogram the master molecular circuit by modifying its DNA, allowing cells to genetically create a new path with a dramatically extended lifespan.

The researchers studied aging in the budding yeast, but they do not rule out that their findings may one day be applied to human cells.

“Whether such manipulations would work in humans is the most important question. There is a reason to believe that the answer may well be “Yes.” Here’s why: genes fundamentally controlling the two paths are deeply conserved over evolutionary time. That is, they are incredibly similar in all kinds of organisms ranging from yeast to human,” the researchers concluded.

**R-UP**

**Four innovative ways to combat aging**

1. **Drugs**
   In recent years, biogerontologists at Paul F. Glenn Center for Aging Research at the University of Michigan documented four different drugs that work in mice to slow aging and post-pone diseases and disabilities that make aging problematic.

2. **Gene therapy**
   Libella Gene Therapeutics says it will administer a gene therapy to volunteers that could reverse aging for up to 20 years. The therapy will attempt to repair people’s telomeres, the caps on the end of their chromosomes that shorten as people age.

3. **Anti-aging protein**
   In a recent study, researchers at University College London identified a novel anti-aging protein called Gaf1. They found that Gaf1 controls protein metabolism, a process that is related to aging. They also found that without this protein, cells have a shorter life span.

4. **Pathways to extend lifespan**
   Scientists at the MDI Biological Laboratory have identified synergistic cellular pathways for longevity that amplify lifespan fivefold in Caenorhabditis elegans, a nematode worm used as a model in aging research. The increase in lifespan would be the equivalent of human living for 400 or 500 years.