

# NCERT-Aging

## Age Reversal

## Age reversal

In an extraordinary feat that challenges our understanding of human physiology, **Joseph Dituri**, a 56-year-old retired US naval officer, emerged from a 93-day **underwater habitation in the Atlantic Ocean with his biological age** seemingly reversed by a decade.

This unprecedented event occurred after Dituri voluntarily isolated himself in a **pressurized pod** at the bottom of the ocean as part of an experiment dubbed **Project Neptune 100**.



- Deep Sea, is no stranger to the depths of the ocean. His latest adventure began on March 1, 2023, when he submerged into Jules' Undersea Lodge, an **underwater hotel in the Florida Keys**. The **pod, situated 30 feet below the surface**, became his home for what would be a record-breaking stay.
- Dituri's **initial goal was to break his previous record of 74 day** underwater, but he surpassed this by **spending a total of 100 days submerged**, with the first 93 days being the focus of the study.



## Purpose

- The purpose of Dituri's extended stay was to explore **human tolerance** to isolated, confined, and extreme environments.
- The high-pressure conditions of his underwater residence were akin to those found in hyperbaric chambers, which are known for their therapeutic effects.
- The experiment aimed to observe the **physiological changes** that could occur under such conditions over an extended period.

## Observations

- Upon resurfacing, Dituri reported feeling significantly **rejuvenated**.
- Medical examinations were quick to reveal astonishing changes.
- His **telomeres, the protective caps at the ends of chromosomes** that typically shorten with age, had **lengthened by 20 percent**. This change in telomere length is a strong **indicator of biological age reversal**.
- Dituri experienced a **surge in stem cell count**, a dramatic **drop in cholesterol** levels by 72 points, and a **reduction in inflammatory markers** by half.
- The benefits extended to Dituri's **sleep quality as well**, with an increase in the percentage of nights spent in deep REM sleep, which is important for physical and mental restoration.



These findings suggest that the high-pressure environment may have **induced a state of accelerated cellular repair and rejuvenation.**







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## Telomeres

- are the "caps" that protect the ends of DNA strands from being destroyed by a cell.
- They are made up of areas of repeated DNA sequences combined with specific proteins at the ends of chromosomes – the tightly wound structures of DNA and proteins inside cells.
- Telomeres play a role **in how fast cells age**, though exactly how isn't totally clear.
- **Telomeres act as barriers, preventing DNA from being degraded and corrupted.**





# Aging process

