

METABOLIC DEPRESSION: A WAY TO DEFYING AGEING

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In ancient scriptures it is mentioned that many Rishis live for many generations. It is hard to believe but after the discovery of *Bdelloidea* belonging to a class of rotifers found in freshwater habitats all over the world one can think it is possible, As for humans are concerned, though at present we are far away the final goal nevertheless we are on the way. A microscopic animal has been revived after slumbering in the Arctic permafrost for 24,000 years. This shows a way for humans also.

Bdelloid rotifers typically live in watery environments and have an incredible ability to survive. Russian scientists found the creatures in a core of frozen soil extracted from the Siberian permafrost using a drilling (Fig.1). This is not only organisms which have been dug out recently (Shmakova et al. A living *Bdelloid* rotifer from 24000 years old Nortic permafrostm). Many more were reported earlier (references in Current Biol. 31 (11) at varied time periods).



A living *Bdelloid* rotifer from 24,000-year-old Arctic permafrost

In natural, permanently frozen habitats, some organisms may be preserved for thousands of years. For example, stems of Antarctic moss were successfully regrown from an over millennium-old sample covered by ice for about 400 years. During this process physiological event “Metabolic depression” takes place, During this adaptive biological process, energy preservation is responsible for torpor, hibernation and estivation. Hibernation is a way animals conserve energy to survive adverse weather conditions or lack of food. The most familiar example is frogs. It involves physiological changes such as a drop in body temperature and slowed metabolism. Hibernation is a response to cold weather and reduced food availability. Recent work has suggested hibernation may also slow the process of senescence, or cellular aging. Humans don’t hibernate for two reasons.1. Our evolutionary ancestors were

tropical animals with no history of hibernating :2. Humans have only migrated into temperate and sub-arctic latitudes in the last hundred thousand years. During torpor in bears, heart and breathing rate decreases, body temperature reduces, do not eat or release waste. Even though humans don’t typically go into torpor of their own volition—and our bodies typically prevent it by shivering—Drew explains that there’s no single “hibernation molecule” or organ that humans lack. In fact, torpor can be induced by doctors in extreme circumstances

There is a close relationship between “depression” and “Metabolism”. Depression has increased the risk of metabolic syndrome in the general population by two times. Limited studies have examined the relationship between these two variables and reported conflicting results.

The process of metabolic depression is reactivated via differential gene expression in response to perceived adverse stimuli in predisposed persons. Behavior inhibition by temperament, anxiety disorders, genetic vulnerabilities, and early traumatic experiences predispose persons to depression.

There are many instances of animal and human bodies found in the ice, frozen, yet preserved and not damaged by the extreme temperature. This makes the concept of a ‘cryosleep’ sound doable. The first person to be cryopreserved was Dr. James Bedford in 1967. He died of kidney cancer, but his will was to be put into a cryo-chamber, in hopes that one day in the future, doctors will be able to bring him back.

Typically, a patient stays in stasis for 2-4 days, though there have been instances where doctors chose to keep their patient in this state for as long as two weeks—without any complications. And the Uchikoshi case showed it’s possible to survive an even longer cooling procedure. A stasis chamber (also called a stasis unit, stasis pod, stasis tube, bio-pod, hibernation pod, or life support canister) was a device used to preserve life.

Cryonics procedures may begin within minutes of death, and use cryoprotectants to prevent ice formation during cryopreservation. Until the day he died, in 2011, Robert Ettinger hoped humanity would figure out a way to cheat death. Today, his body is stored in a cryonic vessel filled with liquid nitrogen and frozen to –196 degrees Celsius. It is, however, not possible for a corpse to be reanimated after undergoing vitrification, as this causes damage to the brain including its neural networks. And astronauts on the International Space Station get to age just a tiny bit slower than people on Earth. That’s because of time-dilation effects.

