

‘*Turritopsis Dohrnii*’ A Creature That Could Unlock Immortality?

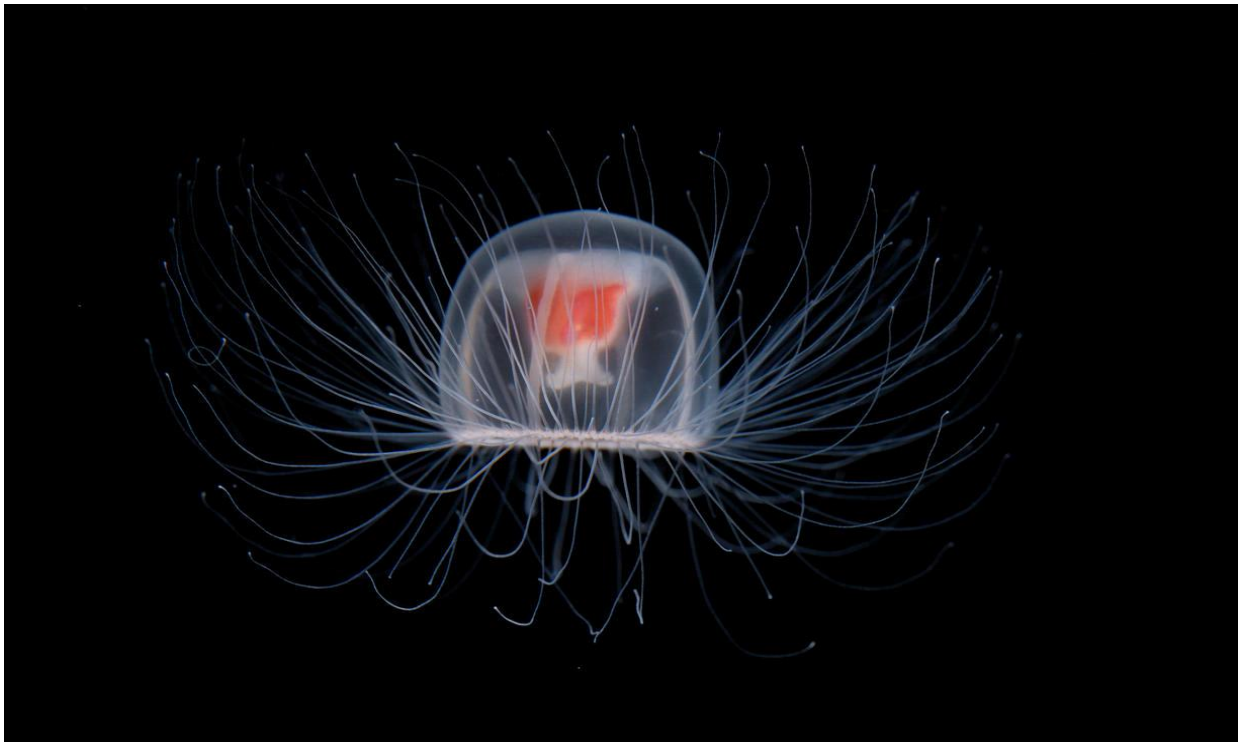
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I. INTRODUCTION

Turritopsis dohrnii, a jelly fish belonging to kindom Animalia, and phylum 'cnidaria'. This is also known as the **Immortal jellyfish** found worldwide in temperate to tropic waters. It is one of the few known cases of animals capable of reverting completely to a sexually immature, colonial stage after having reached sexual maturity as a solitary individual....



image

Turritopsis dohrnii is only about 4.5 mm (0.18 inches) across, smaller than a pinky nail..
Turritopsis dohrnii are a carnivorous species that commonly feed on zooplankton, fish eggs etc.

ASTONISHING LIFECYCLE :-

Today there's only one species that has been called 'biologically immortal': the jellyfish '*Turritopsis dohrnii*'. These small, transparent animals hang out in oceans around the world and can turn back time by reverting to an earlier stage of their life cycle.

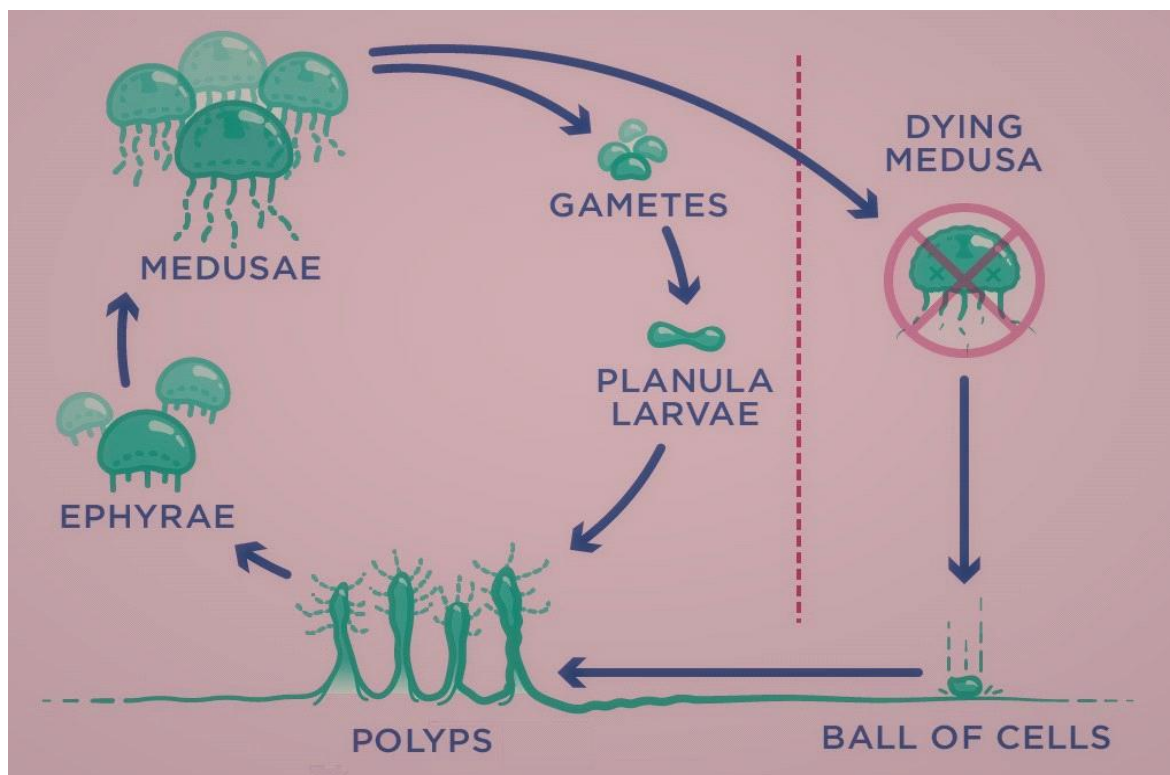


DIAGRAM SHOWING LIFECYCLE

A new jellyfish life begins with a fertilised egg, which grows into a larval stage called a planula. After a quick swim, the planula attaches onto a surface (like a rock, or the ocean floor), where it develops into a polyp: a cylindrical shaped structure with a mouth(Hypostome) at one end and a kind of 'foot' at the other. It remains stuck in place for some time, growing into a little colony of polyps that share feeding tubes with each other.

Eventually, depending on the jellyfish species, one of these polyps will form an outgrowth called a 'bud' that can then break away from the rest of the colony. This process is responsible for the next stages of the jellyfish life cycle: the ephyra (a small jellyfish) and the medusa, which is the fully-formed adult stage capable of sexual reproduction.

For most other jellyfish, this stage 'Medusa' is the end of the line. But '*Turritopsis dohrnii*' has a astonishing process: when it faces some kind of environmental stress, like starvation or injury, it can revert back to being a 'Cluster of cell/ Ball of cells ' which then changes back into the sexually immature polyp phase of life.

This process is like a butterfly turning back into a caterpillar, or a frog becoming a tadpole again.

However '*Turritopsis dohrnii*' isn't wholly 'immortal'. They can still be consumed by predators or killed by other means. However, their ability to switch back and forth between life stages in response to stress means that, in theory, they could live forever.

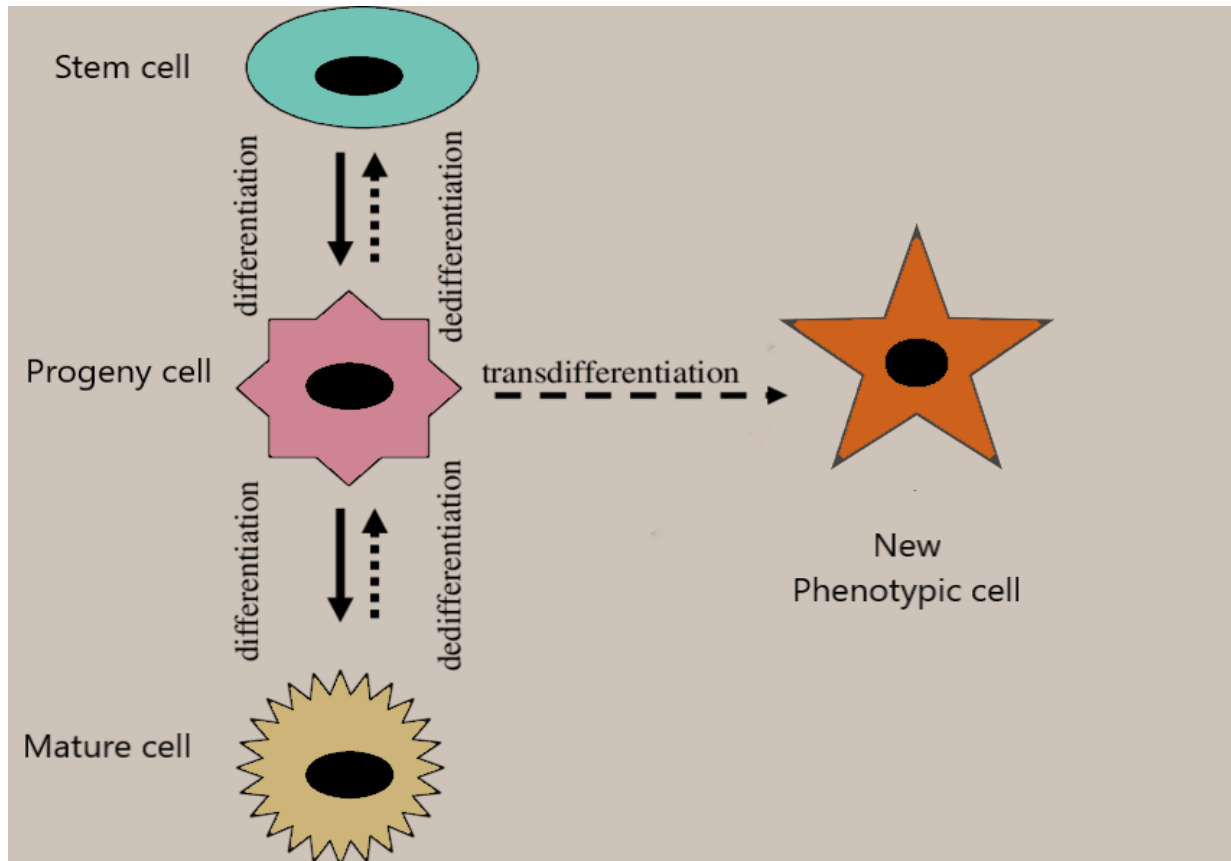
❖ **TRANSDIFFERENTIATION:- A GATEWAY TO MANY UNTREATABLE DISEASES AND POINTING TOWARDS IMMORTALITY IN HUMANS..**

In general Stem cells are the totipotent cells of any organism which can give rise to any type of cell of body at embryonic stage. Along with division of cells differentiation of cells occurs and forms a 'Progeny cell ' which also undergo further division and differentiation and eventually Mature cell is formed

These progeny cell and Mature cell under some conditions can undergo a process called 'Dedifferentiation'.

Due to which it regains the property of division . In short they revert back to their old type of cell .

i.e. Mature cell can revert back to Progeny cell, Progeny cell can revert back to stem cell.



DEDIFFERENTIATION AND TRANSDIFFERENTIATION

Dedifferentiation is an indirect process as a mature cell first has to go through the stem cell stage and it is a time-taking process. As well as this reprogramming of a mature cell into a stem cell is promising but risky, as stem cells are hard to control and therefore it can lead to tumor. Therefore, there is a need for a direct process in which the stem cell stage must not be included.

Transdifferentiation is defined as the conversion of one cell type to another. An example of this process is the development of intestinal tissue at the lower end of the oesophagus and the formation of muscle, chondrocytes, and neurons from neural precursor cells. Scientists have also artificially done the experiment of transdifferentiation on mice to increase the production of INSULINE and the results of this experiment were satisfying.

II. CONCLUSION :-

- IN DISEASES LIKE PARKINSON'S WE LOST THE NEURONS AS WELL AS CONNECTION BETWEEN NEURONS. DUE TO THE PROCESS OF TRANSDIFFERENTIATION WE COULD REPLACE THE NEURONS LOST IN THE BRAIN. THESE '*TURTOPSIS DOHARNI*' COULD TEACH US HOW TO DO THIS THROUGH THE PROCESS OF TRANSDIFFERENTIATION AS THIS PROCESS AT SOME PLACE AND AT SOMETIME OCCURS NATURALLY IN OUR HUMAN BODY AS MENTIONED ABOVE REDUCES THE RISK FACTOR.
- AS '*TURTOPSIS DOHARNI*' IS KNOWN AS IMMORTAL ORGANISM IT COULD OPEN UP SOME NEW GATEWAYS AND COULD GIVE US THE HINT ON THE MOST DISCUSSED TOPIC OF IMMORTALITY OF HUMANS...