

# Aandp topic

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16TH NOVEMBER, CRYOPRESERVATION Ted Williams, the famous American baseball player is now at AlcorLife Extension Foundation, even after 10 years of his death. The reason being, that his body is being preserved so that if in the future, science finds a way to restore life into dead cells, Ted Williams will be among the few who will be resurrected. This preservation procedure is called cryopreservation. James Lovelock was the very first one to theorize about this ground breaking idea of cryopreservation. Cryopreservation is the utilization of extremely low temperatures to preserve living cells and tissues for future use. The use of an extremely low temperature stops every single biochemical process inside the cells including apoptosis and cell death procedures, thus the cells can be stored in a stagnant state for long periods of time till they are thawed for use. The temperature needs to be as low as -196°C and the medium used now is liquid nitrogen. However, cryoprotective agents like DMSO and glycerol are used now to prevent intracellular freezing. Cells like microbial cells (protozoa, fungi spores etc), animal cells (oocyte, sperm, embryo etc) and viruses have been successfully cryopreserved till date. Cryopreservation is a boon for scientific development. Pregnancies have been possible using 20 years frozen embryos and ovarian cells can be stored to help women to conceive even after menopause. Cryopreservation of microbes is being conducted to add data to bio-bank, thus making it possible to study something even if it becomes extinct. Another extremely important use for cryopreservation is, preservation of stem cells. If a new born's stem cells (extracted from placenta) are preserved, they can be used for surgeries in his lifetime thereby eliminating surgical complications. Wildlife scientists are also contemplating to use this technique to save endangered species and clone some extinct ones.

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## ANEMIA

My first brush with Anemia was when I was inflicted by it. That is when I came up close and personal with the disease and gained information about it from my doctor. The most important transport fluid in the human body is the blood and the composition of which is complex and intricate. Anemia is the most common blood disorder which arises when there is a decrease in the number of RBC's or in the amount of hemoglobin in the body. Since the primary work of RBC's is to supply oxygen, shortage of it causes oxidative stress in the cells which leads to further clinical complications. The degree of the disease depends on the severity and the type of Anemia. There are almost 400 different kinds of anemia. While anemia due to iron and vitamin deficiency is most common, other types of anemia include- Hemolytic anemia, Pernicious Anemia, Thalassemia, Sickle cell Anemia etc. Some forms of Anemia like Thalassemia and Sickle-cell anemia are genetic. Though it is not easy to pinpoint the exact causes without knowing the type, the most common causes are- malnutrition, autoimmune disorders, leukemia, heavy menstruation, destructions of RBC's, harsh medication, pregnancy, bone marrow lymphoma, ulcerative colitis, kidney ailments etc. Major symptoms of anemia include signs of weakness, lung and heart problems, lightheadedness, chronic headaches, brittle nails, pale skin etc. Treatment of Anemia depends on what type of Anemia is developed and also on the severity. For example, Iron-deficiency or folate-deficiency Anemia can be tackled through supplementation while more severe and harmful forms of

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Anemia may require extreme procedures like blood transfusion or bone marrow transplants.

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A. D. A. M Medical Encyclopedia using PubMed.