

Applications of Biotechnology

Suspended Animation



'Freeze a life to save a life'

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Sep 27th, 2011

What is Suspended animation?

- Slowing of life processes by external means without termination.
- Extreme cold can be used to precipitate the slowing of an individual's functions.
- Breathing, heartbeat, and other involuntary functions may still occur, but they can only be detected by artificial means.

Set backs...

- In 2006, a 35-year-old man, Mitsutaka Uchikoshi was rescued on a snowy mountainside in Japan 24 days after going missing.
- He seemed to have survived by entering a state of nearly suspended animation.
- His organs had shut down, his body temperature had dropped to 71 degrees, and his metabolism had slowed almost to a standstill.
- Subsequently, the man made a full recovery.



- Laina Beasley, a healthy baby girl but five weeks premature, weighing 6lb 4oz has been born in California after spending 13 years as an embryo frozen at -235C.
- She was kept in suspended animation as a two-celled embryo as in vitro fertilization, or IVF.
- This is thought to be the longest an embryo has been frozen and resulted in a healthy baby.



Debbie and Laina, photographed by Chris Stewart for the SF Chronicle.

Pros of Suspended animation

- Placing astronauts in suspended animation has been proposed as one way for an individual to reach the end of an intergalactic journey, avoiding the necessity for a gigantic generation ship.
- Induced hypothermia has been performed for some open-heart surgeries as an alternative to heart-lung machines.
- This ability to hibernate humans would be useful for a number of reasons, such as saving the lives of seriously ill or injured people by temporarily putting them in a state of hibernation until treatment can be given.



"By cooling rapidly in this fashion we can convert almost certain death into a 90 per cent survival rate."

---Hasan Alam ,2010

Philosophical and ethical considerations

- If death is not an event that happens suddenly when the heart stops, this raises philosophical questions about what exactly death is?
- The birth of Laina, which means God's gift, raises new and difficult questions over the ethics of keeping embryos on ice for decades.
- Is it a treatment or interment?

- Should a patient with a terminal disease be placed in suspended animation until a cure is possible?
- Is it even possible to afford to support thousands or millions of people waiting for a cure?
- What would happen if they were awakened years in the future?
- Should we try to keep people alive beyond their natural life span, if we already have too many people on the planet to support and feed?

Religious reviews...

- There's nothing abnormal or twisted in man's desire to live forever. The biblical scripture of Ecclesiastes 3:11 says,
- "...he (God) hath set the world in their heart so that no man can find out the word that God maketh from the beginning to the end."
- The same scripture in the Living Bible Paraphrased reads,
- "...But though God has planted eternity in the hearts of men, even so, man cannot see the whole scope of God's work from the beginning to end."

Islamic point of view

- Surah al Kahf (verse # 10-21).
- “When the youths retreated to the cave and said, "Our Lord, grant us from Yourself mercy and prepare for us from our affair right guidance. So We cast [a cover of sleep] over their ears within the cave for a number of years...”

View in general...

- As long as such technology had remained purely fictional, it would not have bothered anyone.
- However, making this technology actually work is sure to anger certain religious idea-organisms.
- The reason for this is that one of the biggest replication strategies for religions involves removing fears about what happens after death. This usually takes the form of some sort of idea about an immortal soul that goes someplace else when the body dies.
- The idea of suspended animation blurs the line between life and death.