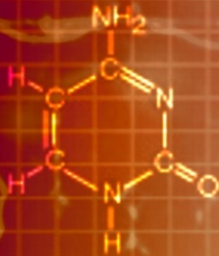
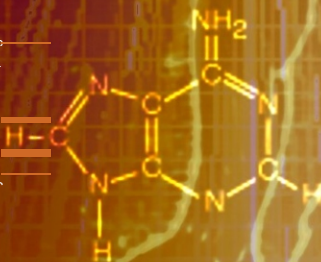
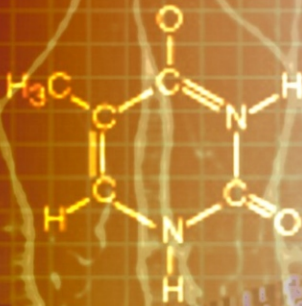


"The first immortal human beings are living among us today. You might be one of them. There are men and women alive today who may well be able to live for centuries, perhaps even extend their life spans indefinitely. For them, death will not be inevitable. The immortals will not age. They will not become feeble and sickly. Ageing will be stopped, even reversed. You may be young and vigorous forever."



Can Science Make Us Immortal?



These words are not from a prophet; neither are they taken from the Scriptures; rather, these are the predictions made by Dr. Ben Bova in his book *IMMORTALITY, How Science Is Extending Your Life Span—And Changing the World*. Bold as these claims maybe to most— even to some scientists—Dr. Bova believes the inevitability of human physical immortality as a byproduct of the current strides made by science—especially in the field of genetic engineering. Even though some experts raised doubts to the possibility of human physical immortality, Dr. Bova was quick to point out how the so called experts have been wrong in the past (i.e. airplane, manned flight to the moon, nuclear power). He was also not modest about the fulfillment of other predictions which he made in the past.

In the future, he says, man will finally be able to escape death from old age. Just because human beings have always died does not mean that they always will die. Death will become an option not an inevitability. So what will bring about this human physical immortality?



One strand of DNA holds the information that codes for various genes; this strand is often called the template strand or antisense strand (containing anticonsens). The other, and complementary, strand is called the coding strand or sense strand (containing a sense).

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Several avenues toward immortality have been mentioned: telomerase, MORF4 (Mortality Factor from human chromosome number 4), human growth hormone (hGH), organ regeneration, cyronics and nanomachines.

Let's take a look at some of them:

Telomerase As we age, our cell reproduction progressively declines. That is why we look the way we do when we grow old. Researchers, however, found that each time our cells divide, the telomeres which cap the ends of our chromosomes, get shorter. After about 50 divisions (depending on what type of cell), the telomeres become too short to protect the chromosome. Consequently, the cell is no longer able to reproduce and eventually dies.

This led Michael Fossel, professor of clinical medicine at the Michigan State University to conclude that "telomeres [are] the clocks of ageing."

So is there a way to stop this clock or even reverse it? Some researchers believe so. By expressing the enzyme telomerase in human culture cells, the cells were able to rebuild telomeres; thereby allowing cells to exceed their Hayflick limit (number of times a cell can divide).

MORF4 Researchers at Baylor College of Medicine in Houston, introduced the MORF4 gene to

cancerous cells and found that the tumor stopped growing and becomes senescent. When a mutated form of MORF4 was added to normal human cells, it enabled the cells to exceed their Hayflick limit.

hGH also known as somatotropin, showed evidence of its direct relationship to ageing. Studies of male volunteers in their 60s and 70s by Dr. Daniel Rudman of the Medical College of Wisconsin has shown that those who received the hGH injections not only stopped ageing in some ways their ageing was reversed.

Regeneration Imagine having the ability to lose an arm and grow it back. Some animals already have this capability and humans, it seems, are not too far behind. And some are more than willing to take this a step further. They see a future where science can bring a person back to life by taking his DNA sample and literally build him from scratch.

Nanomachines Ray Kurzweil, author of *The Age of Spiritual Machines*, talked about the near future where computers will have become more powerful than the human brain. You can have your brain scanned and stored as a 'mind file'. By having a 'virtual' copy of yourself in a hard drive, you can continue to exist even if your organic self dies. Thereby achieving immortality.

Among all these possibilities, the one which received a lot of media attention is the enzyme telomerase. Some believe that the legendary quest for the 'fountain of youth' as made famous by Ponce de Leon has come to an end. And it did not come in the form of a hidden spring located deep in a forest somewhere. It came in a form of an enzyme that can be found in our own DNA.

Societal implications

Will science be able to extend human life indefinitely? Can man finally gain eternal life through his own efforts? Some feel that it is only a matter of time; while others answer with a resounding no. And this is not the first time scientific efforts like these have met strong opposition. Political and religious figures have expressed their fears on the consequences this will have on society. Already there are questions posed on the social, ethical, and religious issues which may arise because of these developments.

The fact that many, out of fear, have lobbied against the furtherance of this scientific endeavor is an indirect confirmation of the possibility of extending human life considerably—maybe even indefinitely. Even the Scriptures tell us that "nothing they [man] plan to do will be impossible for them" (Genesis 11:6). And a few individuals like Dr. Ben Bova feel that the point wherein science will be able to achieve such a feat is inevitably near.

There is absolutely no question as to whether people need to live forever or not. Nobody wants to die. It is man's nature to



1. Senescence
2. Hayflick limit

For man to be truly immortal he must not only survive time and resist disease, but he must also be indestructible.

want to continue to exist; to live a long, healthy, and happy life. Isn't existence more basic than food, shelter, and clothing? After all, doesn't the Scripture say, "is not life more important than food, and the body more important than clothes?"(Matthew 6:25)

So should people start looking to science for eternal life? As Marvin Cetron, in his book *Cheating Death* co-written with Owen Davies, puts it, "will religion still have something to offer people whose salvation is as near as the local pharmacy?"

Truly Immortal

Will religion become a relic from the past; now that science has looked into the very core of what religion is offering? Will the future be characterized by people going to the pharmacy rather than their local congregations? Will eternal life become just another commodity item?

Extending life span indefinitely is one thing; while making one truly immortal is another. Undoubtedly, man may be able to discover a way to extend human life considerably. But can man through science give us true eternal life?

For man to be truly immortal he must not only survive time and resist disease, but he must also be indestructible. Man can still die from accidents, war, famine, pestilence, and disease. To this, science can see no answer. Nowhere in the foreseeable future. And probably never.

For as long as man remains physical he will never be truly immortal. Man, through his own efforts, will never escape death. Because death came as a result of man's sin (Romans 5:12). Man should tremble because there is "One who can destroy both soul and body" (Matthew 10:28). Moreover, the Scriptures speak of a time when the heavens, the earth, and everything in it—will be destroyed by fire: "that day will bring about the destruction of the heavens by fire, and the elements will melt in heat" (2 Peter 3:12). There is no capsule available in the local pharmacy which can save man from that.

There is absolutely nothing wrong with wanting to live long. In fact, it is good for man to desire such a thing. But he has to know where to look. He has to realize what are in his powers to do and what are not. The One True God who is in heaven offers true eternal life. A life not subject to hunger, pain, ageing, and death.

Immortality is not only an issue of time, but also an issue of composition. Man must change in substance, from flesh—which is perishable—to spirit—which is imperishable, to gain eternal life. "For the perishable must clothe itself with the imperishable, and the mortal with immortality."(1 Corinthians 15:53)

True immortality can only come from God—through his Son Jesus; and "to those who by persistence in doing good seek glory, honor, and immortality, he will give eternal life." (Romans 2:7)

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This loss of division potential and the simultaneous change in morphology was termed cellular/replicative senescence. Hayflick did a number of experiments to demonstrate that the cell senescence model was not an artifact of putting cells in culture.

