

Immortality

Joaquín Fargas

Concept

Immortality is a living organism that would last forever, a hybrid, made of heart cells assisted by a robotic system. It is a bioart installation, a work in progress develop in the Bioart Lab at the Maimonides University in Buenos Aires, Argentina.

The first step, finding the cells that would “last forever” is already done; we are now presenting for Prix Ars the second and the third steps of the project. The second step done in 2010 was to make the cell to beat. The third step, today in progress, is to make the hybrid to feel the presence of the public.

Description

The installation is composed by a bioreactor containing living heart cells and a multimedia system. The cells are kept alive into a Petri dish, a container that allows them to be feed with nutrients and to grow over a substrate. The cells are heart rat cells that have no information in their DNA about ageing.

Immortality marks a beginning, the possibility to alter a main human condition: mortality, creating a new being that transcends both death and deterioration of the body.

Concept Development

A major concern of humankind has been to perpetuate over time. Beyond the transcendental spirit that leads us to believe in the continuity of the species, it has been speculated on the possibility that a being, an organism itself, would last forever.

By the mid-nineteenth century, the theory of evolution by Charles Darwin described how and why populations of organisms changes over time. Natural selection, the change, the common origin and gradualism are theories that enabled him to realize how some species survived and how others had disappeared from the planet over millions of years of evolution.

In the XXI century man is entering a new era governed by posthuman evolution, biological evolution faster and more efficient than that proposed by Darwin in the nineteenth century. This hypothesis is based on research and developments on bioinformatics, biocomputing and some life sciences where scanning would seem to be the key, and that responding to the natural biological universe becomes a computer data that can be manipulated and modified.

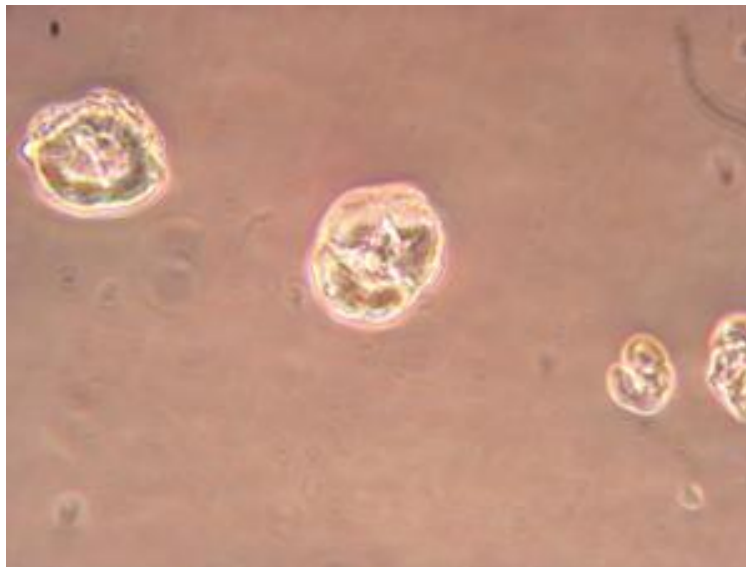
While the "old biological culture" is left behind the artists find that the material body is becoming obsolete. Undoubtedly, this is one of the most radical premises of posthumanism made by authors like Moravec, Vinge or Cronenberg who deny the material body which they see as an obstacle for develop

The work Immortality comes to fulfill the desire to transcend posthumanist human existence by abolishing ageing and death.

The bit, the gene and the atom (first studied by the computer, the second by molecular biology and the third for physics) are the three basic units that allow any form of recombination.

Immortality is the result of that, the combination of bits, atoms and genes to create a hybrid that merges art, science and technology with the natural as artificial.

The purpose of this work is merely artistic, but generates debate regarding aesthetical, ethical and ecological issues.



/// Technical summary of the process

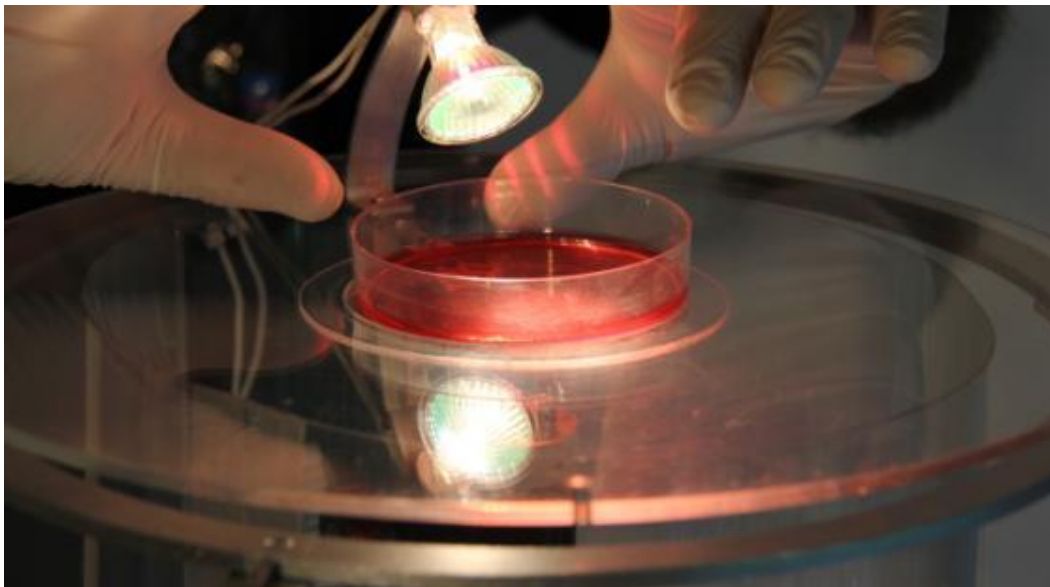
Immortality succeeded in generating a cell culture of cardiomyocytes that maintain the ability to beat "ex vivo". The first approach was performed from adult tissue *Lagostomus maximus* (viscacha), without much success due to the low plasticity and capacity of adult cells, which affected its activity in the culture dish. Subsequently, due to the literature concerning the topic turned to the acquisition of an immortalized cell line of myocardial cells. The same coded designation CRL-1446 and H9c2 (2-1), was purchased from the ATCC (American Type Culture Collection). This was isolated in the seventies of hearts from *Rattus norvegicus* (rat) and has the ability to fuse at low concentrations of serum (food).

In 2010 the second step of the project was finished when the cells start beating into a bioreactor, custom made for this purpose.

/// Parts of the installation

Heart cells

Heart cell has the quality of beating and be synchronized between each other, without any intervention. These cells culture In Vitro, Dichas are the "immortal" ones, because his genetic capacity of no-aging, neutralizing in his DNA the information about the aging.



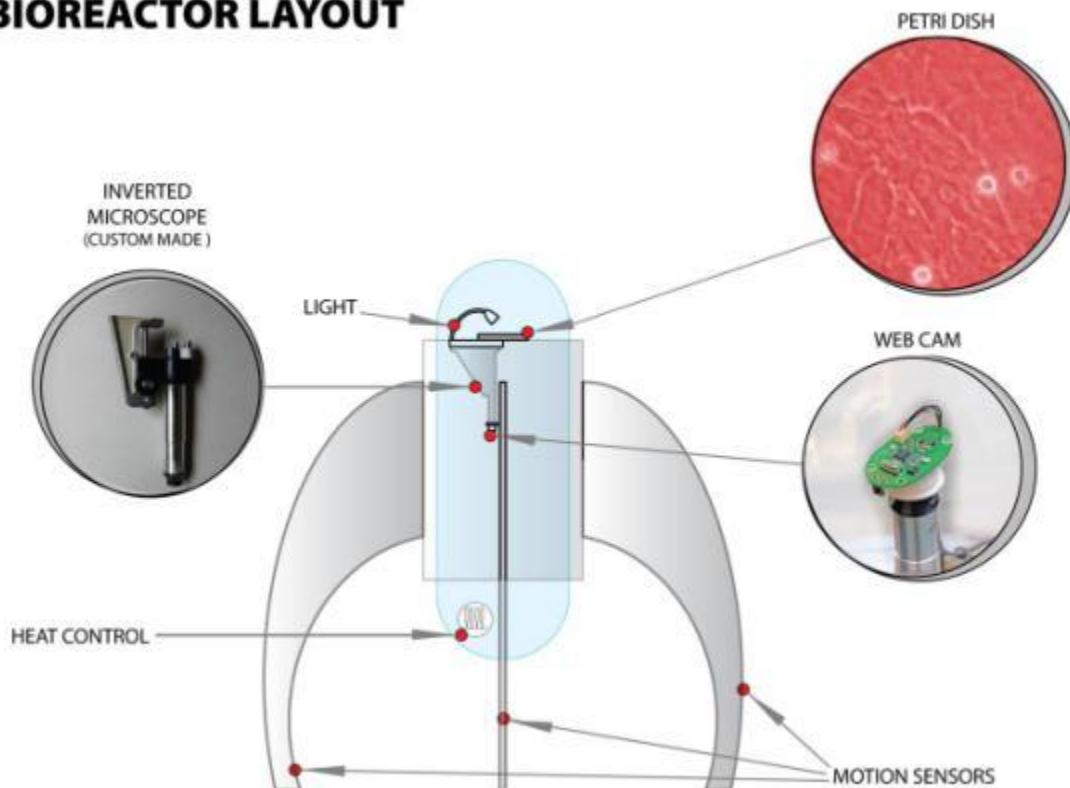
Bioreactor

The bioreactor provides a sterile and controlled atmosphere that allows the cell culture. In the center of the bioreactor is hosted on a Petri dish with the cellular tissue. Cells need food, so they are hosted on a substrate with added nutrients. Cells require a constant temperature of 37 ° C for adequate preservation is ensured thanks to the bioreactor remains.

To visualize the capsule tissue is monitored by a microscope, which transmit the cell activity through a monitor/projector and to a site on Internet.

The bioreactor is an important piece of the project as it let the cultured cells to be taken outside form the laboratory to a public place like a gallery or a museum.

BIOREACTOR LAYOUT





Multimedia system – Place

A sensor system allows the heart to react to the public over his heartbeat accelerating in certain situations.

A multimedia system allows the interaction between the cells and the public.

They show images of the cells contained in the bioreactor through screens or projections, they are taken in real time through a microscope with high definition camera.

Cardiac waves are projected onto the walls and / or displays arranged for this purpose.

