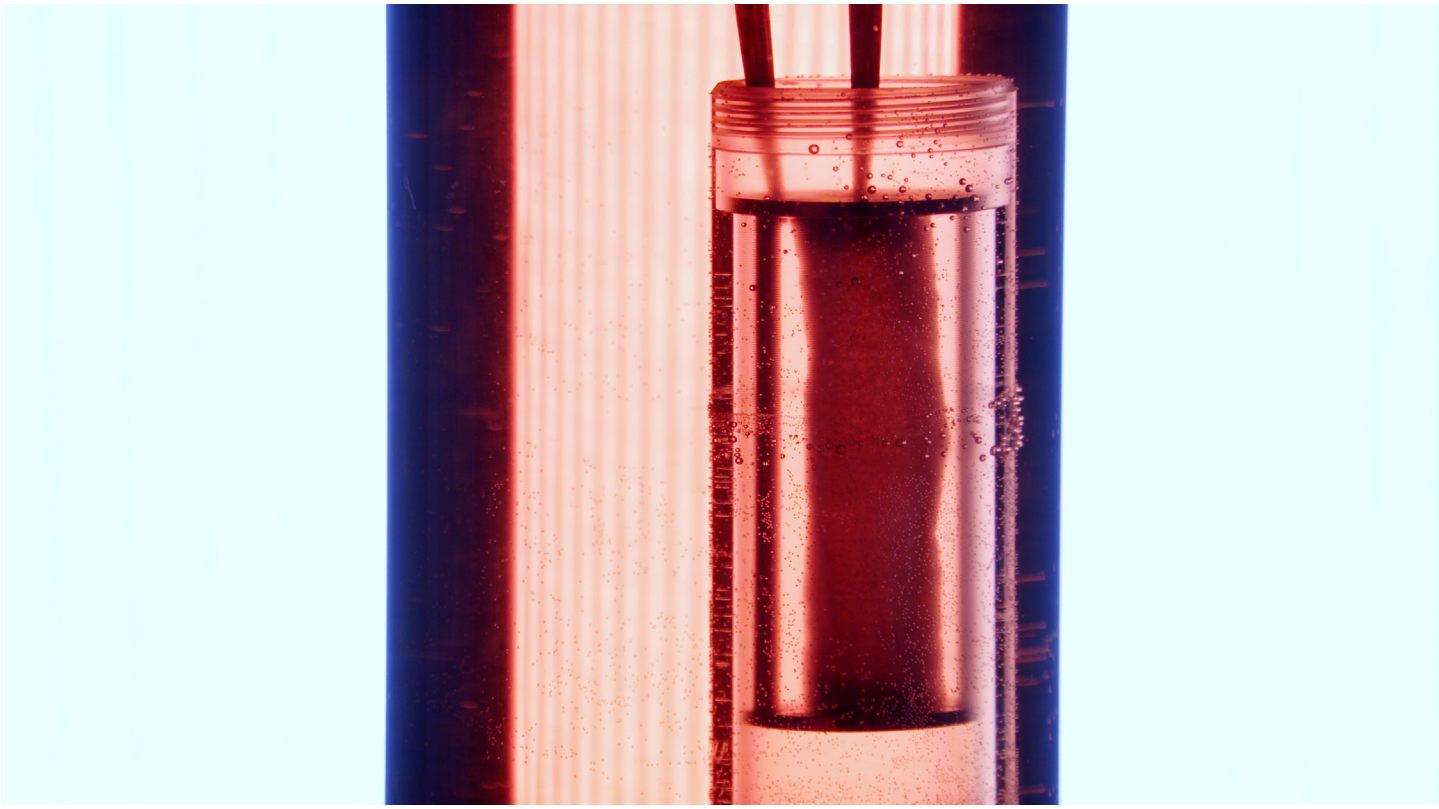
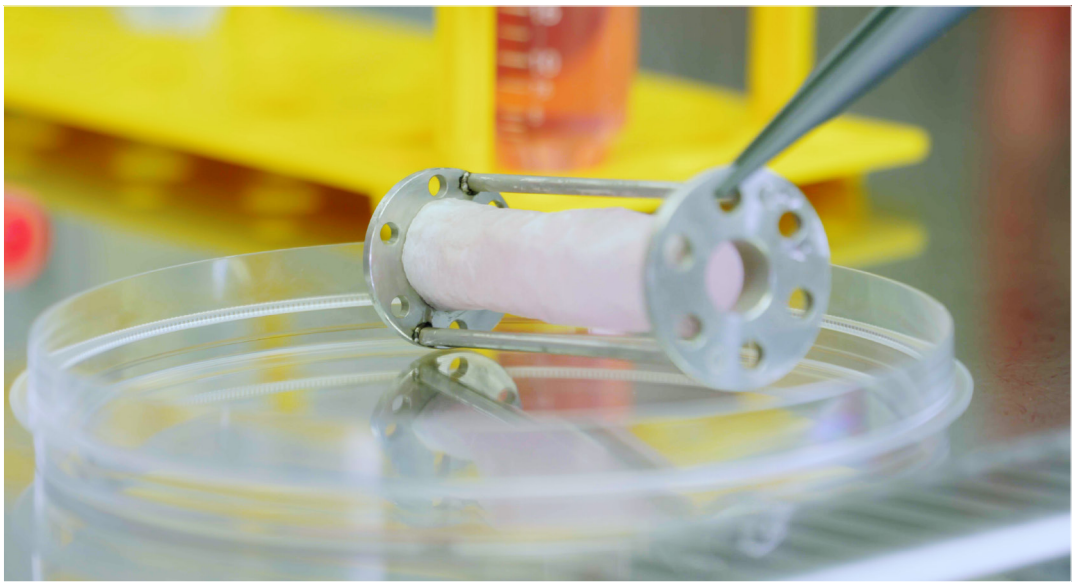


LifeMatrix

Tissue-engineered matrices to regenerate the human heart

Wyss Zurich
Translating
Science into Life

LifeMatrix



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LifeMatrix
is a Wyss Zurich project
www.wysszurich.uzh.ch

Tissue-engineered matrices to regenerate the human heart

Globally, one out of 100 children is born with a heart defect. In some severe cases, a heart valve or blood vessel functions poorly or may even be missing.

Such congenital heart defects are commonly treated today by replacing the missing or damaged part with synthetic prosthetic materials. Unlike direct transplant of tissue from human donors, such artificial materials are not rejected by the recipient's immune system. However, a major drawback of these materials is that these grafts need to be replaced regularly as the child grows, thus requiring repeated surgery and lifelong medical treatment.

A multidisciplinary team from Wyss Zurich has developed a unique tissue engineering technology to grow replacement tissue in the laboratory, which will be compatible with every patient, regenerate and grow with the recipient. To create this tissue, cells of human origin are first grown in culture on a scaffold in the shape of a heart valve or blood vessel. In a process called decellularization, the cells are then removed, leaving behind a perfectly shaped, biologically neutral human tissue matrix called LifeMatrix. After implantation, the recipient's own cells will repopulate the LifeMatrix, replacing the biodegradable scaffold; and this tissue will continue to grow with the child. Such grafts will avoid repeated major surgeries and their associated risks.

Previous work on autologous and personalized cellular tissues (patients receive tissue grown from their own body), which already obtained approval for a pilot clinical study by the german authority (PEI), is the basis for this next generation tissue engineering technology. The aim of the Wyss Zurich project is to bring the LifeMatrix technology into the clinic with a first-in-man clinical trial.