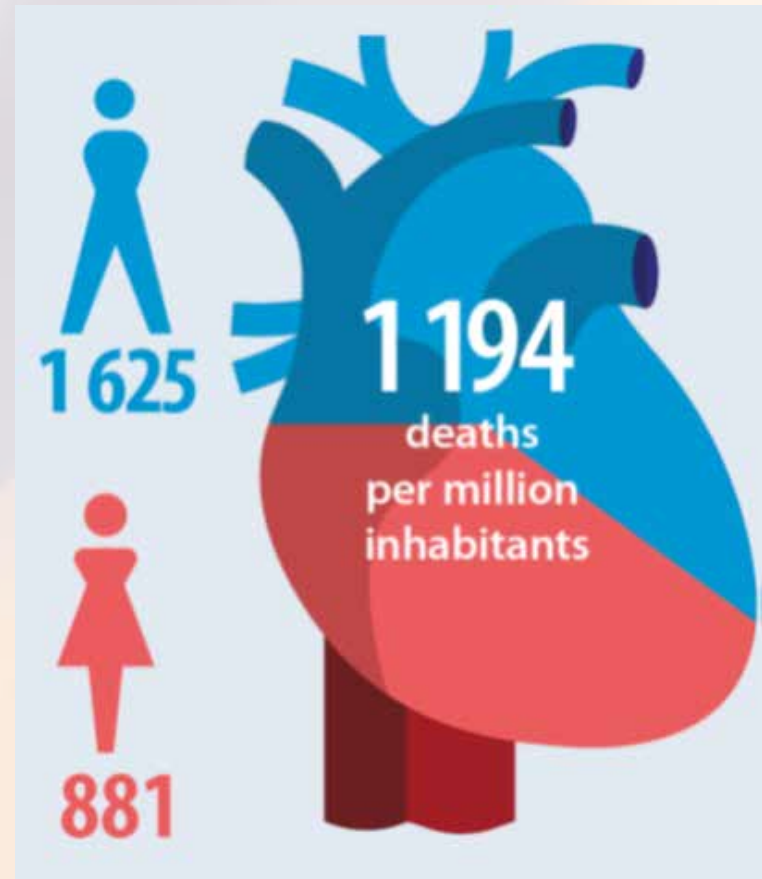




Remodelling of the infarcted heart: piezoelectric multifunctional patch enabling the sequential release of therapeutic factors

Project

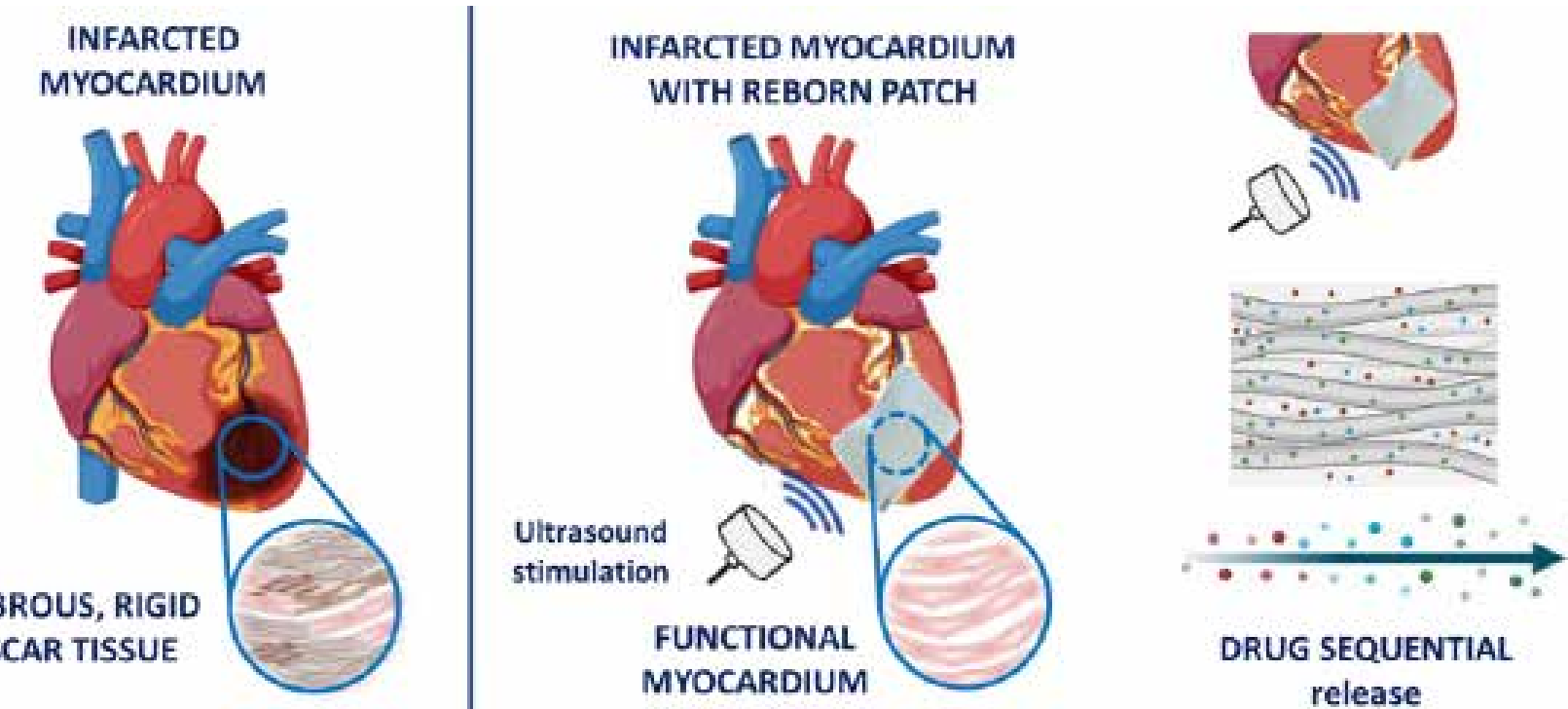


"Death in the EU due to coronary diseases in 2016. (Eurostat data 2016)"

Myocardial infarction accounts for almost half of all deaths due to cardiovascular diseases: it causes about 2 million of deaths in Europe each year. 1 out of 3 people experiencing a myocardial infarction is on a fatal journey toward heart failure.

REBORN project aims to use smart and multifunctional biomaterials to deliver a new cardiac patch that will stimulate and support local heart tissue remodelling. The piezoelectric patch will electromechanically couple with the heart and deliver anti-inflammatory, anti-fibrotic and cardiomyocyte proliferative factors, triggered by ultrasonic stimulation from outside the body.

The ambition is to significantly prevent heart failure in patients surviving an acute myocardial infarction, reducing mortality and enhancing their quality of life.



Objectives

- Development of a piezoelectric, electrospun patch containing multifunctional biomaterials able to combine multiple biological cues
- Creation of an ultrasound stimulation platforms able to trigger the release of the therapeutics incorporated into the REBORN patch
- Production of an advanced in vitro model to support the development and validation of the REBORN patch

Impacts

- Providing a multifunctional smart device to save lives and improve patient well-being while reducing healthcare system costs
- Functional tissue recovery after myocardial infarction avoiding adverse heart remodeling and scar tissue formation
- To potentially increase the survival rate after myocardial infarction by 15-20%, thus providing a longer and healthier life



Project details

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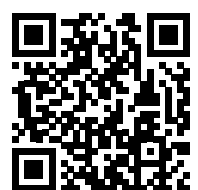
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