

PARTNERS



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PROJECT DETAILS

PROJECT NUMBER: 101091852

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

TOPIC: HORIZON-CL4-2022-RESILIENCE-01-13

START DATE: 01 January 2023

DURATION: 48 Months

GRANTING AUTHORITY: European Health and Digital Executive Agency

EU CONTRIBUTION: € 4.050.412,50

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

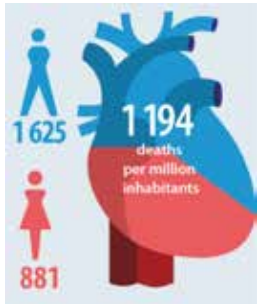


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PROJECT



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.


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


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 on demand, 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 device based on new sustainable materials, 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

