



# REGERNA

## LEVERAGING THE HEART'S NATURAL REGENERATION MECHANISMS FOR TREATING HEART FAILURE

REGERNA is a European Commission-funded research initiative that convenes partners from across Europe who will work together to identify a solution to heart failure.

Using existing technologies already validated in other indications, REGERNA aims to accelerate the development of a drug treatment intended to reactivate naturally present mechanisms of cardiomyocyte proliferation which are switched off after birth.

The treatment will stimulate the regeneration of damaged heart muscle and its subsequent functional recovery.

### CONCEPT

The research's central idea is that the loss of cardiomyocytes in damaged regions can be addressed by leveraging advances in synthetic mRNAs and lipid nanoparticle (LNP)-based carriers.

### ANTICIPATED IMPACT



#### INNOVATIVE, SAFE AND EFFICIENT SOLUTION

for patients who are not responsive to conventional therapies



#### IMPROVED CARDIAC FUNCTION

through promotion of endogenous cardiomyocyte proliferation



#### mRNA-BASED TECHNOLOGIES

deployed beyond the vaccine field



#### CUTTING EDGE RESULTS FOR THE SCIENTIFIC COMMUNITY

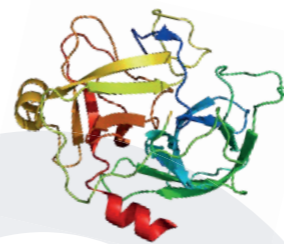
Want to know more ?  
[www.regerna.eu](http://www.regerna.eu)



### OBJECTIVES

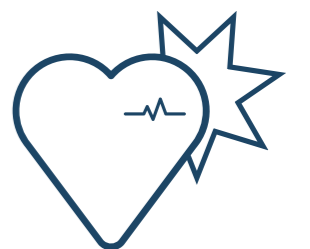
1.

Identify and develop **new mRNAs** encoding proteins that will stimulate existing **signalling pathways** associated with the regeneration of heart muscle.



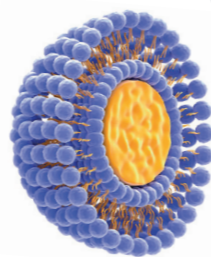
3.

**Demonstrate** the new mRNA-triggered cardiomyocytes integrate within the heart muscle and improve its pumping capacity without causing adverse effects such as rhythm disturbances.



2.

Package this mRNA into **lipid nanoparticles (LNP)** which will be carried specifically in cardiomyocytes and trigger the machinery underlying the regeneration of heart muscle.



4.

Undertake a **Quality-by-Design** strategy to maximise an efficient **translation** from pre-clinical testing to **clinical trials** at the end of the process.



LU Leids Universitair Medisch Centrum

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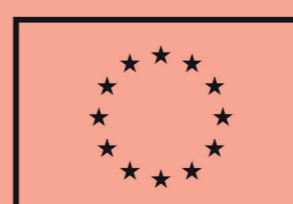
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