

Technology offer IP-036

## MiRNA biomarker to prevent or treat acute coronary syndrome in young adults

Researchers at IMIB have co-developed a new method for early identification of acute coronary syndrome in young adults. Through genetic modification and functional analysis, it has been demonstrated that cells presenting the rs117258475 variant of miR-296 show an impairment in this miRNA, influencing genes involved in inflammation, atherosclerotic plaque formation, and other processes implicated in the early development of acute coronary syndrome.

### State of development

TRL-4 Laboratory validation

### Industrial Property

Spanish patent application

Priority date: 27/3/2023

### Objective of the collaboration

License and/or co-development

### Contact

Innovation Unit at IMIB

innovacion@imib.es



### Market needs

Cardiovascular diseases, especially acute coronary syndrome, are the leading cause of mortality in developed countries, with a high incidence in young adults. In this disease, microRNAs such as miR-296 play a key role in regulating inflammation and thrombosis, processes essential to its development. The dysregulation of these microRNAs, such as the rs117258475 variant, alters the inflammatory and prothrombotic response, increasing the risk of heart attack in young individuals without traditional risk factors. Current therapeutic options focus on managing risk factors but do not specifically address the underlying genetic alterations.



### Technical solution from IMIB

The technical solution is based on the identification of the genetic variant rs117258475 in the miRNA miR-296, which regulates inflammation and thrombosis in acute coronary syndrome. *In vitro* studies have shown that this mutation affects the expression of miR-296, altering the miRNA-mRNA interaction and modifying the cellular response in endothelial models. In mouse models, the rs117258475 variant has demonstrated an increased incidence of acute myocardial infarction and myocardial damage, corroborating its pathological role in the development of acute coronary syndrome in young adults.

### Benefits

- Greater specificity in regulating inflammation and thrombosis in young patients without traditional risk factors.
- High specificity in miR-296, a key factor in the pathogenesis of acute coronary syndrome.
- Cost reduction through early genetic diagnosis, improving quality of life and reducing hospitalizations.