Comparative Study And Mechanisms Of Calcification Heterogeneity In Atherosclerotic Plaques

Fact Sheet

Project Information

CALTHERO

Grant agreement ID: 627418

Project closed

Start date
1 July 2014

End date
30 June 2016

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
€ 194 046,60

EU contribution
€ 194 046,60

Coordinated by
UNIVERSITE DE NANTES
France

Objective

Arterial calcifications, like those seen in patients with atherosclerosis, contribute to morbidity and are predictors of premature death. Despite exposure to the same cardiovascular risk factors, previous studies have demonstrated the concept of the heterogeneity of atheroma according to the arterial beds. These differences have a

major clinical impact on the occurrence of cardiovascular events (embolism, thrombosis, dissection, restenosis), and recurrence of the disease. The host laboratory recently showed that plaque heterogeneity was notably associated with a difference in calcification burden. Further classification distinguished amorphous from cartilage or even bone structures in the affected vasculature. This process remains poorly understood.
This project aims to identify cellular and molecular mechanisms involved in the arterial calcification heterogeneity, by first fully characterizing the lesions in various vascular beds and by associating specific features of the plaque with calcification content. I will also test in vitro the contribution of endothelial cells (EC) and pericytes in vascular cells mineralization and calcification. In particular, I will assess the ability of EC and pericytes to alter macrophage and smooth muscle cell differentiation towards an osteoblast-like cell phenotype. The role of specific molecular pathways (RANK/RANL/OPG...) will be also tested functionally. To further analyze this process in vivo, I will generate double KO mice developing accelerated calcification in lesions and use in vivo fluorescence imaging to monitor plaque formation and calcification over time. Finally, I will assess the predictive clinical impact of the nature of the plaque on intra-stent restenosis in patients following OCT and serial duplex ultrasound imaging.
Altogether, this project should greatly contribute to the characterization of the molecular basis of arterial calcification and the difference in bone metabolism in various vascular beds.

Fields of science (EuroSciVoc)

medical and health sciences > clinical medicine > angiology > **vascular diseases**

medical and health sciences > clinical medicine > cardiology > cardiovascular diseases > **arteriosclerosis**

natural sciences > physical sciences > acoustics > **ultrasound**

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

FP7-PEOPLE-2013-IIF - Marie Curie Action: "International Incoming Fellowships"

Call for proposal

FP7-PEOPLE-2013-IIF
See other projects for this call

Funding Scheme

MC-IIF - International Incoming Fellowships (IIF)

Coordinator

UNIVERSITE DE NANTES

EU contribution

€ 194 046,60

Total cost

No data

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Region

Pays de la Loire > Pays de la Loire > Loire-Atlantique

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation Website
Participation in EU R&I programmes
HORIZON collaboration network

Last update: 23 November 2016

Permalink: https://cordis.europa.eu/project/id/627418

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