Novel Imaging of the heart for new structural and metabolic diagnosis

Fact Sheet

Project Information

ANATOMY-FOUND

Grant agreement ID: 707663

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10.3030/707663

Project closed

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1 February 2017

End date
31 January 2019

Funded under
EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions

Total cost
€ 200 194,80

EU contribution
€ 200 194,80

Coordinated by
AARHUS UNIVERSITET
Denmark

This project is featured in...

Objective

Each year cardiovascular disease (CVD) causes over 4 million deaths in Europe. Predictions suggest that 80% of premature heart disease and stroke is preventable, but ~20% of CVDs are misdiagnosed, and in elderly patients up to 60% of CVDs remain undiagnosed. We need to develop new technologies and strategies for early and accurate diagnosis of the biggest killer in western society.

Currently, diagnosis of CVD is based on assessment of macro-anatomy, whole heart function, and whole body metabolic markers. Early CVD processes begin in heart cells, before evolving to the 'macro' pathology recognisable by traditional techniques. Clinicians desire a non-invasive technique that can provide high-resolution 3D micro-anatomy, and organ specific regional metabolic assessment. However the intricate micro-anatomy of the heart and its dynamic relationship with cardiac function is still fiercely debated.

To elucidate the true micro-anatomy of the heart, and understand its correlation with both pump- and metabolic function in health and disease, I will investigate the following questions:
1)What is the true micro-anatomy of the heart, and how is it remodelled in disease?
2)What is the role of 3D micro-anatomy in 4D pump function?
3)Does micro-anatomical remodelling correlate with regional changes in metabolism?

Using novel state-of-the-art non-invasive 3D and 4D ex-vivo and in-vivo imaging methodologies, I will answer these questions. We will finally understand the micro-anatomy of the heart in 3D, and its relationship with cardiac contraction and metabolism in disease. I hypothesise detecting and correlating novel morphological and metabolic changes upstream of the macro-anatomical and non-specific metabolic changes identifiable by traditional techniques, will offer the foundation for a step-wise change in diagnosis of CVD.

Working with world-renowned researchers, I will develop interdisciplinary skills in functional cardiac imaging to support a productive career in academia.

Fields of science (EuroSciVoc)

medical and health sciences > basic medicine > **anatomy and morphology**

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

medical and health sciences > basic medicine > **pathology**

medical and health sciences > basic medicine > neurology > **stroke**

engineering and technology > medical engineering > diagnostic imaging > **magnetic resonance imaging**

Programme(s)

H2020-EU.1.3. - EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions MAIN PROGRAMME

H2020-EU.1.3.2. - Nurturing excellence by means of cross-border and cross-sector mobility

Topic(s)

MSCA-IF-2015-EF - Marie Skłodowska-Curie Individual Fellowships (IF-EF)

Call for proposal

H2020-MSCA-IF-2015

See other projects for this call

Funding Scheme

MSCA-IF-EF-ST - Standard EF

Coordinator

AARHUS UNIVERSITET

Net EU contribution

€ 200 194,80

Total cost

€ 200 194,80

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Region

Danmark > Midtjylland > Østjylland

Activity type

Higher or Secondary Education Establishments

Links

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

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