HEART4FLOW

Project ID: 310612
Funded under: FP7-IDEAS-ERC

Improved Diagnosis and Management of Heart Disease by 4D Blood Flow Assessment

From 2013-01-01 to 2017-12-31, closed project

Project details

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<th>Total cost:</th>
<th>Topic(s):</th>
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<tr>
<td>EUR 1 430 131</td>
<td>ERC-SG-LS7 - Applied life sciences, biotechnology and bioengineering:</td>
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<tr>
<td>EU contribution:</td>
<td>agricultural, animal, fishery, forestry/food sciences; biotechnology, chemical biology, genetic engineering, synthetic biology, industrial biosciences; environmental biotechnology.</td>
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<td>EUR 1 430 131</td>
<td>Call for proposal:</td>
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<td>Coordinated in:</td>
<td>ERC-2012-StG_20111109</td>
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<td>Sweden</td>
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Objective

The primary purpose of the cardiovascular system is to drive, control and maintain blood flow to all parts of the body. Despite the primacy of flow, cardiac diagnostics still rely almost exclusively on tools focused on morphological assessment. The objective of the HEART4FLOW project is to develop the next generation of methods for the non-invasive quantitative assessment of cardiac diseases and therapies by focusing on blood flow dynamics, with the goals of earlier and more accurate detection and improved management of cardiac diseases.

Recently, a novel moment framework for flow quantification using magnetic resonance imaging (MRI) has been presented which allows for simultaneous measurement of time-resolved, three-dimensional (time + 3D = 4D) blood flow velocity and turbulence intensity. In the HEART4FLOW project, this framework is extended and exploited for assessment of intracardiac blood flow dynamics. A user-friendly quantitative assessment approach is obtained for intracardiac blood flow energetics and wall interaction, as well as stenotic and regurgitant blood flow. Furthermore, the accuracy, measurement time, and robustness of 4D flow MRI acquisition are optimized, allowing its use in large clinical trials. Studying intracardiac blood flow dynamics in patients and healthy subjects at rest and under stress will improve our understanding of the roles of flow dynamics in both health and disease, leading to improved cardiac diagnostics, novel assessments of pharmaceutical, interventional, and surgical therapies, and promoting exploration of new avenues for management of cardiac disorders.

Related information

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<th>Report Summaries</th>
<th>Final Report Summary - HEART4FLOW (Improved Diagnosis and Management of Heart Disease by 4D Blood Flow Assessment)</th>
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**Host Institution**

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**EU contribution:** EUR 1 430 131

**Activity type:** Higher or Secondary Education Establishments

**Administrative contact:** Michael Lögdlund  
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Contact the organisation

**Beneficiaries**

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**To know more**

http://erc.europa.eu/

**Subjects**

Biotechnology - Life Sciences

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