Molecular photoacoustic imaging of stem-cell driven tissue regeneration

Fact Sheet

Project Information

MOPIT

Grant agreement ID: 281356

Project closed

Start date
1 January 2012

End date
31 December 2016

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

Total cost
€ 1 622 736,00

EU contribution
€ 1 622 736,00

Coordinated by
TECHNISCHE UNIVERSITAT BERLIN
Germany

Objective

"I propose to develop a new generation of molecular photoacoustic imaging technologies and methods capable of detecting single deep tissue cells in preclinical studies of tissue regeneration. In order to achieve this goal, an interdisciplinary research programme involving physicists, engineers and life scientists is required to

address the following objectives: 1) the development of novel photoacoustic imaging technology that provides high sensitivity and acquisition speed, 2) the development of the theoretical framework and experimental methods for quantitative imaging, 3) the development of novel genetically expressed reporters, and 4) the preclinical application in small animal models of tissue regeneration. This will result in a preclinical imaging modality has the potential to combine single cell sensitivity and microscale spatial resolution in deep (centimetre range) tissue regions with molecular, physiological, and anatomical imaging capabilities. The instrumentation and methodologies developed in this project will be applied to noninvasive, longitudinal, and quantitative studies of stem cell driven tissue regeneration, such as angiogenesis in bone fractures and muscle trauma. It will allow the detection and tracking of single stem cells and the probing of stem cell function. This will provide unprecedented opportunities for correlating cellular localization, migration, and function and with anatomical changes - knowledge that can be exploited to develop novel drugs and cell-based clinical therapies. Crucially, the technologies and methodologies developed in this project will be directly applicable to a wide range of other fields of the life sciences, such as cancer research and neurology."

Fields of science (EuroSciVoc)

medical and health sciences > medical biotechnology > cells technologies > **stem cells**

medical and health sciences > clinical medicine > **oncology**

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

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

Programme(s)

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

Topic(s)

ERC-SG-LS7 - Applied life sciences, biotechnology and bioengineering: agricultural, animal, fishery, forestry/food sciences; biotechnology, chemical biology, genetic engineering, synthetic biology, industrial biosciences; environmental biotechnology.

Call for proposal

ERC-2011-StG_20101109
See other projects for this call

Funding Scheme

ERC-SG - ERC Starting Grant

Host institution

TECHNISCHE UNIVERSITAT BERLIN

EU contribution

€ 928 308,80

Total cost

No data

Address

STRASSE DES 17 JUNI 135
10623 Berlin
Germany

Region

Berlin > Berlin > Berlin

Activity type

Higher or Secondary Education Establishments

Links

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

Beneficiaries (2)

TECHNISCHE UNIVERSITAT BERLIN

Germany

EU contribution

€ 928 308,80

Address

STRASSE DES 17 JUNI 135
10623 Berlin

Region

Berlin > Berlin > Berlin

Activity type

Higher or Secondary Education Establishments

Links

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

Total cost

No data

CHARITE - UNIVERSITAETSMEDIZIN BERLIN

Germany

EU contribution

€ 694 427,20

Address

Chariteplatz 1
10117 Berlin

Region

Berlin > Berlin > Berlin

Activity type

Higher or Secondary Education Establishments

Links

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

Total cost

No data

Last update: 10 March 2015