The use of induced pluripotent stem cell-derived vascular smooth muscle cells to study aneurysmal diseases

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SCOPE OF THE METHOD

The Method relates to	Human health
The Method is situated in	Basic Research, Translational - Applied Research
Type of method	In vitro - Ex vivo
This method makes use of	Human derived cells / tissues / organs
Specify the type of cells/tissues/organs	vascular smooth muscle cells (lateral mesoderm and neural crest-derived)

DESCRIPTION

Method keywords

induced pluripotent stem cells

drug screening

Disease modeling

Lateral mesoderm

Neural crest

Scientific area keywords

thoracic aortic aneurysm

Marfan syndrome

Loeys-Dietz syndrome

Method description

Vascular smooth muscle cell (VSMC) deficiency plays a pivotal role in aneurysm development. Unfortunately, access to native VSMCs of patients and (particularly) control individuals is extremely limited. It has been shown that iPSC-derived VSMCs recapitulate the yet known disease processes very well. They can thus serve as a substitute for their native counterparts when studying and therapeutically targeting human aneurysmal phenotypes. Even the fact that tissue VSMCs of different embryonic origins discretely contribute to disease development and/or progression can be accounted for by using specific differentiation protocols for mesoderm- and neural crest-derived VSMCs. In our research team we use iPSC-VSMCs to assist the search for modifier genes, to further unravel the disease mechanisms and to find novel drug compounds.

Lab equipment

Method status

Still in development

Internally validated

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

Associated documents

PARTNERS AND COLLABORATIONS

Organisation

Name of the organisation University of Antwerp

Department Center for Medical Genetics

Country Belgium

Geographical Area Flemish Region

Coordinated by

Financed by