Low and very-low-field 3D magnetic resonance spirometry for advanced regional exploration of respiratory diseases

Fact Sheet

Project Information

V-LF-Spiro3D

Grant agreement ID: 101099934

DOI

10.3030/101099934

Start date
1 April 2023

End date
31 March 2027

Funded under
The European Innovation Council (EIC)

Total cost
€ 3 584 656,75

EU contribution
€ 3 584 656,75

Coordinated by
UNIVERSITE PARIS-SACLAY

France

Objective

Lung function is a central concern in the fight against covid-19. Beyond the pandemic heavy losses and long-term health implications, respiratory diseases represent a major threat for the World Health Organisation. It is one of the leading causes of death worldwide, associated to our way of living and impacting all of society. Current tools for diagnosing and monitoring pulmonary conditions are hindered by poor sensitivity (lung function tests), radiation exposure (computed tomography) or examination cost (magnetic resonance imaging, MRI). They all differently fail to fully assess lung structure and function.

V|LF-Spiro3D aims at democratizing newly developed and breakthrough 3D MR
spirometry with high performance, low-cost MRI techniques to provide a ten-minute morphofunctional MRI protocol to engage patients in a safer, easier and more comfortable way.

Based on recent works at Universities Paris-Saclay and Aberdeen, in collaboration with leading MR manufacturer Siemens, SME NMR Service, major French-Dutch hospitals and patient organisations, V|LF-Spiro3D brings together multidisciplinary experts in a patient-oriented approach for both adults and children.

V|LF-Spiro3D will redesign current MRI architecture to perform 3D MR spirometry at low and very low field. High-performance MRI hardware will be developed with accelerated acquisitions and coupled reconstruction strategies relying on deep learning. Biomechanical lung modelling and deep data processing will be guided by implementation of 3D MR spirometry in clinical facilities to produce unprecedentedly large sets of normative and training data covering six major respiratory diseases.

By prioritizing both technology transfer and innovation, V|LF-Spiro3D aims to build up a one-stop-shop imaging standard for unrestricted assessment of lung pathophysiology. The impacts are expected to yield benefits beyond lung imaging and boost health deep-tech on point-of-care imaging and multi-parameter-based digital health in the EU.

### Fields of science

- **medical and health sciences** › **basic medicine** › **physiology** › **pathophysiology**
- **medical and health sciences** › **health sciences** › **infectious diseases** › **RNA viruses** › **coronaviruses**
- **natural sciences** › **computer and information sciences** › **artificial intelligence** › **machine learning** › **deep learning**
- **engineering and technology** › **medical engineering** › **diagnostic imaging** › **magnetic resonance imaging**
- **natural sciences** › **computer and information sciences** › **data science** › **data processing**

### Keywords

- Lung Diseases
- Asthma
- Bronchopulmonary Dysplasia
- Cystic Fibrosis
- Chronic Obstructive Pulmonary Bronchiolitis
- Disease Obliterans Syndrome
- Biomechanics
- Modelling
- Low-field MRI
- 3D Pulmonary Function Test

### Programme(s)

- **HORIZON.3.1 - The European Innovation Council (EIC)**

2 of 11
Topic(s)

HORIZON-EIC-2022-PATHFINDEROPEN-01-01 - EIC Pathfinder Open 2022

Call for proposal

HORIZON-EIC-2022-PATHFINDEROPEN-01

See other projects for this call

Funding Scheme

HORIZON-EIC - HORIZON EIC Grants

Coordinator

UNIVERSITE PARIS-SACLAY

Net EU contribution

€ 1 243 413,75

Address

Batiment breguet - 3 rue joliot curie
91190 Gif-sur-yvette

France

Region

Région Ile-de-France > Ile-de-France > Essonne

Links

Contact the organisation

Participation in EU R&I programmes

HORIZON collaboration network

Other funding

€ 0,00

Participants (14)
INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE

Net EU contribution
€ 40 710,00

Address
Rue de Tolbiac 101
75654 Paris

Region
Ile-de-France > Ile-de-France > Paris

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

Other funding
€ 0,00

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THIRD-PARTY

COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

Net EU contribution
€ 32 566,25

Address
Rue Leblanc 25
75015 Paris

Region
Ile-de-France > Ile-de-France > Paris

Links
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Website
Participation in EU R&I programmes
HORIZON collaboration network

Other funding
€ 0,00

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THIRD-PARTY

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS

Net EU contribution

Address

Region
Ile-de-France > Ile-de-France > Paris

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

Other funding
€ 0,00

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INSTITUT POLYTECHNIQUE DE PARIS

France
Net EU contribution
€ 0,00

Address
Route de saclay
91128 Palaiseau

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Ile-de-France > Ile-de-France > Essonne

Activity type
Higher or Secondary Education Establishments

Links
Contact the organisation
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Other funding
€ 0,00
INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET AUTOMATIQUE

Net EU contribution
€ 17 362,50

Address
Domaine de voluceau rocquencourt
78153 Le chesnay cedex

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Ile-de-France > Ile-de-France > Yvelines

Activity type
Research Organisations

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

Other funding
€ 0,00
INSTITUT MINES-TELECOM

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19 place marguerite perey
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Region
Ile-de-France > Ile-de-France > Essonne

Other funding
€ 0,00

SIEMENS HEALTHCARE SAS

Address
40 avenue des fruitiers
93527 Saint-denis cedex

Region
Ile-de-France > Ile-de-France > Seine-Saint-Denis

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Other funding
€ 0,00
NMR SERVICE GMBH
Germany
Net EU contribution
€ 174,750,00
Address
Blumenstrasse 70
99092 Erfurt
Region
Thüringen > Thüringen > Erfurt, Kreisfreie Stadt
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Links
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Participation in EU R&I programmes
HORIZON collaboration network
Other funding
€ 0,00

TILBURG UNIVERSITY- UNIVERSITEIT VAN TILBURG
Netherlands
Net EU contribution
€ 293,350,00
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Warandelaan 2
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Zuid-Nederland > Noord-Brabant > Midden-Noord-Brabant
Activity type
Higher or Secondary Education Establishments
Links
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Website
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HORIZON collaboration network
Other funding
€ 0,00
ERASMUS UNIVERSITAIR MEDISCH CENTRUM ROTTERDAM

Netherlands

Net EU contribution
€ 516 013,00

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Dr molewaterplein 40
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Activity type
Higher or Secondary Education Establishments

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HORIZON collaboration network

Other funding
€ 0,00

ASSOCIATION HOPITAL FOCH

France

Net EU contribution
€ 255 605,00

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Rue worth 40
92150 Suresnes cedex

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Ile-de-France > Ile-de-France > Hauts-de-Seine

Activity type
Research Organisations

Links
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Other funding
€ 0,00
ASSISTANCE PUBLIQUE HOPITAUX DE PARIS
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Net EU contribution
€ 152 637,50
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55 boulevard diderot
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Ile-de-France > Ile-de-France > Val-de-Marne
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Other funding
€ 0,00

POLE DE RESSOURCES EN EDUCATION THERAPEUTIQUE DU PATIENT ILE DE FRANCE
France
Net EU contribution
€ 52 125,00
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34 rue villiers de l'isle adam
75020 Paris
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Activity type
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UNIVERSITY OF ABERDEEN

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Scotland > North Eastern Scotland > Aberdeen City and Aberdeenshire

Activity type
Higher or Secondary Education Establishments

Other funding
€ 0,00

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Last update: 29 June 2023

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