IMI impact on:

Early Career researchers

innovative health initiative

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IMI impact on:

Early career researchers

the speakers:

Eline van Overbeeke
Pfizer

Pierre Bauvin
Lille Hospital

Elias Meyer
Medical University of Vienna

Colm Carroll
IHI, Event Moderator

The session will focus on projects supported by the Innovative Medicines Initiative, a partnership between the European Union and the European pharmaceutical industry.

COCIR efpia EuropaBio MedTech Europe from diagnosis to cure Vaccines Europe

Co-funded by the European Union

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IMI impact on: Early career researchers

Agenda

- **Introduction and welcome**
- **The challenges the projects were designed to address and the researchers' role in the project activities**
  Followed by questions and answers
- **How have the researchers' participation in the IMI project benefited their careers**
  Followed by questions and answers
- **Closing remarks**

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IMI impact on: Early career researchers

Use the chat below

Ask questions and interact with the speakers
(bottom of your screen)

The session is being **recorded.**
The recording will be posted on IHI's website and Youtube channel.

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The challenges the projects were designed to address and the researchers' role in the project activities

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EU-PEARL
EU PATIENT-CENTRIC
CLINICAL TRIAL PLATFORMS

IHI Early Career Researchers Event

Elias Laurin Meyer, PhD
Medical University of Vienna

This project has received funding from the Innovative Medicines Initiative 2 Joint Undertaking (JU) under grant agreement No 853966. The JU receives support from the European Union's Horizon 2020 research and innovation programme and EFPIA and CHILDREN'S TUMOR FOUNDATION, GLOBAL ALLIANCE FOR TB DRUG DEVELOPMENT NON PROFIT ORGANISATION, SPRINGWORKS THERAPEUTICS INC.

PERSONAL PRESENTATION

- **BSc, MSc and PhD in Biostatistics; (Co-)Author of ~35 papers in statistical/clinical research**
- **PhD thesis: „Designing exploratory platform trials“, supervised by Franz König**
- **Since 2016: Biostatistician and Lecturer at Medical University of Vienna**
- **Since 2020: Member of EU-PEARL**
- **Since 2022: Biostatistics expert at the local Ethics Board**
- **After project end in April 2023 transition to industy**

WHAT IS EU-PEARL?

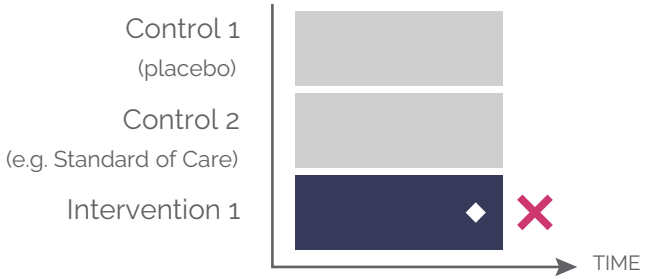
Strategic **alliance** between the **public** and **private** sectors to:

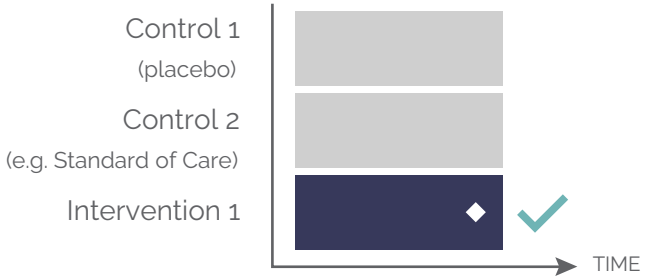
EU-PEARL
EU PATIENT-CENTRIC CLINICAL TRIAL PLATFORMS

efpia imi innovative medicines initiative

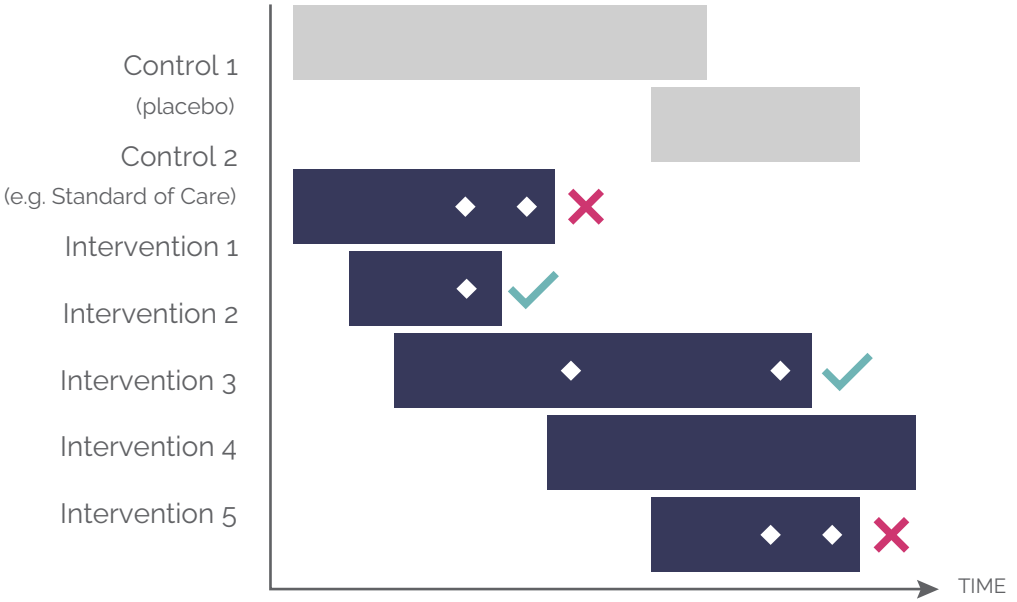
PLATFORM TRIAL APPROACH

Traditional Clinical Trial paradigm





Perpetual open adaptive Platform Trial



(INTERIM) ANALYSIS STOP FOR FUTILITY GRADUATE TO PH 3

ADVANTAGES OF PLATFORM TRIALS

Operational:

- **More patients eligible for trial due to multiple treatments and sub-studies with possibly different inclusion criteria**
- **Joint trial infrastructure leads to savings in time and money for sponsor(s)**

Statistical:

- **Multiple hypotheses tested in the same trial (which is also a big challenge)**
- **Sharing of control data and adaptive decision rules potentially lead to fewer number of patients required**
- **Direct comparison between treatments allows for adaptive randomization leading to effective treatments "graduating" faster and fewer patients on inefficacious treatments**

-> for patients: increased chances of being eligible for at least one study arm, increased probability of receiving effective study treatment, faster decisions

WHO IS INVOLVED

EUROPEAN UNIVERSITY HOSPITAL ALLIANCE (EUHA) HOSPITALS

Vall d'Hebron Institut de Recerca
Vall d'Hebron
Erasmus MC
Assistance Publique Hôpitaux de Paris
UniSR Università Vita-Salute San Raffaele
Medizinische Universität Wien
King's College London
KU Leuven
Charité Universitätsmedizin Berlin

OTHER HOSPITALS

LMU Klinikum der Universität München

UNIVERSITIES

University of Oxford
Manchester 1824 The University of Manchester
Università degli Studi di Milano
Newcastle University
Tartu Ülikool 1632 Universitas Tartuensis

PATIENT ORGANISATION

EPF European Patients Forum

DATA, STATISTICS

The European Institute For Innovation Through Health Data
Berry Consultants Statistical Innovation
CUSTODIX

REGULATORY

Paul-Ehrlich-Institut
euroscan

PROJECT MANAGEMENT

teamit RESEARCH

EUROPEAN RESEARCH INFRASTRUCTURES

eatris
ECRIN European Clinical Research Infrastructure Network

BIOPHARMACEUTICAL COMPANIES / EFPIA / ASSOCIATED PARTNERS

AstraZeneca
Novartis
Janssen Johnson & Johnson
Allergan
novo nordisk
Otsuka
teva
Sanofi
Pfizer
TB Alliance Global Alliance for TB Drug Development
SpringWorks Therapeutics
Children's Tumor Foundation Ending NF Through Research
Servier

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efpia
SpringWorks Therapeutics
TB Alliance
Children's Tumor Foundation Ending NF

MY CONTRIBUTION

- **Aiding development of new statistical methods suitable for platform trials**
- **Providing software for the simulation of complex platform trials (main author of several R packages: CohortPlat, cats, SIMPLE)**
- **Main author of R Shiny app for visualization of simulation results**
- **First author of 6 papers related to the design and simulation of platform trials**
- **Provided simulation results for NASH trial designs (non-alcoholic steatohepatitis), which were discussed with EMA (ITF meeting) and FDA (CPIM meeting)**
- **Co-lead of project deliverable related to software**

References

Meyer, Elias Laurin, et al. "The evolution of master protocol clinical trial designs: a systematic literature review." Clinical Therapeutics (2020).

Meyer, Elias Laurin, et al. "Systematic review of available software for multi-arm multi-stage and platform clinical trial design." Trials (2021).

Meyer, Elias Laurin, et al. "Decision rules for identifying combination therapies in open-entry, randomized controlled platform trials." Pharmaceutical Statistics (2022)

Meyer, Elias Laurin, et al. "Designing an exploratory phase 2b platform trial in NASH with correlated, co-primary binary endpoints." PLOS ONE (2023).

Meyer, Elias Laurin, et al. "CohortPlat: Simulation of cohort platform trials investigating combination therapies". arXiv:2202.02182 [stat.AP].

Meyer, Elias Laurin, et al. "An interactive R-Shiny app for quickly visualizing a tidy, long dataset with mul an application in clinical trial simulations for platform trials". SoftwareX (2023).

Meyer, Elias Laurin. "CohortPlat". https://cran.r-project.org/web/packages/CohortPlat/index.html.

Meyer, Elias Laurin. "cats". https://cran.r-project.org/web/packages/cats/index.html.

OPPORTUNITIES AS PROJECT MEMBER

- **Work with and learn from more experienced researchers, both from Academia and Industry**
- **Collaboration with different stakeholders gives insight into different aspects of the same problem, which in turn shape requirements of developed statistical tools**
- **Opportunities for secondments and internships in partner organizations**
- **Increased visibility through broader network, events and communications team**
- **Team spirit, own research is not disconnected but part of something bigger**

IMI impact on:
Early Career Researchers

Eline van Overbeeke, PhD
Pfizer

17/04/2023

Disclaimer

- Eline van Overbeeke is currently employed by Pfizer, but was employed by the University of Leuven during her research on the IMI PREFER project
- The views and opinions expressed in the following PowerPoint slides are those of the individual presenters and should not be attributed to any organization with which the presenter is employed or affiliated

Conflict	Disclosure
Research Support	• **University of Leuven, PREFER (Innovative Medicines Initiative, IMI – EU Horizon 2020 & EFPIA)**

Employee & IMI project contributions	• Graduated PhD student, University of Leuven
	  • Researcher on **IMI PREFER** (2016-2020)
	• Manager, Health Economics and Outcomes Research, Pfizer
	  • Steering Committee member on **IMI PREFER** (2020-2022)
	  • WP2 Lead & Steering Group member on **IMI EHDEN** (2021-2023)

prefer.

PATIENT PREFERENCES

PREFER

- Aim: To establish recommendations to support development of guidelines for industry, Regulatory Authorities and HTA bodies on how and when to include patient perspectives on benefits and risks of medicinal products
- Public private partnership
  - 10 academic partners
  - 16 industry partners
  - 2 SMEs
  - 4 patient advocacy groups
  - 1 HTA body
  - EMA, FDA, and other Patient and HTA representatives via Stakeholder Advisory Groups
  - Scientific and Ethics advisory boards

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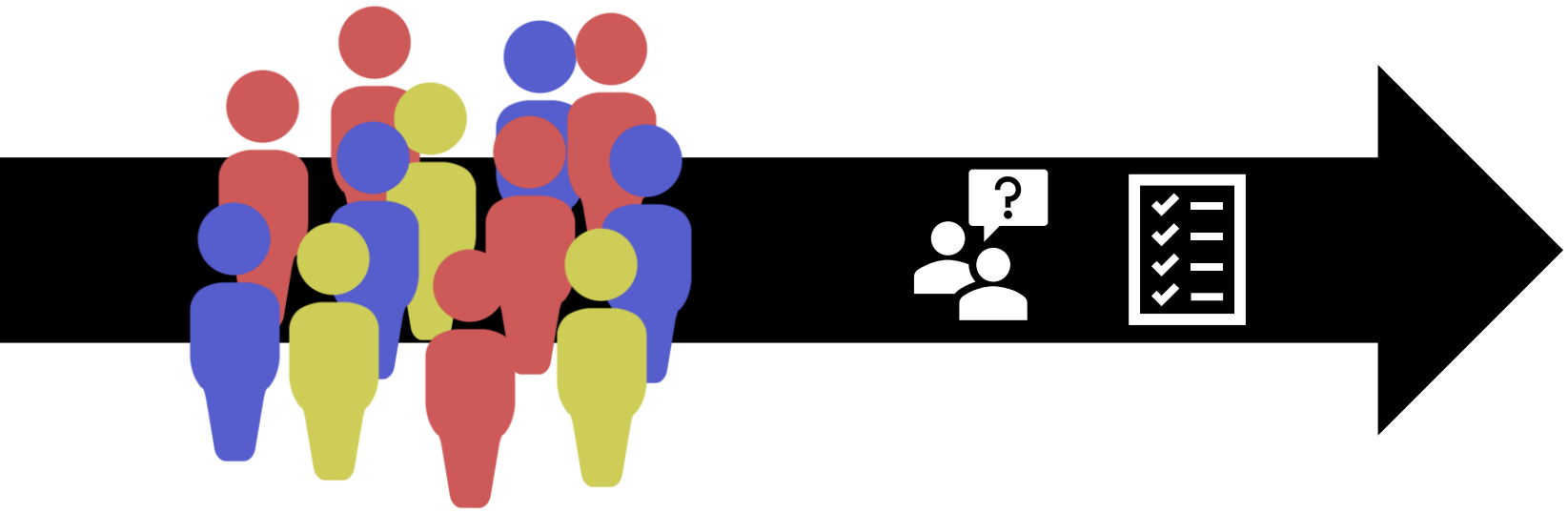
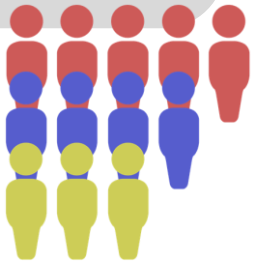
Patient preferences

Patient preference studies (PPS)

*"Qualitative or quantitative assessments of the relative **desirability or acceptability** to **patients** of specified **alternatives or choices** among **outcomes or other attributes** that differ among alternative **health interventions**"*[1]



- What is important?[2]
- How important?
- Trade-offs
- Preference heterogeneity



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1. FDA guidance on patient preference information. 2016
2. Hauber B, RTI

PREFER work packages

Personal contributions

WP1 Project Management
- Steering Committee
- Data management guidance
- Repository

WP3 Case studies
- Case study on early patients needs in Neuromuscular diseases
- **Case study on gene therapy in haemophilia (BE): PAVING**
- Industry case study on gene therapy in haemophilia (UK)

WP2 Patient preference elicitation issues & approaches
- Identification of methods
- Exploration of when in the Medical Product Life Cycle patient preferences can be used
- Needs & expectations of stakeholders

WP4 Recommendations
- Methods chapter
- EMA qualification: PAVING study included as example

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PAVING Objectives & Team

To identify **treatment features** important to Belgian **hemophilia patients**, and the **trade-offs** that patients are willing to make when asked to choose between **gene therapy** and **prophylactic factor replacement therapy**

Study team

KU LEUVEN

RTI (h)(s) Health Solutions

prefer. PATIENT PREFERENCES

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Sponsor

Stakeholder advisory board

HTA/payer	Regulators	Industry	Clinicians	Patient organizations
KCE INAMI-RIZIV	EUROPEAN MEDICINES AGENCY	Pfizer	UZ LEUVEN Cliniques universitaires SAINT-LUC UCL BRUXELLES	EUPATI European Patients' Academy on Therapeutic Innovation EURORDIS RARE DISEASES EUROPE AHVH Hemofilievereniging Association de l'Hémophilie

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PAVING Conclusions

- Top 5 treatment attributes important to patients (interviews n=20):
  - Annual bleeding rate
  - Factor level
  - Uncertainty long-term risks
  - Impact on daily life
  - Probability that prophylaxis can be stopped
- Willingness to receive gene therapy (survey n=117):
  - Up to 88% of PWH may prefer gene therapy over prophylactic factor replacement therapy depending on its profile (under the conditions presented in the survey)
  - In contrast, at least 8% of PWH may never accept gene therapy (under the conditions presented in the survey)
- Educational tools can educate PWH and improve gene therapy acceptability

PWH, people with haemophilia

van Overbeeke E, Hauber B, Michelsen S, et al. Patient preferences for gene therapy in haemophilia: Results from the PAVING threshold technique survey. *Haemophilia*. 2021 Sep; 27:957–966. DOI: 10.1111/hae.14401

van Overbeeke E, Hauber B, Michelsen S, et al. Patient Preferences to Assess Value IN Gene Therapies: Protocol Development for the PAVING Study in Hemophilia. *Frontiers in Medicine*. 2021 Mar; DOI: 10.3389/fmed.2021.595797

Jimenez-Moreno AC, van Overbeeke E, Pinto CA, et al. Patient Preferences in Rare Diseases: A Qualitative Study in Neuromuscular Disorders to Inform a Quantitative Preference Study. *The Patient*. 2021 Feb; 14(2):1-13. DOI: 10.1007/s40271-020-00482-z

van Overbeeke E, Michelsen S, Hauber B, et al. Patient perspectives regarding gene therapy in haemophilia: Interviews from the PAVING study. *Haemophilia*. 2020 Nov; 27:129–136. DOI: 10.1111/hae.14190

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EHDEN
EUROPEAN HEALTH DATA & EVIDENCE NETWORK

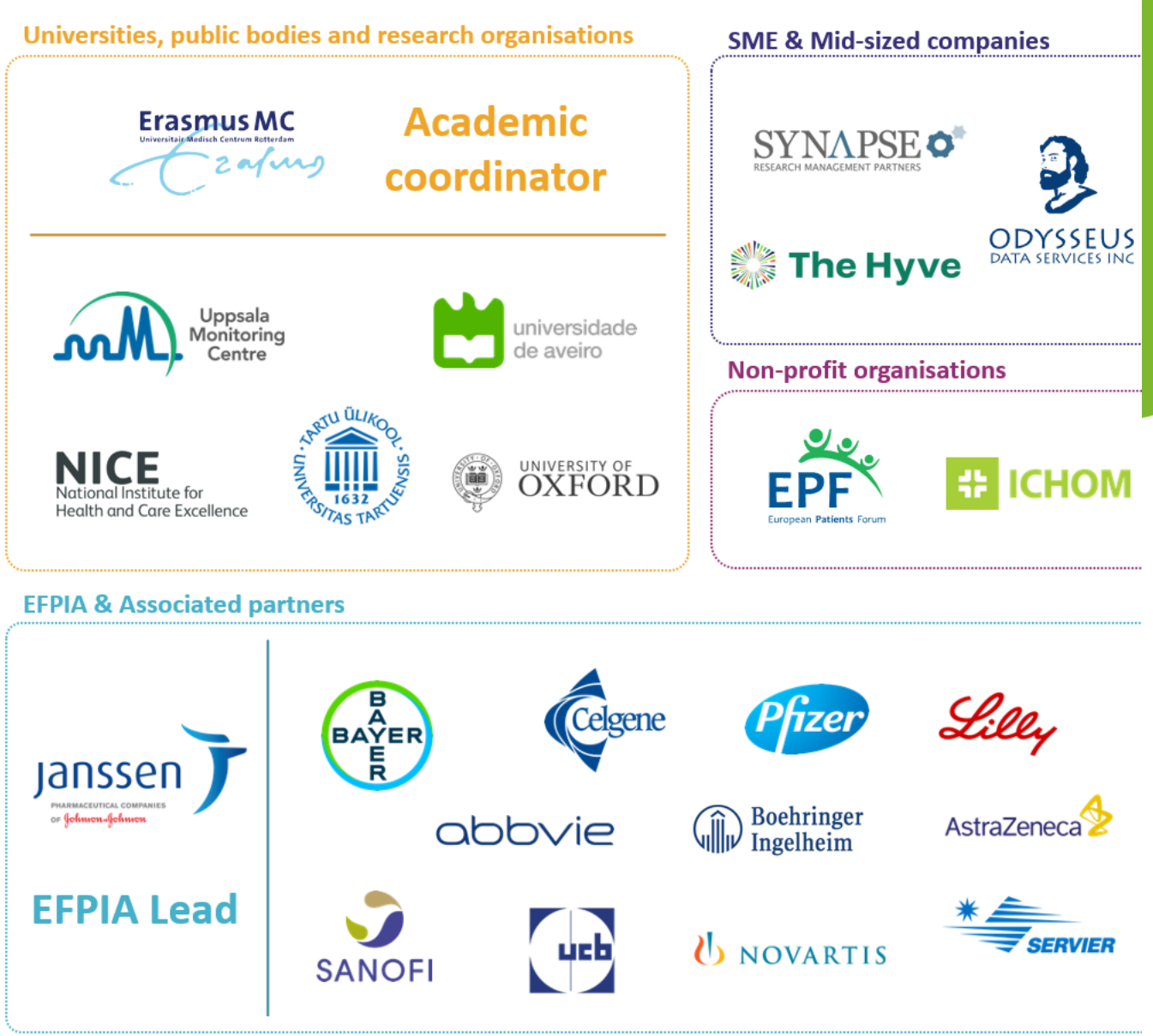
EHDEN

Vision

The European Health Data & Evidence Network (EHDEN) aspires to be the trusted observational research ecosystem to enable better health decisions, outcomes and care

Mission

Our mission is to provide a new paradigm for the discovery and analysis of health data in Europe, by building a **large-scale, federated network of data sources standardised to a common data model**



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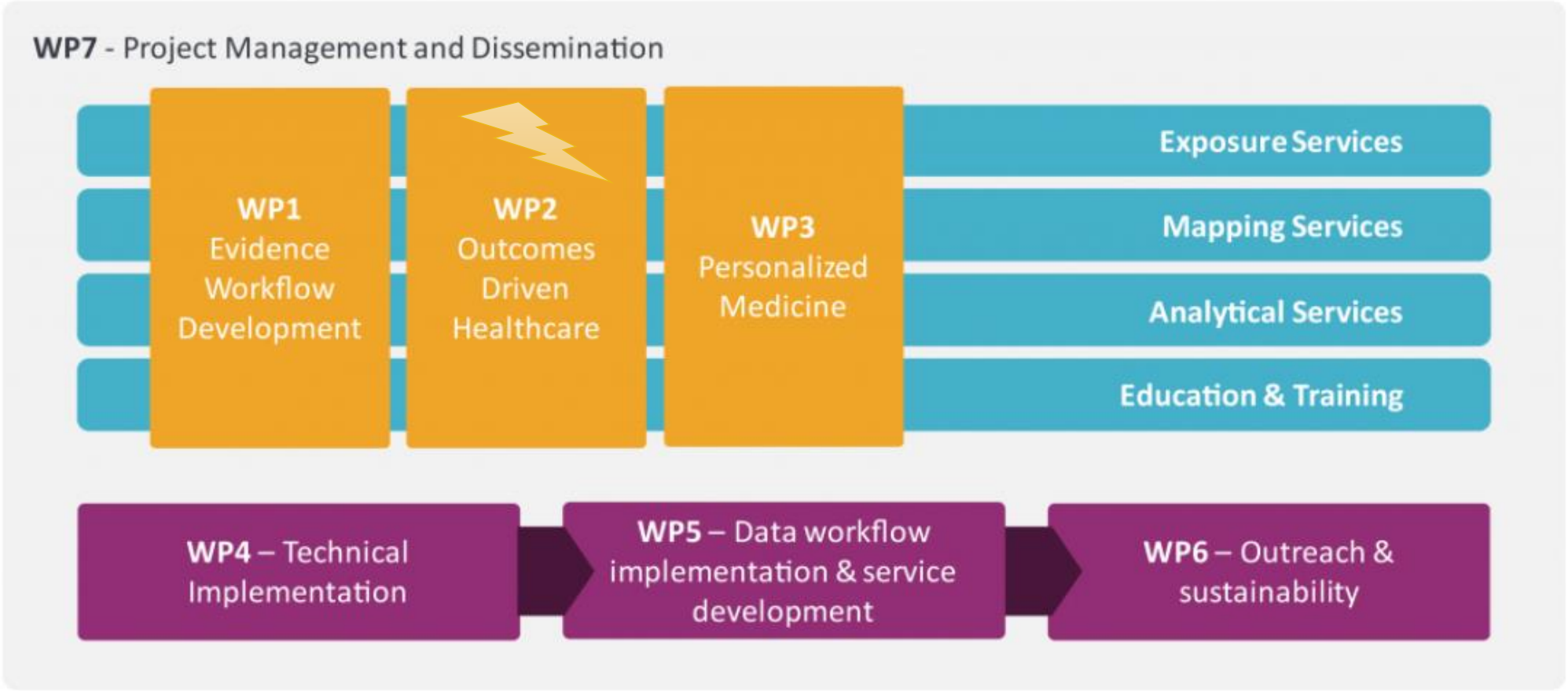
EHDEN workpackages



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WP2 interaction with regulators & payers

- Workshops with regulators and payers to educate them on Real World Data, OMOP common data model (CDM) and Federated Networks, and understand their needs and potential use
- Last Workshop end of Nov 22: Regulators are formally adopting real world evidence, when will health technology assessment?
  - Launch of DARWIN (OMOP CDM) platform by EMA
  - Adoption of OMOP CDM by payers

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Overall outcomes

- Co-author on 17 published papers
- 12 presentations at congresses
- Interactions with many patients, regulators, HTA/payers, industry, clinicians, data infrastructure holders, and academia across US and Europe

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Acknowledgements

PREFER & EHDEN were supported by the Innovative Medicines Initiative, a partnership between the European Union and the European pharmaceutical industry.

With thanks to Prof. Isabelle Huys, Rudy De Cock, Jimmy Toulas, and all PREFER & EHDEN members.

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Thank you for your attention

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COCIR Advancing Healthcare

efpia

EuropaBio The European Association for Bioindustries

MedTech Europe from diagnosis to cure

Vaccines Europe

Co-funded by the European Union

IHI Early Career Researchers

Pierre Bauvin, PhD
Lille Hospital, France

Personal presentation

Personal presentation

- **Engineer** in mathematics and informatics, ENSIMAG 2015

Grenoble, France

Personal presentation

- Specialization in **biostatistics** and big data, South Korea, KAIST

Daejeon, South Korea

Personal presentation

- **Data Scientist consultant** for multiple health companies

Paris, France

Personal presentation

- **PhD thesis**: modelling liver diseases, collaboration INSERM & SANOFI, completed in 2020

Lille Hospital, France

Personal presentation

- **IMI SOPHIA** since 2021

Lille Hospital, France
Novo Nordisk, Favrholm, Denmark

SOPHIA

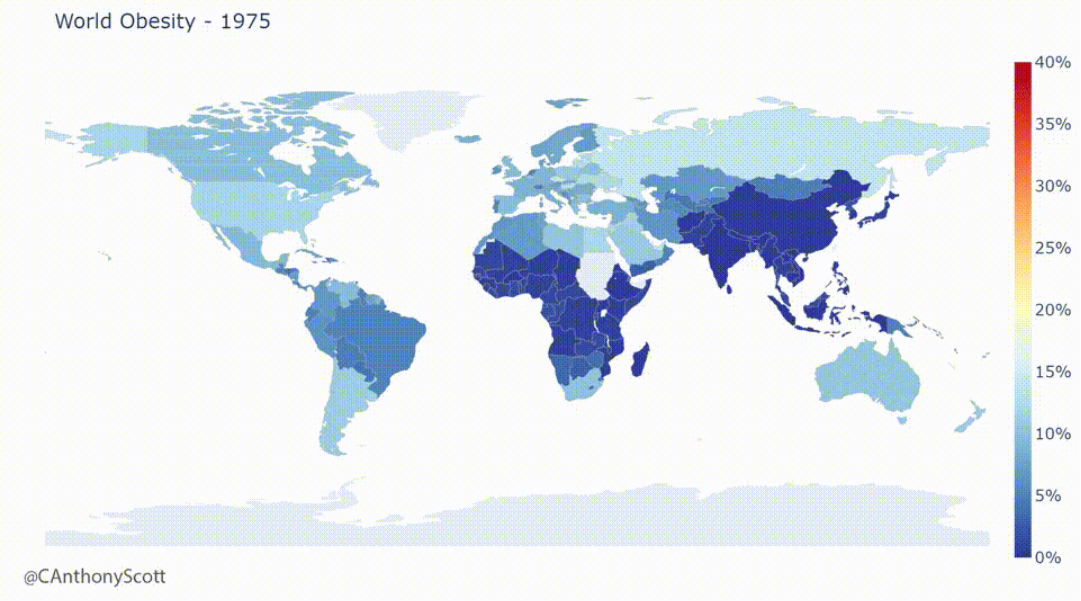
Stratification of Obesity Phenotypes to Optimize Future Therapy

Start date: 06/2020
End date: 05/2025
Participating EFPIA companies:

- Boehringer Ingelheim Int, Germany
- Eli Lilly & co, United Kingdom
- Medtronic International Trading SARL, Switzerland
- Novo Nordisk, Bagsvaerd, Denmark
- Pfizer Limited, United Kingdom

Goals:

- Predict obesity complications
- **Predict best response to obesity treatments**

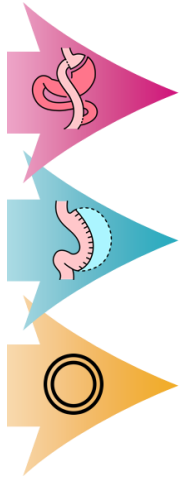


SOPHIA

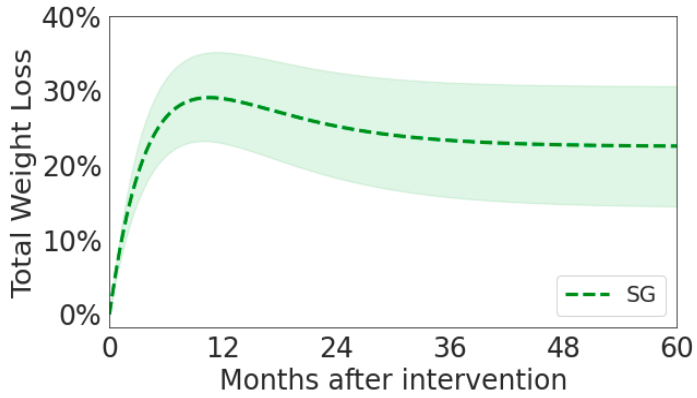
Stratification of Obesity Phenotypes to Optimize Future Therapy

Predict best response to obesity treatments: bariatric surgery

Individuals with obesity
Eligible for bariatric surgery
(mean BMI 47 kg/m²)



Bariatric surgery

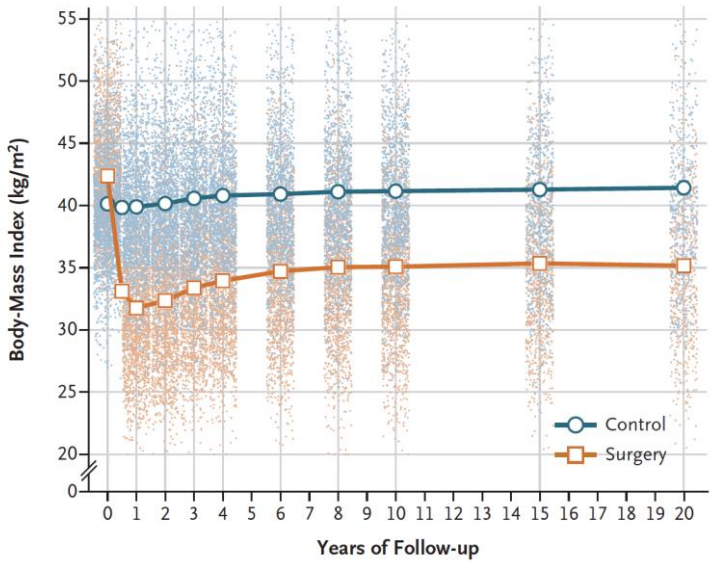


Prolonged weight loss

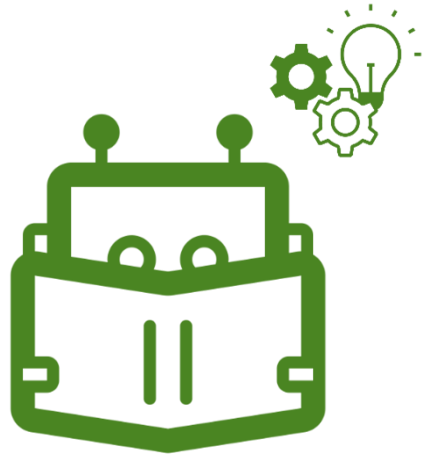
SOPHIA

Stratification of Obesity Phenotypes to Optimize Future Therapy

Predict best response to obesity treatments: bariatric surgery



Weight loss heterogeneity



Machine learning for prediction

Carlson et al, N Engl J Med 2020

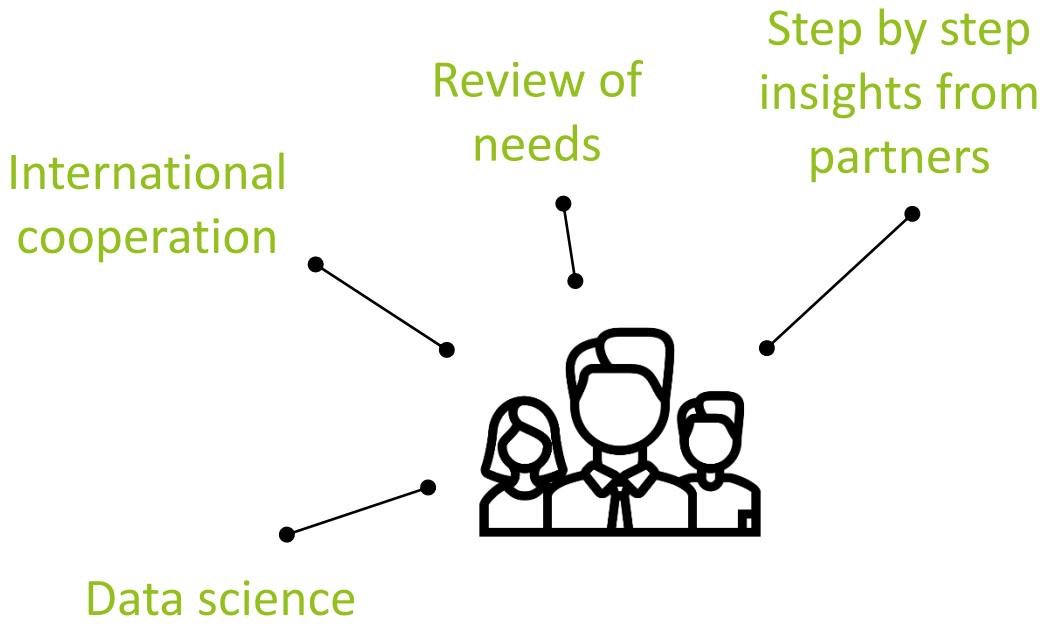
SOPHIA

Stratification of Obesity Phenotypes to Optimize Future Therapy

Predict best response to obesity treatments: bariatric surgery

Challenges:

- Easy-to-use end result, for daily use by both clinicians and patients
- Impactful metrics for patients
- Questions of interest for both the academic partners, and the private partners
- Experts approval
- Test in multiple countries to assess external validation



SOPHIA Bariatric Weight Trajectory Prediction

Prediction About Partners **Contact**

Preoperative data

Weight

120 kg

Height

170 cm

Age

30 years

Non-smoker **Smoker**

Type 2 diabetes

No diabetes

Surgery data

Type of intervention

Gastric Bypass

Predict trajectory

Note

Based on preoperative characteristics, this application displays predicted weights at 1, 3, 12, 24, and 60 months after a **first** bariatric surgery.

- Trajectories are displayed as smooth lines for clarity.
- The range around the curve is based on the interquartile range of prediction errors.
- Predictions are based on the histories of previous individuals undergoing bariatric surgery procedures.
- This program is not intended to provide any advice on healthcare decisions but rather to help healthcare professionals in visualizing the predicted weight trajectory following bariatric surgery.
- None of the personal or health data you enter on this tool is saved on our servers.

SOPHIA
Stratification of Obesity Phenotypes to Optimize Future Therapy

CHU LILLE

Inserm

Université de Lille

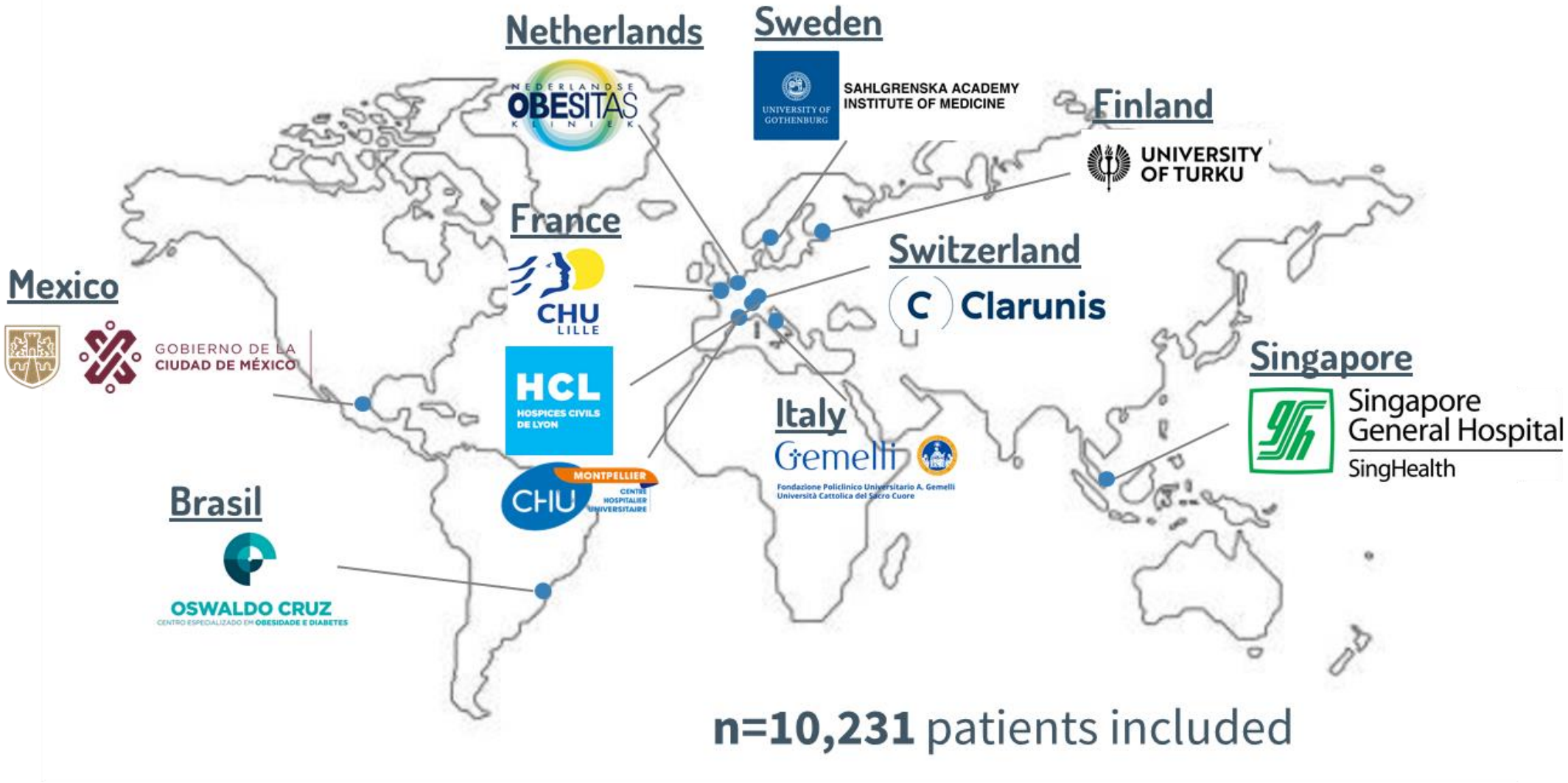
Inria

CRIStAL
Centre de Recherche en Informatique, Signal et Automatique de Lille

cnrs

Bariatric Weight Trajectory Prediction

Any questions ?


Netherlands
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Sweden
UNIVERSITY OF GOTHENBURG
SAHLGRENSKA ACADEMY
INSTITUTE OF MEDICINE
Finland
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France
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Singapore
Singapore General Hospital
SingHealth
Brasil
OSWALDO CRUZ
CENTRO ESPECIALIZADO EM OBESIDADE E DIABETES
n=10,231 patients included

How have the researchers' participation in the IMI project benefited their career

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Find out more

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Upcoming webinars

Impact on:

- Clinical trials
- Ebola virus disease
- Cancer
- Vaccines
- Psychiatric disorders

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Thank you for your attention

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COCIR Advancing Healthcare

efpia

EuropaBio The European Association for Bioindustries

MedTech Europe from diagnosis to cure

Vaccines Europe

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