



New research to investigate role of blood-brain barrier in neurological conditions

-IM²PACT-

A new consortium of 27 international partners from academia, industry, and small and medium enterprises, aims to tackle the unmet challenge of discovery and characterisation of blood-brain barrier targets and transport mechanisms for brain delivery of therapeutics to treat neurodegenerative and metabolic diseases.

The blood-brain barrier is a protective layer between the brain's blood capillaries and the cells that make up brain tissue. This barrier provides a defence against the pathogens and toxins that may be in our blood, allowing very few molecules to pass through. It can also prevent many drugs from passing across into the brain, and this presents a major problem in treating neurological conditions and metabolic diseases, especially when using antibody therapies.

On the other hand, several neurological diseases could originate from a dysfunctional blood-brain barrier.

The funding from the Innovative Medicines Initiative (IMI) to the IM²PACT consortium will allow this public-private partnership, which includes leading international experts in the field, to facilitate the development of drugs to treat neurological disorders by:

- discovering and developing innovative and effective brain transport mechanisms
- establishing and characterising blood-brain barrier models with good predictability in health and disease
- identifying translational read-outs closer to the pathogenesis of neurodegeneration and mimicking altered blood-brain barrier under disease conditions
- in-depth understanding of the biology of the blood-brain barrier and characterisation of various pathophysiological mechanisms across the blood-brain barrier.

IM²PACT will foster the development of disease-modifying treatment in a setting of personalised medicine.

The project is coordinated by the Nuffield Department of Clinical Neurosciences (NDCN) at the University of Oxford. The Oxford team's principal investigator and IM²PACT project coordinator, Zameel Cader, said: "With this funding, we will be able to develop more sophisticated models that replicate the human blood-brain barrier far more accurately, allowing us to investigate how the barrier acts at a molecular level during disease."

Dominique Lesuisse, Head of the Central Nervous System Barrier Group at Sanofi and IM²PACT project leader, added: "Our existing models are not effective enough at telling us which drugs in particular biotherapeutics will break through the blood-brain barrier. IM²PACT will progress the state of the art and help devise optimal ways of getting therapies into the brain."

With a budget of €18m, €9m of direct funding from IMI and €9m of in-kind funding from industry, IM²PACT is forming a large partnership to better understand the blood-brain barrier. The Innovative Medicines Initiative 2 Joint Undertaking is Europe's biggest public private partnership and is funded



jointly by the European Union's Horizon 2020 research and innovation programme and the European pharmaceutical industry, represented by the European Federation of Pharmaceutical Industries and Associations (EFPIA).

Project Facts:

Project Name: Investigating Mechanisms and Models Predictive of Accessibility of Therapeutics into the brain

Project Acronym: IM²PACT

Start date: 01 January 2019

Duration: 60 months

Budget: €18 Million

Coordination: Nuffield Department of Clinical Neurosciences (NDCN) at the University of Oxford, Zamel Cader

Project Lead: Sanofi, Dominique Lesuisse

Project partners at a Glance



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