OUR OBJECTIVES

CoSTREAM aims to improve our understanding of the co-occurrence of stroke and Alzheimer's disease.

The project builds upon large data sets on both diseases and combines genetics, metabolomics, brain imaging and biotechnology to identify and investigate these common mechanisms.

More specifically, we aim to:

- Understand common **genetic and molecular signatures**
- **Identify biomarkers** for (co-)morbidities
- **Identify evidence-based targets** for the development of innovative treatment
- Link and validate biomarkers and signatures to **advanced MRI and PET imaging**
- **Discover compensatory mechanisms** that enable innovative treatment and prevention
- Translate these findings into a validated **organ-on-chip model** of the neurovascular unit for future therapeutic research

For more information visit

CoSTREAM.eu

CoSTREAM

A multidisciplinary approach to understand the link between stroke and Alzheimer's

OUR IMPACT

CoSTREAM fills the urgent need for novel biomarkers, both blood- and imaging-based, that aid in the identification of patients with pathology that can be halted to prevent or delay disease. This leads to new directions for clinical research for disease prevention, health promotion, therapy development, and management of comorbidities.

The increased knowledge of common mechanisms between both diseases will lead to less co-morbidity, development of novel evidence-based intervention, better preventive strategies in clinical and public health care, and increased health at individual as well as societal level.

The organ-on-a-chip model for the neurovascular unit provides an essential tool for the *in vitro* characterization of pathways underlying both diseases, as well as providing revolutionary opportunities for research on therapeutics.

OUR RESULTS SO FAR

We have been able to pinpoint specific genomic regions that mediate risk for stroke or Alzheimer's disease and elucidated their common genetic pathogenesis.

We found consistent relationships between brain morphology, age, and memory ability.

Metabolomics analyses have delivered promising metabolic markers and pathways for stroke and Alzheimer's. Metabolic changes have also been shown to be associated with neurodegeneration and vascular brain pathology.

Multiple risk factors, including demographic factors and cardiovascular disease, have been related to stroke and Alzheimer's. We also found multiple, modifyable protective factors, including education, lifestyle factors, social network and leisure time.

Using Mendelian Randomization, we benchmarked the protective effect of education on Alzheimer's and found suggestive evidence confirming the association of smoking, and coffee consumption.

We have also developed a cutting-edge prototype of an in vitro neurovascular unit that can be used for high-throughput translational research.

We have published more than 80 major scientific publications!

FACTS AND FIGURES

We are investigating a combined dataset spanning more than **12,000 cases of stroke**, over **20,000 cases of Alzheimer's disease,** and roughly 75,000 healthy controls with up to **25 years of follow-up**, including multiple repeat assessments.

The CoSTREAM project is coordinated by Prof. **Cornelia van Duijn** (Erasmus MC) and runs from December 1, 2015 until November 31, 2020.

The project receives €4,590,185 from the EU and €510,187.50 from the Swiss government. **The total funding amounts to €5,100,372.50.**

PROJECT PARTNERS

Erasmus MC	NL
King's Collegen London	UK
University of Cambridge	UK
European Institute of Biomedical Imaging Research	AT
Ludwig-Maximiluans-University Munich	DE
Karolinska Institute	SE
MIMETAS	NL
Institut Pasteur de Lille	FR
Leiden University	NL
University of Geneva	CH
University of Bordeaux	FR