

ABOUT THE sysVASC PROJECT

The collaborative research project sysVASC aims to identify the causative events in cardiovascular diseases in order to predict novel therapeutic targets. The sysVASC consortium includes 18 partners from 10 countries including: 5 SMEs, 5 renowned universities, 5 leading research centres and 3 prominent academic clinical centres.

Cardiovascular diseases are the leading cause of mortality and morbidity worldwide. Despite their prevalence and increasing societal importance, there is only a limited understanding to the earliest stages of the diseases, which are at least in part reversible. Currently, drug-based intervention of cardiovascular disease is based on risk factor control. The early diagnosis of cardiovascular diseases remains challenging as asymptomatic vascular damage accumulates years before patients are identified and subjected to therapeutic measures. The limited knowledge of early vascular disease development is reflected in the lack of targeted preventative and therapeutic options.

The sysVASC consortium intends to provide a better understanding of the underlying disease mechanisms, as well as the prediction and prevention of cardiovascular events, by identifying new targets for intervention using Systems Biology. This holistic approach integrates data from a wide-range of data sources in order to improve biology-driven target selection. The consortium members have complementary skills in cardiovascular medicine, animal models, vascular biology, genomics, proteomics, metabolomics, and systems medicine in order to achieve these goals.

sysVASC aims to:

- **Integrate** high quality, high resolution molecular data from prospective clinical studies
- **Identify** key molecular nodes underlying the progression from asymptomatic disease to major clinical events
- **Evaluate** animal models for their similarity to pathological events in human disease
- **Validate** the selected predicted targets in animal models

By identifying the key molecular structures involved in the onset and progression of cardiovascular disease, sysVASC will not only provide the most appropriate targets for therapeutic intervention, but likely also provide the biomarkers required to tailor therapeutic intervention. As a result, targeted therapy could be developed based on the exact and individual molecular features of each patient.

sysVASC aims to become a show-case for the application of Systems Biology in clinical research and development. The data integration and knowledge extraction models of sysVASC will stimulate the re-use of similar molecular and clinical resources in other fields, additionally the sysVASC algorithms and database structures will greatly facilitate development of therapeutic targets for other diseases.

more information on www.sysvasc.eu

KEY FACTS

- **Title:** "sysVASC"
Systems Biology to Identify Molecular Targets for Vascular Disease Treatment
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