



SYSTEMAGE

Project reference: 306240

Funded under: [FP7-HEALTH](#)

Early warning signals of ageing in human stem cells and age-related disorders

From 2013-01-01 **to** 2017-12-31, ongoing project | [SYSTEMAGE Website](#)

Project details

Total cost: EUR 7 864 905,4	Topic(s): <ul style="list-style-type: none">HEALTH.2012.2.2.2-1 - Integrative systems biology and comparative genomics for studying human ageing and/or most common age-related diseases
EU contribution: EUR 5 989 925	Call for proposal: FP7-HEALTH-2012-INNOVATION-1
Coordinated in: Germany	Funding scheme: CP-FP - Small or medium-scale focused research project

Objective

"The regenerative power of a living organism is linked to the potential of its stem cells to replace the corresponding damaged tissue. Therefore organisms are as old as their stem cells. Whereas the vulnerability to cancer and chronic inflammation is associated with a decline of the immune system, the latter is in turn a sum product of interactions among hematopoietic stem cells (HSC), endothelial cells (EC) of the vascular systems and the microenvironment in the bone marrow, among others. Hence loss of regenerative function and propensity to contract cancers can be interpreted as harbingers of ageing at the level of somatic stem cells. Using HSC and their microenvironment as a model, our principal goal is to develop a systems-level understanding of the molecular mechanisms of ageing in somatic stem cells, the consequences, and means to correct these age-related alterations and diseases. We intend to apply integrative systems biology approaches to characterize the molecular players, genes and pathways that are associated with physiological processes of ageing and two age-related disorders, myelodysplastic syndromes (MDS) and B-cell chronic lymphocytic leukemia (B-CLL). We will use the resulting models of ageing to develop novel, molecular targeted strategies to treat age-related diseases. The SyStemAge consortium involves three hospital departments that are active in implementing innovative treatment strategies of leukaemia and MDS, a number of biomedical departments engaged with basic research in the processes underlying these diseases, two Systems Biology groups, one of Europe's most experienced group in biomedical modelling and complex systems theory and two SMEs with proven expertise in the translation of biomedical models in novel therapy strategies in humans. SyStemAge is uniquely positioned to bridge the gap between the clinical, biomedical and natural sciences and immediately contribute to bio-gerontology."

Related information

Result In Brief

- [We are as old as our stem cells](#)

Report Summaries

- [Periodic Report Summary 1 - SYSTEMAGE \(Early warning signals of ageing in human stem cells and age-related disorders\)](#)

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Subjects

[Scientific Research](#)

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