

Genetic code for stem cell heart repair detected

A research team from Germany and Japan published a new highly specific gene expression code controlling stem cell response for heart repair after infarction.

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/EINPresswire.com/ -- A research team from Germany and Japan published in the LANCET journal EBioMedicine a new highly specific gene expression code controlling stem cell response for heart repair after infarction. Using advanced artificial intelligence algorithms they were able to detect specific variations in bone marrow

stem cells by transcriptome deep sequencing of peripheral blood cells. In the studied patients with arteriosclerotic disease and heart failure they found advanced somatic mutations in blood associated with altered stem cell functions.

Arteriosclerosis, myocardial infarction and heart failure are a prime cause of disease and death worldwide. The genetic cause of disease and mechanisms of repair by stem cells has not been unraveled so far. The new findings show that stem cell senescence by multiple acquired mutations cause defects in myocardial perfusion repair. This mechanism may be a major cause of progressive heart failure and cardiovascular disease. The clinical findings in the phase 3 PERFECT stem cell trial leading to strong improvement in heart function were validated in an independent patient group as well as in two mouse models clarifying the gene switch leading to improved heart repair by circulating stem and immune cells. „This novel diagnostic method can be used for prediction of heart repair, which could form an important milestone in stem cell therapy of heart failure“ was stated by Prof. Gustav Steinhoff, who coordinated the research team from 10 universities.



Markus Wolfien (left) and Gustav Steinhoff (right) at University of Rostock Life, Light&Matter research building

Reference

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