

Stem Cell Ageing

Neural stem cell

Haemopoietic stem cell

Ageing

Microarray

Which Genes Cause Stem Cells' Ageing?

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The Investigation

Stem cells are present in all organs. They are responsible for producing all the cells that make organs and tissues for the lifespan of the individual. However, stem cells' ability to carry out these tasks is decreased with age and in some cases this results in the occurrence of disease.

Potential Benefits

For older people

Stem cells play a central role in maintenance of organ function. This study will determine if ageing of stem cells contribute to the decrease in organ function occurring with age and will increase our understanding of the mechanisms of some of the pathologies of older people, such as Alzheimer's Disease.

For society

The number of older people is increasing in the western world. An understanding of the mechanisms leading to the pathologies of older people such as Alzheimer's Disease, will be of great scientific, commercial and therapeutic interest.

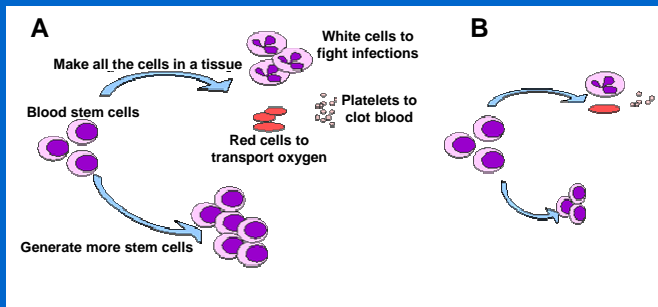


Fig.1 An example of stem cells undergoing ageing. (A) In younger people blood stem cells are capable of generating more stem cells and giving rise to all specialised cells of the blood. These specialised cells are necessary to fight infections, clot blood when a wound occur or transport oxygen to all other tissues. (B) With age blood stem cells decrease their ability to generate more stem cells. In turns this results in a decrease in the number of specialised cells with increased health risks, such as in the case of increased risks of infections in older people.

Resources

Technical researcher for 7 months

Partners

Clive Svendsen - University of Wisconsin in Madison
Stuart Pepper - CRUK, Manchester

Down's syndrome (DS) shows signs of premature ageing with features found commonly in older people such as Alzheimer's disease. We have studied stem cells in blood and brain of DS fetuses and children and found that they have similar characteristics to the stem cells of older individuals.

Objective

In this project we propose to use DS stem cells from brain and blood to identify genes that are important in the loss of stem cell function with age.



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