

# 'Stem cell detectives' uncover potential cancer cause

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(PhysOrg.com) -- Australian researchers have uncovered a new mutation in stem cells that may be linked to the development of leukaemia, breast and colon cancer.

A team led by Dr Peter Papathanasiou from the John Curtin School of Medical Research at The Australian National University and Associate Professor Andrew Perkins from the Institute for Molecular Bioscience at The University of Queensland have completed a three-year screening project to find the genes that control the development and turnover of stem cells.

Stem cells can grow into any other kind of cell in the body, making them a hot area of research to find new treatments for diseases and injuries.

A major finding of the new study was the discovery of a novel [DNA mutation](#) in the c-Myb gene. This gene has been previously linked to a number of different cancer types.

"We've shown that blood stem cells with this genetic mutation behave the same way as those present in human bone marrow diseases, including diseases that can evolve into leukaemia," said Dr Papathanasiou, who is also affiliated with the Australian Phenomics Facility at ANU.

"By understanding more about the [genetic blueprint](#) of these kinds of disorders, we can start to develop new ways of targeting diseases," Dr Perkins said.

"Currently, there is no treatment for this group of blood diseases, but the discovery of this mutation provides new avenues for investigation."

As a result of the screening project, the researchers have also identified five other abnormal blood stem cell profiles, adding to understanding of the genetic diversity of blood cells. The project has also led to a better

understanding of how blood cells develop and how this process becomes corrupted.

"Given that the same genes that operate in stem cells also function in [cancer cells](#) - albeit with genetic mutation - this research also has potential implications for regenerative medicine, by understanding how to stimulate the growth of new [blood cells](#)," Dr Papathanasiou said.

The project was the first in the world to mutate the mammalian genome in a specific search for novel genetic regulators of [stem cells](#).

The findings are published in the American Society of Hematology journal, *Blood*: [www.bloodjournal.org/papbyrecent.shtml](http://www.bloodjournal.org/papbyrecent.shtml)

Provided by University of Queensland

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