

Weakness of leukaemic stem cells discovered

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Despite improved therapy, only one out of every two adult patients survive acute myeloid leukaemia (AML). The mean survival time for this disease, which predominantly occurs in the elderly, is less than a year for patients over 65 years. It is assumed that leukaemic stem cells, which cannot be completely eliminated during treatment, are the origin of relapse. However, as has been discovered by a team of Frankfurt-based researchers, these cells do have a weakness: In the current edition of the high impact journal *Cancer Research*, they report that the enzyme 5-lipoxygenase (5-LO) plays a significant role in the survival of leukaemic AML stem cells.

5-LO is known for its role in inflammatory diseases like asthma. A team led by Dr. Marin Ruthardt from the Haematology Department of the Medical Clinic II and Dr. Jessica Roos, Prof. Diester Steinhilber and Prof. Thorsten Jürgen Maier from the Institute for Pharmaceutical Chemistry showed that the leukaemic [stem cells](#) in a subgroup of AML could be selectively and efficiently attacked by 5-LO inhibitors. This was demonstrable in cell culture models as well as in leukaemia mouse models.

"These results provide the basis for the potential implementation of 5-LO-inhibitors as stem cell therapeutic agents for a sustained AML cure, although this must be investigated further in preclinical and clinical studies in humans," explains Dr. Ruthardt. "In addition, there are plans for further molecular biological studies with the objective of understanding exactly how the 5-LO inhibitors act on the leukaemic cells." Prof. Maier continued.

More information: Roos et al.: "5-lipoxygenase is a candidate target for therapeutic management of stem cell-like cells in acute myeloid leukemia," in *Cancer Research* Volume (2014), Published OnlineFirst July 31, 2014; [DOI: 10.1158/0008-5472.CAN-13-3012](https://doi.org/10.1158/0008-5472.CAN-13-3012)

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