

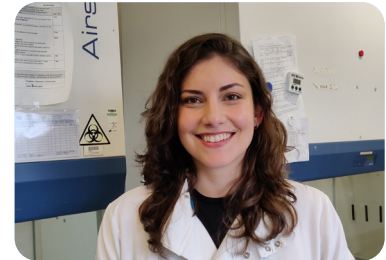
CCLG: The Children & Young People's Cancer Association research: Studying the origins of childhood acute myeloid leukaemia to identify targets for kinder and more effective treatments

Project title: Identifying more efficient therapeutic targets for paediatric AML using CITE-seq

Project stage: Complete (ended May 2025)

Funded by: CCLG and CCLG Special Named Funds including #teamkai and A Goal for Sam

Led by: Dr Juliana Fabiani Miranda, University of York



About the project

Acute myeloid leukaemia (AML) is an aggressive type of blood cancer and is the second most common type of childhood leukaemia. There are not many treatment options, and sometimes the cancer cells escape chemotherapy. This leads to the cancer coming back in over half of patients. Whilst there are new treatments that have been developed, these are mainly for adults with AML and may not work the same for children.

Currently, cure rates can be slightly improved by giving more chemotherapy – but this increases side effects and long-term health issues due to damage to healthy cells. This shows the need for targeted therapies that are more harmful to cancer cells than healthy cells. To develop these new treatments, we need to find ways to selectively target cancer cells. One way to fight cancer cells would be by attacking the proteins they need for growth and survival. However, researchers do not know enough about which proteins are essential for cancer cell survival in AML.

In this project, Dr Juliana Fabiani Miranda and the Proteostem group at the University of York will develop detailed information about all of the proteins and genetic molecules found in childhood AML cells. This will set the foundations for future research by providing data about these cancer cells, particularly those that escape chemotherapy. Dr Fabiani Miranda hopes that her work could lead to new treatments for chemotherapy-resistant AML cells.

Results

Dr Fabiani Miranda has been using parallel analysis of mouse models and human samples to better model and understand childhood AML. The team will continue developing detailed information about the most important proteins and molecules found in childhood AML cells, which will support research that can make a real impact for patients. This pilot project will set the foundations for future research by providing data about these cancer cells, particularly those that escape chemotherapy.

The team hope that research based on their data will lead to a new understanding of the cells at the very

start of AML. This matters because it is those cells that resist therapy and later cause relapses. If we can understand these cells better, we can replace the really harsh therapy children receive with something much more tolerable.

What's next?

Now the project is complete, the researchers have begun applying for larger amounts of funding to fully explore the role proteins in AML and how this understanding could be used for targeted treatments. They hope to provide updates once they have found funding and are able to publish any results.



The Children &
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