CCLG: The Children & Young People's Cancer Association research:

Blocking the activity of an essential protein to treat T-cell acute lymphoblastic leukaemia

Project title: Development and in vivo evaluation of novel EAAT1 inhibitors for their capacity to suppress T-cell acute lymphoblastic leukaemia

Project stage: Just started

Funded by: Children with Cancer UK, CCLG, and CCLG Special Named Funds, including Ruby's Live Kindly Live Loudly Fund, Louie's Research Fund, and Harry's Fund.

Led by: Dr Maarten Hoogenkamp, University of Birmingham

About the project

T-cell acute lymphoblastic leukaemia (T-ALL) affects around 200 people per year in the UK, with the vast majority being children and young adults. Treatment includes steroids and chemotherapy, sometimes followed by a stem cell transplantation. These treatments are toxic and can result in serious long-term side effects. They also don't work for one in five children and around 50% of adult patients - and the cancer can come back after initially successful treatment. When this happens, treatment options are extremely limited. Young people desperately need new medicines that are more effective and less toxic.

Dr Maarten Hoogenkamp and Dr Vesna Satulovic at the University of Birmingham have shown that a protein, called EAAT1, is essential to the growth of T-ALL cells. They have developed inhibitors that can 'switch off' the protein in the lab, but they need refining before they can be tested further. In this project, the researchers will be addressing a key issue in their early inhibitors – that they are not able to persist inside the body. They will refine the inhibitor to make it more stable in the body, so it can't be broken down as quickly. Their new, more stable EAAT1 inhibitors will then be tested on mice with T-ALL to confirm their stability and ability to slow or eliminate the cancer. This is a crucial step that can show the safety and efficacy needed to eventually move the inhibitors forward to clinical trials.

If inhibition of the protein EAAT1 works as efficiently in patients as in the laboratory, then these inhibitors are an exciting potential treatment for hard-to-treat T-ALL. This could reduce the use of toxic drugs, improving quality of life for patients. EAAT1 reliance is present in other cancers, particularly neuroblastoma and bladder cancer, so Dr Hoogenkamp hopes their inhibitors could help patients with a range of cancers.

CCLG The Children & Young People's Cancer Association

Century House, 24 De Montfort Street, Leicester, LE1 7GB

0333 050 7654 | **info@cclg.org.uk** | **www.cclg.org.uk**

@cclgUK