

CCLG: The Children & Young People's Cancer Association research: Stopping the alpha - a potential new treatment approach for osteosarcoma

Project title: Therapeutic targeting of IKKα in osteosarcoma using first-in-class selective IKKα inhibitors

Project stage: Ongoing (planned end January 2027)

Funded by: The Bone Cancer Research Trust, CCLG, and CCLG Special Named Fund, the Little Heroes Fund

Led by: Professor Plevin and Dr Margaret Cunningham, University of Strathclyde



About the project

Osteosarcoma is difficult to treat and survival rates have improved little in recent decades. A key issue is that treatment relies on old anti-cancer drugs and, in some cases, the treatment stops working. A major recent focus in bone cancer research is the identification of overactive biochemical pathways in cancer cells and the development of new drugs that can block such pathways.

This project, led by Professor Plevin and Dr Margaret Cunningham at the University of Strathclyde, will explore whether a specific enzyme (a protein which speeds up chemical processes), known as inhibitory kappa B kinase alpha, or IKKα for short, plays a role in osteosarcoma development. The researchers also want to investigate whether blocking this enzyme can inhibit the growth of osteosarcoma cells. Research in this area is currently very limited, so the researchers must first develop a better understanding of the role of IKKα in osteosarcoma. To this end, new drug compounds which can block the activity of the IKKα enzyme (so-called 'inhibitors') have been developed. Professor Plevin and team are therefore in an ideal position to test whether IKKα plays a role in osteosarcoma progression and if such new drugs have any utility as future treatments.

The project will test the effect of IKKα inhibitor drugs across two main phases. First of all, the researchers will use a technique called RNA sequencing to measure all the genes in osteosarcoma cells at once and see which ones are sensitive to IKKα drugs. They will then link these findings to features of cancer: how well the cells survive, how quickly the cells grow and if the inhibitors can increase cell killing caused by other anti-cancer drugs. Together, this will demonstrate if the inhibitors have the potential to become a new treatment for osteosarcoma. If the results from this project are positive, it opens up the possibility that these IKKα inhibitors could be developed further into kinder, more effective medicines with the prospect of treating patients. This could be alone or more likely as part of a combination therapy strategy.



The Children &
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