Newer, better drugs to treat childhood leukaemia

Every day in the UK, ten children are diagnosed with cancer. For over a third of them the diagnosis is leukaemia. Around 20 per cent of those children are not cured and the disease returns because treatment options available today cannot completely remove the cancerous leukaemia cells in these patients.

Research undertaken by Allison Blair, Reader in Experimental Haematology, has identified leukaemia stem cells which appear to play an important role in the persistence of the disease. Her work has shown that some leukaemia stem cells are resistant to current therapies, and since these leukaemia stem cells survive treatment, and their numbers continue to grow during and after therapy, they eventually lead to clinically observable, and frequently incurable relapse.

The treatment at relapse involves even higher doses of chemotherapy, usually requiring a healthy stem cell transplant harvested from the patient when in remission. Dr Blair’s group is looking at ways in which the healthy stem cells could be expanded, thus increasing the chances of successful treatment. The same techniques could be used for treatments of non-cancerous conditions, such as sickle cell disease.

It is now also becoming possible to test new drugs designed to specifically target leukaemia cells with relative sparing of the healthy blood cells, thus avoiding one of the main side-effects of treatment: aiming to kill all – and only – leukaemia cells. Dr Blair’s group were the first to report complete elimination of leukaemia cells in vivo using the drug parthenolide. Work is ongoing to improve delivery methods of this drug, enabling its use in children.

www.bristol.ac.uk/cellmolmed/research/stem-cells/haemopoietic/


Right: Dr Allison Blair. Left: Leukaemia cells overexpress a protein, shown in green. We are developing therapies to target this protein and reduce toxicity to normal cells.