

Scientists harness immune system to prevent lymphoma relapse

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UK scientists hope that lymphoma patients could benefit from a new drug that triggers the cancer-fighting properties of the body's own immune system, after highly promising early laboratory results.

The University of Manchester researchers, who were funded by the charity Leukaemia & Lymphoma Research, have shown that, when used in conjunction with [radiotherapy](#), the new drug is potentially four times more likely to lead to long-term survival than radiotherapy alone.

Relapse is a common fate for many [lymphoma patients](#) and new treatments are desperately needed. The new research, which is published online in *Blood*, the Journal of the American Society of Hematology (ASH), shows that the chemical R848 can be used to prime the [immune system](#) to fight [cancer](#).

R848 is a chemical which signals to certain molecules known as receptors found on the surface of immune cells, triggering them into action. Receptors play a key role in the function of the immune cell by recognising harmful agents and instructing the cell to respond. It was shown that injections of R848 can generate a rapid expansion of specific anti-lymphoma immune cells known as 'killer T cells'.

Dr Simon Dovedi, of the University of Manchester's School of Cancer and Enabling Sciences, who led the research, said: "Excitingly we think that R848 could be capable of giving patients a protective immunological memory by generating lymphoma-specific anti-tumour

cells. This could be the key to ensuring long-term survival."

The Manchester team tested injections of R848, in combination with radiotherapy, in the laboratory on mice with lymphoma. It was found to have few side effects, with 100% of mice achieving long-term survival compared to just 28% of those mice which were treated with radiotherapy alone. In those mice that achieved long-term survival through treatment with R848 and radiotherapy, any re-introduction of cancer was completely rejected by the immune system in 75% of cases. These successful laboratory results mean that it could soon be used in early phase clinical trials for patients with lymphoma.

Professor Chris Bunce, Research Director of Leukaemia & Lymphoma Research, said: "While it is still early and this treatment has not yet been tested in humans, these results are hugely promising. One of the major obstacles to long-term successful treatment for many types of [lymphoma](#) has been relapse after initial successful treatment. [Treatment](#) with R848 can prime T cells to recognise various tumour-associated antigens, protecting patients from the return of the cancer."

More information: The report is published online in the journal *Blood*, the Journal of the American Society of Hematology (ASH), under the title 'Systemic delivery of a TLR7 agonist in combination with radiation primes durable anti-tumor immune responses in mouse models of lymphoma'.

Provided by University of Manchester

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