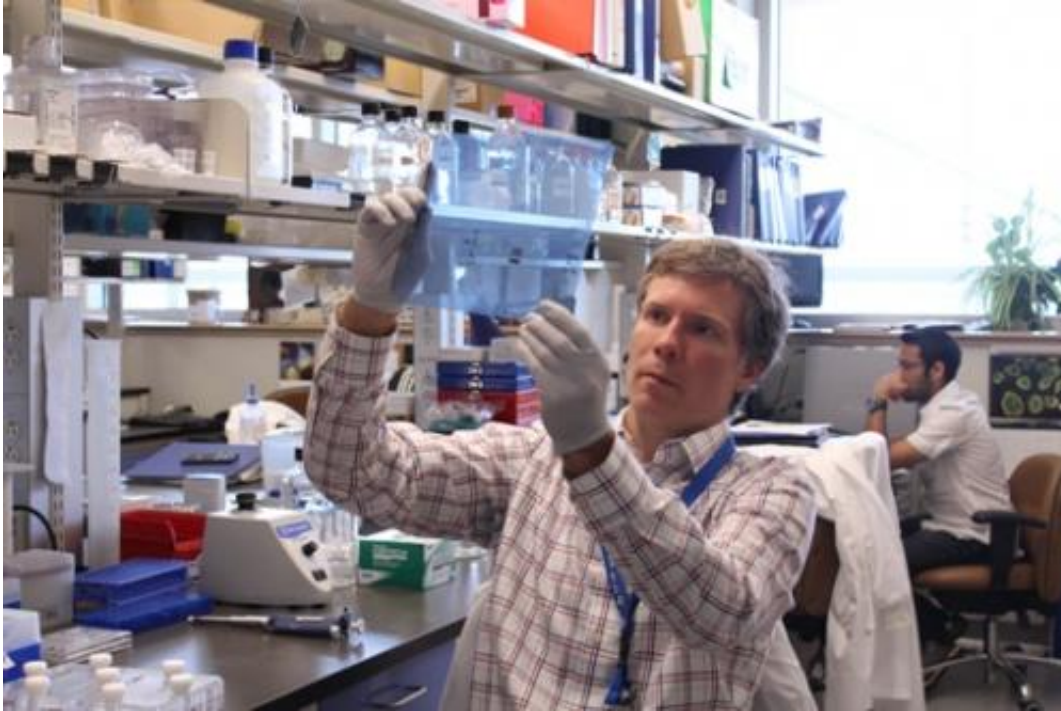


Virus-derived particles target blood cancer

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Dr. David Conrad is investigating virus-derived particles for the treatment of leukemia. Credit: Ottawa Hospital Research Institute

Ottawa researchers have developed unique virus-derived particles that can kill human blood cancer cells in the laboratory and eradicate the disease in mice with few side effects. The study is published in *Blood Cancer Journal* by co-senior authors Drs. David Conrad and John Bell of the Ottawa Hospital Research Institute (OHRI) and the University of Ottawa (uOttawa).

While Dr. Bell and his colleagues have been investigating replicating viruses for the treatment of solid cancers for many years, with very promising results, this is the first major success they have had treating [blood cancer](#) (leukemia). It is also the first success they have had using a non-replicating virus-derived particle as opposed to a replicating virus.

"Our research indicated that a replicating virus might not be the safest or most effective approach for treating leukemia, so we decided to investigate whether we could make virus-derived particles that no longer replicate but still kill cancer," said Dr. Conrad, a [hematologist](#) conducting research in the Blood and Marrow Transplant Program at The Ottawa Hospital, and currently completing his PhD at OHRI and uOttawa in the Department of Cellular and Molecular Medicine. "We were delighted to see that this [novel therapy](#) was very safe at high doses, and worked extremely well in our laboratory leukemia models. We hope to test this in patients in the near future."

The researchers used a specific method and dose of UV light to transform regular replicating viruses into unique particles that could no longer replicate and spread, but could still enter [cancer cells](#) efficiently, kill them and stimulate a strong immune response against the cancer. These particles were able to kill multiple forms of leukemia in the laboratory, including samples taken from local patients who had failed all other therapies. Normal [blood cells](#) were not affected. This novel treatment was also successful in mouse models of leukemia. In fact, 80 per cent of the mice that received the therapy had markedly prolonged survival and 60 per cent were eventually cured, while all of the untreated mice died of their leukemia within 20 days.

"Leukemia is a devastating disease that can be very difficult to treat, and new therapies are urgently needed," said Dr. Conrad. "While we're still at the early stages of this research, I think this therapy holds a lot of promise because it appears to have a potent, long-lasting effect on

leukemia without the debilitating side effects of many cancer therapies used in the clinic right now. We will likely see even better results once we optimize the dose in our preparations to advance this research into human clinical trials."

More information: Non-replicating rhabdovirus-derived particles (NRRPs) eradicate acute leukemia by direct cytolysis and induction of antitumor immunity. Batenchuk C, Le Boeuf F, Stubbett L, Falls T, Atkins HL, Bell JC, and Conrad DP. Blood Cancer J. 2013 Jul 12;3:e123. [DOI: 10.1038/bcj.2013.23](https://doi.org/10.1038/bcj.2013.23)

Provided by Ottawa Hospital Research Institute

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