

Armed malaria protein found to kill cancer cells

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A new type of cancer therapy based on seemingly unrelated elements of malaria and cancer is showing promise for development. Kairos Therapeutics, a Vancouver-based biotech company spun-out of The Centre for Drug Research and Development (CDRD), has partnered with VAR2 Pharmaceuticals to advance the technology into clinical trials.

While looking into why pregnant women are particularly susceptible to malaria, researchers from the University of British Columbia, BC Cancer Agency, University of Copenhagen and VAR2 Pharmaceuticals discovered that the mosquito-borne parasite produces a protein "VAR2CSA" that binds to a particular type of sugar molecule found in the placenta. Further studies showed that the same sugar molecule is also found on the majority of [cancer](#) cell types. This commonality is understandable because both tumours and placentas share a number of characteristics, such as rapid growth and tissue invasion.

"I have worked for more than 25 years developing therapeutics for the treatment of cancer and I have never seen a target so broadly expressed on different forms of cancer as VAR2CSA," said John Babcock, President and CSO of Kairos Therapeutics.

John and a team of scientists at Kairos Therapeutics have developed a novel technology to arm antibodies and other targeting proteins with high potency toxins that could be used to specifically kill cancer cells. Kairos teamed up with scientists at VAR2 Pharmaceuticals, led by Drs.

Mads Dugaard and Ali Salanti, and together they demonstrated that the [sugar molecule](#) could be a target for anti-cancer drugs, and that the VAR2CSA malarial protein could provide the tool for delivering Kairos' potent cancer killing toxins to tumours.

By attaching Kairos' novel toxins to VAR2CSA, the results showed that over 95 per cent of tumour cell lines were successfully treated across a broad array of cancer types, including pancreatic, brain, blood, ovarian, gastric, lung, bladder, skin, prostate, and breast.

The drug was then tested on mice that were implanted with human tumours. In models of non-Hodgkin's lymphoma, castration-resistant prostate cancer, and [metastatic breast cancer](#), the Kairos-VAR2 therapeutic demonstrated the ability to prevent tumour growth, regress established tumours, and cure metastatic disease. The studies were published today in the journal *Cancer Cell*.

John was optimistic, "By arming VAR2CSA with Kairos' novel toxins, we have created a promising therapeutic that could benefit patients across multiple types of cancer".

Based on this work, Kairos Therapeutics and VAR2 Pharmaceuticals are now developing the compound for [clinical trials](#) in humans.

Provided by The Centre for Drug Research and Development

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