

MEDIA RELEASE

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New technology, 'Invasion-Block', targets melanoma spread

Research conducted at the Centenary Institute has given rise to a ground-breaking tool called 'Invasion-Block' that can identify drugs capable of halting the spread of cancer cells. The pioneering development could lead to better treatments for melanoma, the most dangerous form of skin cancer.

An automated high-content screening platform, 'Invasion-Block' is designed to measure the invasive capacity of cancer cells. A revolutionary tool, it enables scientists to assess how well various drugs and compounds can prevent the spread of cancer.

In the recently published study, 'Invasion-Block' was employed to investigate the invasive behaviour of melanoma cells, particularly their ability to infiltrate other parts of the body. It was used in conjunction with a custom-designed image analysis program called 'S-MARVEL', to screen thousands of compounds, including drugs that are already approved for use in people.

Dr Shweta Tikoo, senior study researcher affiliated with both the Centenary Institute and the Department of Dermatology, Medical University of Vienna said that melanoma is an extremely challenging disease.

"Melanoma is a tough opponent, often spreading rapidly and making it difficult to treat. The key to finding better treatments lies in drug discovery and this is where the 'Invasion-Block' tool plays a pivotal role," said Dr Tikoo.

Excitingly for the researchers, 'Invasion Block' revealed that drugs that blocked a class of enzymes – known as Abl/Src, PKC, PI3K, and ATM kinases – made melanoma cells much less able to invade other tissues.

"This suggests these enzymes may hold the key to finding treatments that can help curb the spread of melanoma," said Dr Dajiang Guo, the first author of the study, currently a postdoctoral researcher at the Weill Cornell Medicine.

Intriguingly, the researchers further used CRISPR technology to 'turn-off' the gene responsible for expressing ATM kinase in melanoma cells. In doing so they observed that the melanoma cells became less invasive in laboratory tests and didn't spread as much to the lymph nodes when tested in mice.

"We believe that ATM may serve as a potent therapeutic target for treating the spread of melanoma in patients," said Dr Tikoo.

The researchers say the study is a significant step in the fight against melanoma, offering fresh hope to patients while laying the groundwork for further studies and the development of new and better treatments.

“The combination of ‘Invasion-Block’ and ‘S-MARVEL’ is opening new avenues in the search for drugs that can arrest the spread of cancer,” said Dr Tikoo.

The study was co-headed by Dr Rohit Jain, Professor Wolfgang Weninger and Dr Shweta Tikoo with all three senior authors being co-affiliated with the Centenary Institute and the Medical University of Vienna.

The research was published in *The Proceedings of the National Academy of Sciences (PNAS)*, a peer reviewed journal of the National Academy of Sciences.

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Images:

Dr Shweta Tikoo and Dr Dajiang Guo:

<https://drive.google.com/file/d/1jGdHOZCf5hJ-sji4q9E8EIGTkuoIVmVY/view?usp=sharing>

<https://drive.google.com/file/d/1pirRd37yJr35Tzm9QyhMR5WWJL0oalZ4/view?usp=sharing>

Publication:

Invasion-Block & S-MARVEL: A high-content screening and image analysis platform identifies ATM kinase as a modulator of melanoma invasion and metastasis.

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For all media and interview enquiries, please contact

Tony Crawshaw, Media and Communications Manager, Centenary Institute on 0402 770 403 or email: t.crawshaw@centenary.org.au

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