Medical Xpress

Going to 'Wars' against cancer and heart disease

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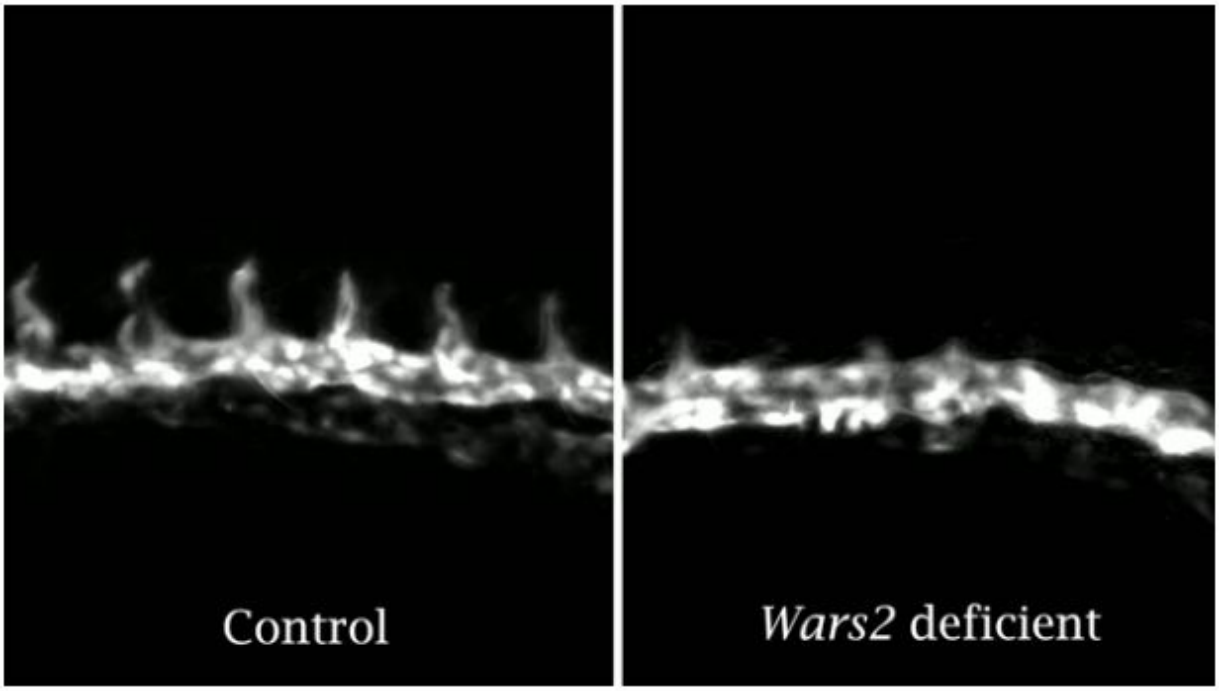

In a study conducted by Duke-NUS Medical School (Duke-NUS) and the National Heart Centre Singapore (NHCS), researchers discovered a new gene that controls blood vessel formation. This work presents a possible new drug target for cancer and heart disease, and was published in the journal, *Nature Communications*, on 8 July 2016.

Blood vessels form a network throughout the body to deliver the nutrients necessary to keep the tissues and organs alive and healthy. The formation of this network is controlled by a process called angiogenesis. Angiogenesis inhibition is commonly targeted in cancer treatment development that aims to starve tumours of the nutrients necessary for their survival. In the heart, increasing angiogenesis can help heart pump function.

For the first time, a team led by Professor Stuart Cook at Duke-NUS, uncovered a role for the gene, Wars2, in the process of angiogenesis. Mr Mao Wang, PhD student at Duke-NUS, is co-first author of the study alongside Dr Patrick Sips, Associate Scientist from Brigham and Women's Hospital and Harvard Medical School. Together, they confirmed the importance of Wars2 for angiogenesis in rats and zebrafish.

"Using different genetic techniques, we inhibited Wars2 function in both rats and zebrafish, and the resulting animals showed impairment of blood vessel formation within the heart and in the rest of the body," described Mr Wang.

To confirm the involvement of Wars2 in angiogenesis, the researchers increased the effect of Wars2 and showed that blood vessel formation was enhanced. Specifically, they were able to determine that Wars2 plays an important role in supplying sufficient endothelial cells, the building blocks of blood vessels, for angiogenesis.

"Angiogenesis is vital for supporting life and providing nutrients to all parts of the body," said Prof Cook, Tanoto Foundation Professor of Cardiovascular Medicine at the SingHealth Duke-NUS Academic Medical Centre. "Finding a way to control angiogenesis not only provides a target for the development of anti-cancer therapies, but may also prove useful in similarly starving abnormal blood vessel growth

elsewhere in the body, like in diabetic eye disease." Prof Cook is also the Director of the Cardiovascular and Metabolic Diseases Research Programme at Duke-NUS.

Ultimately, Wars2 provides researchers and pharmaceutical companies a fresh new target for developing treatments for diseases characterised by abnormal blood vessel growth that may be more effective and specific or complementary to what is currently available.

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Provided by Duke-NUS Medical School