

The secret life of 'tweeting' tumours

June 21 2013

(Medical Xpress)—A breakthrough study led by researchers at Royal Prince Alfred Hospital and the University of Sydney's Brain and Mind Research Institute (BMRI) has revealed how brain tumours communicate with other cells, which may lead to new treatments. The study has been published online in the journal *RNA Biology*.

Dubbed the biological equivalent of "tweeting", the study found that brain tumours release small bits of information, known as microvesicles, which contain new forms of RNA, the close cousin of DNA, and that these interact with brain [blood vessel cells](#). RNA is a group of [biological molecules](#) that perform multiple roles, including the control of gene expression.

One of the study's lead authors, Associate Professor Michael Buckland from the BMRI, said the scientific and medical community was only just becoming aware of the importance of microvesicles in both health and disease.

"It seems that many cells release microvesicles allowing them to communicate and influence other cells nearby and in distant parts of the body in real-time - much like tweeting," Associate Professor Buckland said.

The study used [brain tumour](#) cells grown in culture, and harvested the microvesicles released into the [culture medium](#). The addition of these brain tumour microvesicles to cultures of brain blood vessel cells resulted in significant changes to the cells.

"Microvesicles are therefore likely to play an important role in the changes to blood vessels seen in high grade brain tumours, the most common form in Australian adults," he said.

"These vesicles present a new target for treatments against brain tumours. Furthermore, they can be detected in the blood of patients with brain tumours, and may be an important [diagnostic tool](#) in the future," Associate Professor Buckland said.

"This is a fascinating 'first look' into a new and uncharted realm of brain tumour biology."

A leading brain tumour neurosurgeon at RPA, Dr Brindha Shivalingham, says [brain cancer](#) is a devastating disease and the neurosurgical community is desperate to find answers.

"The discovery made by our collaborative laboratory is indeed exciting and gives us hope toward finding effective therapies for our patients," Dr Shivalingham said.

This research is part of a broader program undertaken at the Department of Neuropathology at RPA, the only one of its kind in NSW. The department recently relocated to the [Brain](#) and Mind Research Institute.

BMRI executive director, Professor Ian Hickie, said it was a great pleasure to welcome Associate Professor Buckland and the team to the Institute.

"This discovery reveals the advances in our understanding of neurology that come from collaboration between leading researchers in multiple disciplines and the sharing of research infrastructure - the key philosophy upon which BMRI is built," Professor Hickie said.

More information: www.landesbioscience.com/journal/article/25281/

Provided by University of Sydney

Citation: The secret life of 'tweeting' tumours (2013, June 21) retrieved 9 April 2024 from <https://medicalxpress.com/news/2013-06-secret-life-tweeting-tumours.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--