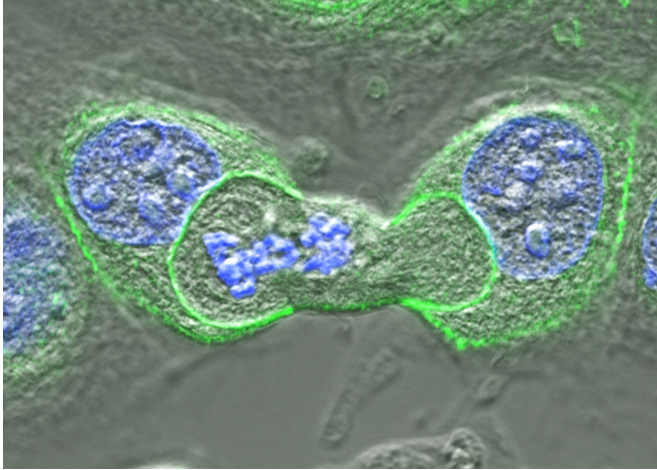


Cannibal cells may limit cancer growth

11 July 2017



A cell in the process of dividing (centre) that is being engulfed by cells on either side. DNA is shown in blue and a protein responsible for attachment between cells is shown in green. Credit: Dr Jo Durgan, Babraham Institute

Cell cannibalism in tumour samples has been observed for over a century, yet this unusual behaviour is not well studied. New research led by scientists at the Babraham Institute, Cambridge reveals a new mechanism driving cell cannibalism that offers surprising insights into cancer biology.

Cell cannibalism, also called entosis, occurs when one cell surrounds, kills and digests another. Entosis doesn't typically happen between healthy cells but it is common in tumours. This latest research, published in the journal *eLife*, reveals that cannibalism can be triggered by [cell division](#); when one cell divides to form two. Since [uncontrolled cell division](#) is a key hallmark of cancer, this suggests that cannibalism may have a role to play in resisting cancer.

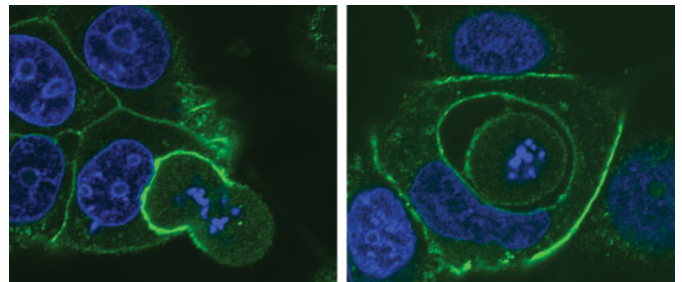
The research, which also includes scientists from Memorial Sloan Kettering Cancer Centre, USA and the Francis Crick Institute in London, examined human epithelial cells. These cells form many of

the surfaces in the body and give rise to over 80% of human cancers. Normally, [epithelial cells](#) remain firmly attached to their surroundings when they divide. This study shows that weakened attachments result in more cell cannibalism. This may explain why drugs that weaken cell attachments are effective anti-cancer drugs.

First author on the paper, Dr Jo Durgan, said: "We set out to identify the proteins that control cell cannibalism in tumour cells, but by using time-lapse microscopy to watch this process in action, we stumbled across a completely unexpected new mechanism. The link we've found to cell division is really intriguing from the perspective of cancer."

Cell cannibalism has a complex relationship with cancer and it is not totally clear whether it helps or hinders tumour growth. However, the discovery that dividing cells are more likely to be cannibalised by other cells suggests that entosis may help to slow or prevent cancer by causing cancer [cells](#) to be consumed and destroyed by nearby [healthy cells](#).

Lead scientist on the paper, Dr Oliver Florey, said: "Entosis is a fascinating process that may play a role in normal physiology, as well as cancer. By studying entosis, we hope to gain insights into fundamental cell biology, as well as to explore intriguing new avenues for [cancer](#) research. After 100 years of observing 'cell-in-cell' structures, there is now an exciting push towards discoveries in both cell and [cancer biology](#)."



Left: A dividing cell (lower right) in the process of being

engulfed by another cell (centre). Right: A dividing cell that has been completely consumed by another cell. DNA shown in blue. A protein involved in contact between cells shown in green. Credit: Dr Jo Durgan, Babraham Institute

More information: Joanne Durgan et al, Mitosis can drive cell cannibalism through entosis, *eLife* (2017). DOI: [10.7554/eLife.27134](https://doi.org/10.7554/eLife.27134)

Provided by Babraham Institute

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