

Divide and conquer: Genes decide who wins in the body's battle against cancer

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Researchers funded by the Medical Research Council (MRC) have discovered for the first time that two proteins called Mahjong and Lgl could be star players in helping to identify how the body's own cells fight back against cancer cells. This discovery, publishing today in the online, open-access journal *PLoS Biology*, could lead to future treatments to make our healthy cells better-equipped to attack cancer cells, an entirely new concept for cancer research.

The team, who undertook the research at the MRC Laboratory for Molecular Cell Biology and Cell Biology Unit at University College London (UCL), have proven that normal cells and [cancerous cells](#) compete in a game of 'do or die'. If non-cancerous cells gain the advantage and entirely surround [cancer cells](#), the cancer cells will die. If, however, the cancerous cells manage to break free, they will continue to divide and grow undisturbed. The study shows that the Lgl and Mahjong proteins play a key role in the cells' competitiveness, influencing the outcome over which cells will die. This kind of cell competition had previously been shown to occur in flies, however this is the first time it has been seen in mammals.

This discovery could potentially lead to new kinds of treatments for carcinomas, tumours which make up more than 80 per cent of all cancers. Carcinomas originate from the epithelial cells that make up tissues such as our lungs, glands and [digestive system](#).

Dr Yasuyuki Fujita, group leader at MRC Laboratory for Molecular Cell Biology and [Cell Biology](#) Unit at UCL is thrilled by the results: "This is the first time that we have seen cancer cells being killed simply by being surrounded by healthy cells. If we can build on this knowledge and improve our understanding of how this happens, in the future we may be able to find a way to enhance this ability and develop a totally new way of preventing and treating cancer."

Basic science is critical to understanding the human body's natural resilience to diseases such as cancer and to guiding the development of future treatments. The MRC has a dedicated record of investment in science that links laboratory-based knowledge to clinical investigation.

More information: Tamori Y, Bialucha CU, Tian A-G, Kajita M, Huang Y-C, et al. (2010) Involvement of Lgl and Mahjong/VprBP in Cell Competition. *PLoS Biol* 8(7): e1000422. [doi:10.1371/journal.pbio.1000422](https://doi.org/10.1371/journal.pbio.1000422)

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