Scientists discover mechanism that ‘deactivates’ ovarian cancer cells

Scientists at the Ovarian Cancer Action Research Centre at Imperial College London have discovered a mechanism that deactivates ovarian cancer cells, which could lead to better treatments for women with ovarian cancer.

Clinical trials are already underway to block AXL, a protein that accelerates the growth and spread of ovarian cancer cells. But this early stage research demonstrates potential for minimising treatment and in turn reducing side effects for women being treated for ovarian cancer.

Research published today in the journal EMBO Reports has found a new mechanism for a protein named OPCML. OPCML is a tumour suppressor that is usually lost in cancer patients. Scientists have found that when OPCML is put back into cancer cells, it cleverly deactivates AXL.

When AXL becomes activated, it renders cancer cells more aggressive, increasing their ability to move and spread to other parts of the body. However, it also reveals itself to OPCML, which then drags the bound molecules into a specific region of the cell where AXL is deactivated.

The research was funded by medical research charity Ovarian Cancer Action and carried out at the Ovarian Cancer Action Research Centre at Imperial College London.

The study, co-authored by Dr Chiara Recchi and Professor Hani Gabra, found that since OPCML already blocks most of AXL, much less AXL inhibitor is required to deactivate AXL completely in ovarian cancer cells. Since inhibitors always present a certain degree of toxicity, if the dose of the inhibitor could be reduced, the patients should suffer fewer side effects.

The next stage is to develop OPCML as a therapeutic agent. Since OPCML acts on the external part of the cells, delivering it on the surface of cancer cells could represent an efficient therapeutic strategy. Also, OPCML is a “natural” protein present in most of the cells of our bodies, so it should have minimal toxicity.

Dr Chiara Recchi, Research Fellow and Lead Researcher of the study, said: “Our results are really exciting because they reveal an unusual biological mechanism and shed light on the function of AXL, pointing us in the right direction to find a way to deactivate it in cancer patients. In this context, OPCML has a tremendous potential as therapeutic.”

Dr Jane Antony, Research Associate and first author of the study said: “This study will enable new treatment strategies to be designed to fight recurrent and aggressive ovarian cancer, for which there are currently limited treatment options. AXL has always been a key player in cancer metastasis and these results reveal how these cancer drivers can be modulated by tumour suppressors such as OPCML.”

Professor Iain McNeish, Director of Ovarian Cancer Action Research Centre, said: “At the Ovarian Cancer Action Research Centre, our aim is always to translate important scientific discoveries into new treatments for our patients. These exciting results reveal potential new mechanisms by which we can attack ovarian cancer.”

Funding research is the key to improving the diagnosis, treatment and survival of ovarian cancer. To donate, visit: ovarian.org.uk/donate

ENDS

For further information, email Tori@ovarian.org.uk or call 020 7380 1735

Notes to editor:

1. **Research article**: The tumour suppressor OPCML promotes AXL inactivation by the phosphatase PTPRG in ovarian cancer DOI of the article: [10.1525/embr.20174567](http://embor.embopress.org/cgi/doi/10.1525/embr.201745670)

2. **Ovarian Cancer Action** is the UK’s ovarian cancer research charity and its mission is to fund research that saves lives.
From funding scientists on the front line, to mobilising millions of people across the UK to take action. Ovarian Cancer Action is driven by a vision of a world without ovarian cancer and a belief that it can create a better future.  
www.ovarian.org.uk

3. Imperial College London is one of the world’s leading universities. The College’s 17,000 students and 8,000 staff are expanding the frontiers of knowledge in science, medicine, engineering and business, and translating their discoveries into benefits for our society.

Imperial is the UK’s most international university, according to Times Higher Education, with academic ties to more than 150 countries. Reuters named the College as the UK’s most innovative university because of its exceptional entrepreneurial culture and ties to industry. www.imperial.ac.uk