

# Scientists step closer to halting spread of lung cancer

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Lung CA seen on CXR. Credit: [CC BY-SA 4.0](#) James Heilman, MD/Wikipedia

Scientists at the Universities of York and Texas have found that a component of cancer cells, which acts like a 'cellular post office', could be the key to preventing the spread of lung cancer to other parts of the body.

The findings could point towards new therapeutics, targeted at a particular communication mechanism in the cell. This communication triggers a change in the scaffolding of the cell perimeter - altering from a fixed shape, attached to an organ, to a less stable one, moving freely around the body.

The '[post office](#)' of the cell, or the Golgi apparatus as it is more commonly known, has the ability to package proteins in order to transport them to other parts of the cell or to deliver them to areas outside of the cell.

Researchers identified that a protein, called PAQR11, inside the 'cellular post office', receives a signal from another protein, called Zeb1; the communication between the two proteins prompts the transport of membrane sacks inside the Golgi.

These sacks, or vesicles, change their delivery routes and fundamentally alter the perimeter of the [cancer cells](#) making it possible for the cell to detach from its fixed position in the lung and travel to other areas of the body.

Dr Daniel Ungar, from the University of York's Department of Biology, said: "If we think of the [cancer](#) cell like a tent structure; it has fixed sides to hold its shape and is firmly anchored to the ground in order to secure its contents. It cannot conceivably be moved until its architecture is altered somehow.

"In order to move the tent, we have to rearrange its contents and collapse

its sides in order to lift it out of its anchored position and carry it away. A similar process happens with cancer when it metastasises – its outer edges are altered resulting in it becoming un-anchored."

The Golgi, which is the delivery centre for communications between proteins, hence the name 'cellular post office', receives the communication between two proteins, which signals that the movement of membrane sacks around the cell should be changed. This change in movement alters the perimeter of the cancer cell and, much like a tent's sides collapsing, allows it to move from its original resting place to anywhere in body.

Dr Ungar added: "Now that we recognise this system, there is the potential to develop a drug that interferes with this communication and prevents the Golgi apparatus from facilitating the movement of the membrane sacks. The next stage of this study will be to look at how we target this process without interrupting normal cellular functions of non-cancerous [cells](#)."

The research, funded by the National Institutes of Health, the American Cancer Society, and the Cancer Prevention Research Institute of Texas, is published in *The Journal of Clinical Investigation*.

**More information:** Xiaochao Tan et al. Epithelial-to-mesenchymal transition drives a pro-metastatic Golgi compaction process through scaffolding protein PAQR11, *Journal of Clinical Investigation* (2016). [DOI: 10.1172/JCI88736](https://doi.org/10.1172/JCI88736)

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