

Tumors prefer the easy way out

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Tumor cells become lethal when they spread. Blocking this process can be a powerful way to stop cancer. Historically, scientists thought that tumor cells migrated by brute force, actively pushing through whatever tissue was in their way, but recent evidence has shown that tumor cells may be more methodical. And in a new study, Cornell University researchers report that tumor cells take advantage of already-cleared paths to migrate unimpeded.

"We are looking for novel ways of preventing [cancer cells](#) of the [primary tumor](#) from spreading to other parts of the body. Our study points to [potential therapeutic targets](#) that could be inhibited to halt tumor cell movement," says principal investigator Cynthia Reinhart-King, PhD.

The body's [tissue](#) is full of small gaps in between the different proteins and cells that make it up. Much of the research into [tumor cell migration](#), however, has represented the tissue as a solid gel. While this model has been useful in understanding how tumor cells invade, scientists are not sure if moving through an environment with non-uniform consistency, like the body, involves the same machinery. Some studies have supported that preexisting spaces and tracks join together into tunnels that tumor cells can use to migrate and spread.

In this new study, the research team examined how tumor cells moved through a more accurate model of the tissue environment that included cell-sized tracks compared with a uniform environment with no paths. "Numerous groups, including our own, have studied how cells move. We now know, however, that how cells move depends on the structure of the environment in which they are moving. Ours is the first study to rebuild the native tracks and gaps that exist in tissue to investigate how cells use these as superhighways to move quickly to spread throughout the body," says Reinhart-King.

The investigators found that when working through an environment with no pre-existing tracks, tumor cells had to actively stick to the tissue, break it down and then move themselves forward. In contrast, moving through tissue with paths was much easier because once the cells found the tunnels, they could avoid their tissue-clearing processes and pass through unhampered.

These findings support that [tumor cells](#) prefer pre-formed tunnels because they allow the cells to move easier. The study also suggests that

targeting the machinery that makes cells mobile, rather than targeting the tissue-clearing process—which has been tested in patients but has not been very effective—may be a better treatment strategy to stop cancers from spreading.

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More information: "Comparative mechanisms of cancer cell migration through 3D matrix and physiological microtracks." *Am J Physiol Cell Physiol*, 308(6), C436–C447. [DOI: 10.1152/ajpcell.00225.2014](https://doi.org/10.1152/ajpcell.00225.2014)

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