

Korea uncovers new cancer reversion treatment strategy

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Despite decades of intensive cancer research by numerous biomedical scientists, cancer still holds its place as the number one cause of death in Korea. The fundamental reason behind the limitations of current cancer treatment methods is the fact that they all aim to completely destroy cancer cells, which eventually allows the cancer cells to acquire immunity.

In other words, recurrences and side-effects caused by the destruction of healthy cells are inevitable. To this end, some have suggested anticancer treatment methods based on cancer reversion, which can revert cancer cells back to normal or near-normal cells under certain conditions. However, the practical development of this idea has not yet been attempted.

Researchers at Korea Advanced Institute of Science and Technology (KAIST) have successfully identified the fundamental principle of a process that can revert cancer cells back to normal cells without killing the cells.

The team focused on the fact that unlike normal cells, which react according to external stimuli, cancer cells tend to ignore such stimuli and only undergo uncontrolled cell division. Through computer simulation analysis, the team discovered that the input-output (I/O) relationships that were distorted by genetic mutations could be reverted back to normal I/O relationships under certain conditions. The team then demonstrated through molecular cell experiments that such I/O relationship recovery also occurred in real cancer cells.

The results of this research show that the reversion of real cancer cells does not happen by chance, and that it is possible to systematically explore targets that can induce this phenomenon.