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New discovery in cancer progression paves way to combat cancer

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Singapore scientists have identified an important novel mechanism in cancer cells that could enable more targeted treatment for cancer

Scientists from A*STAR's Institute of Molecular and Cell Biology (IMCB) and Genome Institute of Singapore (GIS), as well as the NUS Cancer Science Institute of Singapore (CSI Singapore), National Cancer Centre Singapore (NCCS) and Nanyang Technological University (NTU), have identified an important cancer progression mechanism that is observed in 90 per cent of cancer cells. This discovery will guide further development of cancer specific drugs with potentially fewer side effects.

The life span of a normal healthy cell is determined by telomeres, protective caps at the ends of chromosomes. Each time a cell divides, the telomeres become shorter until eventually, they are too short to protect the DNA and the cell dies naturally. In contrast, cancer cells live through reactivating telomerase, an enzyme which can prolong telomeres, but is inactive in most adult cells.

By activating the Human Telomerase Reverse Transcriptase (hTERT) gene, cancer cells can continue to divide and multiply indefinitely in the body.

Studies have shown that telomerase is reactivated in as much as 90 per cent of cancers, making hTERT, through which telomerase is activated, an excellent candidate for targeting cancer cells.

Building on this work, the team will collaborate with industrial and clinical partners to develop cancer-specific telomerase inhibitors and bring those candidates to the clinical stage.