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Scientists from India and Russia design nanoparticles against cancer

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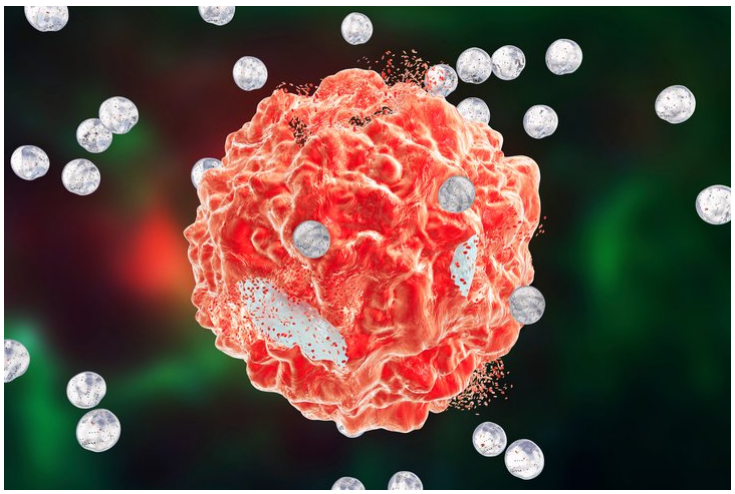

Scientists from the National University of Science and Technology MISIS (NUST MISIS), Moscow, and the Saha Institute of Nuclear Physics, Kolkata have developed star-shaped gold nanoparticles that can selectively destroy cancer cells. These stable, inexpensive and non-toxic particles will also make it possible to detect cancer at an early stage.

Star-shaped nanoparticles appear to be most efficient in photothermal therapy (PTT) that uses light radiation for the treatment of many medical conditions, including cancer.

When a nanoparticle reaches the affected area, it is blasted with a laser pulse. The nanoparticle absorbs the light and focuses it like a lens, directing it straight to the star’s sharp edge.

This light is then converted into heat, that is concentrated at the tip of the star. The generated heat flow breaks the membrane of a cancer cell and destroys it while leaving the healthy cells unharmed.

The gold nanoparticles are synthesised in a water solution of vitamin C, which makes them inexpensive and non-toxic. Experts from the Blokhin Russian Cancer Research Center also participated in the development.