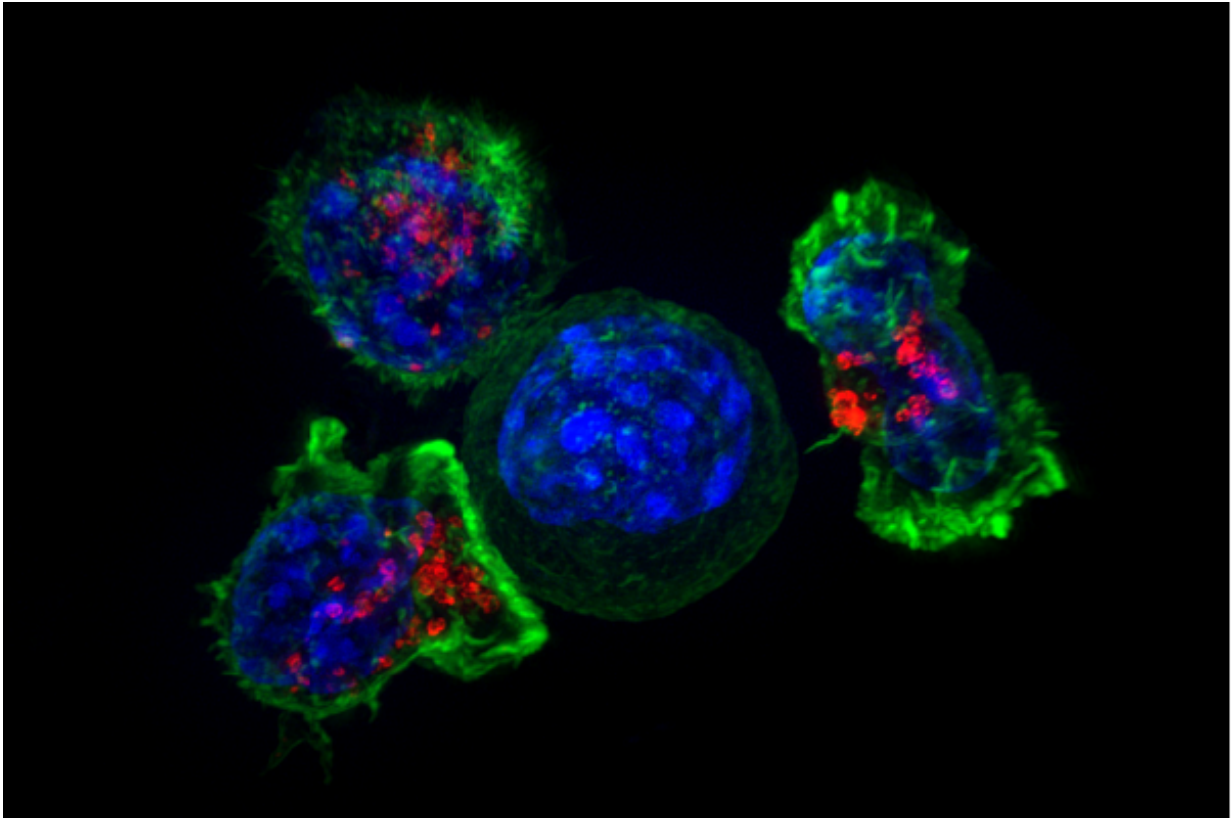


# Why cancer is so hard to beat

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Killer T cells surround a cancer cell. Credit: NIH

A new study published in *Biotechnology & Biotechnological Equipment* may have identified one of the key reasons why cancer is so hard to beat; it's an evolutionary mechanism to protect the survival of life on Earth. As authors Rumena Petkova and Stoyan Chakarov explain, our bodies are usually very efficient at identifying and repairing damaged DNA

through a series of 'checkpoints.' When the damage cannot be repaired, the cell usually dies in a process called apoptosis. But when that doesn't happen, cancer can result as a last-ditch 'checkpoint' to remove defective cells, the mutations that caused the damage and their DNA from the gene pool.

Petkova and Chakarov explain that [cancer](#), along with death from old age, 'seems to be a key evolutionary mechanism similar to DNA repair and apoptosis that protects the life.' What their theory means in practice, sadly, is that 'a universal and radical' cure for cancer does not – and may not ever – exist.

"Despite the successes of modern medicine, cancer is rarely completely cured and is likely to cause, directly or indirectly, the death of the patient, thereby preventing the propagation of the errors that made the tumor cells capable of avoiding replicative senescence or cell death."

Those individual fights we do win, however, are important, not least to cancer victims and their families. While we may never see a complete cure for cancer, modern medicine can now cure some types of cancer completely, and significantly slow down the progression of others. The result is that many individuals affected by cancer can and do lead lives of normal quality and life expectancy; moreover, it is likely the types of cancer than can be treated will continue to increase as medicine advances.

The authors conclude, "In this sense, we are as close as we could ever be to combating cancer."

**More information:** Rumena Petkova et al. The final checkpoint. Cancer as an adaptive evolutionary mechanism, *Biotechnology & Biotechnological Equipment* (2016). [DOI: 10.1080/13102818.2016.1152163](#)

Provided by Taylor & Francis

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