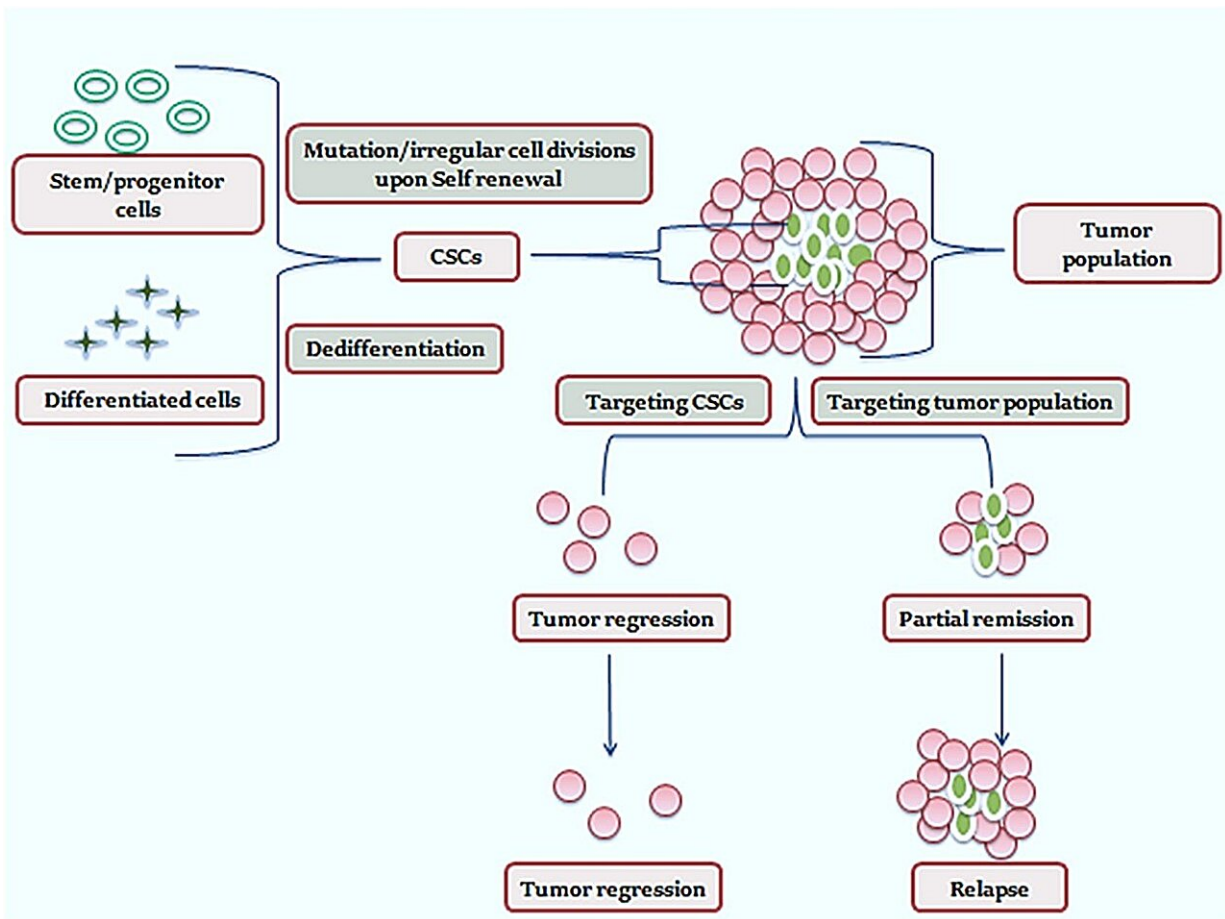


Breathing new life into old medications: A strategy that targets cancer stem cells

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CSC (cancer stem cell) origin and treatment approach for cancer therapy. Credit: *Genes & Diseases* (2023). DOI: 10.1016/j.gendis.2022.12.013

In a [review](#) published in the journal *Genes & Diseases*, researchers from

ICMR-National Institute of Nutrition (NIN), advocate for the repurposing of non-cancer drugs to target elusive cancer stem cells (CSCs). By focusing on drugs that are already approved and have established safety records for other conditions, this strategy offers a more immediate and safer avenue to innovate cancer therapy.

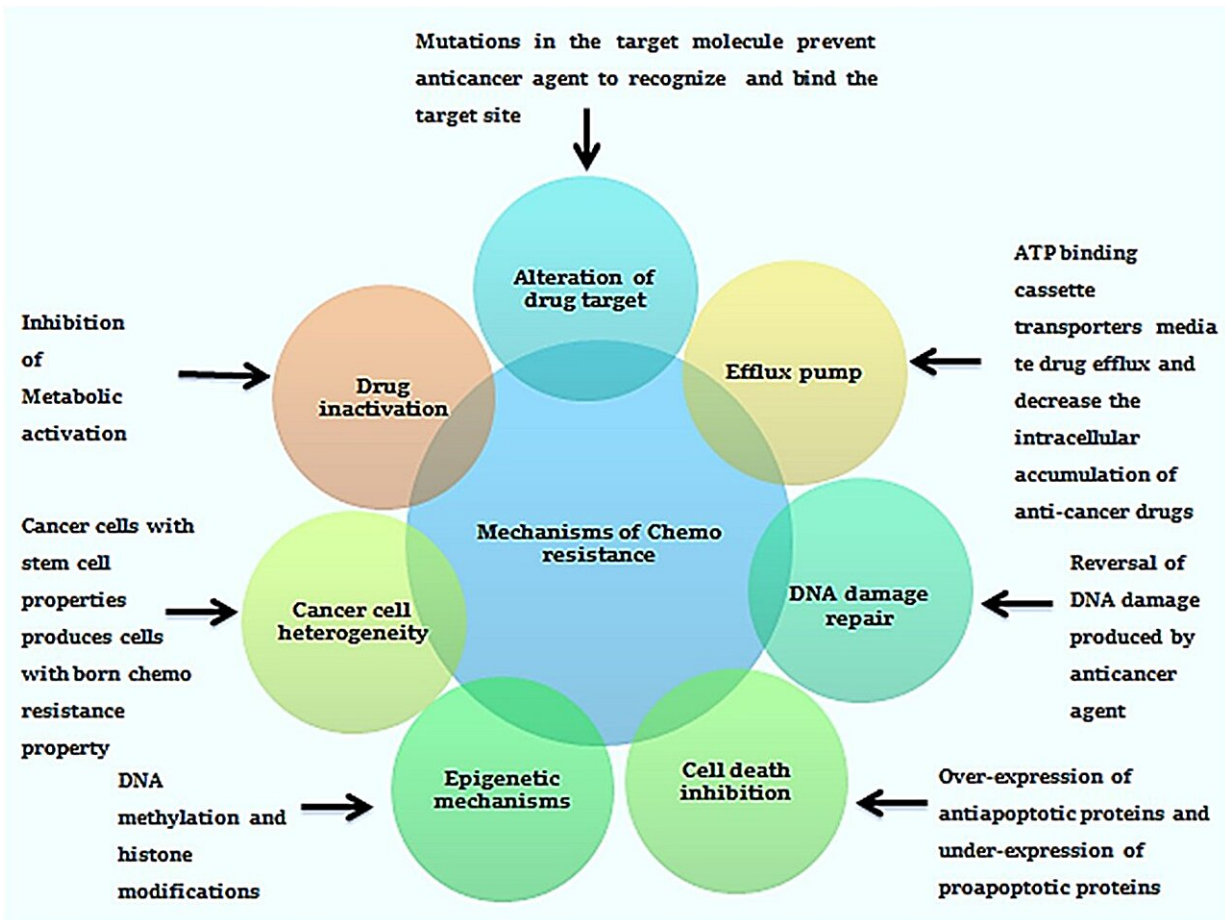
The team rigorously screened a variety of existing non-[cancer](#) drugs to determine their anticancer capabilities. Emphasis was placed on those that could effectively target the resilient CSCs. Additionally, the study delved into the combined efficacy of these repurposed drugs with micronutrients, renowned for their anticancer benefits and minimal side effects.

Recent studies have highlighted the instrumental role that CSCs play in not only defining the aggressiveness of tumors but also their ability to resist [conventional treatments](#). This breakthrough sets the foundation for the development of more tailored therapeutic treatments.

Traditional cancer therapies, including chemotherapy, have proven their effectiveness over time. However, a significant drawback is their tendency to harm [healthy cells](#) in the process, leading to a range of side effects. These include more common ones, such as [hair loss](#), as well as more detrimental health implications. In a noteworthy discovery, the research identified a range of non-cancer drugs that, when suitably repurposed, have the potential to target CSCs directly. This could provide a novel solution to overcome the limitations associated with mainstream therapies.

In addition, when these repurposed drugs are synergistically combined with micronutrients, it is believed that their anticancer properties could be significantly amplified. This dual approach heralds a comprehensive method of treatment with potentially diminished side effects. The urgency to specifically target CSCs is becoming an unequivocal focus

for advancing [cancer therapy](#)'s future landscape.



Mechanisms involved in chemoresistance. Credit: *Genes & Diseases* (2023). DOI: 10.1016/j.gendis.2022.12.013

Creating new drugs tailored for CSCs is undoubtedly a monumental task, both in terms of time and financial resources. In this context, the strategy of repurposing existing medications appears as a smarter and more efficient alternative. When these repurposed drugs are seamlessly integrated with existing treatments and are further enhanced by strategies focused on CSC-specific pathways, promising more effective

and less detrimental outcomes for patients.

Should this innovative strategy prove consistently successful, it may reshape the landscape of cancer therapy, making treatments both more effective and patient-friendly. By maximizing the potential of existing drugs and understanding their novel applications, a swifter route to effective and targeted treatments could become available for cancer patients globally.

More information: Divya Ajmeera et al, Drug repurposing: A novel strategy to target cancer stem cells and therapeutic resistance, *Genes & Diseases* (2023). [DOI: 10.1016/j.gendis.2022.12.013](https://doi.org/10.1016/j.gendis.2022.12.013)

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