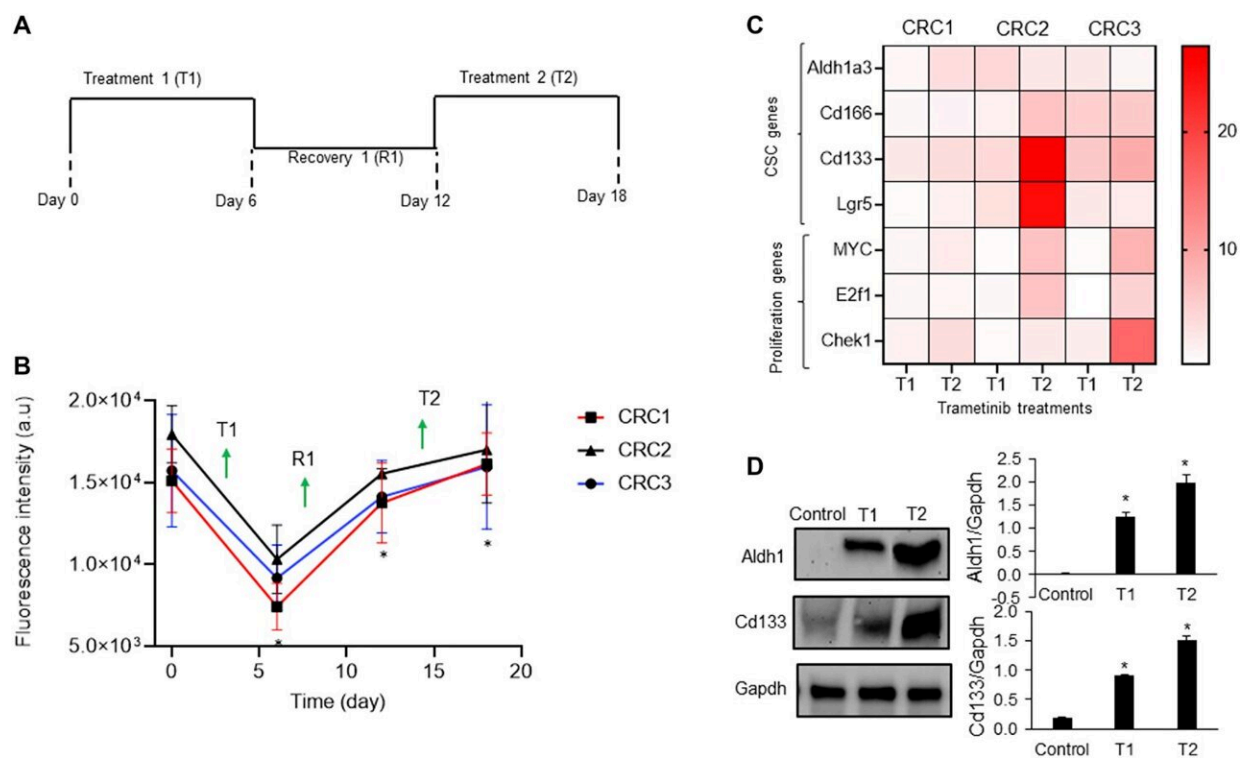


Suppression of cancer stemness and drug resistance via BRAF/EGFR/MEK inhibition in colorectal cancer cells

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Mechanism of drug resistance of CRC spheroids. Credit: *Oncotarget* (2023). DOI: 10.18632/oncotarget.28517

A new [research paper](#) titled "Inhibiting BRAF/EGFR/MEK suppresses cancer stemness and drug resistance of primary colorectal cancer cells"

has been published in *Oncotarget*.

Drug resistance is a major barrier against successful treatments of [cancer](#) patients. Gain of stemness under drug pressure is a major mechanism that renders treatments ineffective. Identifying approaches to target cancer stem cells (CSCs) is expected to improve treatment outcomes for patients. In their new study, researchers Astha Lamichhane, Gary D. Luker, Seema Agarwal, and Hossein Taviana from The University of Akron, University of Michigan and Georgetown University have aimed to elucidate the role of cancer stemness in resistance of colorectal cancer cells to targeted therapies.

"[...] we developed spheroid cultures of patient-derived BRAFmut and KRASmut tumor cells and studied resistance mechanisms to inhibition of MAPK pathway through phenotypic and gene and protein expression analysis," the researchers write.

They found that treatments enriched the expression of CSC markers CD166, ALDH1A3, CD133, and LGR5 and activated PI3K/Akt pathway in cancer cells. The team examined various combination treatments to block these activities and found that a triple combination against BRAF, EGFR, and MEK significantly reduced stemness and activities of oncogenic signaling pathways. This study demonstrates the feasibility of blocking stemness-mediated drug resistance and tumorigenic activities in colorectal cancer.

"Our approach to identify mechanisms of [drug resistance](#) of patient-derived cancer cells to targeted therapies and develop effective treatments is promising toward cancer precision medicine," the researchers summarize.

More information: Astha Lamichhane et al, Inhibiting BRAF/EGFR/MEK suppresses cancer stemness and drug resistance of

primary colorectal cancer cells, *Oncotarget* (2023). DOI: [10.18632/oncotarget.28517](https://doi.org/10.18632/oncotarget.28517)

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