

Depleting CAR T cells after tumor treatment reverses B cell deficiency in mice

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Genetically engineered T cells, or CAR T cells, represent a promising approach to treat multiple types of cancer. These therapies can eliminate tumors by targeting specific markers that are expressed on different cancer cell types. CAR T cell treatments for B cell-associated cancers have been particularly successful in eradicating tumors. These treatments destroy tumor cells expressing CD19, a protein that is upregulated at the early stages of B cell development. Unfortunately, because CAR T cells persist after a patient goes into remission, continual targeting of CD19 can lead to long-term depletion of healthy B cells.

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In this issue of the *JCI*, a team led by Dirk Busch at Technical University München has developed a strategy to prevent depletion of healthy B cells after successful CAR T cell treatments for B cell lymphomas.

They created CD19-targeting CAR T cells that also express a non-functional form of another protein called EGFR. They then treated a [mouse model](#) of leukemia with the EGFR- and CD19-targeting T cells.

After the treatment successfully eliminated B cell tumors in these mice, the researchers administered an antibody for EGFR, which depleted CAR T cells.

This strategy permanently restored levels of healthy B cells without causing cancer relapse in the mouse model.

This work provides evidence that incorporating an additional targeting mechanism into genetically engineered cells may improve the safety of these cell-based therapies.

More information: Paulina J. Paszkiewicz et al, Targeted antibody-mediated depletion of murine CD19 CAR T cells permanently reverses B cell aplasia, *Journal of Clinical Investigation* (2016).

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