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Development of novel avenues to overcome challenges facing CAR T cells

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Abbreviated Title: Augmenting CAR T cells

Abstract

There has been dramatic success in treating patients with adoptive transfer of autologous T cells genetically modified to express a chimeric antigen receptor (CAR) redirecting them to the antigen CD19. Despite this success, the application of CAR T cell therapy in solid malignancies has encountered many challenges that need to be overcome if similar success across other cancers is to become a reality. These challenges can be classified into six categories: the heterogeneity of tumor cell clones and tumor-associated antigen expression; poor T cell trafficking into the tumor site; poor T cell survival and persistence; the presence of suppressive immune cells; the secretion of suppressive soluble factors in the tumor microenvironment; the upregulation of T cell

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