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## Chimeric antigen receptor T cells in cancer immunotherapy: Beyond CD19

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Chimeric antigen receptor T (CART) cell therapy represents a novel, potent and potentially curative therapy in hematological malignancies. CD19 directed CARTs have resulted in impressive complete response rates of 90% in acute lymphoblastic leukemia and many of these remissions are durable without any further therapies. Impressive response rates were also reported in non-Hodgkin lymphoma and chronic lymphocytic leukemia. CD19 represents a unique target for CART cells; it's expressed universally on leukemic cells, has limited off tumor expression and B cell aplasia is well tolerated. A vertical advance in the field of CARTcell immunotherapy is to extend its application to non B-cell malignancies as well as to solid tumors. BCMA directed CART cells have been used in refractory multiple myeloma with very encouraging results. CD33 and CD123 directed CARTs have shown potent activity in preclinical models of acute myeloid leukemia and are being investigated in early phase clinical trials. Their expression on normal hematopoiesis warrants the use of follow up rescue transplantation. Furthermore, transient approaches and introduction of suicide mechanisms are needed, several of which are being investigated. Finally, different immunotherapeutic combinations are being developed and optimized and it is an exciting approach to enhance the therapeutic index of CART cell therapy.

### Biography

Saad S Kenderian, MD, is a Senior Associate Consultant in the Division of Hematology and Bone Marrow Transplantation at the Mayo Clinic. He holds the academic rank of Assistant Professor of Medicine and Oncology, Mayo Clinic College of Medicine. After completing a combined Fellowship in Hematology and Medical Oncology, he joined the Division of Hematology at Mayo, received the Mayo Scholar Award and joined the Translational Research Program of the University of Pennsylvania as a Mayo Scholar, where he worked in T cell immunotherapy for over two years. He returned to the Mayo Clinic in early 2016. He has received internal and external funding for his work in immunotherapy. He has been honored with numerous awards during his training and career. He is a Member of the American Society of Hematology, American Society for Blood and Marrow Transplantation, American Association for Cancer Research. He has authored or co-authored more than 25 articles in peer-reviewed journals and holds several patents in the field of engineered T cell therapy.

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