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## Chimeric antigen receptors (CARs) engineered control adverse immune responses

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Building on Chimeric Antigen Receptor (CAR) therapy for cancer, we have created and expanded human “natural” regulatory T cells (Tregs), as well as cytotoxic T cells that are rendered specific by expression of either T-cell receptor (TCR), single chain Fv (scFv) V regions or a novel CAR derivative, called B-cell antibody receptors (BAR). These specific Tregs demonstrate potent suppression of T-cell and B-cell responses in two disease models, MS and hemophilia, *in vitro* and *in vivo*. These cells are stable, specific and potent. Engineered BAR cytotoxic cells have also been generated that can directly target and kill specific B cells. Our results are a platform to generate T cells that can be used to block adverse immune responses. Translation into large animals and clinical trials are planned.

### Biography

David W Scott, PhD is Vice Chair for Research, Department of Medicine, Uniformed Services School of Health Sciences, Bethesda, MD and an alumnus of Antioch College, University of Chicago (MS) and Yale (PhD). Following a fellowship at Oxford University, he held tenured positions at Duke University, University of Rochester and University of Maryland Medical School. He has contributed to over 200 research papers on immunologic tolerance and its application in autoimmune diseases, hemophilia and gene therapy. He is the author of two textbooks, including *The Nature of Immunologic Tolerance*, he is a recipient of a number of awards, e.g. Distinguished Service Award from the American Association of Immunologists, a Boarhaave Professorship at Leiden University in Holland and the 2009 Scientific Achievement Award from AAPS.

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