# Development of a novel anti BCMA (B cell Maturation Antigen) 9C4 academic CAR as a low cost adaptive cellular therapy candidate in multiple myeloma 2630

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## Abstract citation ID: vkaf283.529 Development of a novel anti BCMA (B cell Maturation Antigen) 9C4 academic CAR as a low cost adaptive cellular therapy candidate in multiple myeloma 2630

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### Abstract Description:

Multiple myeloma (MM) is characterized by the proliferation of malignant plasma cells (PCs) within the bone marrow and is a fatal

disease. Continuous emergence and evolution of drug-resistant clones remains a challenge. BCMA (B Cell Maturation Antigen) is known to be overexpressed in MM and is an attractive molecular target in MM. We evaluated BCMA expression in a cohort of MM patients which, identified elevated mRNA levels alongside increased serum BCMA, an indicator associated with poor prognosis in MM. BCMA was confirmed as a viable therapeutic target, and expression of the BCMA ECD protein was successfully achieved in a eukaryotic system enabling hybridoma generation. Twenty unique hybridoma clones were generated and screened for optimal binding to the BCMA ECD protein using ELISA. The leading clone, 9C4, was selected based on its binding affinity. Molecular docking studies revealed four distinct and unique BCMA binding epitopes (S, Q, N, E), It was found to interact with 23 residues of BCMA which is higher then many currently known antibody candidates. The ScFv sequence of the 9C4 clone was then incorporated into a second-generation CAR (Chimeric antigen receptor) construct co expressing CD34ζ and 4-1BB domains which was expressed on T cells to generate Anti-BCMA CAR T cell which was evaluated using both in vitro and in vivo assays.Our work provides a framework for development of a novel academic low cost Anti-BCMA CAR-T cell therapy in multiple myeloma.

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