Antigen Delivery to Plasmacytoid Dendritic Cells via BST2 Induces Protective T Cell-Mediated Immunity.

Plasmacytoid dendritic cells (PDCs) are capable of presenting Ags to T cells in a tolerogenic or immunogenic manner depending on the formulation of the Ag and the mode of stimulation. It has not been investigated whether effective adaptive immune responses useful for vaccination can be induced by Ab-mediated Ag targeting to PDCs in vivo. In this study, we show that Ag delivered to murine PDCs via bone marrow stromal cell Ag 2 (BST2)/CD317 in combination with TLR agonists as adjuvants is specifically presented by PDCs in vivo and elicits strong cellular and humoral immune responses. These include IFN-? production by CD4(+) T cells and high Ab titers with a broad range of IgG isotypes. In addition, BST2-mediated Ag delivery in the presence of polyinosinic-polycytidylic acid as adjuvant induces cytotoxic T lymphocytes that are functional in vivo. A single immunization with Ag-fused anti-BST2 Ab together with polyinosinic-polycytidylic acid as adjuvant is sufficient to trigger protective immunity against subsequent viral infection and tumor growth. We conclude that despite the potential tolerogenic properties of PDCs, Ag targeting to PDCs in combination with TLR agonists as adjuvants is an effective vaccination strategy.