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(54) Title: VACCINES WITH HIGHER CARBOHYDRATE ANTIGEN DENSITY AND NOVEL SAPONIN ADJUVANT

(57) Abstract: The present invention provides vaccines comprising carbohydrate antigen conjugated to a diphtheria toxin (DT) as a carrier protein, wherein the ratio of the number of carbohydrate antigen molecule to the carrier protein molecule is higher than 5:1. Also disclosed herein is a novel saponin adjuvant and methods to inhibit cancer cells, by administering an effective amount of the vaccine disclose herein.