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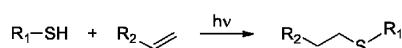
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(54) Title: PRECISION GLYCOCONJUGATES AS THERAPEUTIC TOOLS

Fig. 2

Photolytic thiol-ene "click chemistry"



R₁ = Cysteine residues on T-cell epitope (ex. Tetanus toxoid)
R₂ = Carbohydrate antigens serving as B-cell epitope

(57) Abstract: The present description relates to glycoconjugates, glycoconjugate immunogens and glycoconjugate vaccines comprising carbohydrate antigens coupled to immunogenic carrier proteins, or materials used for detection and screening of resulting antibodies. Improved methods of more directly and precisely conjugating carbohydrate antigens to free thiol groups of immunogenic carrier proteins are described, including "click-chemistry" approaches based on photocatalytic thiol-ene reactions.