Title: CARBOHYDRATE-BASED SYNTHETIC VACCINES FOR HIV

Abstract: The present invention relates to a constructed oligosaccharide cluster, optionally bonded to an immunogenic protein, that can be administered to a subject to induce an immune response for increasing production of 2G12 and/or used in assays as reactive sites for determining compounds that inactivate and/or bind the high-mannose oligosaccharide cluster. Compositions comprising these clusters, methods of using these clusters and compositions are disclosed.
### INTERNATIONAL SEARCH REPORT

**International application No.**
PCT/US03/32496

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(8) : C12P 19/00, 19/12, 19/04; C12M 5/16, 5/06; A01N 43/04; A61K 31/70, 31/715, 39/40, 39/395; A61M 36/14

US CL : 435/72, 101, 100, 329; 514/23, 54, 61; 424/1,73, 137.1

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/72, 101, 100, 329; 514/23, 54, 61; 424/1,73, 137.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

Please See Continuation Sheet

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Tkola et al. Human monoclonal antibody 2G12 defines a distinctive neutralization epitope on the gp120 glycoprotein of human immunodeficiency virus type 1. J. Virol. 1996 70: 1100-1108, see Figure 4.</td>
<td>1-8 and 34-37</td>
</tr>
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<td>T</td>
<td>Dudkin et al. Toward Fully Synthetic Carbohydrate-Based HIV Antigen Design: On the Critical Role of Bivalency. J. Am. Chem. Soc.; (Communication); 2004; 126(31); 9560-9565.</td>
<td>1-38</td>
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**Date of the actual completion of the international search**

**Date of mailing of the international search report**
30 JAN 2006

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**Form PCT/ISA/210 (second sheet) (July 1998)**
Continuation of B. FIELDS SEARCHED Item 3:
USPUB, USPGPUB, DERWENT, EPO, IPO, USOCR, STN (Bioscience)
mannose, oligosaccharide, oligomannose; 2G12, antibody, HIV, immunogenic protein; scaffold, man9glcnac2asn