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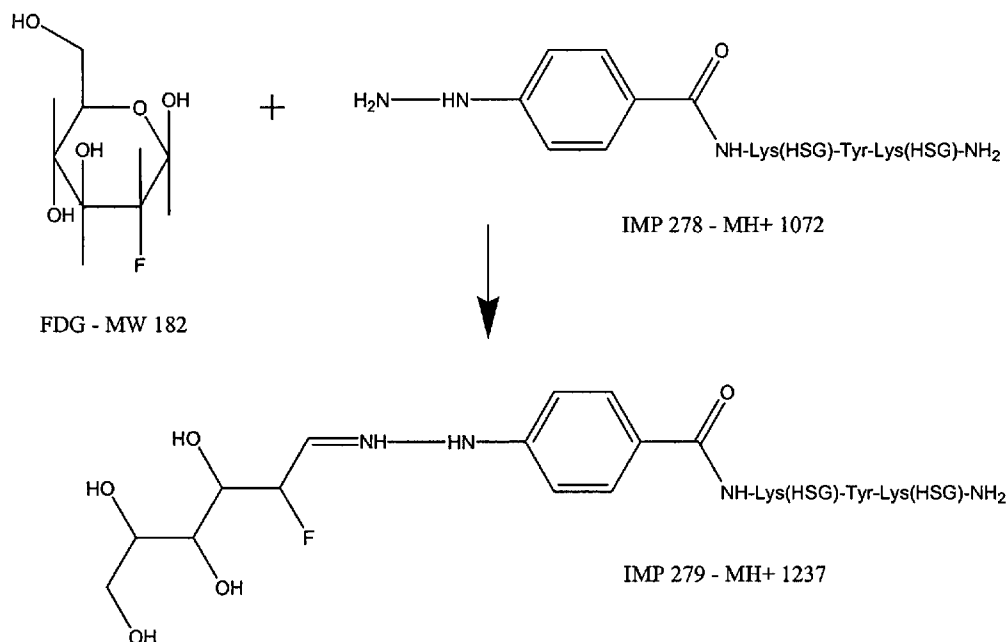
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- Published:
- with international search report
  - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: FLUORINATED CARBOHYDRATE CONJUGATES



(57) Abstract: Disclosed are novel conjugates that include fluorinated carbohydrate molecules and methods for synthesizing the conjugates. The fluorinated carbohydrate molecule may include a radioisotope. The method of synthesizing the conjugate is useful for labeling selected molecules, and the conjugates may be useful in diagnostic or therapeutic methods. Particularly, the conjugates may be useful in diagnostic or therapeutic kits.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US04/24237

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC: **C07H 5/02**( 2006.01),**1/00**( 2006.01)  
  
 USPC: 536/122,124  
 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. : 536/122, 124

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 EAST; STN Text and Inventor Search Performed by STIC (See SCORE)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,057,301 (WILBUR et al) 15 October 1991 (15.10.1991), see entire document.	1-136

Further documents are listed in the continuation of Box C.  See patent family annex.

* Special categories of cited documents:		"T"
"A"	document defining the general state of the art which is not considered to be of particular relevance	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier application or patent published on or after the international filing date	"X"
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"O"	document referring to an oral disclosure, use, exhibition or other means	"Y"
"P"	document published prior to the international filing date but later than the priority date claimed	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
		"&"
		document member of the same patent family

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Name and mailing address of the ISA/US  
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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/24237

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

- Remark on Protest**
- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
  - The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
  - No protest accompanied the payment of additional search fees.

**BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING**

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-122 and 136, drawn to a conjugate comprising a fluorinated carbohydrate molecule linked to a second molecule, wherein the fluorinated carbohydrate molecule comprises F-18 or F-19, methods of preparation and use thereof.

Group II, claim(s) 123-128, drawn to a method of separating 2-Fluoro-2-Deoxy-D-Glucose.

Group III, claim(s) 129-135, drawn to a method of separating 1,3,4,6-tetra-O-acetyl-2-O-fluorine- $\alpha$ -D-glucose.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: PCT Rule 13.2, requires that unity of invention exists only when there is a shared same or corresponding technical feature among the claimed inventions. All the groupings are directed to fluorinated carbohydrates, but each group has a different special technical feature not shared by the remaining groups. Group I is directed to a fluorinated carbohydrate molecule, which has the special technical feature of being linked to a second molecule, wherein the fluorinated carbohydrate molecule comprises F-18 or F-19, which is not shared by any of the remaining groups. Group II is directed to method of separating 2-Fluoro-2-Deoxy-D-Glucose, which has the special technical feature of contacting a solution comprising 2-Fluoro-2-Deoxy-D-Glucose with boronic acid resin, not shared by any of the remaining groups. Group III is directed to a method of separating 1,3,4,6-tetra-O-acetyl-2-O-fluorine- $\beta$ -D-glucose, which has the special technical feature of contacting a solution comprising 1,3,4,6-tetra-O-acetyl-2-O-fluorine- $\beta$ -D-glucose with a resin capable of being alkylated, not shared by any of the remaining groups.