Field: BIOSYNTHESIS OF HUMAN MILK OLIGOSACCHARIDES IN ENGINEERED BACTERIA

Abstract: The invention provides compositions and methods for engineering bacteria to produce fucosylated oligosaccharides, and the use thereof in the prevention or treatment of infection.
INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 2012/025450

A. CLASSIFICATION OF SUBJECT MATTER

C12N 15/09 (2006.01)
C12N 15/52 (2006.01)
C12N 15/63 (2006.01)
C12P 19/04 (2006.01)

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)

C12N 15/00, 15/09, 15/10, 15/52, 15/63, C12P 19/00, 19/04

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)

PatSearch (RU/TP internal), Esp@cenet, PAJ, USPTO

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>US 752 12 12 B1 (CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CN RS)) 2 1.04.2009, claims, col. 4, lines 40-44, col. 12-14, 19-20, ex. 8, col. 18, ex. 5, col. 10-11, ex. 2, col. 12, lines 65-57, col. 18-19, ex. 7, fig. 1, fig. 9</td>
<td>1-5. 7-15, 18-19, 21-30, 34-38</td>
</tr>
</tbody>
</table>

* Further documents are listed in the continuation of Box C.

See patent family annex.

"T" 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

"X" 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

"Y" 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

"Footnotes:

- "T" indicates that the cited document is not in conflict with the claimed invention.
- "X" indicates that the cited document is relevant to the claimed invention.
- "Y" indicates that the cited document is relevant to the claimed invention but its combined effect with other documents makes it less significant.

Date of the actual completion of the international search
30 July 2012 (30.07.20 12)

Date of mailing of the international search report
16 August 2012 (16.08.20 12)

Name and mailing address of the ISA/FTPS
Russia, I23995, Moscow, G-59, GSP-5, Berezhhovskaya nab., 30-1

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Authorized officer
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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).

This International Searching Authority found multiple inventions in this international application, as follows:
(see extra sheet)

1. [ ] As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. [x] As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of 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.
In accordance with the Rule 13.2 in case of the group of inventions is claimed in the international application, the criterion of unity considers met when the technical relationship among these inventions is performed to be expressed by one or several similar or relevant significant technical features.

Within the represented claims the unifying features are features of bacteria construction comprising β-galactosidase gene. Taking into account that the document D1 discloses all the features, therefore, according to the Rule 13.2 the claimed inventions do not have common technical features performing the contribution to the art.

Thus, the claims comprises 8 invention groups:
Invention of the independent claim 1 relates to the 1st group;
Invention of the independent claim 11 relates to the 2nd group;
Invention of the independent claim 21 relates to the 3rd group;
Invention of the independent claim 26 relates to the 4th group;
Inventions of the independent claims 31-33 relate to the 5th group;
Invention of the independent claim 35 relates to the 6th group;
Invention of the independent claim 36 relates to the 7th group;
Invention of the independent claim 37 relates to the 8th group.

The possibility of use of the claimed bacteria construction for use in claimed methods is not obvious from the cited prior art for the group No 5.