Title: TRUNCATED ST6GALNAC1 POLYPEPTIDES AND NUCLEIC ACIDS

Abstract: The present invention features compositions and methods related to truncated mutants of ST6GalNAc1. In particular, the invention features truncated human, mouse, and chicken ST6GalNAc1 polypeptides. The invention also features nucleic acids encoding such truncated polypeptides, as well as vectors, host cells, expression systems, and methods of expressing and using such polypeptides.

Declaration under Rule 4.17:
— of inventorship (Rule 4.17(iv))

Published:
— with international search report

Date of publication of the international search report: 12 April 2007

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**

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(8): C12Q 1/68(2007.01), C12P 21/00, C12N 9/10, C12N 1/18; C07B 21/02(2007.01), C07H 21/04

USPC: 425/6, 69.1, 193, 252.3; 536/23.1, 23.2

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.: 435/6, 69.1, 193, 252.3; 536/23.1, 23.2

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

WebStar dictionary

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

STN- Index Bioscience Medicine databases, WEST, STN-nucleic acid and protein databases and Google

**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>ZERFAPUI et al. The cystolic and transmembrane domains of the beta 1,6 N-acetylglucosaminyltransferase (C2GnT) function as a cis to medial/Golgi-targeting determinant. 2002, Glyobiology, Vol. 12, No. 1, pages 15-24 (See Abstract p15, p16, Fig. 1A, Col 1, Results section).</td>
<td>1, 7-8</td>
</tr>
</tbody>
</table>

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

![Special categories of cited documents]

**Date of the actual completion of the international search**

13 November 2006 (13.11.2006)

**Date of mailing of the international search report**

9 JAN 2007

**Name and mailing address of the ISA/US**

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Form PCT/ISA/210 (second sheet) (April 2005)
# INTERNATIONAL SEARCH REPORT

**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).

**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.: 1, 4-7, 8 and SEQ ID NO: 10

**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

Group I claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of SEQ ID NO: 10.
Group II claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of SEQ ID NO: 12.
Group III claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of SEQ ID NO: 14.
Group IV claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of delta35 of human sequence of Fig. 31.
Group V claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of delta72 of human sequence of Fig. 31.
Group VI claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of delta109 of human sequence of Fig. 31.
Group VII claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of delta33 of human sequence of Fig. 31.
Group VIII claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of delta170 of human sequence of Fig. 31.
Group IX claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of delta232 of human sequence of Fig. 31.
Group X claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of delta272 of human sequence of Fig. 31.
Group XI claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of SEQ ID NO: 28.
Group XII claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of SEQ ID NO: 30.
Group XIII claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of SEQ ID NO: 32.
Group XIV claim(s) 1, 4-7, 8, drawn to an isolated truncated ST6galNAcI polypeptide of delta225 of chicken sequence of Fig. 31.
Group XV claim(s) 1 and 2, drawn to an isolated truncated ST6galNAcI polypeptide lacking all or portion of signal domain and transmembrane domain.

Group XVI claim(s) 1, 2 and 3, drawn to an isolated truncated ST6galNAcI polypeptide lacking all or portion of signal domain, transmembrane domain and stem domain.
Group XVII claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of SEQ ID NO: 10.
Group XVIII claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of SEQ ID NO: 12.
Group XIX claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of SEQ ID NO: 14.
Group XX claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of delta35 of human sequence of Fig. 31.
Group XXI claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of delta72 of human sequence of Fig. 31.
Group XXII claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of delta109 of human sequence of Fig. 31.
Group XXIII claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of delta133 of human sequence of Fig. 31.
Group XXIV claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of delta170 of human sequence of Fig. 31.
Group XXV claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of delta232 of human sequence of Fig. 31.
Group XXVI claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of delta272 of human sequence of Fig. 31.
Group XXVII claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of SEQ ID NO: 28.
Group XXVIII claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of SEQ ID NO: 30.
Group XXIX claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of SEQ ID NO: 32.
Group XXX claim(s) 9-17, drawn to an isolated truncated ST6galNAcI polynucleotide encoding a polypeptide of delta225 of chicken sequence of Fig. 31.
Group, XXXI claim(s) 18-23, drawn to a method of catalyzing the transfer of a sialic acid moiety to an acceptor moiety. The inventions listed as Groups I - XXXI 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: The polypeptide of Group I-XVI and polynucleotide of Group XVII-XXX are each unrelated and chemically distinct entities. The only shared technical feature of these groups is that they all relate to polynucleotide encoding a polypeptide ST6GaINAcI. However, this shared technical feature is not a “special technical feature” as defined by PCT Rule 13.2 as it does not define a contribution over the art. GenBank Accession No. NM_002456 ("Homo sapiens mucin 1 cell surface associated (MUC1), transcript variant 1, mRNA", created 3/24/1999) teach a DNA encoding a ST6GaINAcI polypeptide, which is known in the art. Thus, a ST6GaINAcI polypeptide does not make contribution over the prior art.