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(54) Title: PROTEIN GLYCOSYLATION

(57) Abstract: The present invention relates to methods for glycosylating a protein in which the protein is modified to include an alkyne and/or an azide group. The invention further relates to a protein glycosylated by these methods.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. C07K1/107

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)
C07K

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 practical, search terms used)
EPO-Internal, WPI Data, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KUIJPERS BRIAN H M ET AL: "Expedient synthesis of triazole-linked glycosyl amino acids and peptides." ORGANIC LETTERS. 2 SEP 2004, vol. 6, no. 18, 2 September 2004 (2004-09-02), pages 3123-3126, XP002403019 ISSN: 1523-7060 cited in the application Abstract; Tables 1-5, Schemes 1-2; p. 3126, RH col. paragraph 2 (conclusions).	1-13, 24-30, 35-43

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TORNOE C W ET AL: "Peptidotriazoles on solid phase" JOURNAL OF ORGANIC CHEMISTRY, AMERICAN CHEMICAL SOCIETY. EASTON, US, vol. 67, no. 9, 2002, pages 3057-3064, XP002234501 ISSN: 0022-3263 cited in the application Abstract; Scheme 1-3; compounds 3a-s, 3r.	1-13, 24-30, 35-43
X	ROICE M ET AL: "HIGH CAPACITY POLY(ETHYLENE GLYCOL) BASED AMINO POLYMERS FOR PEPTIDE AND ORGANIC SYNTHESIS" QSAR AND COMBINATORIAL SCIENCE, WILEY-VCH, WEINHEIM, DE, vol. 23, no. 8, 2004, pages 662-673, XP008041412 ISSN: 1611-020X Abstract; Scheme 4, reaction of peptide 17 with Fmoc-Dap(N3)-OH.	23
X	WO 2004/094593 A (SCRIPPS RESEARCH INST [US]; CHIN JASON W [GB]; CROPP ASHTON T [US]; AN) 4 November 2004 (2004-11-04) Abstract; Fig. 13; p. 126, paragraph 338; examples 1-5.	1-13, 24-30, 35-43
A	KIICK K L ET AL: "Protein Engineering by In Vivo Incorporation of Non-Natural Amino Acids: Control of Incorporation of Methionine Analogues by Methionyl-tRNA Synthetase" TETRAHEDRON, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 56, no. 48, 24 November 2000 (2000-11-24), pages 9487-9493, XP004220796 ISSN: 0040-4020 cited in the application Abstract; compound 3; p. 9492, RH. col. last sentence before Acknowledgements	1-42
A	LINK A JAMES ET AL: "Presentation and detection of azide functionality in bacterial cell surface proteins." JOURNAL OF THE AMERICAN CHEMICAL SOCIETY. 1 SEP 2004, vol. 126, no. 34, 1 September 2004 (2004-09-01), pages 10598-10602, XP002403020 ISSN: 0002-7863 cited in the application Abstract; p. 10599, RH. col. "Expression of OmpC containing Non-canonical amino acids"; Fig.1; scheme 1.	1-42

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International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 00/01712 A2 (GENENCOR INT [US]) 13 January 2000 (2000-01-13) cited in the application Abstract; Fig. 1	31-42
A	WO 2005/000862 A2 (ISIS INNOVATION [GB]; DAVIS BENJAMIN GUY [GB]; GAMBLIN DAVID PHILIP [G) 6 January 2005 (2005-01-06) cited in the application Abstract; p. 2, l. 13-27; examples 19-21, 55-59, 75.	31-42

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004094593 A	04-11-2004	AU 2004233083 A1	04-11-2004
		CA 2520750 A1	04-11-2004
		EP 1613735 A2	11-01-2006
		MX PA05011127 A	10-03-2006
WO 0001712 A2	13-01-2000	AU 749383 B2	27-06-2002
		AU 5208199 A	24-01-2000
		CA 2331783 A1	13-01-2000
		EP 1093459 A2	25-04-2001
		JP 2002519050 T	02-07-2002
WO 2005000862 A2	06-01-2005	AU 2004251105 A1	06-01-2005
		BR PI0411766 A	08-08-2006
		CA 2529341 A1	06-01-2005
		EP 1644390 A2	12-04-2006