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(74) Agents: REDDY, Daphne et al.; Life Technologies Corporation, Attention: IP Department, 5791 Van Allen Way, Carlsbad, CA 92008 (US).

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(71) Applicant (for all designated States except US): LIFE TECHNOLOGIES CORPORATION [US/US]; c/o CPA Global, P.O. Box 52050, Minneapolis, Minnesota 55402 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BARRETT, Shawn [CA/US]; 9300 Via Cimato Dr, Clarence Center, New York 14032 (US). JACOBIA, Scott [US/US]; 277 Darwin Drive, Snyder, New York 14226 (US).

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[Continued on next page]

(54) Title: CELL CULTURE MEDIUM COMPRISING SMALL PEPTIDES

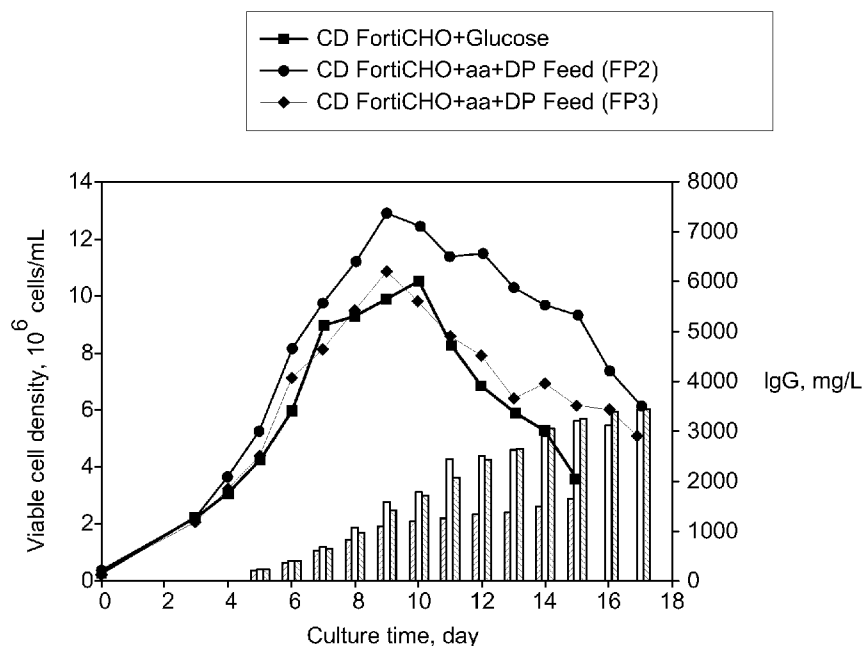


FIG. 1

(57) Abstract: Cell culture media, concentrated media and feeds, methods of manufacturing cell culture media and feeds, and methods of culturing cells are provided. One or more small peptides, including dipeptides are added to the cell culture media to provide improved stability and improved conditions for culturing cells.

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- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

A. CLASSIFICATION OF SUBJECT MATTER*C12N 5/02(2006.01)i, C12N 1/38(2006.01)i, C07K 5/06(2006.01)i, C12N 7/01(2006.01)i*

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 5/02

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords:cell culture medium, dipeptide, cystein-alanine, tyrosine-alanine

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GIBCO, Cat. No. 35050-061, GlutaMAX TM I(100X), June 2003 See the whole document	1-7,26-31,41-44 ,51-67
A	SAFC Biosciences, Technical Bulletin, 'Glutamine-S Stability', January 2006 See the whole document	1-7,26-31,41-44 ,51-67
A	CHRISTIE, A and BUTLER, M., 'Glutamine-based dipeptides are utilized in mammalian cell culture by extracellular hydrolysis catalyzed by a specific peptidase', Journal of Biotechnology, vol.37, pp.277-290, 1994	1-7,26-31,41-44 ,51-67
A	AREDES FERNANDEZ, P.A. et. al., 'Effect of amino acids and peptides on growth of pediococcus pentosaceus from wine', Latin American Applied Research, vol.1.33, pp.225-229, 2003 See abstract; page 226	1-7,26-31,41-44 ,51-67
A	MOHABBAT, T. and DREW, B., 'Simultaneous determination of 33 amino acids and dipeptides in spent cell culture media by gas chromatography-flame ionization detection following liquid and solid phase extraction', Journal of Chromatography B, vol.862, pp.86-92, 2008 See the whole document	1-7,26-31,41-44 ,51-67



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"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

"&" document member of the same patent family

Date of the actual completion of the international search

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Korean Intellectual Property Office
Government Complex-Daejeon, 189 Cheongsu-ro,
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Lee Hyojin

Telephone No. 82-42-481-8743



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/033630

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GREENE, J. et. al., 'Rapid and precise determination of cellular amino acid flux rates using HPLC with automated derivatization with absorbance detection', Agilent Technologies, Inc. Application Note, 6 February 2009 See the whole document	1-7,26-31,41-44 ,51-67
X	GIBCO, 'What happens when you pair the finest base medium with the perfect feed supplement?', CD OptiCHO™ Medium and CHO CD EfficientFeed™ Kit, 2008	61
A	See the whole document	1-7,26-31,41-44 ,51-60,62-67
X	TISCORNIA, G. et. al., 'Production and purification of lentiviral vectors', vol.1, no.1, pp.241-245, 27 June 2006	62
A	See the whole document	1-7,26-31,41-44 ,51-61,63-67

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/033630**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.: 9,20,21,24,25,45-50,68
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:

Claims 9,20,21,24,25,45-50 and 68 are unclear, as they refer to the multiple dependent claims which are not drafted in accordance with the third sentence of Rule 6.4(a).
3. ☒ Claims Nos.: 8,10-19,22,23,32-40
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:

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 an additional fee, this Authority did not invite payment of any additional fee.
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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/033630Patent document
cited in search reportPublication
datePatent family
member(s)Publication
date

None