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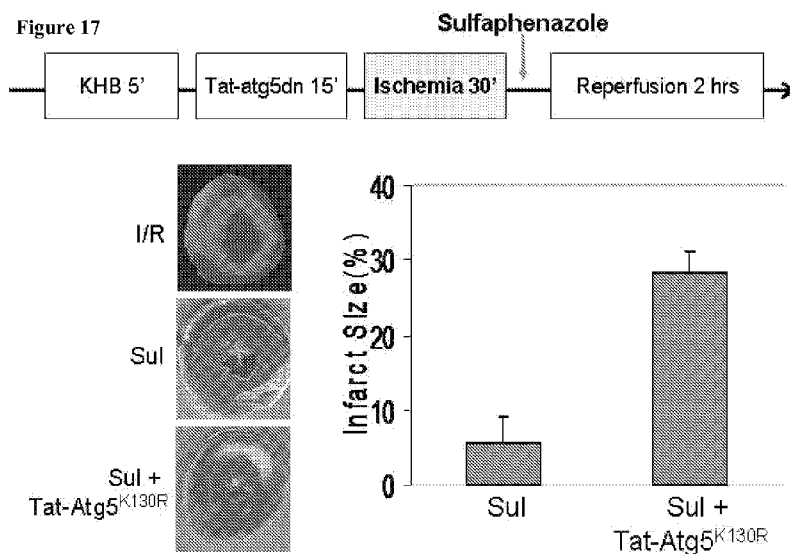
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Published:

- 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))
- with sequence listing part of description (Rule 5.2(a))

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2 February 2012

(54) Title: COMPOSITIONS AND METHODS FOR MODULATING AUTOPHAGY



(57) Abstract: In alternative embodiments, the invention provides cell-permeable recombinant or synthetic proteins to modulate autophagy, including a Tat-Atg5K130R (inhibitor of autophagy) and a Tat-Becn1 (stimulant or activator of autophagy), and nucleic acids expressing them and methods for making and using them, e.g., to treat conditions and disorders responsive to autophagy modulation (e.g., where autophagy is dysregulated), including neurodegeneration, cystic fibrosis, cancer, heart failure, diabetes, obesity, sarcopenia, aging, ischemia/reperfusion, inflammatory disorders including Crohns, ulcerative colitis, biliary cirrhosis, lysosomal storage diseases, infectious diseases associated with intracellular pathogens including viruses, bacteria, and parasites such as Trypanosomes and malaria.

WO 2011/106684 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/026299**A. CLASSIFICATION OF SUBJECT MATTER***C12N 15/62(2006.01)i, C12N 15/63(2006.01)i, C07K 19/00(2006.01)i, A61K 38/16(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 15/62; A61K 39/395; A01H 5/00; C12N 5/04; C07K 16/40

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: autophagy, recombinant protein, Tat-Atg5K130R, Tat-beclin1

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008-0175837 A1 (CHIORI IJICHI et al.) 24 July 2008 See the whole document	1-5
A	WO 02-33051 A1 (THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE SECRETARY OF AGRICULTURE) 25 April 2002 See the whole document	1-5
A	CHENGQUN HUANG et al. Autophagy and protein kinase C are required for cardioprotection by sulfaphenazole. Am J Physiol Heart Circ Physiol. Published online before print December 2009, Vol. 298, No. 2, pp. H570-H579 See the whole document	1-5
A	SMADAR YITZHAK et al. Autophagy is required for preconditioning by the adenosine A1 receptor-selective agonist CCPA. Basic Res Cardiol. 2009, Vol. 104, No. 2, pp. 157-167 See the whole document	1-5
A	ROBERTA A. GOTTLIEB et al. Cardioprotection requires taking out the trash. Basic Res Cardiol. 2009, Vol. 104, No. 2, pp. 169-180 See the whole document	1-5

 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

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/026299**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.: 7-17
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 7-17 pertain to methods for treatment of the human body by surgery or therapy, as well as diagnostic methods, and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
2. Claims Nos.: 8-10, 12, 14-17
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:
See extra sheet
3. Claims Nos.: 6, 7, 10, 13, 14, 17
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

International application No.

PCT/US2011/026299

(Continuation of Box No. II)

Claims 8, 9, 12, 15, 16 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).

The subject matter of claims 8-10 is not clear because claim 6 relates to the pharmaceutical composition, but claims 8-10, dependent on claim 6, relate to the method.

Claims 14 and 17 are worded in reference to the method of any of claims 6 to 12. However, said method has not been worded in claim 6.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/026299

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0175837 A1	24.07.2008	EP 1875921 A1	09.01.2008
		JP W020-061181 96A1	09.11.2006
		WO 2006-118196 A1	09.11.2006
WO 02-33051 A1	25.04.2002	AU 1154002 A	29.04.2002
		AU 2002-11540 A1	29.04.2002
		WO 02-33051A1	25.04.2002