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(88) Date of publication of the international search report:

11 March 1999 (11.03.99)

(54) Title: TRUNCATED VEGF-RELATED PROTEINS

VEGF-B

	TRAT TRAT TRAT
CQPREVVVPLSMELMGNVVKQLVPSCVTVQRCGGCCPDDGLECVPTGQHQVRMQILMIQYPSSQLGEMSLEEHSQ CQPREVVVPLSMELMGNVVKQLVPSCVTVQRCGGCCPDDGLECVPTGQHQVRMQILMIQYPSSQLGEMSLEEHSQ CQPREVVVPLSMELMGNVVKQLVPSCVTVQRCGGCCPDDGLECVPTGQHQVRMQILMIQYPSSQLGEMSLEEHSQ CQPREVVVPLSMELMGNVVKQLVPSCVTVQRCGGCCPDDGLECVPTGQHQVRMQILMIQYPSSQLGEMSLEEHSQ CQPREVVVPLSMELMGNVVKQLVPSCVTVQRCGGCCPDDGLECVPTGQHQVRMQILMIQYPSSQLGEMSLEEHSQ CQPREVVVPLSMELMGNVVKQLVPSCVTVQRCGGCCPDDGLECVPTGQHQVRMQILMIQYPSSQLGEMSLEEHSQ CQPREVVVPLSMELMGNVVKQLVPSCVTVQRCGGCCPDDGLECVPTGQHQVRMQILMIQYPSSQLGEMSLEEHSQ	OCEC OCEC OCEC OCEC
RPKKKESAVKPDSPRILCPPCTQRRQRPDPRTCRCRCRRRFLHCQGRGLELNPDTCRCRKPRK RPKKKESAVKPDSPRILCPPCTQRRQRPDPRTCRCRCRRRFLHCQGRGLELNPDTCRCRKPRK RPKKKESAVKPDSPRILCPPCTQRRQRPDFTCRCRCRRRFLHCQGRGLELNPDTCRCRKPRK RPKKKESAVKPDSPRILCPPCTQRRQRPDPRTCRCRCRRFFLHCQGRGLELNPDTCRCRKPRK RPKKKESAVKPDSPRILCPPCTQRRQRPDPRTCRCRCRRRFLHCQGRGLELNPDTCRCRKPRK RPKKKESAVKPDSPRILCPPCTQRRQRPDPTCRCRCRRRFLHCQGRGLELNPDTCRCRKPRK RPKKKESAVKPDSPRILCPPCTQRRQRPDRTCRCRCRRRFLHCQGRGLELNPDTCRCRKPRK RPKKKESAVKPDSPRILCPPCTQRRQRPDRTCRCRCRRFFLHCQGRGLELNPDTCRCRKPRK	

(57) Abstract

The present invention provides novel truncated forms of vascular endothelial growth factor-related proteins (VRPs or VRPs) which are useful for the stimulation of angiogenesis *in vitro* and *in vivo*. The invention also provides nucleic acids encoding such novel truncated VRPs and methods of producing truncated VRPs. Pharmaceutical compositions comprising truncated VRPs and methods of gene therapy using the nucleic acids which code for truncated VRPs may be useful for the treatment of heart disease and for wound healing.

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A. CLASSIFICATION OF SUBJECT MATTER IPC 6 C12N15/12 C07 C07K14/52 C12N5/10 A61K38/19 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) IPC 6 C12N C07K A61K 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) C. DOCUMENTS CONSIDERED TO BE RELEVANT Category ^a Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No χ 1-5, WO 96 27007 A (AMRAD OPERATIONS PTY LTD 17-23, (AU); HAYWARD NK; WEBER G; GRIMMOND S ET AL.) 6 September 1996 25, 28-30. 43-46. 48,49, 60,61 see abstract Υ 15,16, see page 6, line 24-25 32-36, 38, 40-42. 47, 50-59, 62-67 see page 10, line 17-21; figure 10 see page 19 - page 23; example 4 Seq.ID:4 see page 41 -/--Χ Further documents are listed in the continuation of box C. X. Patent family members are listed in annex. Special categories of cited documents; "T" later document published after the international filing date or priority date and not in conflict with the application but *A* document defining the general state of the lart which is not cited to understand the principle or theory underlying the considered to be of particular relevance invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another 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 docucitation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled in the art. other means *P* document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 15. 01. 1999 28 September 1998 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentiaan 2 NL - 2280 HV Rijewijk Tel. (+31-70) 340-2040, Tx. 31 651 epo ni, Fax: (+31-70) 340-3016 Macchia, G

International application No PCT/US 98/07801

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Category ³	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Seq.ID:6 see page 43 - page 44 see page 52 - page 53; claims 11,12,15,16,19	
X	WO 96 39421 A (HUMAN GENOME SCIENCES INC (US); HU JS.; OLSEN H. (US); ROSEN C.A.) 12 December 1996 cited in the application	1-3,5,6, 15-23, 28-30, 32-36, 40-49, 56,59-61
Y	see abstract see page 4, paragraph 6	15,16, 32-36, 38, 40-42, 47,56,59
	see page 6, paragraph 4 see page 10, paragraph 3 - page 12,	
	paragraph 3 see page 18, paragraph 4 - page 20,	
	paragraph 1 see page 22, paragraph 2	
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	<pre>see page 38 - page 39; example 2 Seq.ID:2 see page 44</pre>	
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International Explication No
PCT/US 98/07801

C/Continue	OCCUMENTS OF THE PROPERTY OF T	
Category 3	ation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Internativ of application No.

PCT/US 98/07801

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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. X Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely: Remark: Although claim(s) 45, 47-52, 56-67 is(are) directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
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).
Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
See additional 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 ciaims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
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. X 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.: 4 totally; 1-3, 5-67 partially.
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 4 totally; 1-3, 5-67 all partially.

Truncated VEGF-B, VRF-2 or VEGF-3 subunit having a deletion of at least one of the aminoacid residues N-terminal to the first cysteine of the core sequence of said subunit, homodimers and heterodimers thereof. Nucleic acid molecule encoding said truncated subunit, recombinant vector comprising said nucleic acid molecule and transformed host cell thereof. Delivery vector comprising said nucleic acid molecule. Method for producing said truncated subunit. Pharmaceutical composition comprising said truncated subunit or delivery vector, therapeutical applications thereof.

2. Claims: 1-3, 5-67 all partially.

As invention 1 but concerning VEGF-C.

3. Claims: 1-3, 6-67 all partially.

As invention 1 but concerning PIGF.

4. Claims: 1-3, 5-67 all partially.

As invention 1 but concerning poxvirus ORF-1.

5. Claims: 1-3, 5-67 all partially.

As invention 1 but concerning poxvirus ORF-2.

Inform. n on patent family members

International Application No
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