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(54) Title: MODIFICATIONS OF PEPTIDE COMPOSITIONS TO INCREASE STABILITY AND DELIVERY EFFICIENCY

(57) Abstract: The disclosed invention relates to methods of modifying peptide compositions to increase stability and delivery efficiency. Specifically, the disclosed invention relates to methods to increase the stability and delivery efficiency of protein kinase C (PKC) modulatory peptide compositions. A "therapeutic peptide composition" comprises a "carrier peptide" and a "cargo peptide." A "carrier peptide" is a peptide or amino acid sequence within a peptide that facilitates the cellular uptake of the therapeutic peptide composition. The "cargo peptide" is a PKC modulatory peptide. Peptide modifications to either the carrier peptide, the cargo peptide, or both, which are described herein increase the stability and delivery efficiency of therapeutic peptide compositions by reducing disulfide bond exchange, physical stability, reducing proteolytic degradation, and increasing efficiency of cellular uptake.

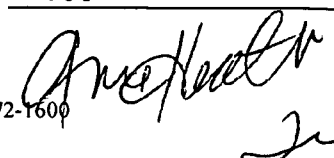


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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US08/5 1706

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC: C07K 14/00( 2006.01)  USPC: 530/324 According to International Patent Classification (IPC) or to both national classification and IPC													
<b>B. FIELDS SEARCHED</b>  Minimum documentation searched (classification system followed by classification symbols) U.S. : 530/324  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 practicable, search terms used) CAS Online, WEST													
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>													
Category *	Citation of document, with indication, where appropriate, of the relevant passages  E US 7,265,092 A (LI) 04 September 2007 (04.09.2007), see entire document.  A US 6,855,693 A (MOCHLY-ROSEN et al) 15 February 2005 (15.02.2005), see entire document.  A US 6,165,977 A (MOCHLY-ROSEN) 26 December 2000 (26. 12.2000), see entire document.												
	Relevant to claim No.  1-7  1-7  1-7												
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input type="checkbox"/> See patent family annex.													
<table border="0"><tr><td>• Special categories of cited documents</td><td>"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</td></tr><tr><td>"A" document defining the general state of the art which is not considered to be of particular relevance</td><td>"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</td></tr><tr><td>"E" earlier application or patent published on or after the international filing date</td><td>"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</td></tr><tr><td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td><td>"&amp;" document member of the same patent family</td></tr><tr><td>"O" document referring to an oral disclosure, use, exhibition or other means</td><td></td></tr><tr><td>"P" document published prior to the international filing date but later than the priority date claimed</td><td></td></tr></table>		• 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 cited to understand the principle or theory underlying the invention	"A" document defining the general state of the art which is not considered to be of particular relevance	"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	"E" earlier application or patent published on or after the international filing date	"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	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family	"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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"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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## INTERNATIONAL SEARCH REPORT

International application No.

PCTAJS08/5 1706

**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.:  
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 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:  
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. 1-7
- 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/US08/51 706

BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

The inventions listed as Groups IV 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 reason:

US 2006/01 53867 discloses a PKC modulatory peptide that is coupled to a carrier peptide.

Therefore, the technical feature linking the inventions of Groups 1-IV does not constitute a special technical feature as defined by PCT rule 13.2, as the feature in question does not "define a contribution" over the prior art.