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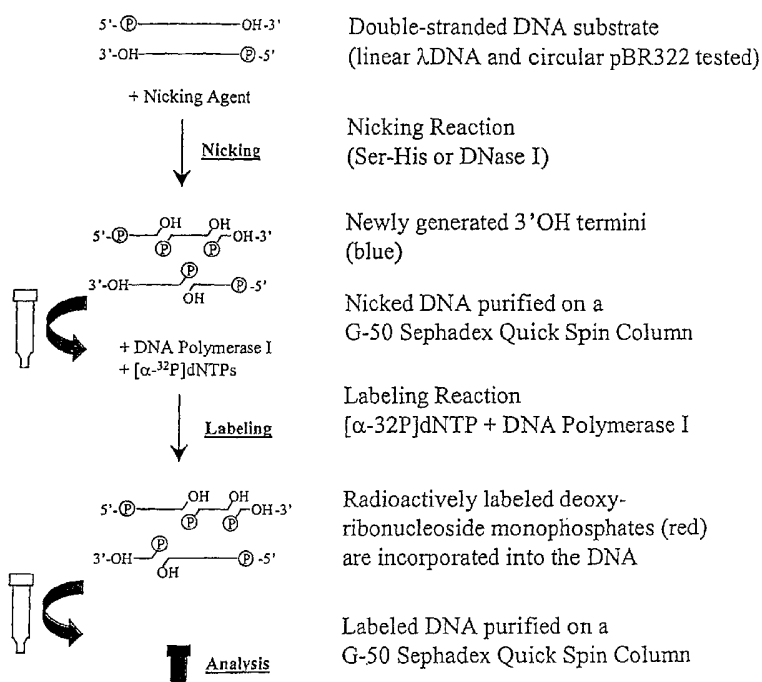
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- (71) Applicant (*for all designated States except US*): **OHIO UNIVERSITY** [US/US]; Technology Transfer Office, 20 East Circle Drive, Athens, OH 45701 (US). Published: — *with international search report*
- (72) Inventors; and (88) Date of publication of the international search report: 19 June 2003
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[Continued on next page]

(54) Title: DIPEPTIDE SERYL-HISTIDINE AND RELATED OLIGOPEPTIDES CLEAVE DNA, PROTEIN, AND A CARBOXYL ESTER

Nick Translation with Ser-His



(57) Abstract: A compound other than Ser-His, having the structure (Ser/Cys) - Xaa_m - His - Xaa_n (EM'), where 0 ≤ (m+n) ≤ 12, is useful as a nuclease or protease. A compound having the structure EM-L-BM, where EM is EM' above or Ser-His, L is a linker and BM is a nucleotide or amino acid sequence binding moiety, is also useful as a nuclease or protease. The compounds, EM and EM-L-BM which act as nucleases are useful in labeling a nucleic acid by nick translation.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/US 01/43079

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07K5/08 C07K5/10 C07K7/06 C07K7/08 C07K19/00
C07H21/00

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 7 C07K C07H

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)

CHEM ABS Data, WPI Data, PAJ, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; KULIK, WILLEM ET AL: "Fast atom bombardment tandem mass spectrometry for amino acid sequence determination in tripeptides" retrieved from STN Database accession no. 113:6782 CA XP002227765 & BIOMEDICAL & ENVIRONMENTAL MASS SPECTROMETRY (1989), 18(10), 910-17 , 1989, abstract --- -/--	1

Further documents are listed in the continuation of box C.

Patent family members are listed in 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 document 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 another 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

17 January 2003

Date of mailing of the international search report

04/02/2003

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

Internati pplication 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.
X	<p>DATABASE WPI , 1999 Derwent Publications Ltd., London, GB; AN 1999-471871 XP002227766 "New modified amino acid specific enzyme active useful biochemical catalyst" & JP 11 196819 A (M SHIMIZU), 27 July 1999 (1999-07-27) abstract</p> <p style="text-align: center;">----</p>	1
P,X	<p>Y LI ET AL.: "Peptide seryl-histidine and related oligopeptides cleave DNA, protein and a carboxyl ester " BIOORGANIC & MEDICINAL CHEMISTRY., vol. 8, no. 12, December 2000 (2000-12), pages 2675-2680, XP002227764 ELSEVIER SCIENCE LTD., GB ISSN: 0968-0896 the whole document</p> <p style="text-align: center;">-----</p>	1-9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/43079

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. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: 1-9
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 FURTHER INFORMATION sheet PCT/ISA/210

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:

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.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-9

Present claims 1-9 relate to an extremely large number of possible compounds and methods based on these compounds. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the compounds and methods claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Moreover the applicant is informed that the Search Division is not in state to check whether the compounds falling under the wording of claims 1-2 indeed have the claimed nuclease/protease activity. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to the active compounds listed in Table 2 and methods based on them.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US 01/43079

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 11196819	A	NONE	27-07-1999