

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
9 April 2009 (09.04.2009)

PCT

(10) International Publication Number  
**WO 2009/043527 A3**

(51) International Patent Classification:

A61K 38/27 (2006.01) A61P 31/14 (2006.01)  
A61P 3/00 (2006.01) A61P 37/06 (2006.01)  
A61P 9/00 (2006.01) A61P 31/12 (2006.01)  
A61P 11/00 (2006.01) A61P 9/10 (2006.01)  
A61P 25/28 (2006.01) A61P 25/16 (2006.01)  
A61P 31/00 (2006.01) A61P 27/06 (2006.01)  
A61P 35/00 (2006.01) A61P 25/08 (2006.01)  
A61P 37/00 (2006.01)

(74) Agent: ARTH, Hans-Lothar; ABK Patent Attorneys, Jasminweg 9, 14052 Berlin (DE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(21) International Application Number:

PCT/EP2008/008110

(22) International Filing Date:

9 September 2008 (09.09.2008)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

07017755.5 11 September 2007 (11.09.2007) EP

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (for all designated States except US): MONDO-BIOTECH LABORATORIES AG [LI/LI]; Herrengasse 21, FL-9490 Vaduz (LI).

Declaration under Rule 4.17:

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

(72) Inventors; and

(75) Inventors/Applicants (for US only): BEVEC, Dorian [DE/DE]; Kriegerstrasse 62, 82110 Germering (DE). CAVALLI, Fabio [CH/CH]; Via Pasquée 23, CH-6925 Gentilino (CH). CAVALLI, Vera [CH/CH]; Via Pasquée, 23, CH-6925 Gentilino (CH). BACHER, Gerald [DE/DE]; Masurenweg 5, 82110 Germering (DE).

Published:

— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
28 May 2009

(54) Title: THERAPEUTIC USE OF HUMAN GROWTH HORMONE 1-43

(57) Abstract: The present invention is directed to the use of the peptide compound Phe-Pro-Thr-Ile-Pro-Leu-Ser-Arg-Leu-Phe-Asp-Asn-Ala-Met-Leu-Arg-Ala-His-Arg-Leu-His-Gln-Leu-Ala-Phe-Asp-Thr-Tyr-Gln-Glu-Phe-Glu-Glu-Ala-Tyr-Ile-Pro-Lys-Glu-Gln-Lys-Tyr-Ser-OH as a therapeutic agent for the prophylaxis and/or treatment of cancer, autoimmune diseases, fibrotic diseases, inflammatory diseases, neurodegenerative diseases, infectious diseases, lung diseases, heart and vascular diseases and metabolic diseases. Moreover the present invention relates to pharmaceutical compositions preferably in form of a lyophilisate or liquid buffer solution or artificial mother milk formulation or mother milk substitute containing the peptide Phe-Pro-Thr-Ile-Pro-Leu-Ser-Arg-Leu-Phe-Asp-Asn-Ala-Met-Leu-Arg-Ala-His-Arg-Leu-His-Gln-Leu-Ala-Phe-Asp-Thr-Tyr-Gln-Glu-Phe-Glu-Glu-Ala-Tyr-Ile-Pro-Lys-Glu-Gln-Lys-Tyr-Ser-OH optionally together with at least one pharmaceutically acceptable carrier, cryoprotectant, lyoprotectant, excipient and/or diluent.

WO 2009/043527 A3

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2008/008110

A. CLASSIFICATION OF SUBJECT MATTER					
INV.	A61K38/27	A61P3/00	A61P9/00	A61P11/00	A61P25/28
	A61P31/00	A61P35/00	A61P37/00	A61P31/14	A61P37/06
	A61P31/12	A61P9/10	A61P25/16	A61P27/06	A61P25/08
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) A61K A61P					
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) EPO-Internal, WPI Data, MEDLINE, EMBASE, BIOSIS, COMPENDEX, CHEM ABS Data					
C. DOCUMENTS CONSIDERED TO BE RELEVANT					
Category*	Citation of document, with indication, where appropriate, of the relevant passages				Relevant to claim No.
X	US 4 496 521 A (LEWIS U JAMES [US]) 29 January 1985 (1985-01-29) abstract; examples 1,2 column 9, line 33 - line 49 -----				1-12
P,X	SUCH-SANMARTIN GERARD ET AL: "Characterisation of the 5 kDa growth hormone isoform" GROWTH FACTORS, HARWOOD ACADEMIC PUBLISHERS GMBH, XX, vol. 26, no. 3, 1 June 2008 (2008-06-01), pages 152-162, XP009113794 ISSN: 0897-7194 abstract "Possible biological relevance of the 5kDa GH isoform" on page 161 ----- -/--				1-12
<input checked="" type="checkbox"/>	Further documents are listed in the continuation of Box C.				<input checked="" type="checkbox"/>
* 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 document but 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					
Date of the actual completion of the international search  17 March 2009			Date of mailing of the international search report  30/03/2009		
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016			Authorized officer  Pilling, Stephen		

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2008/008110

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LEWIS U ET AL: "STRUCTURE AND PROPERTIES OF MEMBERS OF THE HGH FAMILY: A REVIEW" ENDOCRINE JOURNAL, TOKYO, JP, vol. 47, no. SUPPL, 1 January 2000 (2000-01-01), pages S1-S8, XP008073462 ISSN: 0918-8959 abstract "The 5 KD-peptide with insulin potentiating properties" on page s6	1-12
X	WO 00/69900 A (CONJUCHEM INC [CA]; BRIDON DOMINIQUE P [CA]; EZRIN ALAN M [US]; MILNER) 23 November 2000 (2000-11-23) abstract page 16, line 29 - page 17, line 19 page 85, line 26 - page 86, line 28; sequence 23	1-12
X	WO 2006/085075 A (DA VOLTERRA [FR]; CENTRE NAT RECH SCIENT [FR]; STEVENS IAN EDWARD [GB]) 17 August 2006 (2006-08-17) page 3, line 19 - line 32 page 23, line 29 - line 30	1-12
X	US 2003/069170 A1 (SOLTERO RICHARD [US] ET AL SOLTERO RICHARD [US] ET AL) 10 April 2003 (2003-04-10) paragraphs [0038], [0079], [0227], [0231], [0234]	1-12
P,X	WO 2008/059062 A (DA VOLTERRA [FR]; ANDREMONT ANTOINE [FR]; HUGUET HELENE-CELINE [FR]) 22 May 2008 (2008-05-22) abstract page 32, line 28 - line 29	1-12
P,X	WO 2007/134151 A (SMITHKLINE BEECHAM CORP [US]; WELLS MICKEY LEE [US]; DOUCET DANY [US]) 22 November 2007 (2007-11-22) abstract page 21, line 6 - line 7	1-12

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2008/008110

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4496521	A	29-01-1985	AU 578902 B2	10-11-1988
			AU 3159784 A	04-03-1985
			DK 110585 A	11-03-1985
			EP 0148942 A1	24-07-1985
			JP 60501861 T	31-10-1985
			WO 8500597 A1	14-02-1985
			WO 0069900	A
			AU 765753 B2	25-09-2003
			AU 5139300 A	05-12-2000
			CA 2373680 A1	23-11-2000
			CA 2623458 A1	23-11-2000
			DE 60026300 T2	16-11-2006
			DK 1105409 T3	03-07-2006
			EP 1105409 A2	13-06-2001
			ES 2257298 T3	01-08-2006
			JP 4217004 B2	28-01-2009
			JP 2003508350 T	04-03-2003
			JP 4219339 B2	04-02-2009
			JP 2005263807 A	29-09-2005
			JP 4221392 B2	12-02-2009
			JP 2005239736 A	08-09-2005
			JP 2008150384 A	03-07-2008
			PT 1105409 T	31-07-2006
WO 2006085075	A	17-08-2006	AU 2006211996 A1	17-08-2006
			CA 2595526 A1	17-08-2006
			CN 101128187 A	20-02-2008
			EP 1845948 A2	24-10-2007
			JP 2008529996 T	07-08-2008
			US 2008317666 A1	25-12-2008
US 2003069170	A1	10-04-2003	US 2004017387 A1	29-01-2004
			US 2004038866 A1	26-02-2004
WO 2008059062	A	22-05-2008	NONE	
WO 2007134151	A	22-11-2007	EP 2023947 A2	18-02-2009