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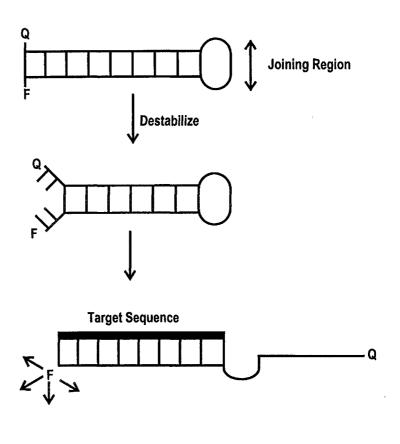
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(54) Title: MOLECULAR TORCHES

(57) Abstract

The present invention features "molecular torches" and the use of molecular torches for detecting the presence of a target nucleic acid sequence. Molecular torches contain a target binding domain, a target closing domain, and a joining region. The target binding domain is biased towards the target sequence such that the target binding domain forms a more stable hybrid with the target sequence than with the target closing domain under the same hybridization conditions. The joining region facilitates the formation or maintenance of a closed torch.



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INTERNATIONAL SEARCH REPORT

al Application No PCT/US 99/15098

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C1201/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 $\begin{array}{ll} \mbox{Minimum documentation searched (classification system followed by classification symbols)} \\ \mbox{IPC 7} & \mbox{C12Q} \end{array}$

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)

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Category	Challott of document, was indicated, in the appropriate,	
X	EP 0 601 889 A (MAINE MEDICAL CENTER RES) 15 June 1994 (1994-06-15)	1,3-5,7, 9,12, 16-19, 21,23, 26,30-34
	the whole document	
Χ	EP 0 566 751 A (HOFFMANN LA ROCHE) 27 October 1993 (1993-10-27)	30,32
A	page 2, line 1 - line 45	1-4,12, 13
	page 4, line 28 -page 5, line 16; claims	
	-/	·

Y Further documents are listed in the continuation of box C.	Patent family members are listed in annex.				
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Date of the actual completion of the international search	Date of mailing of the international search report				
21 January 2000	31/01/2000				
Name and mailing address of the ISA	Authorized officer				
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo ni, Fax: (+31–70) 340–3016	Luzzatto, E				

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INTERNATIONAL SEARCH REPORT

Intern all Application No PCT/US 99/15098

Category °	ation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages	 Relevant to claim No.
Category ³	Charlott of document, manufacturin, more appropriate, of the following persons	
A	TYAGI S ET AL: "MOLECULAR BEACONS: PROBES THAT FLUORESCE UPON HYBRIDIZATION" NATURE BIOTECHNOLOGY,US,NATURE PUBLISHING, vol. 100, page 303-308 XP002914999 ISSN: 1087-0156 the whole document	1-37
A	US 5 723 591 A (FLOOD SUSAN J A ET AL) 3 March 1998 (1998-03-03) column 8, line 1 - line 15	1,2,12,
A	WO 97 23647 A (BEHRINGWERKE AG ;ULLMAN EDWIN F (US)) 3 July 1997 (1997-07-03) page 22, line 35 -page 23, line 7	1,3,12, 13
4	WO 98 02582 A (GEN PROBE INC) 22 January 1998 (1998-01-22) page 7, line 23 -page 10, line 7	14,15, 28,29,36
Р,Х	WO 99 22018 A (BOSTON PROBES INC; HYLDIG NIELSEN JENS (US); COULL JAMES M (US); G) 6 May 1999 (1999-05-06) page 16, line 20 -page 19, line 38; claims; figure A	1-5,7,9
		·

3

INTERNATIONAL SEARCH REPORT

information on patent family members

Intern all Application No PCT/US 99/15098

	atent document d in search repor	t	Publication date		Patent family member(s)	Publication date
EP	0601889	Α	15-06-1994	US	5607834 A	04-03-1997
FP	05667 5 1		27-10-1993	CA	2090904 A	24-09-1993
	0500751	,,	2, 20 200	DE	69207580 D	22-02-1996
				DE	69207580 T	08-08-1996
				DK	566751 T	04-03-1996
				ES	2082256 T	16-03-1996
				GR	3019617 T	31-07-1996
				ΙE	72498 B	23-04-1997
				ĴΡ	6007199 A	18-01-1994
				US	5573906 A	12-11-1996
	57235 9 1	 A	03-03-1998	US	5538848 A	23-07-1996
UJ	3,2331		33 33 2773	AU	695561 B	13-08-1998
				AU	4283696 A	06-06-1996
				CA	2201756 A	23-05-1996
				EP	0792374 A	03-09-1997
				EP	0972848 A	19-01-2000
				JP	10510982 T	27-10-1998
				WO	9615270 A	23-05-1996
				US	5876930 A	02-03-1999
WO.	 9723647	Α	03-07-1997	CA	2239683 A	03-07-1997
	3.200.7	••	-	EP	0876510 A	11-11-1998
				US	5914230 A	22-06-1999
 W0	9802582	Α	22-01-1998	AU	3728897 A	09-02-1998
5				CA	2260749 A	22-01-1998
				EP	0912767 A	06-05-1999
 W0	9922 0 18	Α	06-05-1999	AU	1366299 A	17-05-1999