

APPLICANT
 CONTINUING DATA***NONE
 VERIFIED
 H.K.

06/89, 737
 Wessendorf

FOREIGN/PCT APPLICATIONS***NONE
 VERIFIED
 H.K.

NOV 09 1995

FOREIGN FILING LICENSE GRANTED 09/16/89

***** SMALL ENTITY *****

Foreign priority claimed 35 USC 119 conditions met	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	AS FILED	STATE OR COUNTRY CA	SHEETS DRWGS. 3	TOTAL CLAIMS 26	INDEP. CLAIMS 3	FILING FEE RECEIVED \$ 221.00	ATTORNEY'S DOCKET NO. CL1
Verified and Acknowledged			H.K. Examiner's Initials						

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TITLE
~~METHOD FOR FUNCTIONALIZING AND LABELING THE 3'-TERMINUS OF A SYNTHETIC OLIGONUCLEOTIDE USING A UNIQUE MULTIFUNCTIONAL CONTROLLED PORE GLASS (MFCPG) REAGENT~~
 FOR
~~SOLID PHASE OLIGONUCLEOTIDE SYNTHESIS~~

U.S. DEPT. of COMM.-Pat. & TM Office — PTO-436L (rev. 10-78)

H.K.
 3/9/92

PARTS OF APPLICATION FILED SEPARATELY

NOTICE OF ALLOWANCE MAILED		PREPARED FOR ISSUE 3-12		CLAIMS ALLOWED	
3/10/92		GARY L. KUNZ Assistant Examiner	JM Banks Docket Clerk	Total Claims 2	Print Claim 1
ISSUE FEE		JOHNNIE R. BROWN SUPERVISORY PATENT EXAMINER ART UNIT 1803 Primary Examiner		DRAWING	
Amount Due 565.00	Date Paid 6-2-92			Sheets Drwg. 36	Figs. Drwg. 37
Label Area		ISSUE CLASSIFICATION		ISSUE BATCH NUMBER	
		Class 428	Subclass A22	A95	
WARNING: The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368. Possession outside the U.S. Patent & Trademark Office is restricted to authorized employees and contractors only.					

1.	Application	papers.	
2.	Prior Act		Oct 16, 1989
3.	Key 3 mos.		1-16-91 1-14
4.	Ext. of Time (2 months)		06/19/91 mail 6/17
5.	Amdt A		06/19/91
6.	Key 3 mos.		9/19/91 7-19
7.	Amdt B (X) (2)		12-23-91 04/19 12-19
8.	TELE. INTERVIEW SUMMARY		1/24/91
9.	Advisory Action		1/27/92 1-27
10.	Amdt C (X) w/ Regime 2 mos		2-18-92
11.	TELEPHONE INTERVIEW SUMMARY		3-6-92
12.	Ex. Amdt. / D		3-10-92
13.	Journal Entry Books		5/26/92 37
14.			
15.	Key for CFC R322		Oct. 9, 1992
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PATENT APPLICATION SERIAL NO.

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

G 11071 09/07/89 0739000 19-0000 120 201 221.00CH

PTO-1556
(5/87)

Sir:
Transmitted herewith for filing is the patent application of:

Inventor(s): Paul S. Nelson
Method for Functionalizing and Labeling the 3' Terminus of a Synthetic
Entitled: Oligonucleotide Using a Unique Multifunctional Controlled Pore Glass (MF-CPG)
Reagent in Solid Phase Oligonucleotide Synthesis

Enclosed are:

- Declaration and Power of Attorney form(s)
 - Three (3) sheets of drawings and two sets of soft copies
 - Assignment(s) of the invention to Clontech Laboratories, Inc.
-
- Letter re Assignment(s)
 - Declaration(s) claiming status as a small business entity/nonprofit organization
 - Acknowledgement postcard

CLAIMS AS FILED

	Number filed	Number Extra	Rate	Fee
Basic Fee				\$185
Total Claims	26	- 20 =	6 x \$ 6	36
Independent Claims	3	- 3 =	0 x \$18	0
			Total Filing Fee	\$221

- Please charge \$221 to Deposit Account No. 19-0065. A duplicate copy of this sheet is enclosed.
- The Commissioner is hereby authorized to charge any additional filing fees which may be required, or credit any overpayment, to Deposit Account No. 19-0065. A duplicate copy of this sheet is enclosed.
- This application is being mailed by Express Mail under 37 CFR 1.10 and the required certificate appears below.

August 28, 1989
Date

Doris C. Saliwanchik
Attorney of Record

CERTIFICATE OF MAILING BY EXPRESS MAIL (37 CFR 1.10)

Express Mail No.: LB03409845X Date of Deposit: August 28, 1989
I hereby certify that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Doris C. Saliwanchik
Name of person mailing paper

Doris C. Saliwanchik
Signature



DESCRIPTION

METHOD FOR FUNCTIONALIZING AND LABELING
THE 3' TERMINUS OF A SYNTHETIC OLIGONUCLEOTIDE USING
A UNIQUE MULTIFUNCTIONAL CONTROLLED PORE GLASS
(MF-CPG) REAGENT IN SOLID PHASE
OLIGONUCLEOTIDE SYNTHESIS

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Background of the Invention

10 Single base substitutions in human genes are the cause or are strongly associated with a variety of human diseases such as the hemoglobinopathies (Saiki, R.K., S. Scharf, F. Faloona, K.B. Mullis, G.T. Horn, H.A. Erlich, and N. Arnheim [1985] Science 230:1350-1354; Embury, S.H., S.J. Scharf, R.K. Saiki, M.A. Gholson, M. Golbus, N. Arnheim, and H.A. Erlich [1987] N. Engl. J. Med. 316:656-660) and cancer (Liu, E., B. Hjelle, R. Morgan, F. Hecht, and J.M. Bishop [1987] Nature 330:186-188; Rodenhuis, S., M.L. van de Wetering, W.J. Mooi, S.G. Evers, N. van Zandwijk, and J.L. Bos [1987] N. Engl. J. Med. 317:929-935). Previously, if no convenient restriction sites were altered by the base change, then the only recourse has been to clone and sequence the affected gene. Recently, polymerase chain reaction (PCR) amplification of the DNA segment in question, coupled with hybridization of specific oligonucleotide probes, has allowed sequence determination without the need for molecular cloning. The applicability of the latter technique is dependent on the availability of versatile and inexpensive oligonucleotide probes.

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25 Methods to covalently attach labels and reporter molecules to oligonucleotides have permitted their use as non-radioactive hybridization probes. New technologies in non-isotopic gene probes (Agrawal, S., C. Christodoulou, and M.J. Gait [1986] Nucl. Acids Res. 14:6227-6245; Connolly, B.A. [1987] Nucl.

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