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08-31-2001



To The Honorable Commissioner of Patents a

original documents or copy thereof.

1. Name of conveying party(ies):

101830920

s of receiving party(ies):

Muthiah Manoharan June 21, 2001
First Assignor Date of Execution

Name: ISIS Pharmaceuticals, Inc.

Vasulinga T. Ravikumar July 26, 2001
Second Assignor Date of Execution

Street Address: 2292 Faraday Avenue

Third Assignor Date of Execution

City: Carlsbad

Fourth Assignor Date of Execution

State California ZIP 92008

Fifth Assignor Date of Execution

Additional name(s) & address attached? () YES (X) NO

Sixth Assignor Date of Execution

3. Nature of Conveyance (check only one):

- New Assignment
- License Agreement
- Change of Name
- Merger
- Security Agreement
- Other:

() Cross-reference of Assignment filed in United States Application No. __/__/__, recorded on __/__/__ at Reel No. ____ and Frame No. ____

Additional name(s) of conveying party(ies) attached? () YES (X) NO

4. Identification of Application number(s), patent number(s) OR date of execution of application to which assignment refers:

Application Nos.: 09/708,224

Patent Nos.:

Date application was signed by the first named executing inventor

(Fill-in this date only if assignment is filed together with a new application)

5. Name and address of party to whom correspondence concerning documents should be mailed:

Name:
WOODCOCK WASHBURN KURTZ MACKIEWICZ & NORRIS LLP
One Liberty Place - 46th Floor
Philadelphia, Pennsylvania 19103-7301
215-568-3100

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41):.....\$40.00
 Enclosed
 Authorized to be charged to Deposit Account Number 23-3050

8. Please charge any deficiency or credit any overpayment to Deposit Account Number 23-3050

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Michael P. Straher/ 38,325

August 22, 2001

Name of Person Signing/Reg. No.

Signature

Date

Total number of pages including cover sheet, assignment document and additional pages attached thereto: 4

Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents and Trademarks
Box Assignments
Washington, D.C. 20231

A S S I G N M E N T

WHEREAS, We, **Muthiah Manoharan of Carlsbad, California 92009 and Vasulinga T. Ravikumar of Carlsbad, California 92009**, have invented a certain invention entitled **ACTIVATORS FOR OLIGONUCLEOTIDE SYNTHESIS**, for which we have made application for Letters Patent of the United States, said application having been filed on **November 8, 2000 and assigned Application No. 09/708,224**; and

WHEREAS, ISIS Pharmaceuticals, Inc. hereinafter referred to as the assignee, of 2292 Faraday Avenue, Carlsbad CA, a corporation of Delaware, is desirous of acquiring the entire right, title and interest in and to the said inventions or improvements and in and to the said application, and in, to and under any and all Letters Patent which may be granted on or as a result thereof in any and all countries:

NOW, THEREFORE, for and in consideration of the sum of One Dollar (\$1.00) to each of us in hand paid by said assignee, and other good and valuable consideration, the receipt of which is hereby acknowledged, we, the said assignors, have sold, assigned, transferred and set over, and by these presents do hereby sell, assign, transfer and set over to said assignee, the entire right, title and interest in and to said inventions or improvements and said application and any and all continuations, divisions and renewals of and substitutes for said application, and in, to and under any and all Letters Patent which may be granted on or as a result thereof in the United States and any and all other countries, and any reissue or reissues or extension or extensions of said Letters Patent, and assign to and authorize said assignee, to file in our names applications for Letters Patent in all countries, the same to be held and enjoyed by said assignee, its successors, assigns, nominees or legal representatives, to the full end of the term or terms for which said Letters Patent respectively may be granted, reissued or extended, as fully and entirely as the same would have been held and enjoyed by us had this assignment, sale and transfer not been made.

AND we hereby covenant that we have full right to convey the entire interest herein assigned, and that we have not executed and will not execute any agreement in conflict herewith, and we further covenant and agree that we will each time request is made and without undue delay, execute and deliver all such papers as may be necessary or desirable to perfect the title to said inventions or improvements, said application and said Letters Patent to said assignee, its

