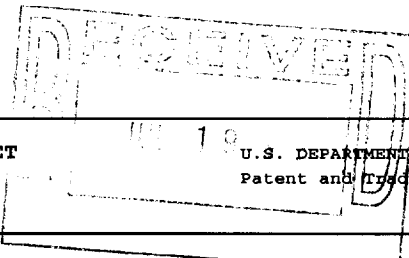


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U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

FORM PTO-1595
(Rev. 6-93)
OMB No. 0651-0011 (exp. 4/94)

To the Hon. Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Feng Xu
Sonja Salmon
Heinz-Josef Wilhelm Deussen

*MKD
7-19-99*

2. Name and address of receiving party(ies):

Name: Novo Nordisk Biotech, Inc.
Internal Address:
Street Address: 1445 Drew Avenue,
Davis, CA 95616

Additional name(s) of conveying party(ies) attached? Yes No

3. Nature of conveyance:

- Assignment Merger
- Security Agreement Change of Name
- Other _____

Execution Date: July 1, 1999, July 2, 1999 and July 7, 1999

Additional name(s) & address(es) attached? Yes No

Novo Nordisk BioChem North America
State Road 1003, Box 576
Franklinton, NC 27525

Novo Nordisk A/S
Novo Alle
DK-2880 Bagsvaerd
Denmark

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: _____

A. Patent Application No.(s): 09/199,222

B. Patent No.(s)

Additional numbers attached? Yes No

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

Name: Steve T. Zelson, Esq.

Internal Address:

Novo Nordisk of North America, Inc.

Street Address: 405 Lexington Avenue,
Suite 6400

City: New York State: NY Zip: 10174-6401

6. Total number of applications and patents involved: one

7. Total fee (37 CFR 3.41) \$ 40.00

Enclosed

Authorized to be charged to deposit account

8. Deposit account number:

14-1447

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

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.

Robert L. Starves

Name of Person Signing

Robert L. Starves

Signature

July 15, 1999

Date

Total number of pages including cover sheet, attachments, and document: 3

07/20/1999 DNGUYEN 0000064 141447 09199222

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40.00 CH

ASSIGNMENT OF APPLICATION FOR PATENT

WHEREAS:

Feng Xu, a citizen of Peoples Republic of China, residing at 1534 Carmel Valley Drive, Woodland, California 95776.

Sonja Salmon, a citizen of the United States, residing at 416 Emerson Drive, Raleigh, North Carolina, 27609.

(hereinafter ASSIGNOR), has made a discovery or invention entitled:

Enzymatic Methods For Dyeing With Reduced Vat And Sulfur Dyes

for which application of Letters Patent of the United States has been filed on November 24, 1998, under Serial No. 09/199,222.

WHEREAS:

NOVO NORDISK BIOTECH, INC., located at 1445 Drew Avenue, Davis, California 95616, and Novo Nordisk BioChem North America, located at State Road 1003, Box 576, Franklinton, North Carolina 27525, corporations organized under the laws of Delaware, and wholly-owned subsidiaries of Novo Nordisk of North America, Inc., a corporation organized under the laws of Delaware, 405 Lexington Avenue, New York, New York 10017, (hereinafter ASSIGNEES), is desirous of acquiring the entire interest in, to and under said invention and in, to and under Letters Patent or similar legal protection to be obtained therefor in the United States and in any and all foreign countries.

NOW, THEREFORE, in consideration of the payment by ASSIGNEES to ASSIGNORS of the sum of one dollar (\$1) or the equivalent thereof, the receipt of which is hereby acknowledged, and for other good and valuable consideration, ASSIGNORS hereby sells, assigns and transfers to ASSIGNEES, its successors, legal representatives and assigns, the full and exclusive right, title and interest to said discovery or invention in the United States and its territorial possessions and in all foreign countries and to all Letters Patent or similar legal protection in the United States and its territorial possessions and in any and all foreign countries to be obtained for said invention by said application or any continuation, division, continuation-in-part, renewal, extension, substitute or reissue thereof or any legal equivalent thereof in a foreign country for the full term or terms for which the same may be granted.

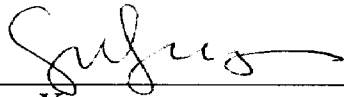
SAID ASSIGNORS hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States of America and any Official of any country or countries foreign to the United States of America whose duty it is to issue Letters Patent on applications as aforesaid, to issue all such Letters Patent for said discovery or invention to the ASSIGNEES, as assignee of the entire right, title and interest in, to and under the same, for

the sole use and behalf of the ASSIGNEES, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

SAID ASSIGNORS hereby covenants that I have full right to convey the entire right, title and interest herein sold, assigned, transferred and set over.

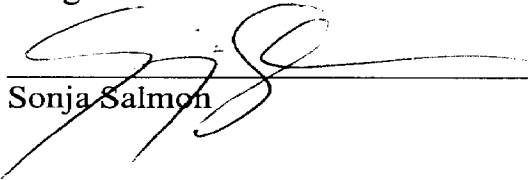
AND SAID ASSIGNORS hereby further covenants and agrees that the ASSIGNEES, its successors, legal representatives, and assigns, may apply for foreign Letters Patent on said discovery or invention and claim the benefits of the International Convention, and that I will, at any time, when called upon to do so by the ASSIGNEES, its successors, legal representatives, or assigns, communicate to the ASSIGNEES, its successors, legal representatives, or assigns, as the case may be, any facts known to me respecting said discovery or invention, and execute and deliver any and all lawful papers that may be necessary or desirable to perfect the title to the said discovery or invention, the said applications and the said Letters Patent in the ASSIGNEES, its successors, legal representatives and assigns, and that if reissues of the said Letters Patent or disclaimers relating thereto, or divisions, continuations, or refilings of the said applications, or any thereof, shall hereafter be desired by the ASSIGNEES, its successors, legal representatives or assigns, I will, at any time, when called upon to do so by the ASSIGNEES, its successors, legal representatives, or assigns, sign all lawful papers, make all rightful oaths, execute and deliver all such disclaimers and all divisional, continuation and reissue applications so desired, and do all lawful acts requisite for the application for such reissues and the procuring thereof and for the filing of such disclaimers and such applications, and generally do everything possible to aid the ASSIGNEES, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for said invention or discovery in all countries, all without further compensation but at the expense of the ASSIGNEES, its successors, legal representatives and assigns.

Date: 7/1/99



Feng Xu

Date: 2 July 1999



Sonja Salmon

ASSIGNMENT OF APPLICATION FOR PATENT

WHEREAS:

Heinz-Josef Wilhelm Deussen, a citizen of Germany, residing at Mosevangen 16, 2860-Søborg, Denmark.

(hereinafter ASSIGNOR), has made a discovery or invention entitled:

Enzymatic Methods For Dyeing With Reduced Vat And Sulfur Dyes

for which application of Letters Patent of the United States has been filed on November 24, 1998, under Serial No. 09/199,222.

WHEREAS:

NOVO NORDISK A/S, a corporation organized under the laws of Denmark, located at Novo Alle, DK-2880 Bagsvaerd, Denmark (hereinafter ASSIGNEE), is desirous of acquiring the entire interest in, to and under said invention and in, to and under Letters Patent or similar legal protection to be obtained therefor in the United States and in any and all foreign countries.

NOW, THEREFORE, in consideration of the payment by ASSIGNEE to ASSIGNOR of the sum of one dollar (\$1) or the equivalent thereof, the receipt of which is hereby acknowledged, and for other good and valuable consideration, ASSIGNOR hereby sells, assigns and transfers to ASSIGNEE, its successors, legal representatives and assigns, the full and exclusive right, title and interest to said discovery or invention in the United States and its territorial possessions and in all foreign countries and to all Letters Patent or similar legal protection in the United States and its territorial possessions and in any and all foreign countries to be obtained for said invention by said application or any continuation, division, continuation-in-part, renewal, extension, substitute or reissue thereof or any legal equivalent thereof in a foreign country for the full term or terms for which the same may be granted.

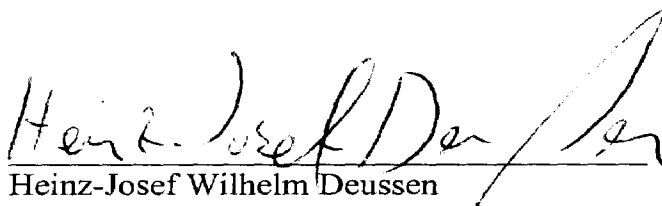
SAID ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States of America and any Official of any country or countries foreign to the United States of America whose duty it is to issue Letters Patent on applications as aforesaid, to issue all such Letters Patent for said discovery or invention to the ASSIGNEE, as assignee of the entire right, title and interest in, to and under the same, for the sole use and behalf of the ASSIGNEE, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

SAID ASSIGNOR hereby covenants that I have full right to convey the entire right, title and interest herein sold, assigned, transferred and set over.

AND SAID ASSIGNOR hereby further covenants and agrees that the ASSIGNEE, its successors, legal representatives, and assigns, may apply for foreign Letters Patent on said discovery or invention and claim the benefits of the International Convention, and that I will, at any time, when called upon to do so by the ASSIGNEE, its successors, legal representatives, or assigns, communicate to the ASSIGNEE, its successors, legal representatives, or assigns, as the case may be, any facts known to me respecting said discovery or invention, and execute and deliver any and all lawful papers that may be necessary or desirable to perfect the title to the said discovery or invention, the said applications and the said Letters Patent in the ASSIGNEE, its successors, legal representatives and assigns, and that if reissues of the said Letters Patent or disclaimers relating thereto, or divisions, continuations, or refilings of the said applications, or any thereof, shall hereafter be desired by the ASSIGNEE, its successors, legal representatives or assigns, I will, at any time, when called upon to do so by the ASSIGNEE, its successors, legal representatives, or assigns, sign all lawful papers, make all rightful oaths, execute and deliver all such disclaimers and all divisional, continuation and reissue applications so desired, and do all lawful acts requisite for the application for such reissues and the procuring thereof and for the filing of such disclaimers and such applications, and generally do everything possible to aid the ASSIGNEE, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for said invention or discovery in all countries, all without further compensation but at the expense of the ASSIGNEE, its successors, legal representatives and assigns.

Date:

7/7/99


Heinz-Josef Wilhelm Deussen