

MPO 12-10-98

04-15-1999

FORM PTO-1594 (Rev. 6-30) 12+10-98 RE D  
OMB No. 0651-0011 (exp. 4/94)  
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SHEET U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office



101011280

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

1. Name of conveying party(ies):  
Chrysalis International Corp.  
Chrysalis International Preclinical Services Corp.  
Chrysalis DN Transgenic Services Corp.  
Chrysalis International Clinical Services Corp.  
 Individual(s)  Association  
 General Partnership  Limited Partnership  
 Corporation-State  
 Other \_\_\_\_\_  
Additional name(s) of conveying party(ies) attached?  Yes  No

2. Name and address of receiving party(ies)  
Name: First Union National Bank  
Internal Address: \_\_\_\_\_  
Street Address: 123 South Broad Street  
City: Philadelphia State: PA ZIP: 19107  
 Individual(s) citizenship \_\_\_\_\_  
 Association National Banking Association  
 General Partnership \_\_\_\_\_  
 Limited Partnership \_\_\_\_\_  
 Corporation-State \_\_\_\_\_  
 Other \_\_\_\_\_  
If assignee is not domiciled in the United States, a domestic representative designation is attached:  Yes  No  
(Designations must be a separate document from assignment)  
Additional name(s) & address(es) attached?  Yes  No

3. Nature of conveyance:  
 Assignment  Merger  
 Security Agreement  Change of Name  
 Other Collateral Assignment of Trademark  
Execution Date: 11/18/98

4. Application number(s) or patent number(s):  
A. Trademark Application No 78/129,665  
B. Trademark Registration No.(s) 2,170,114  
12-10-1998  
U.S. Patent & TMO/OTM Mail RptDt. #39  
Additional numbers attached?  Yes  No

5. Name and address of party to whom correspondence concerning document should be mailed:  
Name: Scott J. Fields, Esq.  
Internal Address: \_\_\_\_\_  
\_\_\_\_\_  
Klehr, Harrison, Harvey,  
Street Address: Bransburg & Ellers, LLP  
1401 Walnut Street  
City: Philadelphia State: PA ZIP: 19102  
12/22/1998 NGUYEN 00000266 2170114

6. Total number of applications and registrations involved: ..... 2  
7. Total fee (37 CFR 3.41).....\$80.00  
 Enclosed  
 Authorized to be charged to deposit account  
8. Deposit account number: \_\_\_\_\_  
(Attach duplicate copy of this page if paying by deposit account)

01 FC:481 40.00 OP  
02 FC:482 25.00 OP  
03 FC:998 15.00 OP

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.*  
Scott J. Fields  
Name of Person Signing  
Reg No 32,857  
[Signature]  
Signature  
12/7/98  
Date  
Total number of pages including cover sheet, attachments, and document:

**COLLATERAL ASSIGNMENT  
OF PATENTS, TRADEMARKS, COPYRIGHTS AND LICENSES**

This Collateral Assignment of Patents, Trademarks, Copyrights and Licenses ("Assignment") is made effective this \_\_\_\_ day of November, 1998 among CHRYSALIS INTERNATIONAL CORPORATION, a Pennsylvania corporation, CHRYSALIS INTERNATIONAL PRECLINICAL SERVICES CORPORATION, a Pennsylvania corporation, CHRYSALIS DNX TRANSGENIC SCIENCES CORPORATION, an Ohio corporation, and CHRYSALIS INTERNATIONAL CLINICAL SERVICES CORPORATION, a Delaware corporation (severally and collectively referred to and obligated as "Assignor"), each with an office at 575 Route 28, Raritan, New Jersey 08869, and FIRST UNION NATIONAL BANK ("Assignee"), a national banking association, the successor by merger to CoreStates Bank, N.A. ("CoreStates"), having an address of 123 South Broad Street, Philadelphia, Pennsylvania 19107.

**WHEREAS**, on or about August 29, 1997, Assignor and Assignee entered into (i) a certain Term Loan and Security Agreement, as amended, (ii) a certain Security Agreement, and (iii) a certain Collateral Assignment of Contracts (the Term Loan and Security Agreement, the Security Agreement and the Collateral Assignment of Contracts being hereinafter collectively referred to as the "Loan Agreement");

**WHEREAS**, pursuant to the Loan Agreement, Assignee holds a lien on and a security interest in all of the properties described in the Loan Agreement including, without limitation, Assignor's present and future patents, patent applications, patentable inventions, licenses and sublicenses, trademarks, trademark applications, trademark registrations, tradenames, trade dress, the goodwill associated with such trademarks, trade names and trade dress, copyrights, copyright applications and copyright registrations;

**WHEREAS**, Assignor and Assignee desire to confirm as a matter of record with the Office of the Commissioner of Patents and Trademarks the existence of Assignee's liens on and security interests in and to all of the intellectual properties described in the Loan Agreement and this Assignment;

**NOW, THEREFORE**, in consideration of the promises set forth herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and intending to be legally bound thereby, the parties agree as follows:

**1. Incorporation of Loan Agreement.** The Loan Agreement and the terms and provisions thereof are hereby incorporated herein in their entirety. All terms not otherwise defined herein shall have the meanings set forth in the Loan Agreement.

**2. Collateral Assignment of Patents, Trademarks, Licenses and Copyrights.** To secure the complete and timely payment and satisfaction of the Obligations and obligations of Assignor to Assignee under the Loan Agreement, and all loan documents referred to in the Loan Agreement (referred to collectively herein as "Obligations"), Assignor hereby grants, assigns and creates a security interest in favor of the Assignee (and confirms and reaffirms the prior grant, assignment and security interest in favor of Assignee pursuant to the Loan Agreement) as and by way of a mortgage and security interest having priority over all other security interests, with power of sale, to the extent permitted by law, upon the occurrence of an Event of Default in all of the Assignor's right, title and interest in and to all of its now owned or existing and filed and hereafter acquired or arising and filed and the cash and noncash proceeds thereof:

**a.** trademarks, whether registered or unregistered, trademark applications, trademark registrations, including renewals thereof, trade dress and tradenames, including, without limitation, the trademarks, trade dress and tradenames listed on Exhibit A, attached hereto; the goodwill of Assignor's business connected with and symbolized by said trademarks, tradenames and trade dress; all income, royalties, damages and payments now and hereafter due and/or payable with respect thereto, including without limitation, damages and payments for past or future infringements thereof; the right to sue for past, present and future infringements thereof; and all rights corresponding thereto throughout the world (hereinafter referred to collectively as "Trademarks");

**b.** copyrights, copyright applications, and copyright registrations, including, without limitation, renewals thereof, listed on Exhibit B attached hereto; all income, royalties, damages and payments now and hereafter due and/or payable under and with respect thereto, including, without limitation, damages and payments for past or future infringements thereof; the right to sue for past, present and future infringements thereof; and all rights corresponding thereto throughout the world (hereinafter referred to collectively as "Copyrights");

**c.** license agreements with any other party, whether Assignor is a licensor or licensee under any such license agreement, including, without limitation, the licenses listed on Exhibit C attached hereto, and the right to prepare for sale, sell and advertise for sale all inventory now or hereafter owned by Assignor and now or hereafter covered by such licenses (hereinafter referred to collectively as "Licenses");

**d.** patents and patent applications, including, without limitation, the inventions and improvements described and claimed therein, and those patents listed on Exhibit D attached hereto, and the reissues, divisions, continuations, renewals, extensions and continuations-in-part thereof; all income, royalties, damages and payments now and hereafter due and/or payable under and with respect thereto, including, without limitation, damages and payments for past or future infringements thereof; the right to sue for past, present and future infringements thereof; and all rights corresponding thereto throughout the world (hereinafter referred to collectively as "Patents").

3. **Duties of Assignor.** Assignor shall have the duty: (a) to use for the duration of this Agreement proper notice in connection with its use of the Patents, Trademarks, Copyrights and Licenses; (b) to prosecute diligently any patent applications of the Patents, any trademark application of the Trademarks, and any copyright applications of the Copyrights pending as of the date hereof or thereafter until all Obligations are paid in full and the Loan Agreement is terminated; (c) to make application on patentable inventions, and to apply to register the Trademarks and Copyrights, as appropriate; and (d) to preserve and maintain all rights in the Patents, Trademarks, Copyrights and Licenses. All expenses incurred in connection with said applications and said maintenance shall be borne by the Assignor. Assignor shall not abandon any right to file a patent, trademark or copyright application, or any pending patent, trademark or copyright application or any License, without the prior written consent of Assignee. Any failure of Assignor to comply with the duties set forth in this Paragraph 3 will be deemed an Event of Default under the Loan Agreement.

4. **Restriction On Use, License and Transfer of Properties.** Unless and until there shall have occurred an Event of Default under the Loan Agreement, Assignee shall have no right to use the Trademarks, Copyrights, Patents or Licenses, or issue any license thereunder, or assign or otherwise transfer title in said Trademarks, Copyrights, Patents or Licenses to anyone else.

5. **Restrictions on Future Agreements.** Assignor agrees that until all Obligations shall have been paid and satisfied in full, Assignor will not, without the prior written consent of the Assignee, enter into any agreement or arrangement which is inconsistent with Assignor's obligations under this Assignment, except to sublicense in the ordinary course of Assignor's business, provided that such sublicenses are sublicenses covered under Paragraph 2(c); and Assignor further agrees that it will not take any action, or permit any action to be taken by others, subject to its control, including licensees, or fail to take any action, which would affect the validity or enforcement of the rights of Assignee under this Assignment.

6. **Warranty.** Assignor represents, warrants, and covenants that:

a. the Patents, Trademarks, Copyrights and Licenses are subsisting and have not been adjudged invalid or unenforceable in whole or in part;

b. each of the Patents, Trademarks, Copyrights and Licenses is valid and enforceable;

c. to the best of Assignor's knowledge, no claim has been made that the use of any of the Patents, Trademarks, Copyrights or Licenses does or may violate the rights of any third persons;

d. that it has no notice of any suits or actions commenced or threatened against it with reference to the Patents, Trademarks, Copyrights, or Licenses and/or the interests granted therein;

e. that Assignor is the sole and exclusive owner of the entire and unencumbered right, title and interest in and to each of the Patents, Trademarks, Copyrights and Licenses, free and clear of liens, charges and encumbrances, including, without limitation, pledges, assignments, licenses, registered user agreements, shop rights and covenants by Assignor not to sue third parties, except for sublicenses permitted in Paragraph 5; and

f. neither the making of this Assignment nor Assignor's performance hereunder requires the agreement or approval of any other person or any governmental authority or agency which has not been obtained.

7. **New Patents, Trademarks, Copyrights and Licenses.** Assignor represents and warrants that the Patents, Trademarks, Copyrights and Licenses listed on Exhibits A-D hereto, constitute a complete list of all of the patents, trademarks, copyrights, licenses and sublicenses now owned by Assignor and licenses to which Assignor is now subject. If, before the Obligations shall have been satisfied in full, Assignor shall (a) obtain rights in and to any new patentable inventions, patent applications, patents, trademarks, trademark applications, trademark registrations, trade dress, tradenames, copyrights, copyright applications, copyright registrations or licenses, or (b) become entitled to the benefit of any patent, patent application, trademark, trademark application, trademark registration, trade dress, trade name, copyright, copyright application, copyright registration, or license, the provisions of Paragraph 2 above shall automatically apply thereto. Assignor shall give to the Assignee written notice of any existing and new rights and/or benefits as described in this Paragraph 7 but excluded from Exhibits A-D hereto not more than thirty (30) days after the date of this Assignment and within thirty (30) days of the acquisition or creation by Assignor of any new rights and/or benefits. Assignor hereby authorizes the Assignee to modify this Assignment by amending Exhibit A, Exhibit B, Exhibit C and/or Exhibit D, as applicable, to include any Patents, Trademarks, Copyrights and Licenses presently owned by Assignor but not included on Exhibits A-D hereto and for any of Assignor's future Patents, Trademarks, Copyrights and/or Licenses.

8. **Events of Default.** This Assignment is subject to the terms and conditions of the Loan Agreement, and default (or the occurrence of an Event of Default) hereunder with respect to Assignor shall constitute a default (or Event of Default) under the Loan Agreement and all agreements between Assignor and Assignee unless cured within the applicable cure period (if any) set forth in the Loan Agreement. In addition, Assignor shall be deemed to be in default hereunder upon the occurrence of any of the following events ("Event of Default"):

a. if any representation or warranty contained herein shall prove to have been, when made, false, inaccurate, or misleading;

b. if Assignor breaches any covenant or obligation contained herein; or

c. if a default (or Event of Default) occurs under the Loan Agreement.

9. **Foreclosure.** Upon the occurrence of an Event of Default under the Loan Agreement, Assignee, as holder of a security interest, may take such action as is permitted by law, in Assignee's sole discretion, to foreclose upon said intellectual property. For such purposes, and in the Event of Default under the Loan Agreement, Assignor hereby authorizes Assignee to make, constitute and appoint any officer or agent of Assignee as Assignee may select, in its sole discretion, as Assignor's true and lawful attorney-in-fact, with power to (a) endorse Assignor's name on all applications, documents, papers and instruments necessary or desirable for the Assignee to use the Patents, Trademarks, Copyrights and Licenses, or (b) take any other actions with respect to the Patents, Trademarks, Copyrights and Licenses as the Assignee deem in the best interest of the Assignee; or (c) grant or issue any exclusive or non-exclusive license under the Patents, Trademarks, Copyrights and Licenses to anyone, or (d) assign, pledge, convey or otherwise transfer title in or dispose of the Patents, Trademarks, Copyrights and Licenses to anyone. Assignee hereby ratifies all that such attorney shall lawfully do or cause to be done by virtue hereof. This power of attorney shall be irrevocable until the Obligations shall have been paid in full and the Loan Agreement shall have been terminated.

10. **Reassignment to Assignor.** This Assignment is made for collateral purposes only. Upon payment in full of the Obligations and termination of the Loan Agreement, Assignee shall execute and deliver to Assignor all deeds, assignments and/or other instruments as may be necessary to re-vest in Assignor full title to the Patents, Trademarks, Copyrights and Licenses, subject to any disposition thereof which may have been made by Assignee pursuant hereto or pursuant to the Loan Agreement.

11. **Assignee' Right to Sue.** Following an Event of Default under the Loan Agreement, Assignee shall have the right, but shall in no way be obligated, to bring suit in Assignee' own name or the name of Assignee' agent to enforce the Licenses, Patents, Trademarks and/or Copyrights, and, if Assignee shall commence any such suit, Assignor shall, at the request of Assignee, do any and all lawful acts and execute any and all proper documents reasonably required by Assignee in aid of such enforcement and Assignor shall promptly, upon demand, reimburse and indemnify Assignee for all reasonable costs and expenses incurred by Assignee in the exercise of its rights under this Paragraph 11.

12. **Indemnification.** Assignor agrees to indemnify and hold Assignee harmless against any claim for damages, including reasonable attorneys' fees, in the event that Assignee is implicated in any action or suit between Assignor and a third party involving the use of any of the Patents, Trademarks and/or Copyrights or involving any of the Licenses, or in any action which relates in any way to the Patents, Trademarks, Copyrights and/or Licenses.

13. **Waivers.** No course of dealing between Assignor and Assignee, nor any failure to exercise, nor any delay in exercising, on the part of Assignee, any right, power or privilege hereunder or under the Loan Agreement shall operate as a waiver thereof; nor shall any single or

partial exercise of any right, power or privilege hereunder or thereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

**14. Severability.** The provisions of this Assignment are severable, and if any clause or provision shall be invalid and unenforceable in whole or in part in any jurisdiction, then such invalidity or unenforceability shall affect only such clause or provision, or part thereof, in such jurisdiction, and shall not in any manner affect such clause or provision in any other jurisdiction, or any other clause or provision of this Assignment in any jurisdiction.

**15. Modification.** This Assignment cannot be altered, amended or modified in any way, except as specifically provided in Paragraph 7 hereof, or by a writing signed by the parties hereto.

**16. Cumulative Remedies; Effect on Loan Agreement.** All of Assignee's rights and remedies with respect to the Patents, Trademarks, Copyrights and Licenses, whether established hereby or by the Loan Agreement, or by any other agreements or by law shall be cumulative and may be exercised singularly or concurrently. Assignor acknowledges and agrees that this Assignment is not intended to limit or restrict in any way the rights and remedies of Assignee under the Loan Agreement but rather is intended to facilitate the exercise of such rights and remedies given it by the terms of this Assignment, all rights and remedies allowed by law and the rights and remedies of a secured party under the Uniform Commercial Code as enacted in any jurisdiction in which the Patents, Trademarks, Copyrights or Licenses may be located.

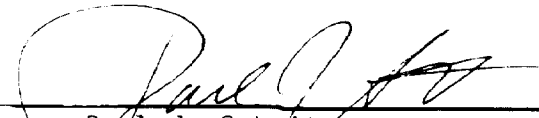
**17. Binding Effect; Benefits.** This Assignment shall be binding upon the Assignor and its respective successors and assigns, and shall inure to the benefit of Assignee, their nominees and assigns.

**18. Governing Law.** This Assignment shall be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania.

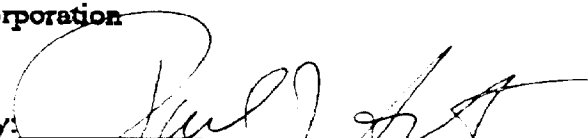
**19. Further Assurances.** Assignor agrees to execute any documents which are or may be required in order to perfect the recordation of this Assignment, including the Assignment as amended pursuant to Paragraph 7, in the United States Patent and Trademark Office, the United States Copyright Office and in the records of such states as are appropriate under the provisions of the Uniform Commercial Code without compensation from Assignee.

**IN WITNESS WHEREOF**, the parties hereto have duly executed this Assignment the day and year first above written.

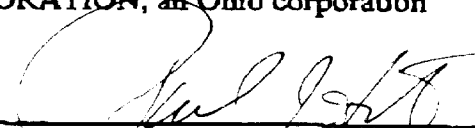
**CHRYSALIS INTERNATIONAL CORPORATION,**  
a Pennsylvania Corporation

By:   
Name: Paul J. Schmitt  
Title: Chairman, President & CEO

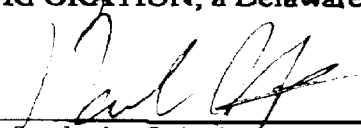
**CHRYSALIS INTERNATIONAL PRECLINICAL SERVICES CORPORATION,** a Pennsylvania corporation

By:   
Name: Paul J. Schmitt  
Title: Chairman & CEO

**CHRYSALIS DNX TRANSGENIC SCIENCES CORPORATION,** an Ohio corporation

By:   
Name: Paul J. Schmitt  
Title: President & CEO

**CHRYSALIS INTERNATIONAL CLINICAL SERVICES CORPORATION,** a Delaware corporation

By:   
Name: Paul J. Schmitt  
Title: Chairman

**FIRST UNION NATIONAL BANK**

By: \_\_\_\_\_  
Name:  
Title:



IN WITNESS WHEREOF, the parties hereto have duly executed this Assignment the day and year first above written.

CHRYSALIS INTERNATIONAL CORPORATION,  
a Pennsylvania Corporation

By: \_\_\_\_\_  
Name:  
Title:

CHRYSALIS INTERNATIONAL PRECLINICAL  
SERVICES CORPORATION, a Pennsylvania  
corporation

By: \_\_\_\_\_  
Name:  
Title:

CHRYSALIS DNX TRANSGENIC SCIENCES  
CORPORATION, an Ohio corporation

By: \_\_\_\_\_  
Name:  
Title:

CHRYSALIS INTERNATIONAL CLINICAL  
SERVICES CORPORATION, a Delaware corporation

By: \_\_\_\_\_  
Name:  
Title:

FIRST UNION NATIONAL BANK

By: Richard B. Shyer  
Name: Richard B. Shyer  
Title: Senior Vice President

STATE OF \_\_\_\_\_ :  
: SS.  
COUNTY OF \_\_\_\_\_ :

On this, the \_\_\_\_ day of November, 1998, before me, a Notary Public, the undersigned officer, personally appeared \_\_\_\_\_, who, in due form and according to law was deposed and said that he/she is the \_\_\_\_\_ of Chrysalis International Corporation, a Pennsylvania corporation, and that he/she, being duly authorized, duly executed the foregoing instrument on behalf of said corporations for the purposes therein contained by signing his/her name as such officer.

IN WITNESS WHEREOF, I have hereunto set my hand and notarial seal.

\_\_\_\_\_  
Notary Public

KELLY A. WENDLING

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires:

MY COMMISSION EXPIRES JANUARY 13, 2000

STATE OF \_\_\_\_\_ :  
: SS.  
COUNTY OF \_\_\_\_\_ :

On this, the \_\_\_\_ day of November, 1998, before me, a Notary Public, the undersigned officer, personally appeared \_\_\_\_\_, who, in due form and according to law was deposed and said that he/she is the \_\_\_\_\_ of Chrysalis International Preclinical Services Corporation, a Pennsylvania corporation, and that he/she, being duly authorized, duly executed the foregoing instrument on behalf of said corporations for the purposes therein contained by signing his/her name as such officer.

IN WITNESS WHEREOF, I have hereunto set my hand and notarial seal.

\_\_\_\_\_  
Notary Public

KELLY A. WENDLING

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires:

MY COMMISSION EXPIRES JANUARY 13, 2000

FROM KLEHR HARRISON

PHILADELPHIA

(TUE) 11/17/98 19:13/ST. 18:04/NO. 4861622851 P 38

STATE OF \_\_\_\_\_ :  
: SS.  
COUNTY OF \_\_\_\_\_ :

On this, the \_\_\_\_ day of November, 1998, before me, a Notary Public, the undersigned officer, personally appeared \_\_\_\_\_, who, in due form and according to law was deposed and said that he/she is the \_\_\_\_\_ of Chrysalis DNX Transgenic Sciences Corporation, an Ohio corporation, and that he/she, being duly authorized, duly executed the foregoing instrument on behalf of said corporations for the purposes therein contained by signing his/her name as such officer.

IN WITNESS WHEREOF, I have hereunto set my hand and notarial seal.

\_\_\_\_\_  
Notary Public

KELLY A. WENDLING

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires:

MY COMMISSION EXPIRES JANUARY 13, 2000

STATE OF \_\_\_\_\_ :  
: SS.  
COUNTY OF \_\_\_\_\_ :

On this, the \_\_\_\_ day of November, 1998, before me, a Notary Public, the undersigned officer, personally appeared \_\_\_\_\_, who, in due form and according to law was deposed and said that he/she is the \_\_\_\_\_ of Chrysalis International Clinical Services Corporation, and that he/she, being duly authorized, duly executed the foregoing instrument on behalf of said corporations for the purposes therein contained by signing his/her name as such officer.

IN WITNESS WHEREOF, I have hereunto set my hand and notarial seal.

\_\_\_\_\_  
Notary Public

KELLY A. WENDLING

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires:

MY COMMISSION EXPIRES JANUARY 13, 2000

**EXHIBIT A****TRADEMARKS**

<b>COUNTRY</b>	<b>APPLN. NO.</b>	<b>REGN. NO.</b>	<b>REGN. DATE</b>
United States	129,666	2170114	06/30/98
United States	129,665		
Australia	719,071	719071	10/10/97
Canada	818,800		
Estonia	9602096	25640	04/24/98
European Community	333,733		
Israel	106,898	106898	02/04/98
Israel	106,897	106897	02/24/98
Japan	8-84335		
Japan	8-84336		
Latvia	M961501	M40759	05/20/98
Lithuania	96-2207		
Norway	964,729		
Switzerland	7628/1996	442851	06/23/97
Turkey	15723	180322	10/24/96
Turkey	15722	180300	10/24/96

**EXHIBIT B**  
**COPYRIGHTS**

No material copyrights at this time.

**EXHIBIT C**

**LICENSES**

<b>Patent (or Application)</b>	<b>Assignee (Licensed From)</b>	<b>License Date (Term/Terms)</b>	<b>Description (Utility)</b>	<b>U.S. Appl. No. (Date)</b>	<b>U.S. Patent(s) No. (Issue Date)</b>	<b>Sublicensed To</b>
Microinjection ('191)	Ohio University (same)	6/13/85 (Life of Patent/Exclusive)	Method of making transgenic animals for research and "bioreactor" production (useful for in-vivo research)	US 273,239 (6/12/81)	US 4,873,191 (10/10/89)	Various incl. Nexttran & Baxter for "Field of Use"
Wagner 3C	Ohio University (same)	6/13/85 (Life of '191 Patent/Exclusive)	Transgenic animals created by the '191 method (useful for in-vivo research)	US 08/449,285 (5/24/95)	(Pending)	Various incl. Nexttran & Baxter for "Field of Use"
Gene Targeting	Univ. of Utah (GenPharm*)	1/1/91 (Life of Patents/Non-exclusive)	Positive-Negative election method for gene targeting (useful for in-vivo research)	US 07/397,707 (8/22/89)	US 5,464,764 (11/7/95) US 5,487,992 (1/30/96) US 5,627,059 (5/6/97*) US 5,631,153 (5/20/97*)	Nexttran & Baxter for "Field of Use"
AAV Vectors	Princeton U. (same)	12/22/91 (Life of Patent/Exclusive)	Method of making helper-free stock of AAV vectors (useful for gene-therapy delivery)	US 7,399 (1/21/93)	US 5,436,146 (7/25/95)	Cell Genesys and Nexttran & Baxter (for "Field of Use")
AAV Vectors	Princeton U. (same)	1/10/91 (Life of Patent/Exclusive)	Chimeric transactivating proteins comprising DNA binding and functional areas (for increasing gene expr)	US 41,297 (3/30/93)	US 5,574,730 (10/7/97)	Unlicensed Inactive
Hb with a $\beta$ -Like Globin	DNX	N/A	Hu Hb development	US 258,311 (6/10/94)		Nexttran/Baxter for "Fields of Use"

Human Hemoglobin in Transgenic Pigs	DNX	N/A	Devel. of Hu Hb in Tg. Pigs	US 717,774 (6/14/91) US 897,648 (6/12/92) US 105,989 (8/11/93) Plus 5 ex-US applic.		Nextran/Baxter for "Fields of Use"
Production Predetermined Peptides in Tg Animals	DNX	N/A	Fusion Proteins with Globin	US 255,272 (6/7/94)	US 5,627,268 (5/6/97)	Unlicensed Inactive
PLA <sub>2</sub> Transgenic Animals	DNX	N/A	Transgenic rodents expressing Hu PLA <sub>2</sub> (useful as disease model for research)	US 287,980 (8/9/94)	US 5,625,125 (4/29/97)	Taonic (exclusive for collaboration)
TNF gene construct	No Assignee (Hellenic Pasteur Institute)	3/14/95 (Period of constr. Use/Non-exclusive)	Transgenic model of arthritis (useful alone or in combination with PLA <sub>2</sub> to test compounds)	No Patent Application	N/A	Taonic (exclusive for collaboration)

## Existing Patent License Agreement Amendments

### Ohio University '191 Patent License Agreement (6/13/85)

7/1/91 Letter agreement re: prosecution of patent applications

### '191 License to GenPharm (1/1/91)

8/1/91 Amendment re: royalty rates  
• 7/5/97 Medarex merger letter

### '191 License to Genzyme (2/1/90)

4/29/91 Amendment re: expanding breeding service rights  
7/17/97 Letter agreement transferring '191 license obligations to Genzyme  
Transgenics

### '191 Research Licenses

10/31/95 Amgen letter of understanding re: unlicensed uses of the '191 technology  
• 12/19/91 BMS letter agreement re: narrow transfer of transgenic mice  
• 2/10/92 BMS letter agreement re: broad transfer of transgenic mice  
• 4/29/91 Merck license amendment re: expanding breeding service rights  
• 4/29/91 Monsanto license amendment re: expanding breeding service rights  
• 1/23/96 Upjohn letter agreement re: merger with Pharmacia  
• 6/15/98 Upjohn Pharmacia license amendment adding "have-made" rights  
6/30/98 Upjohn Pharmacia letter agreement returning PRV gp50 license rights  
obtained by Chrysalis in the 1991 Upjohn '191 research (cross-license)  
agreement

### '191 Characterized Model License Agreements

9/17/96 Rockefeller University letter of understanding re: transfer to Virologix  
• 4/25/97 Mayo letter agreement re: confidentiality  
• 7/24/97 Johns Hopkins letter agreement re: changes to the license grant

### Princeton University Agreements

12/22/87 License agreement covering AAV technology spawned from the July 24,  
1987 Research Agreement  
1/4/90 Transgenics / DNX merger letter  
12/28/90 Research Agreement amendment promulgating the '404 technology (LAP  
fusion protein) license agreement  
1/10/91 License agreement covering LAP fusion protein technology



- 1/28/93 Letter of termination of July 24, 1987 Research Agreement

**Cephalon Agreement (3/9/92) Amendment in Progress**

10/23/98 Draft which broadens scope of Chrysalis rights to use collaboration animals  
an collect service fees

At final stages of negotiation

Includes back service fees due totalling ~\$20,000

**Chrysalis International Corporation  
Current '191 Licensees and Collaborators**

**Transgenic Research Licensees**

Alcon	Merck
Allergan	Millennium
Amgen	Miles / Bayer
Bristol-Myers Squibb	Monsanto (Searle)
Eli Lilly	Novartis (Sandoz)
Genentech / Roche	Schering-Plough
Glaxo Wellcome	Parke-Davis/WarnerLambert
Hoechst-Mario-Roussel / Ariad	Pfizer
Immunex	Pharmacia-Upjohn
University of Pennsylvania	
EABC	WyethAyerst/AHP/Genetics Institute

**Transgenic Production ("Bioreactor") Licensees**

Genzyme Transgenics	Pharmaceutical Protein Holdings
GenPharm International / Medarex	Pharming BV
Nexttran / Baxter Healthcare (hemoglobin subs.)	

**Transgenic Breeding Licensees**

Charles River Laboratories	Taconic Farms
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**Characterized Transgenic Model Licensees**

Duke University	Northwestern University
The Johns Hopkins University	The Rockefeller University
Mayo Medical Ventures	University of Washington

**Collaboration Agreements**

Cephalon (research)	Pfizer (transgenic service)
Taconic Farms (transgenic model sales)	

11/13/98

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**TRADEMARK  
REEL: 1883 FRAME: 0565**

**Chrysalis Out-Licenses**

<b>Licensee</b>	<b>Agreement Date (or #)</b>	<b>Type License or Agreement</b>	<b>Annual Fees</b>	<b>Royalty Rate</b>
<b>AAV License</b>				
Cell Genesys (Somatix)	7/1/91	Exclusive	\$10,000*	4.0%*
<b>'91 Licenses</b>				
<b>Research Licenses</b>	19	Non-Exclusive	\$20- \$35,000	none
Transgenic Production	5			
Transgenic Breeding	2			2%
Characterized Tg Model	6	Non-Exclusive	\$3,000 min.	15%
Collaboration Agreements	3			
<b>Hemoglobin / Xenograft Applications (Nexttran JV)</b>	8/29/94	Exclusive (for "Field")	none	none
<b>Hemoglobin Technology</b>				
Hu Hb in Tg Pigs (Nexttran JV)	8/29/94 (8 applic.)	Exclusive (for "Field")	none	3%
Hb with Delta-Like Globin (Nexttran JV)	8/29/94 (1 applic.)	Exclusive (for "Field")	none	3%

\* Plus other fees associated with milestones and Cell Genesys sublicensing deals

\* 1.5% above the Princeton rate

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**TRADEMARK**  
**REEL: 1883 FRAME: 0566**

Chrysalis Transgenic Service Collaborations

Licensee	Agreement Date (or #)	Type License or Agreement	Annual Fees	Royalty Rate
Cephalon	3/9/92	Tg Animal Development Service	Discounted Service Fees (-23%)	n/a
Pfizer	1/9/98	Tg Animal Development Service	\$450,000 per qtr (2 years)	n/a
Taconic	10/1/96	Tg animal Breeding & sales	Profit share (50:50)	n/a

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**EXHIBIT D**

**PATENTS**

No material patents at this time.