As filed with the Securities and Exchange Commission on December 16, 1997
Registration No. 333-

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

REGISTRATION STATEMENT ON FORM S-3
UNDER
THE SECURITIES ACT OF 1933

TITAN PHARMACEUTICALS, INC.
(Exact name of Small Business Issuer as specified in its charter)

Delaware	*2836*	*94-3171940*
(State or other jurisdiction of incorporation)	*(Primary standard industrial classification code number)*	*(I.R.S. employer identification number)*

400 Oyster Point Blvd.
South San Francisco, California 94080
(650) 244-4990
(Address and telephone number of principal executive offices and principal place of business)

Louis R. Bucalo, M.D., Chief Executive Officer
Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd.
South San Francisco, California 94080
(650) 244-4990
(Name, address and telephone number of agent for service)

Copies to:

Fran Stoller, Esq.
Bachner, Tally, Polevoy & Misher LLP
380 Madison Avenue
New York, New York 10017
(212) 687-7000

Approximate date of proposed sale to the public: As soon as practicable after this Registration Statement becomes effective.

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box. [_]

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than pursuant to dividend or interest reinvestment plans, please check the following box. [X]

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. [_]

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier registration statement for the same offering. [_]

If the delivery of the prospectus is expected to be made pursuant to Rule 434, please check the following box. [_]

CALCULATION OF REGISTRATION FEE

<TABLE>
<CAPTION>

Title of Each Class of Securities to be Registered	Amount to be Registered	Proposed Maximum Aggregate Price per Share(1)	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
<S>	<C>	<C>	<C>	<C>
Common Stock, $.001 par value	594,595 shares	$5.19	$3,085,948.05	$910.00

</TABLE>

(1) Estimated solely for purposes of calculating the registration fee pursuant to Rule 457(c) under the Securities Act of 1933, as amended, on the basis of the market price of the Common Stock on the Nasdaq SmallCap Market on December 15, 1997.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

Information contained herein is subject to completion or amendment. A registration statement relating to these securities has been filed with the Securities and Exchange Commission. These securities may not be sold nor may offers to buy be accepted prior to the time the registration statement becomes effective. This prospectus shall not constitute an offer to sell or the solicitation of an offer to buy nor shall there be any sale of these securities in any State in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such State.

SUBJECT TO COMPLETION - DATED DECEMBER 16, 1997

PROSPECTUS

TITAN PHARMACEUTICALS, INC.

This Prospectus relates to the offer and resale by Hoechst Marion Roussel, Inc. (the "Selling Stockholder") of 594,595 shares (the " Shares") of common stock, $.001 par value (the "Common Stock") of Titan Pharmaceuticals, Inc. (the "Company").

The Company is obligated under certain circumstances, upon the request of the Selling Stockholder, to pay the Selling Stockholder, in cash, the difference between (i) $5,500,000 and (ii) the net proceeds received by the Selling Stockholder from the sale of Shares. See "Selling Stockholder."

The Selling Stockholder is obligated to sell the Shares through a broker-dealer designated by the Company; provided that if the Company has not designated a broker-dealer by the date of this Prospectus, the Selling Stockholder may select a broker-dealer for such sales. The Company has not determined which, if any, broker-dealer it will designate. Subject to the foregoing, the Shares may be offered by the Selling Stockholder from time to time in transactions on the Nasdaq SmallCap Market, in privately negotiated transactions, through the writing of options on the Shares or a combination of such methods of sale, at fixed prices that may be changed, at market prices prevailing at the time of sale, at prices related to such prevailing market prices or at negotiated prices. The Selling Stockholder may effect such transactions by selling the Shares to or through broker-dealers and such broker-dealers may receive compensation in the form of discounts, concessions or commissions from the Selling Stockholder or the purchasers of the Shares for whom such broker-dealers may act as agent or to whom they sell as principal or both (which compensation to a particular broker-dealer might be in excess of customary commissions). See "Selling Stockholder" and "Plan of Distribution."

The Company will not receive any of the proceeds from the sale of the Shares by the Selling Stockholder. The Company has agreed to bear certain expenses (other than fees and expenses, if any, of counsel or other advisors to the Selling Stockholder) in connection with the registration and sale of the Shares. The Company has agreed to indemnify the Selling Stockholder against certain liabilities, including certain liabilities under the Securities Act of 1933, as amended (the "Act").

The Company's Units, Common Stock and Class A Warrants are traded on The Nasdaq SmallCap Market ("Nasdaq") under the symbols TTNPU, TTNP, and TTNPW, respectively. On December 15, 1997, the closing bid prices of the Units, Common Stock and Warrants were $6.375, $5.1875 and $1.3125, respectively.

THE SECURITIES OFFERED HEREBY INVOLVE A HIGH DEGREE OF RISK. SEE "RISK FACTORS" BEGINNING ON PAGE 5.

THESE SECURITIES HAVE NOT BEEN APPROVED OR DISAPPROVED BY THE SECURITIES AND EXCHANGE COMMISSION OR ANY STATE SECURITIES COMMISSION NOR HAS THE SECURITIES AND EXCHANGE COMMISSION OR ANY STATE SECURITIES COMMISSION PASSED UPON THE ACCURACY OR ADEQUACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

*The date of this Prospectus is _____ , 199_*

AVAILABLE INFORMATION

The Company has filed with the Securities and Exchange Commission (the "Commission"), Washington, D.C. a Registration Statement on Form S-3 under the Securities Act of 1993, as amended (the "Act") covering the securities offered by this Prospectus. This Prospectus does not contain all of the information set forth in the Registration Statement and the exhibits thereto. Statements contained in this Prospectus as to the contents of any contract or other document referred to are not necessarily complete and in each instance such statement is qualified by reference to each such contract or document. The Company is subject to the informational requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and in accordance therewith files reports and other information with the Commission. Copies of such material can be obtained from the Public Reference Section of the Commission at 450 Fifth Street, N.W., Washington, D.C. 20549 at prescribed rates. The Company is an electronic filer, and the Commission maintains a web site that contains reports, proxy and information statements and other information regarding the Company at www.sec.gov./edgar.html.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents filed with the Commission (File No. 0-27436) pursuant to the Exchange Act are incorporated herein by reference:

1. *The Company's Annual Report on Form 10-KSB for the fiscal year ended December 31, 1996, including any documents or portions thereof incorporated by reference therein;*

2. *The Company's Current Report on Form 8-K filed with the Commission on January 15, 1997;*

3. *The Company's Quarterly Report on Form 10-QSB for the period ended March 31, 1997;*

4. *The Company's Current Report on Form 8-K filed with the Commission on May 30, 1997;*

5. *The Company's Current Report on Form 8-K filed with the Commission on June 10, 1997;*

6. *The Company's definitive Proxy Statement dated June 25, 1997;*

7. *The Company's Quarterly Report on Form 10-QSB for the period ended June 30, 1997;*

8. The Company's Current Report on Form 8-K filed with the Commission on July 18, 1997;

9. The Company's Quarterly Report on Form 10-QSB for the period ended September 30, 1997;

10. The Company's Current Report on Form 8-K filed with the Commission on November 21, 1997;

11. The Company's Registration Statement on Form 8-A declared effective on January 18, 1996, registering the Common Stock and Class A Warrants under the Exchange Act; and

12. All other documents filed by the Company pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act subsequent to the date of this Prospectus and prior to the termination of this offering.

Any statement contained in any document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Prospectus to the extent that a statement contained herein or in any subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as modified or superseded, to constitute a part of this Prospectus. The Company will provide without charge to each person to whom this Prospectus is delivered, upon written or oral request of any such person, a copy of any or all of the documents incorporated herein by reference (other than exhibits to such documents which are not specifically incorporated by reference into such documents). Requests for such documents should be directed to the Company, 400 Oyster Point Boulevard, South San Francisco, California 94080, Attention: Chief Financial Officer, telephone (415) 244-4990.

PROSPECTUS SUMMARY

This Prospectus contains forward-looking statements that involve risks and uncertainties. The Company's actual results may differ significantly from the results discussed in the forward-looking statements due to, among other factors, the results of ongoing research and development activities, pre-clinical and clinical testing, financing and strategic agreements and relationships; and those factors discussed in the Section entitled "Risk Factors," as well as those factors described elsewhere herein and in any documents actually or deemed to be incorporated herein.

Titan Pharmaceuticals, Inc. ("Titan") is engaged in the development of therapeutic products for the treatment of cancer, disorders of the central nervous system and other serious and life-threatening diseases. Titan's products utilize core technologies, including molecular therapy, cell therapy and gene therapy. Titan's strategy is to develop the products in its current portfolio, while actively seeking to acquire additional complementary therapeutic technologies and products.

In January 1997, Titan obtained an exclusive worldwide license from Hoechst Marion Roussel, Inc. ("Hoechst") to Iloperidone, an "atypical" antipsychotic agent in development for the treatment of schizophrenia and related disorders. Iloperidone has been evaluated in Phase I and II human clinical trials and is set to enter Phase III clinical trials. In November 1997, Titan entered into an agreement (the" Sublicense Agreement") with Novartis Pharma AG ("Novartis") pursuant to which Novartis was granted a sublicense for the worldwide (with the exception of Japan) development, manufacturing and marketing of Iloperidone. Pursuant to the Sublicense Agreement, Novartis paid Titan $18 million in license fees and reimbursement of research and development expenses and made a $5 million equity investment in Titan, and is required to make additional milestone and royalty payments to Titan.

Titan's product pipeline includes three potential cancer vaccines utilizing

anti-idiotypic antibody technology which have demonstrated the ability to generate an immune response against antigens associated with most adenocarcinomas (such as colon, gastrointestinal and non-small cell lung cancer), breast cancer, small cell lung cancer, ovarian cancer and melanoma: Cea Vac, TriGem and TriAB have all completed Phase I clinical trials in various cancer types and Phase II/III studies are planned for 1998.

Two additional cancer products in Titan's portfolio are MDRx1, a gene therapy product which has completed Phase I testing in ovarian and breast cancer patients at M.D. Anderson Cancer Center in Houston, and Pivanex Injection, a product which has demonstrated encouraging results in an ongoing Phase I study. Titan's portfolio also includes additional potential cancer therapeutics, as well as two platform technologies and two potential products relating to the treatment of central nervous system ("CNS") diseases, which are all in the preclinical development stage.

A portion of Titan's operations are currently conducted through three entities (the "Operating Companies"). Ingenex, Inc. ("Ingenex"), a company engaged in the development of proprietary gene-based therapies; ProNeura, Inc., ("ProNeura"), a company engaged in research and development activities relating to a polymeric implantable drug delivery technology; and Theracell, Inc. ("Theracell"), a company engaged in the development of cell-based therapeutics intended for the restorative treatment of neurological diseases and central nervous system disorders. In November 1997, Ansan Pharmaceuticals, Inc. ("Ansan"), a former Operating Company, completed a merger which resulted in Titan divesting itself of its equity interest in Ansan in exchange for the rights to Pivanex Injection and the repayment of outstanding indebtedness to Titan.

References to the Company include the Operating Companies unless the context requires otherwise. Titan was incorporated in Delaware in February 1992. Titan's executive offices are located at 400 Oyster Point Blvd., Suite 505, South San Francisco, California 94080, and its telephone number is (415) 244-4990.

RISK FACTORS

The Shares offered hereby are speculative in nature and an investment in the Shares offered hereby involves a high degree of risk. In addition to the other information contained in this Prospectus, prospective investors should carefully consider the following risk factors in evaluating whether to purchase the Shares offered hereby.

History of Operating Losses; Need for Additional Financing. The Company has experienced substantial operating losses since its inception in July 1991. As of September 30, 1997, the Company's accumulated deficit was approximately $56.9 million. Such losses have been principally the result of the various costs associated with research and development activities and the Company's provision of financial, administrative, regulatory and management services to the Operating Companies. At December 15, the Company had working capital of approximately $25.5 million and believes that available funds will enable it to fund its operations for at least 18-24 months. The Company will be required to seek substantial additional financing to commercialize any products that it may successfully develop. The Company has no bank lines of credit and there can be no assurance that the Company will be able to obtain any needed additional financing on commercially reasonable terms.

Early Stage of Development of Proposed Products. The Company's proposed products are at various stages of development and will require significant further research, development, testing and regulatory clearances prior to commercialization. There can be no assurance that any proposed products will be successfully developed, prove to be safe and efficacious, receive requisite regulatory approvals, demonstrate substantial therapeutic benefits in the treatment of any disease or condition, be capable of being produced in commercial quantities at reasonable costs or be successfully marketed. Accordingly, the Company must be evaluated in light of the expenses, delays, uncertainties and complications typically encountered by newly established biopharmaceutical businesses, many of which may be beyond the Company's control. These include, but are not limited to, unanticipated problems relating to product development, testing, regulatory compliance, manufacturing, marketing and competition, and additional costs and expenses that may exceed current

estimates. There can be no assurance that the Company will successfully develop and commercialize any products or ever achieve profitable operations.

Government Regulation. The research, preclinical development, clinical trials, product manufacturing and marketing to be conducted by or on behalf of the Company are subject to regulation by the FDA and similar health authorities in foreign countries. FDA approval of products, as well as the manufacturing processes and facilities, if any, used to produce such products, will be required before such products may be commercialized in the United States. The process of obtaining approvals from the FDA is costly, time consuming and often subject to unanticipated delays. There can be no assurance that approvals of any of the proposed products, processes or facilities will be granted on a timely basis, if at all. Even if regulatory approval is granted, such approval may include significant limitations on indicated uses for which any such products could be marketed. Further, even if such regulatory approvals are obtained, a marketed drug and its manufacturer are subject to continued review, and later discovery of previously unknown problems may result in restrictions on such product or manufacturer, including withdrawal of the product from the market. New government regulations in the United States or foreign countries also may be established that could delay or prevent regulatory approval of

products under development. Further, because gene therapy is a relatively new technology and has not been extensively tested in humans, the regulatory requirements governing gene therapy products are uncertain and may be subject to substantial further review by various regulatory authorities in the United States and abroad. This uncertainty may result in extensive delays in initiating clinical trials and in the regulatory approval process for Ingenex. Regulatory requirements ultimately imposed could have a material adverse effect upon the business of Ingenex and, ultimately, the Company. Failure by the Company to obtain regulatory approval of its proposed products, processes or facilities could have a material adverse effect on its business, financial condition and results of operations. The proposed products under development may also be subject to certain other federal, state and local government regulations, including, but not limited to, the Federal Food, Drug and Cosmetic Act, the Environmental Protection Act, the Occupational Safety and Health Act, and state, local and foreign counterparts to certain of such acts.

Reliance on Patents and Other Proprietary Rights. The Company's success will depend, in part, on its ability, and the ability of the Operating Companies and their licensor(s), to obtain protection for their products and technologies under United States and foreign patent laws, to preserve their trade secrets, and to operate without infringing the proprietary rights of third parties. The Company has obtained rights to certain patents and patent applications and may, in the future, seek rights from third parties to additional patents and patent applications. There can be no assurance that patent applications relating to potential products or technologies, including those licensed from others, or that the Company may license in the future, will result in patents being issued, that any issued patents will afford adequate protection or not be challenged, invalidated, infringed, or circumvented, or that any rights granted thereunder will afford competitive advantages to the Company. Furthermore, there can be no assurance that others have not independently developed, or will not independently develop, similar products and/or technologies, duplicate any of the Company's products or technologies, or, if patents are issued to, or licensed by, the Company, design around such patents.

There can be no assurance that the validity of any of the patents licensed to the Company would be upheld if challenged by others in litigation or that the Company's activities would not infringe patents owned by others. The Company could incur substantial costs in defending itself and/or the Operating Companies in suits brought against them or any of their licensors, or in suits in which the Company may assert, against others, patents in which the Company has rights. Should the Company's products or technologies be found to infringe patents issued to third parties, the manufacture, use, and sale of such products could be enjoined and the Company could be required to pay substantial damages. In addition, the Company may be required to obtain licenses to patents or other proprietary rights of third parties, in connection with the development and use of their products and technologies. No assurance can be given that any licenses required under any such patents or proprietary rights would be made available on acceptable terms, if at all.

Titan also relies on trade secrets and proprietary know-how, which it seeks

to protect, in part, by confidentiality agreements with employees, consultants, advisors, and others. There can be no assurance that such employees, consultants, advisors, or others, will maintain the confidentiality of such trade secrets or proprietary information, or that the trade secrets or

proprietary know-how of the Company will not otherwise become known or be independently developed by competitors in such a manner that the Company will have no practical recourse.

Titan is aware of an issued United States patent (as well as corresponding patents and patent applications in foreign countries) relating to multidrug resistance in mammalian cells. This patent claims substantially the same subject matter as is claimed by certain issued United States patents that have been licensed by Ingenex. The Company is also aware of an issued United States patent, relating to ex vivo gene therapy. The Company believes that this patent claims subject matter that relates to any gene therapeutic developed by Ingenex to the extent that the introduction of the gene into the subject's cells is performed ex vivo. Thus, it may be necessary for Ingenex to obtain a license under either or both of such patents to pursue commercialization of its proposed gene therapy products utilizing the MDR1 gene or ex vivo therapies, as applicable. There can be no assurance that Ingenex will be able to obtain such licenses or that such licenses, if available, can be obtained on terms acceptable to Ingenex. Failure of Ingenex to obtain such licenses could have a material adverse effect on the business, financial condition and results of operations of Ingenex and the Company. Ingenex has received notice that three companies are opposing the grant of a European patent which has claims directed to the human MDR1 gene and gene fragments.

Competition and Technological Change. Competition in the pharmaceutical and biotechnology industries is intense and is expected to increase. The Company will face competition from numerous companies that currently market, or are developing, products for the treatment of diseases and disorders targeted by the Company. Many of these entities have significantly greater research and development capabilities, experience in obtaining regulatory approvals and manufacturing, marketing, financial and managerial resources than the Company. Acquisitions of or investments in competing biotechnology companies by large pharmaceuticals companies could enhance such competitors' financial, marketing and other resources. The Company also competes with universities and other research institutions in the development of products, technologies and processes. There can be no assurance that competitors of the Company will not succeed in developing technologies or products that are more effective than the Company or that will render the Company's products or technologies noncompetitive or obsolete. In addition, certain of such competitors may achieve product commercialization or patent protection earlier than the Company.

Dependence Upon Key Collaborative Relationships and License and Sponsored Research Agreements. The Company relies significantly on the resources of third parties to conduct research and development. The Company's success will depend, in part, on its ability and the ability of the Operating Companies to maintain existing collaborative relationships and to develop new collaborative relationships with third parties. There can be no assurance that the Company will be successful in maintaining its existing collaborative arrangements or that any collaborative arrangements will lead to the successful commercialization of products.

The license agreements relating to the in-licensing of technology that have been or may in the future be entered into by the Company or the Operating Companies typically require the payment of an up-front license fee and royalties based on sales of licensed products and processes under the license and any sublicense with minimum annual royalties, the use of due diligence in developing and bringing products to market, the achievement of funding milestones

and, in some cases, the grant of stock to the licensor. The sponsored research agreements that have been or may in the future be entered into by generally require periodic payments on an annual or quarterly basis. Some agreements also may require funding or production facilities relating to clinical research. Failure to meet financial or other obligations under either license agreements or sponsored research agreements in a timely manner, the rights to proprietary

technology or the right to have the applicable university or institution conduct research and development efforts could be lost.

Dependence on Third Parties for Manufacturing and Marketing Activities. To date, the Company has not introduced any products on the commercial market. To conduct human clinical trials and ultimately to gain market acceptance, the products under development must be manufactured in compliance with regulatory requirements and at acceptable costs. It is not expected that the Company will have the resources in the foreseeable future to allocate to the manufacture or direct marketing of any proposed products and, therefore, it is intended that collaborative arrangements be pursued regarding the manufacture and marketing of any products that may be successfully developed. There can also be no assurance that additional collaborative arrangements to manufacture or market any proposed products will be entered into or, in lieu thereof, that any manufacturing operations can be successfully established or that any sales force can be successfully implemented.

Dependence on Key Personnel. The Company is highly dependent on the services of Dr. Louis R. Bucalo, President and Chief Executive Officer, as well as the other principal members of management and scientific staff of the Company and the Operating Companies. The loss of one or more of such individuals could substantially impair ongoing research and development programs and the Company's ability to obtain additional financing. The future success of the Company depends in large part upon its ability and that of the Operating Companies to attract and retain highly qualified personnel. This intense competition for such highly qualified personnel from other pharmaceutical and biotechnology companies, as well as universities and nonprofit research organizations, and may have to pay higher salaries to attract and retain such personnel. There can be no assurance that sufficient qualified personnel can be hired on a timely basis or retained. The loss of such key personnel or failure to recruit additional key personnel could have a material adverse effect on the Company's business, financial condition and results of operations.

Shares Eligible for Future Sale. Future sales of the Company's Common Stock by existing stockholders pursuant to Rule 144 under the Securities Act, pursuant to an effective registration statement or otherwise, could have an adverse effect on the price of the Company's securities.

USE OF PROCEEDS

The Company will not receive any proceeds from the sale of the Shares by the Selling Stockholder.

DIVIDEND POLICY

The Company has never paid cash dividends on its Common Stock and does not anticipate paying cash dividends in the foreseeable future. The Company currently intends to retain all earnings, if any, for use in the expansion of the Company's business. The declaration and payment of future dividends, if any, will be at the sole discretion of the Board of Directors and will depend upon the Company's profitability, financial condition, cash requirements, future prospects and other factors deemed relevant by the Board of Directors.

SELLING STOCKHOLDER

In January 1997, the Company issued the Shares to the Selling Stockholder in connection with entering into a worldwide exclusive license agreement for the antipsychotic agent, Iloperidone (the "HMR Agreement"). Pursuant to the HMR Agreement, the Company agreed, at the request of the Selling Stockholder, to register the Shares under the Act to permit public secondary trading of the Shares.The HMR Agreement obligates the Company, upon the request of the Selling Stockholder, to pay the Selling Stockholder, in cash, the difference between (i) $5,500,000 and (ii) the net proceeds received by the Selling Stockholder from the sale of Shares within 10 days of receipt of written notice from the Selling Stockholder. Notice is required to be provided upon the earlier of (i) completion of the sale of the Shares or (ii) 120 days after the effective date of the registration statement on Form S-3 (the "Registration Statement") of which this Prospectus forms a part. The Selling Stockholder has notified the

Company that it intends to make such a request for payment at the appropriate time. Any Shares remaining unsold pursuant to this Prospectus will be surrendered to the Company.

The Company has agreed to bear certain expenses (other than fees and expenses, if any, of counsel to the Selling Stockholder) in connection with the registration and sale of the Shares being offered by the Selling Stockholder. See "Plan of Distribution." The Company has agreed to prepare and file such amendments and supplements to the Registration Statement and Prospectus as may be necessary to keep the Registration Statement effective as provided for in the HMR Agreement.

The following table sets forth certain information regarding the beneficial ownership of Common Stock by the Selling Stockholder and as adjusted to give effect to the sale of the Shares offered hereby.

Selling Stockholder(1)	Number of Shares Beneficially Owned Prior to Offering(2)	Percentage Ownership Prior to Offering	Number of Shares Being Offered(2)
Hoechst Marion Roussel, Inc.	594,595	4.43%	594,595

(1) The address of such stockholder is 10236 Marion Park Drive, Dock 6, Kansas City, Missouri 64137.

PLAN OF DISTRIBUTION

Pursuant to the HMR Agreement, the Selling Stockholder is obligated to sell the Shares through a broker-dealer designated by the Company; provided that if the Company has not designated a broker-dealer by the effective date of the Registration Statement, the Selling Stockholder may select a broker-dealer for such sales. The Company has not determined which, if any, broker-dealer it will designate.

Subject to the foregoing, the Selling Stockholder may sell Shares from time to time in transactions on the Nasdaq SmallCap Market, in privately negotiated transactions, through the writing of options on the Shares or a combination of such methods of sale, at fixed prices which may be changed, at market prices prevailing at the time of sale, at prices related to such prevailing market prices or at negotiated prices. The Selling Stockholder may effect such transactions by selling the Shares to or through broker-dealers, and such broker-dealers may receive compensation in the form of discounts, concessions or commissions from the Selling Stockholder or the purchases of the Shares for whom such broker-dealers may act as agent or to whom they sell as principal, or both (which compensation to a particular broker-dealer might be in excess of customary commissions).

The Selling Stockholder and any broker-dealers who act in connection with the sale of Shares hereunder may be deemed to be "underwriters" as that term is defined in the Act, and any commissions received by them and profit on any resale of the Shares as principal might be deemed to be underwriting discounts and commissions under the Act.

The Company has agreed to indemnify the Selling Stockholder against certain liabilities, including certain liabilities under the Act.

LEGAL MATTERS

The validity of the securities offered hereby have been passed upon for the Company by Bachner, Tally, Polevoy & Misher LLP, New York, New York.

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[Back Cover]

No dealer, salesman or other person has been authorized to give any information or to make any representations, other than those contained in this

Prospectus, and, if given or made, such information or representations must not be relied upon as having been authorized by the Company or by the Underwriter. This Prospectus does not constitute an offer to sell, or a solicitation of an offer to buy, any securities offered hereby by anyone in any jurisdiction in which such offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer, or solicitation. Neither the delivery of this Prospectus nor any sale made hereunder shall, under any circumstances, create any implication that the information herein contained is correct as of any time subsequent to the date of this Prospectus.

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TITAN PHARMACEUTICALS, INC.

PROSPECTUS

[date]

PART II

Information Not Required in Prospectus

Item 14. Other Expenses of Issuance and Distribution

The estimated expenses payable by the Registrant in connection with the issuance and distribution of the securities being registered are as follows:

	Amount
SEC Registration Fee	$ 910.00
Printing and Engraving Expenses	3,500.00
Legal Fees and Expenses	7,500.00
Blue Sky Fees and Expenses	3,500.00
Accounting Fees and Expenses	7,500.00
Total	$ 22,910.00

Item 15. Indemnification of Directors and Officers

The Amended and Restated Certificate of Incorporation and By-Laws of the Registrant provide that the Registrant shall indemnify any person to the full extent permitted by the Delaware General Corporation Law (the "GAL"). Section 145 of the GAL, relating to indemnification, is hereby incorporated herein by reference.

In accordance with Section 102(a)(7) of the GAL, the Certificate of Incorporation of the Registrant eliminates the personal liability of directors to the Registrant or its stockholders for monetary damages for breach of fiduciary duty as a director with certain limited exceptions set forth in Section 102(a)(7).

The Registrant also enters into indemnification agreements with each of its officers and directors, the form of which is filed as Exhibit 10.6 and reference is hereby made to such form.

In addition, the Registrant currently maintains an officers' and directors' liability insurance policy which insures, subject to the exclusions and limitations of the policy, officers and directors of the Company against certain liabilities which might be incurred by them solely in such capacities.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling the Registrant, pursuant to the foregoing provisions, the Company has been informed that in the opinion of the commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. See Item 17, "Undertakings."

Item 16. Exhibits

3.1 - Restated Certificate of Incorporation of the Registrant(1)
3.2 - Form of Amendment to Restated Certificate of Incorporation of the Registrant(1)
3.3 - By-laws of the Registrant(1)
4.1 - Form of Bridge Note(1)
4.2 - Bridge Warrant Agreement(1)

4.3 - Form of Warrant Agreement(1) 4.4 - Form of Underwriter's Unit Purchase Option(1)
4.5 - Form of Investor Rights Agreement between the Registrant and the holders of Series A and Series B Preferred Stock(1)
4.6 - Form of Placement Agent's Unit Purchase Option(4)
5.1 - Opinion of Bachner, Tally, Polevoy & Misher LLP
10.1 - 1993 Stock Option Plan(1)
10.2 - 1995 Stock Option Plan(1)
10.3 - Employment Agreement between the Registrant and Louis Bucalo dated February 1, 1993, amended as of February 3, 1994(1)
10.4 - Employment Agreement between Registrant and Richard Allen dated July 28, 1995(1)
10.5 - Employment Agreement between Registrant and Sunil Bhonsle, dated August 6, 1995(1)
10.6 - Form of Indemnification Agreement(1)
+10.9 - MDR Exclusive License Agreement between Ingenex, Inc. (formerly Pharm-Gen Systems Ltd.) and the Board of Trustees of the University of Illinois dated May 6, 1992(1)
+10.11 - License Agreement between Theracell, Inc. and New York University dated November 20, 1992, as amended as of February 23, 1993 and as of February 25, 1995(1)
+10.12 - License Agreement between the Registrant and the Massachusetts Institute of Technology dated September 28, 1995(1)
+10.14 - Exclusive License Agreement between Ingenex, Inc. and the Board of Trustees of the University of Illinois, dated July 1, 1994(1)
+10.15 - Exclusive License Agreement between Ingenex, Inc. and the Board of Trustees of the University of Illinois, dated July 1, 1994(1)
+10.16 - License Agreement between Ingenex, Inc. and the Massachusetts Institute of Technology, dated September 11,1 992(1)
+10.17 - License Agreement between Ingenex, Inc. and Baylor College of Medicine, dated October 21, 1992(1)
10.18 - Lease for Registrant's facilities(2)
+10.19 - License Agreement between Theracell, Inc. and the University of

		South Florida dated March 15, 1996(3)
+10.20	–	License Agreement between Trilex Pharmaceuticals, Inc. (formerly Ascalon Pharmaceuticals, Inc.) and the University of Kentucky Research Foundation dated May 30, 1996(4)
+10.22	–	License Agreement between the Registrant and Hoechst Marion Roussel, Inc. effective as of December 31, 1996(5)
10.23	–	Employment Agreement between Registrant and Robert E. Farrell dated August 9, 1996(5)
10.24	–	Financing Agreement between the Registrant and Ansan Pharmaceuticals, Inc. dated March 21, 1997(6)
10.25	–	Agreement for Purchase and Sale of Assets between the Registrant and Pharmaceuticals Product Development, Inc. dated June 4, 1997(6)
++10.27	–	License Agreement between the Registrant and Bar-Ilan Research and Development Company Limited effective November 25, 1997

10.28	–	Letter Agreement between the Registrant and Ansan Pharmaceuticals, Inc. dated November 24, 1997
10.29	–	Stock Purchase Agreement between the Registrant and Ansan Pharmaceuticals, Inc. effective November 25, 1997
++10.30	–	Sublicense Agreement between the Registrant and Novartis Pharma AG dated November 20, 1997
23.1	–	Consent of Bachner, Tally, Polevoy & Misher LLP – Included in Exhibit 5.1
23.2	–	Consent of Ernst & Young LLP, Independent Auditors – Included on Page II-6
24.1	–	Power of Attorney – Included on Page II-4

\+ Confidential treatment has been granted with respect to portions of this exhibit.

++ Confidential treatment has been requested with respect to portions of this exhibit.

(1) Incorporated by reference from the Registrant's Registration Statement on Form SB-2 (File No. 33-99386).

(2) Incorporated by reference from the Registrant's Annual Report on Form 10-KSB for the year ended December 31, 1995.

(3) Incorporated by reference from the Registrant's Quarterly Report on Form 10-QSB for the period ended March 31, 1996.

(4) Incorporated by reference from the Registrant's Registration Statement on Form SB-2 (File No. 333-13469).

(5) Incorporated by reference from the Registrant's Annual Report on Form 10-KSB for the year ended December 31, 1996.

(6) Incorporated by reference from the Registrant's Quarterly Report on Form 10-QSB for the period ended March 31, 1997.

Item 17. Undertakings

Undertaking Required by Item 512 of Regulation S-K.

The undersigned registrant hereby undertakes that, for purpose of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

In accordance with the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has authorized this Registration Statement or Amendment thereto to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of South San Francisco, State of California on the 15th day of December, 1997.

TITAN PHARMACEUTICALS, INC.

By: /s/ Louis R. Bucalo

Louis R. Bucalo, M.D., President

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below under the heading "Signature" constitutes and appoints Louis R. Bucalo and Lindsay R. Rosenwald, or either of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities to sign any or all amendments to this registration statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully for all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, each acting alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

In accordance with the requirements of the Securities Act of 1933, this Registration Statement or Amendment thereto has been signed by the following persons in the capacities and on the dates stated.

Signature	Title	Date
/s/ Louis R. Bucalo Louis R. Bucalo, M.D.	President, Chief Executive Officer and Director (principal executive officer)	December 15, 1997
/s/ Ernst Gunter-Afting Ernst Gunter-Afting	Director	December 15, 1997
/s/ Victor J. Bauer Victor J. Bauer	Director	December 15, 1997
/s/ Michael K. Hsu Michael K. Hsu	Director	December 15, 1997
/s/ Hubert E. Huckel Hubert E. Huckel, M.D.	Director	December 15, 1997
/s/ Marvin E. Jaffe, M.D. Marvin E. Jaffe, M.D.	Director	December 15, 1997
/s/ Lindsay A. Rosenwald Lindsay A. Rosenwald, M.D.	Director	December 15, 1997
/s/ Konrad M. Weis Konrad M. Weis, Ph.D.	Director	December 15, 1997
/s/ Kenneth J. Widder Kenneth J. Widder, M.D.	Director	December 15, 1997
/s/ Robert E. Farrell Robert E. Farrell	Executive Vice President and Chief Financial Officer (principal financial and accounting officer)	December 15, 1997

CONSENT OF COUNSEL

The consent of Bachner, Tally, Polevoy & Misher LLP is contained in its opinion filed as Exhibit 5.1 to the Registration Statement.

CONSENT OF ERNST & YOUNG LLP,INDEPENDENT AUDITORS

We consent to the incorporation by reference in the Registration Statement (Form S-3) and related Prospectus of Titan Pharmaceuticals, Inc. for the registration of 594,595 shares of its Common Stock of our report dated February 21, 1997 with respect to the consolidated financial statements of Titan Pharmaceuticals, Inc. included in its annual report filed with the Securities and Exchange Commission for the year ended December 31, 1996.

Palo Alto, California *ERNST & YOUNG LLP*
December 12, 1997

Exhibit 5.1

Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd., Suite 505
South San Francisco, California 94080

Re:
Registration Statement on Form S-3

Gentlemen:

We have acted as counsel to Titan Pharmaceuticals, Inc., a Delaware corporation (the "Company"), in connection with the preparation of a registration statement on Form S-3 (the "Registration Statement") filed with the Securities and Exchange Commission under the Securities Act of 1933, as amended (the "Act"), relating to the registration of an aggregate of 594,595 shares (the "Shares") of the common stock, par value $.001 per share, of the Company (the "Common Stock") for resale by Hoechst Marion Roussel, Inc. (the "Selling Stockholder").

In this connection, we have reviewed (a) the Registration Statement; (b) the Company's Restated Certificate of Incorporation and Bylaws; (c) the form of License Agreement between the Company and the Selling Stockholder effective as of December 31, 1996; and (d) certain records of the Company's corporate proceedings as reflected in its minute books. In our examination, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals and the conformity with the original of all documents submitted to us as copies thereof. Where factual matters relevant to such opinion were not independently established, we have relied upon certificates of officers and responsible employees and agents of the Company. Our opinion set forth below is limited to the General Corporation Law of the State of Delaware.

Based upon the foregoing, it is our opinion that the Shares have been duly and validly authorized and issued and are fully paid and nonassessable.

We hereby consent to the use of this opinion as Exhibit 5.1 to the Registration Statement and to all references to our firm in the Registration Statement. In giving this consent, we do not thereby concede that we come within the categories of persons whose consent is required by the Act or the General Rules and Regulations promulgated thereunder.

Very truly yours,

/s/ BACHNER, TALLY, POLEVOY & MISHER LLP

*PORTIONS OF THIS EXHIBIT HAVE BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT. THE OMITTED PORTIONS, MARKED BY AN * AND [ ], HAVE BEEN SEPARATELY FILED WITH THE COMMISSION.*

Exhibit 10.27

LICENSE AGREEMENT

This License Agreement (hereinafter referred to as the License Agreement), effective as of the 25th day of November, 1997 is made by and between Bar-Ilan Research and Development Company Ltd., a company duly organized and existing under the laws of the State of Israel and having a principal place of business at Bar-Ilan University, PO Box 1530, Ramat Gan 52115, Israel (BAR-ILAN), and Titan Pharmaceuticals, Inc., a corporation duly organized and existing under the laws of the State of Delaware and having a principal place of business at 400 Oyster Point Boulevard, Suite 505, South San Francisco, California 94080, USA (TITAN).

WHEREAS, BAR-ILAN is entering this License Agreement on its own behalf, and as representative and trustee for Bar-Ilan University (the University) and MOR - Research Applications Ltd. (MOR), and represents that it has been authorized by the University and MOR to make the representations and undertakings contained herein; and

WHEREAS, BAR-ILAN has the right to grant licenses under the Patent Rights (as later defined) and whereas TITAN desires to obtain a license upon the terms and conditions hereinafter set forth; and

WHEREAS, TITAN has represented to BAR-ILAN, to induce BAR-ILAN to enter into this License Agreement, that it shall commit itself to a thorough, vigorous and diligent program of exploiting the Patent Rights and know-how of BAR-ILAN, so that public utilization shall result therefrom; and

WHEREAS, BAR-ILAN and Ansan Pharmaceuticals, Inc., a corporation duly organized and existing under the laws of the State of Delaware and having a principal place of business at 400 Oyster Point Boulevard, Suite 435, South San Francisco, California 94080, USA (ANSAN) have entered into a previous license agreement, effective as of October 31, 1992; and

WHEREAS, BAR-ILAN and ANSAN mutually agree to terminate that previous license agreement and replace it with this License Agreement and a parallel license agreement between BAR-ILAN and ANSAN.

NOW, THEREFORE, it is agreed as follows:

ARTICLE I - DEFINITIONS

For the purposes of this License Agreement, the following words and phrases shall have the following meanings:

1.1. "AFFILIATE" shall mean any company or entity, the voting control of which is at least fifty percent (50%), directly or indirectly, owned or controlled by TITAN or which, directly or indirectly, owns or controls at least fifty percent (50%) of TITAN or which is under common control with TITAN. AFFILIATE shall also mean any entity in fact effectively controlled by or under common control with TITAN.

1.2. "Patent Rights" shall mean Israeli Patent Applications Nos. 83389 and 87072, filed July 30, 1987 and July 11, 1988, respectively; and any applications claiming priority or benefit directly or indirectly from either or both of them, including any continuations, continuations-in-part, and divisionals thereof; and any patents issuing from any of the foregoing, including any reissues, reexaminations, and extensions thereof; as set forth in Appendix I.

1.3. "Licensed Product(s)" shall mean:

1.3.1. Any product which is covered in whole or in part by a valid and unexpired claim contained in the Patent Rights in the country in which the product is made, used, leased, or sold;

1.3.2. Any product which is manufactured by using a process which is covered in whole or in part by a valid and unexpired claim contained in the Patent Rights in the country in which the process is used;

1.3.3. Any product which is used according to a method which is covered in whole or in part by a valid and unexpired claim contained in the Patent Rights in the country in which the method is used.

1.4. "Licensed Process(es)" shall mean any process or method, which is covered, in whole or in part, by a valid and unexpired claim contained in the Patent Rights in the country in which the process or method is used.

1.5. "TITAN Field" shall mean: (a) with respect to butylidene dibutyrate (sometimes referred to as AN-10), non-topical applications for oncologic disorders; and (b) with respect to all other products within the Patent Rights, all indications and routes of administration except (i) the treatment of (-hemoglobinopathies ((-globin disorders) and (ii) topical applications other than oncologic disorders. The term oncologic disorders shall not include chemotherapy-or radiotherapy-induced alopecia.

1.6. "Net Sales" shall mean TITAN's or an AFFILIATEs billings for Licensed Products and Licensed Processes, less the sum of the following:

- *(a) discounts allowed in amounts customary in the trade;*
- *(b) sales, tariffs, duties, and/or use taxes directly imposed on and with reference to particular sales;*
- *(c) outbound transportation prepaid or allowed;*
- *(d) amounts allowed or credited on returns; and*
- *(e) bad debt deductions actually written off during the period.*

No deductions shall be made for commissions paid to individuals whether they be independent sales agencies or regularly employed by TITAN or an AFFILIATE and on their payroll. Licensed Products and Licensed Processes shall be considered sold when billed out or invoiced.

ARTICLE 2 - GRANT

2.1. BAR-ILAN hereby grants to TITAN a worldwide license to practice under the Patent Rights, and to make, have made, use, lease, and/or sell the Licensed Products in the TITAN Field and to practice the Licensed Processes in the TITAN Field, said license being perpetual unless sooner terminated as hereinafter provided and subject to the payment of royalties

as hereinafter provided, and said license to include the right to sublicense in the TITAN Field and to be exclusive to TITAN in the TITAN Field.

2.2. TITAN agrees that any sublicenses granted by it shall provide for the same obligations as those obligations imposed only by this License Agreement.

2.3. TITAN agrees to forward to BAR-ILAN annually a copy of such reports received from any sublicensee as may be pertinent to an accounting of royalties, as well as copies of all sublicense agreements entered into by TITAN in connection with the Patent Rights.

ARTICLE 3 - DUE DILIGENCE

3.1. TITAN shall use its reasonable best efforts to bring Licensed Products or Licensed Processes to market through a thorough, vigorous and diligent program for exploitation of the Patent Rights and continue active, diligent marketing efforts for Licensed Products or Licensed Processes throughout the life of this Agreement.

3.2. TITAN shall endeavor to use the Rabin Medical Center in Petach-Tikva, Israel, as one of the sites to conduct human clinical trials of the Licensed Products provided that US Food and Drug Administration (FDA) protocols and standards can be achieved and the cost per patient is competitive with the United States.

ARTICLE 4 - ROYALTIES

4.1. For the rights, privileges, and license granted hereunder, TITAN shall pay to BAR-ILAN, as set forth below, either (i) until the expiration of the last applicable patent within the Patent Rights on any Licensed Product or Licensed Process in the country in which such Licensed Process is used or such Licensed Product is made, used, leased, or sold, after which time TITANs license shall become fully paid-up and perpetual in such country; or (ii) until this License Agreement shall be terminated as hereinafter provided:

*The information below, marked by * and [ ], has been omitted pursuant to a request for confidential treatment. The omitted portion had been separately filed with the Commission.*

4.1.1. In each calendar year, a royalty in an amount equal to [*****] of Net Sales of the Licensed Products or Licensed Processes leased or sold by TITAN or an AFFILIATE.

4.1.2. In each calendar year, a royalty in an amount equal to [*****] of the royalties, fees, or any other lump sum received by TITAN or an AFFILIATE from its sublicensees for the use, lease, or sale of Licensed Products and Licensed Processes. TITAN shall not sell or sublicense the use, lease, sale, or other disposition of Licensed Products or Licensed Processes to an AFFILIATE of TITAN without obtaining the prior written consent of BAR-ILAN, which consent shall not unreasonably be withheld.

4.1.3. To maintain the exclusivity of TITANs license to the Patent Rights, TITAN shall pay minimum annual royalties in accordance with the following schedule:

(a) On October 31, 1998, a minimum of ..... [*****]
(b) Each calendar year thereafter, a minimum of ... [*****]

4.2. No multiple royalties shall be payable because use, lease, or sale of any Licensed Product or Licensed Process is, or shall be, covered by more than one valid and unexpired claim contained in the Patent Rights.

4.3. Royalty payments shall be paid in United States Dollars in New York or at such other place as BAR-ILAN may reasonably designate consistent with the laws and regulations controlling in any foreign country. Any withholding taxes which TITAN or any sublicensee shall be required by law to withhold on remittance of the royalty payments shall be deducted from the royalty paid to BAR-ILAN. TITAN shall furnish BAR-ILAN the original copies of all official receipts for such taxes. If a currency conversion shall be required in connection with the payment of royalties hereunder, such conversion shall be made using the exchange rate prevailing at Citibank, NA in New York on the last business day of the calendar quarterly reporting period to which such royalty payments relate.

*The information below, marked by * and [ ], has been omitted pursuant to a request for confidential treatment. The omitted portion had been separately filed with the Commission.*

4.4. In all cases, the price utilized to determine Net Sales employed in the computation of royalties shall be a genuine and objective selling price which would otherwise be established in a bona fide arms length transaction between unrelated and independent parties which have no affiliation or other interest which might affect such genuine and objective selling price. TITAN covenants not to engage in manipulative transfer pricing, distribution of Licensed Products which are not commercially reasonable, or any other means to avoid the intended application of this Article 4. In the event Licensed Products are used or otherwise disposed of by TITAN to an AFFILIATE or any other party at a price which is less than a genuine and objective selling price, as described herein, the price utilized to determine Net Sales employed in the computation of royalties shall be the prevailing price of the identical type of Licensed Products sold or leased by TITAN to independent and unrelated third parties. In the event that TITAN shall not have customarily sold or leased the identical type of Licensed Products to independent and unrelated third parties then the price employed in the computation of royalties shall be set at [*****] of the full cost of production, including all direct costs and full overhead, for such Licensed Products sold.

4.5. In addition to any royalties payable under Paragraph 4.1, if TITAN, or an AFFILIATE or sublicensee of TITAN, receives approval from the US FDA to market a Licensed Product in the TITAN Field (as those terms are used in this License Agreement) before ANSAN, or an AFFILIATE or sublicensee of ANSAN, receives approval from the US FDA to market a Licensed Product in the ANSAN Field (as those terms are used in the License Agreement between BAR-ILAN and ANSAN), then TITAN shall pay to BAR-ILAN four additional payments of [******] each: the first within 90 days of receiving the approval, the second within 180 days of receiving the approval, the third within 270 days of receiving the approval, and the fourth within 360 days of receiving the approval.

ARTICLE 5 - REPORTS AND RECORDS

5.1. TITAN shall keep full, true and accurate books of account containing all particulars that may be necessary to the purpose of showing the amount payable to BAR-ILAN by way of royalty as aforesaid. Said books of account shall be kept at TITAN's principal place of business. Said books and the supporting data shall be open upon reasonable notice to TITAN and no more than twice per calendar year, for five (5) years following the

end of the calendar year to which they pertain, for inspection by the BAR-ILAN Internal Audit Division and/or by an independent certified public accountant employed by BAR-ILAN, to which TITAN has no reasonable objection, for the purpose of verifying TITAN's royalty statement or compliance in other respects with this License Agreement.

5.2. TITAN, within sixty (60) days after the end each quarter of each calendar year, shall deliver to BAR-ILAN true and accurate reports, giving such particulars of the business conducted by TITAN during the preceding quarter under this License Agreement as shall be pertinent to a royalty accounting hereunder. These shall include at least the following:

- *(a) All Licensed Products and Licensed Processes used, leased, or sold by or for TITAN, its AFFILIATES and sublicensees.*
- *(b) Total amounts invoiced for Licensed Products and Licensed Processes used, leased, or sold by or for TITAN, its AFFILIATES and sublicensees.*
- *(c) Deductions applicable in computed "Net Sales as defined in Paragraph 1.6.*
- *(d) Total royalties due based on Net Sales by or for TITAN, its AFFILIATES and sublicensees.*
- *(e) Names and addresses of all AFFILIATES and sublicensees of TITAN. (f) On an annual basis, TITAN's Annual Report.*

5.3. With each such report submitted, TITAN shall pay to BAR-ILAN the royalties due and payable under this License Agreement. If no royalties (other than the minimum royalty pursuant to Paragraph 4.1.3) shall be due, TITAN shall so report.

ARTICLE 6 - PATENT PROSECUTION

6.1. TITAN, at its own expense and utilizing patent counsel of its choice selected in consultation with BAR-ILAN, shall have the sole right and obligation for the filing, prosecution, and maintenance of the Patent Rights. TITAN, or its patent counsel, shall provide BAR-ILAN

with copies of all correspondence and documents filed with, or received from, any patent office or patent agent. In addition, TITAN agrees that any and all official or ribbon copies of issued patents shall be forwarded to, and retained by, BAR-ILAN.

6.2. BAR-ILAN and TITAN agree for the benefit of ANSAN that neither shall take any action in regard to prosecution of the Patent Rights (including by reexamination, reissue, or the like) that could result in any diminution of rights with respect to any claims covering rights outside the TITAN Field, in particular, to any composition of matter claims relating to butylidene dibutyrate, except with the consent of ANSAN.

ARTICLE 7 - TERMINATION

7.1. If TITAN shall become bankrupt or insolvent, shall file a petition in bankruptcy, or if the business of TITAN shall be placed in the hands of a receiver, assignee, or trustee for the benefit of creditors, whether by the voluntary act of TITAN or otherwise, this License Agreement shall automatically terminate.

7.2. Should TITAN fail in its payment to BAR-ILAN of royalties due in accordance with the terms of this License Agreement which are not the subject of a bona fide dispute between BAR-ILAN and TITAN, BAR-ILAN shall have the right to serve notice upon TITAN, by certified mail to the address designated in Article 13 hereof, of its intention to terminate this License Agreement within sixty (60) days after receipt of said notice of termination unless TITAN shall pay to BAR-ILAN, within the sixty (60) day period, all such royalties due and payable. Upon the expiration of the sixty (60) day period, if TITAN shall not have paid all such royalties due and payable, the rights, privileges and license granted hereunder shall thereupon immediately terminate.

7.3. Upon any material breach or default of this License Agreement (including without limitation, the failure to submit annual reports as provided under Paragraph 5.2) by TITAN, other than those occurrences set out in Paragraphs 7.1 and 7.2 hereinabove, which shall always take precedence in that order over any material breach or default referred to in this Paragraph 7.3, BAR-ILAN shall have the right to terminate this License Agreement and the rights, privileges and

license granted hereunder by ninety (90) days' notice to TITAN by certified mail to the address designated in Article 13 hereof. Such termination shall become effective unless TITAN shall have cured any such breach or default capable of being cured prior to the expiration of the ninety (90) day per from receipt of the notice of termination.

7.4. TITAN shall have the right to terminate this License Agreement at any time on nine (9) months notice by certified mail to BAR-ILAN.

7.5. Upon termination of this License Agreement for any reason, nothing herein shall be construed to release either party from any obligation that matured prior to the effective date of such termination. TITAN and/or any sublicensee thereof may, however, after the effective date of such termination, sell all Licensed Products, and complete Licensed Products in the process of manufacture at the time of such termination, and sell the same, provided that TITAN shall pay to BAR-ILAN the royalties therein as required by Article 4 of this License Agreement and shall submit the reports required by Article 5 hereof on the sales of Licensed Products.

7.6. Upon the termination of this License Agreement, TITAN shall (except to the extent necessary to complete the manufacture and sale of Products permitted under Paragraph 7.5 above): (i) return to BAR-ILAN any materials still in its possession provided to it by BAR-ILAN pursuant to this License Agreement; (ii) maintain the confidentiality of all proprietary, non-public information provided to it by BAR-ILAN; and (iii) not use the Licensed Products or other information disclosed pursuant to this License Agreement in any way in connection with its business.

7.7. Upon the termination of this License Agreement for any reason, existing sublicense agreements pertaining to Licensed Products entered into by TITAN pursuant to this License Agreement shall at BAR-ILANs option be assigned, upon such termination, from TITAN to BAR-ILAN or to BAR-ILANs designee.

ARTICLE 8 - ARBITRATION

8.1. Except as to issues relating to the validity, enforceability, or infringement of any patent contained in the Patent Rights licensed hereunder, any and all claims, disputes, or

controversies arising under, out of, or in connection with this License Agreement, which have not been resolved by good faith negotiations between the parties, shall be resolved by final and binding arbitration to be held in Tel Aviv under the rules of the American Arbitration Association then in effect. The

arbitrators shall have no power to add to, subtract from, or modify any of the terms or conditions of this License Agreement. Any award rendered in such arbitration may be enforced by either party in any court having jurisdiction.

8.2. Any claim, dispute, or controversy concerning the validity, enforceability, or infringement of any patent contained in the Patent Rights licensed hereunder shall be. resolved in any court having jurisdiction thereof. In the event TITAN institutes a proceeding to contest the validity or enforceability of the Patent Rights, all royalties owed by TITAN under Article 4 of this License Agreement shall continue to be paid by TITAN until such proceeding is resolved, after appeals if any.

8.3. In the event that, in any arbitration proceeding, any issue shall arise concerning the validity, enforceability, or infringement of any patent contained in the Patent Rights licensed hereunder, the arbitrators shall, to the extent possible, resolve all issues other than validity, enforceability, and infringement; in any event, the arbitrators shall not delay the arbitration proceeding for the purpose of obtaining or permitting either party to obtain judicial resolution of such issues, unless an order staying the arbitration proceeding shall be entered by a court of competent jurisdiction. Neither party shall raise any issue concerning the validity, enforceability, or infringement of any patent contained in the Patent Rights licensed hereunder in any proceeding to enforce any arbitration award hereunder, or in any proceeding otherwise arising out of any such arbitration award.

ARTICLE 9 - INFRINGEMENT AND OTHER ACTIONS

9.1. TITAN and BAR-ILAN shall promptly provide written notice to the other party of any alleged infringement by a third party of the Patent Rights within the TITAN Field and provide such other party with any available evidence of such infringement.

9.2. During the term of this Agreement, TITAN shall have the right, but not the obligation, to prosecute and/or defend, at its own expense and utilizing counsel of its choice, any infringement of and/or challenge to the Patent Rights within the TITAN Field. In furtherance of such right, BAR-ILAN hereby agrees that TITAN may join BAR-ILAN as a party in any such suit, without expense to BAR-ILAN. No settlement, consent judgment, or other voluntary final disposition of any such suit may be entered into without the consent of BAR-ILAN, which consent shall not unreasonably be withheld. TITAN shall indemnify BAR-ILAN against any order for costs that may be made against BAR-ILAN in any such suit.

9.3. Any recovery of damages by TITAN in any such suit shall be applied first in satisfaction of any unreimbursed expenses and legal fees of TITAN relating to the suit. The balance remaining from any such recovery shall be treated as royalties received by TITAN from sublicensees and shared by BAR-ILAN and TITAN in accordance with Paragraph 4.1.2 hereof.

9.4. If within six (6) months after receiving notice of any alleged infringement within the TITAN Field, TITAN shall have been unsuccessful in persuading the alleged infringer to desist, or shall not have brought and shall not be diligently prosecuting an infringement action, or if TITAN shall notify BARILAN, at any time prior thereto, of its intention not to bring suit against the alleged infringer, then, and in those events only, BAR-ILAN shall have the right, but not the obligation, to prosecute, at its own expense and utilizing counsel of its choice, any infringement of the Patent-Rights within the TITAN Field, and BAR-ILAN may, for such purposes, join TITAN as a party plaintiff. The total cost of any such infringement action commenced solely by BAR-ILAN shall be borne by BAR-ILAN and BAR-ILAN shall keep any recovery or damages for past infringement derived therefrom.

9.5. In any suit to enforce and/or defend the Patent Rights pursuant to this License Agreement, the party not in control of such suit shall, at the request and expense of the controlling party, cooperate in all respects and, to the extent possible, have its employees testify when requested and make available relevant records, papers, information, samples, specimens, and the like.

9.6. BAR-ILAN and TITAN agree for the benefit of ANSAN that, before either of them shall commence or respond to a suit to enforce and/or defend the Patent Rights, they shall consult with ANSAN in good faith to the extent legally

permissible to ensure that no action shall jeopardize the legitimate interests of ANSAN in the Patent Rights. TITAN further agrees that it will cooperate in good faith with ANSAN to establish an agreement for shared responsibility and/or cost of enforcement and/or defense to the extent that such enforcement and/or defense implicates both the ANSAN Field and the TITAN Field.

ARTICLE 10 - PRODUCT LIABILITY

10.1. BAR-ILAN, by this License Agreement, makes no representation as to the patentability and/or breadth of the inventions contained in the Patent Rights. BAR-ILAN, by this License Agreement, makes no representation as to patents now held or which will be held by others in the field of the Licensed Products for a particular purpose.

10.2. TITAN agrees to defend, indemnify, and hold BAR-ILAN, the University and MOR harmless from and against all liability, demands, damages, expense, or losses for death, personal injury, illness, or property damage arising (a) out of the use by TITAN or its transferees of inventions licensed or information furnished under this License Agreement, or (b) out of any use, sale, or other disposition by TITAN or its transferees of products made by use of such inventions or information. As used in this clause, BAR-ILAN includes the Trustees, Officers, Agents, Employees and Students of BAR-ILAN, the University, and MOR, and TITAN includes its AFFILIATES, Contractors and Sub-contractors.

ARTICLE 11 - ASSIGNMENT

TITAN may assign or otherwise transfer this License Agreement and the license granted hereunder, and the rights acquired by it hereunder so long as such assignment or transfer shall be accompanied by a sale or other transfer of TITAN's entire business or of that part of TITAN's business to which the license granted hereunder relates. TITAN shall give BAR-ILAN thirty (30) days prior written notice within which to reasonably object to such assignment or transfer. If within thirty (30) days after the giving of such notice, no written objection is received by TITAN,

BAR-ILAN shall be deemed to have approved such assignment or transfer; provided, however, BAR-ILAN shall not be deemed to have approved such assignment and transfer unless such assignee or transferee shall have agreed in writing to be bound by the terms and conditions of this License Agreement. If, within such thirty (30) day period, BAR-ILAN provides written notice of reasonable objection to such assignment or transfer, then no such assignment or transfer shall be made and, if made, shall be deemed null and void. Upon such assignment or transfer and agreement by such assignee or transferee, the term TITAN as used herein shall mean such assignee or transferee. If TITAN shall sell or otherwise transfer its entire business or that part of its business to which the license granted hereby relates and the transferee shall not have agreed in writing to be bound by the terms and conditions of this License Agreement, or new terms and conditions shall not have been reasonably agreed upon within sixty (60) days of such tale or transfer, BAR-ILAN shall have the right to terminate this License Agreement.

ARTICLE 12 - NON-USE OF NAMES

TITAN shall not use the name of BAR-ILAN or MOR or any adaptation thereof in any advertising, promotional, or sales literature without prior written consent obtained from BARILAN, in each case, except that TITAN may state that it is licensed by BAR-ILAN under one or more of the patents and/or applications comprising the Patent Rights.

ARTICLE 13 - PAYMENTS, NOTICES AND OTHER COMMUNICATIONS

Any payment, notice, or other communication pursuant to this License Agreement shall be sufficiently made or given on the date of mailing if sent to such party by certified first class mail, postage prepaid, addressed to it at its address below or as it shall designate by written notice given to the other party:

In the case of BAR-ILAN:

Bar-Ilan Research & Development Company Ltd.
Bar-Ilan University
PO Box 1530

Ramat Gan 52115
Israel

In the case of TITAN:

Titan Pharmaceuticals, Inc.
400 Oyster Point Boulevard, Suite 505
South San Francisco, California 94080
USA

ARTICLE 14 - EFFECTIVENESS

This License Agreement shall become effective and binding on the parties hereto upon the closing of the Agreement and Plan of Reorganization dated July 16, 1997 by and between ANSAN and Discovery Laboratories, Inc.

ARTICLE 15 - MISCELLANEOUS PROVISIONS

15.1. This License Agreement shall be construed, governed, interpreted and applied in accordance with the laws of the State of Israel, except that questions affecting the validity, enforceability, or infringement of any patent contained in the Patent Rights shall be determined by the law of the country in which the patent was granted.

15.2. The parties hereto acknowledge that this License Agreement sets forth the entire agreement and understanding of the parties hereto as to the subject matter hereof, and shall not be subject to any change or modification except by the execution of a written instrument subscribed to by the parties hereto.

15.3. The provisions of this License Agreement are severable, and in the event that any provision of this License Agreement shall be determined to be invalid or unenforceable under any controlling body of law, such invalidity or unenforceability shall not in any way affect the validity or enforceability of the remaining provisions hereof.

15.4. TITAN agrees to mark the Licensed Products sold in the United States with all applicable United States patent numbers. All Licensed Products shipped to, or sold in, other countries shall be marked in such a manner as to conform with the patent laws and practice of the country of manufacture or sale.

15.5. The failure of either party to assert a right hereunder or to insist upon compliance with any term or condition of this License Agreement shall not constitute a waiver of that right or excuse a similar subsequent failure to perform any such term or condition by the other party.

IN WITNESS WHEREOF, the parties hereto have executed this License Agreement, in duplicate, by proper persons thereunto duly authorized.

BAR-ILAN	*TITAN*
By: /s/ AMITZOR SHLASKY	*By: /s/ SUNIL BHONSLE*
Name: Amitzor Shlasky	*Name: Sunil Bhonsle*
Title: Managing Director	*Title: Exec. V.P. and COO*
Date: 13-11-97	*Date: 11/24/97*

APPENDIX I

Country	*Application No.*	*Filing Date*	*Patent No.*	*Issue Date*
Israel	*83389*	*July 30, 1987*	*83389*	*December 23, 1993*
Israel	*87072*	*July 11, 1988*	*87072*	*November 19, 1993*
*Austria**	*88111971.3*	*July 25, 1988*	*95164*	*September 29, 1993*
*Belgium**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
Canada	*573,518*	*July 29, 1988*	*1,327,595*	*March 8, 1994*

*France**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
*Germany**	*88111971.3*	*July 25, 1988*	*3884517*	*September 29, 1993*
*Great Britain**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
*Greece**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
*Italy**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
Japan	*191,981/88*	*July 30, 1988*	*--*	*--*
*Luxembourg**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
*Netherlands**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
*Spain**	*88111971.3*	*July 25, 1988*	*2045028*	*September 29, 1993*
*Sweden**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
*Switzerland**	*88111971.3*	*July 25, 1988*	*0 302 349*	*September 29, 1993*
USA	*07/223,595*	*July 25, 1988*	*5,200,553*	*April 6, 1993*

** Based on European Patent Application No. 88111971.3, filed July 25, 1988; European Patent No. 0 302 349, granted September 29, 1993*

Exhibit 10.28

November 24, 1997

Titan Pharmaceuticals, Inc.
400 Oyster Point Boulevard, Suite 505
South San Francisco, CA 94080
Attention: Sunil Bhonsle

Ladies and Gentlemen:

This letter sets forth our agreement regarding the conduct of and payment for certain dispute resolution matters arising from the License Agreement between Bar-Ilan University (Bar-Ilan) and Titan; and for the partial reimbursement of certain moneys to be paid under the License Agreement between Bar-Ilan and Titan and the corresponding License Agreement between Bar-Ilan and Ansan.

In the event of any dispute between Bar-Ilan and Titan arising from or relating to the License Agreement between Bar-Ilan and Titan, Titan shall promptly notify Ansan, and Ansan and Titan shall have the right jointly to commence, control and resolve any litigation or arbitration with Bar-Ilan with counsel of their selection. The parties shall share equally the cost of such litigation or arbitration (including the reasonable cost of counsel), provided that Ansan shall not be required to share any judgment or award entered against Titan, citing Titan to be at fault. Any amounts payable by Ansan to Titan under this paragraph shall be creditable against any amounts then owing by Titan to Ansan under Article 2 of the Stock Purchase Agreement between Titan and Ansan.

Under Paragraph 4.5 of the License Agreement between Bar-Ilan and Titan, and under Paragraph 4.5 of the corresponding License Agreement between Bar-Ilan and Ansan, whichever of Titan and Ansan first receives approval from the US Food and Drug Administration to market a Licensed Product in its Field (as defined in its License Agreement) becomes obliged to pay Bar-Ilan the sum of $200,000 in four payments over the 360 days following receipt of the approval. As long as both the License Agreement between Bar-Ilan and Titan and the License Agreement between Bar-Ilan and Ansan remain in effect, if either of Titan or Ansan receives such an approval and thereby becomes obliged to pay Bar-Ilan under Paragraph 4.5 of its License Agreement, and the other of Titan or Ansan subsequently receives such an approval, then that second party to receive approval shall reimburse the first party to receive approval one-half of the payments the first party has made or will make to Bar-Ilan under Paragraph 4.5 of the first party's License Agreement.

Please confirm by your signature below that the above sets forth your agreement in this matter.

Yours very truly,
Ansan Pharmaceuticals, Inc.

By:/s/ Vaughan Shalson
---------- Vaughan Shalson

So Agreed.
Titan Pharmaceuticals, Inc.

By:/s/ Sunil Bhonsle
---------- Sunil Bhonsle

Exhibit 10.29

STOCK PURCHASE AGREEMENT

This Stock Purchase Agreement (hereinafter referred to as the "Agreement") effective as of the 25th day of November, 1997 is made by and between Ansan Pharmaceuticals, Inc., a corporation duly organized and existing under the laws of the State of Delaware and having a principal place of business at 400 Oyster Point Boulevard, Suite 435, South San Francisco, California 94080, USA ("ANSAN") and Titan Pharmaceuticals, Inc., a corporation duly organized and existing under the laws of the State of Delaware and having a principal place of business at 400 Oyster Point Boulevard, Suite 505, South San Francisco, California 94080, USA ("TITAN").

WHEREAS, TITAN is the principal stockholder of ANSAN; and WHEREAS,

ANSAN has licensed patent rights pursuant to the terms of a License Agreement (the "Original ANSAN License") dated as of October 31, 1992 by and between ANSAN and Bar-Ilan Research and Development Company Ltd., a company duly organized and existing under the laws of the State of Israel and having a principal place of business at Bar-Ilan University, PO Box 1530, Ramat Gan 52115, Israel ("BAR-ILAN"); and

WHEREAS, the parties to this Agreement have previously entered into a Sublicense Agreement (the "Sublicense") dated as of July 15, 1997, under which ANSAN granted a sublicense to TITAN of certain rights under the Original ANSAN License in return for transfer to ANSAN of all the ANSAN securities owned by TITAN and payment by TITAN to ANSAN of a royalty on Net Sales of the sublicensed compounds; and

WHEREAS, BAR-ILAN, ANSAN, and TITAN mutually agree to terminate the Original ANSAN License and the Sublicense, and replace them with License Agreements between BAR-ILAN and ANSAN (the "New ANSAN License") and between BAR-ILAN and TITAN (the "TITAN License") and with this Agreement.

NOW, THEREFORE, it is agreed as follows:

1. Definitions

For the purposes of this Agreement, the following words and phrases shall have the following meanings:

1.1. "AFFILIATE" of TITAN shall have the meaning set forth in Paragraph 1.1 of the TITAN License.

1.2. "AN-9" shall mean pivaloyloxymethyl butyrate.

1.3. "Discovery" shall mean Discovery Laboratories, Inc., a corporation duly organized and existing under the laws of the State of Delaware and having a principal place of business at 509 Madison Avenue, New York, New York 10022

1.4. "Licensed Processes" shall have the meaning set forth in Paragraph 1.4 of the TITAN License.

1.5. "Licensed Products" shall have the meaning set forth in Paragraph 1.3 of the TITAN License.

1.6. "Merger Agreement" shall mean that Agreement and Plan of Reorganization dated July 16, 1997 by and between ANSAN and Discovery.

1.7. "Net Sales" shall have the meaning set forth in Paragraph 1.6 of the TITAN License.

1.8. "New ANSAN License" shall mean the License Agreement to be entered into by and between BAR-ILAN and ANSAN, as set forth in Exhibit A hereto.

1.9. "Original ANSAN License" shall mean the License Agreement dated as of October 31, 1992 by and between BAR-ILAN and ANSAN.

1.10. "Patent Rights shall" have the meaning set forth in Paragraph 1.2 of the TITAN License.

1.11. "Securities" shall mean all outstanding securities in the capital stock of ANSAN owned by or on behalf of TITAN, namely 1,212,654 shares of ANSAN Common Stock.

1.12. "TITAN License" shall mean the License Agreement to be entered into by and between BAR-ILAN and TITAN, as set forth in Exhibit B hereto.

2. Royalty Payments

In addition to the royalties payable to BAR-ILAN pursuant to the TITAN License, TITAN shall pay to ANSAN either (i) until the expiration of the last applicable patent within the Patent Rights on any Licensed Product or Licensed Process in the country in which such Licensed Process is used or such Licensed Product is made, used, leased, or sold, after which time TITAN's obligation to pay royalties in that country shall cease, or (ii) until this Agreement is terminated in accordance with its terms, in each calendar year an amount equal to two percent (2%) of Net Sales of the Licensed Products or Licensed Processes leased or sold by TITAN, any AFFILIATE or any sublicensee of TITAN.

3. Securities

Subject to the terms and conditions of this Agreement, TITAN shall transfer to ANSAN at the Closing (as defined in Article 5) all its right, title and interest in the Securities, free and clear of any and all liens, encumbrances and security interests. ANSAN and TITAN acknowledge that a portion of the Securities are held by Continental Stock Transfer & Trust Company as Escrow Agent pursuant to the terms of an Escrow Agreement dated as of May25, 1995. ANSAN and TITAN agree to take all steps reasonably necessary to obtain release of such Securities and delivery to ANSAN in accordance with the terms of this Agreement.

4. Repayment of Indebtedness

Subject to the terms and conditions of this Agreement, ANSAN shall retire all indebtedness then owing to TITAN, including the principal amount and interest then owing on the debenture due April 1998 and any moneys owed for administrative and financial services, less the sum of up to $100,000 for expenditures made by ANSAN in connection with the Pivanex(TM)

product development program subsequent to June 30, 1997 (which shall be contributed to ANSAN's capital), at the Closing (as defined in Article 5).

5. Closing

The closing of the transactions contemplated by this Agreement (the Closing) shall take place simultaneously with the closing of the Merger Agreement at the offices of Heller Ehrman White & McAuliffe, 525 University Avenue, Palo Alto, California or at such other time, date and location as the parties agree.

6. Conditions to Closing

6.1. Conditions to Obligations of TITAN. The obligations of TITAN to consummate the transactions contemplated hereby shall be subject to satisfaction at the Closing of each of the following conditions, any of which may be waived by TITAN:

(a) Representations and Warranties. The representations and warranties of ANSAN contained in this Agreement shall have been true and correct in all material respects as of the date of this Agreement and as of the date of the Closing. TITAN shall have received a certificate with respect to the foregoing signed on behalf of ANSAN by the Chief Executive Officer of ANSAN.

(b) Closing of the Merger Agreement. The transactions contemplated by the Merger Agreement shall have closed.

(c) License Agreements. BAR-ILAN and ANSAN shall have executed and delivered the New ANSAN License in substantially the form attached as Exhibit A hereto.

6.2. Conditions to Obligations of ANSAN. The obligations of ANSAN to consummate the transactions contemplated hereby shall be subject to satisfaction at the Closing of each of the following conditions, any of which may be waived by ANSAN:

(a) Representations and Warranties. The representations and warranties of TITAN contained in this Agreement shall have been true and correct in all material respects as of the date of this Agreement and as of the date of the Closing. ANSAN shall have received a certificate with respect to the foregoing signed on behalf of TITAN by the Chief Executive officer of TITAN.

(b) Closing of the Merger Agreement. The transactions contemplated by the Merger Agreement shall have closed.

(c) License Agreements. BAR-ILAN and TITAN shall have executed and delivered the TITAN License in substantially the form attached as Exhibit B hereto.

7. Representations and Warranties of TITAN.

7.1. Authority. TITAN has all requisite corporate power and authority to enter into this Agreement and to consummate the transactions contemplated hereby. The execution and delivery of this Agreement and the consummation of the transactions contemplated hereby have been duly authorized by all necessary corporate action on the part of TITAN.

7.2. Ownership of Securities. TITAN is the sole record and beneficial owner of the Securities and owns all right, title and interest in such Securities free and clear of all liens, encumbrances and security interests and at the Closing shall transfer title to such Securities free and clear of all liens, encumbrances and security interests. TITAN does not own beneficially or of record or have the right to purchase any securities of ANSAN other than the Securities.

8. Representations and Warranties of ANSAN.

8.1. Authority. ANSAN has all requisite corporate power and authority to enter into this Agreement and to consummate the transactions contemplated hereby. The execution and delivery of this Agreement and the consummation of the transactions contemplated hereby have been duly authorized by all necessary corporate action on the part of ANSAN, subject to approval of the stockholders of ANSAN.

8.2. Original ANSAN License. The Original ANSAN License is in full force and effect, and to the knowledge of ANSAN, neither ANSAN nor BAR-ILAN is in material breach of any term of the Original ANSAN License.

8.3. Patents. Except as disclosed in any filings by ANSAN with the Securities and Exchange Commission pursuant to the Securities Act of 1933 or the Securities Exchange Act of 1934 prior to the date hereof, ANSAN has no knowledge of any pending or threatened litigation claiming that any claim of the Patent Rights infringes the rights of any other person, and to ANSAN's knowledge there has been no infringement of the Patent Rights by any other person. During the term of the Original ANSAN License, ANSAN has satisfied all of its obligations to maintain the Patent Rights. 9. Transfer of Know-How; Further Cooperation.

9.1. Transfer of Know-How. Within 30 days after the Closing, ANSAN shall transfer to TITAN, free of charge, (a) copies of all pertinent documents relating to the rights granted in the TITAN License, including all reports,

data, contracts and regulatory submissions and (b) all remaining Licensed Product which has been formulated for non-topical use. ANSAN and TITAN shall promptly after the Closing take all steps necessary to transfer the IND for AN-9 into TITAN's name and shall notify the FDA of such intention within 30 days after the Closing. If necessary, the parties will cooperate in good faith to establish an agreement for continuing support of the AN-9 product development program. The parties will negotiate the specifics of such an agreement and the reimbursement to be made to ANSAN for expenses incurred in connection therewith on or before the Closing.

9.2. Further Cooperation. The parties recognize that they may both be developing the same compound(s) within the same patent rights (referred to as the Basic Patents in the New ANSAN License and the Patent Rights in the TITAN License), so that each may develop intellectual property, such as know-how and/or further patent rights, of value to both parties. Accordingly, the parties agree that they will cooperate in good faith to establish an agreement for the disclosure by each party to the other of intellectual property relevant to the others Field, and for the cooperative development and/or cross-licensing of such intellectual property.

10. Miscellaneous.

10.1. Notices. Any notice or other communication required or permitted hereunder shall be in writing and shall be delivered personally or sent by facsimile transmission, overnight courier, or certified, registered or express mail, postage prepaid. Any such notice shall be deemed delivered when so delivered personally or when sent by facsimile transmission (provided that an appropriate indication of successful transmission is given by the sending facsimile transmitter and a confirmation copy is sent by overnight courier), or if sent by overnight courier, one day after deposit with an overnight courier, or, if mailed, three days after the date of deposit in the United States mails as follows:

If to ANSAN: *Ansan Pharmaceuticals, Inc.*
400 Oyster Point Boulevard, Suite 435
South San Francisco, California 94080
Attention: President
Telecopy No. (650) 635-0201

If to TITAN: *Titan Pharmaceuticals, Inc.*
400 Oyster Point Boulevard, Suite 505
South San Francisco, California 94080
Attention: President
Telecopy No. (650) 244-4956

Either party may, by notice given in accordance with this Paragraph to the other party, designate another address or person for receipt of notices hereunder.

10.2. Binding Effect; Amendment; Assignment. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns. Nothing in this Agreement is intended to confer upon any person other than the parties hereto and their respective successors and permitted assigns any rights or remedies whatsoever. This Agreement may be amended only by an instrument in writing signed on behalf of each of the parties. Neither party may sell, transfer or assign any of its rights or obligations under this Agreement without the written consent of the other party, which will not be unreasonably withheld.

10.3. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of California applicable to agreements made between California residents and to be performed entirely within California.

10.4. Expenses. All costs and expenses incurred in connection with the transactions contemplated by this Agreement shall be paid by the party incurring such expenses.

10.5. Further Assurances. Each party will execute and deliver all such further documents and instruments and take all such further actions as may be necessary to consummate the transactions contemplated hereby.

10.6. Disputes. Any and all disputes between the parties arising from or relating to this Agreement shall be referred to the Chief Executive Officers of ANSAN and TITAN, respectively, and they shall endeavor to resolve such dispute in good faith for a period of 45 days. If any such dispute has not been resolved within such 45-day period, either party may file an action in a court of competent jurisdiction.

10.7. Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all other prior and contemporaneous agreements, understandings, discussions and correspondence between the parties with respect to the subject matter.

IN WITNESS WHEREOF, the parties hereto have executed this License Agreement, in duplicate, by proper persons thereunto duly authorized.

ANSAN	*TITAN*
By: /s/ V.H.J. SHALSON	*By:/s/ SUNIL BHONSLE*
Name: Vaughan Shalson	*Name: Sunil Bhonsle*
Title: President and CEO	*Title: Executive V.P. and COO*
Date: November 24, 1997	*Date: 11/24/97*

*PORTIONS OF THIS EXHIBIT HAVE BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT. THE OMITTED PORTIONS, MARKED BY AN * AND [ ], HAVE BEEN SEPARATELY FILED WITH THE COMMISSION.*

CONFIDENTIAL

SUBLICENSE AGREEMENT

THIS SUBLICENSE AGREEMENT, effective as of the 20th day of November, 1997, between TITAN PHARMACEUTICALS, INC., a corporation organized under the laws of the State of Delaware and having its principal office at 400 Oyster Point Blvd., Suite 505, South San Francisco, CA 94080 (hereinafter "TITAN"), and NOVARTIS PHARMA A.G., a corporation organized under the laws of Switzerland and having its principal office at Lichtstrasse 35, CH 4002 Basel, Switzerland (hereinafter "NOVARTIS").

WITNESSETH THAT:

WHEREAS, TITAN is the exclusive worldwide licensee of HOECHST MARION ROUSSEL, INC. ("HMRI"), under a License Agreement between TITAN and HMRI having an Effective Date of December 31, 1996 (the "License Agreement"); and

WHEREAS, under such License Agreement, TITAN has rights with respect to certain patents and patent applications, identified in Appendix A hereto, and know-how relating to a compound known as Iloperidone; and

WHEREAS, NOVARTIS desires to obtain certain exclusive sublicenses from TITAN under the aforesaid License Agreement, and TITAN is willing to grant to NOVARTIS such sublicenses;

NOW, THEREFORE, in consideration of the covenants and obligations expressed herein, and intending to be legally bound, the parties agree as follows:

1. DEFINITIONS.

1.1 "HMRI" shall mean HOECHST MARION ROUSSEL, INC.

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1.2 "TITAN" shall mean TITAN PHARMACEUTICALS, INC.

1.3 "NOVARTIS" shall mean NOVARTIS PHARMA A.G.

1.4 "AFFILIATE" shall mean any corporation, firm, partnership or other entity, whether de jure or de facto, which directly or indirectly owns, is owned by or is under common ownership with a party to this Sublicense Agreement, or HMRI, to the extent of more than fifty percent (50%) of the equity (or such lesser percentage which is the maximum allowed to be owned by a foreign corporation in a particular jurisdiction) having the power to direct the affairs of the entity and any person, firm, partnership, corporation or other entity actually controlled by, controlling or under common control with a party to this Sublicense Agreement or HMRI.

1.5 "COMPETITIVE INDUSTRY STANDARD LEVEL" shall mean PRODUCT shall be marketed by or on behalf of NOVARTIS, its AFFILIATES or SUBLICENSEES in the countries of the TERRITORY where PATENTS are issued and enforced with at least the same diligence that NOVARTIS would use in marketing its own products in such countries, in a manner consistent with the effort devoted by the pharmaceutical industry to products having the same or similar potential value of PRODUCT in those countries when PRODUCT is launched.

1.6 "COMPOUND" shall mean the chemical compound known as Iloperidone, whose more specific chemical name is 1-[4-[3-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]propoxy]-3-methoxyphenyl]ethanone, including any salts, hydrates, solvates, and/or stereoisomers thereof, and only the metabolites listed in Appendix B hereto, including any salts, hydrates, solvates and/or stereoisomers of such metabolites.

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1.7 "EEA" shall mean the European Economic Area, which consists of the EUROPEAN UNION and Iceland, Lichtenstein and Norway.

1.8 "EUROPEAN UNION" shall mean the member states of the European Union, as may exist from time to time, which as of the date hereof include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

1.9 "EXCLUSIVE" shall have the meaning specified in Section 2.1 hereof.

1.10 "FDA" shall mean the United States Food and Drug

Administration.

1.11 "FD&C ACT" shall mean the Federal Food, Drug and Cosmetic Act (21 U.S.C. 301ff), as amended from time to time.

1.12 "FIELD" shall mean the treatment in humans of psychiatric disorders, including psychotic disorders, and analgesia.

1.13 "IND" shall mean an Investigational New Drug Application.

1.14 "KNOW-HOW" shall mean all technical information and know-how: (a) presently developed and owned or controlled by HMRI and its AFFILIATES, (b) developed and owned or controlled by TITAN and its AFFILIATES after the date of the License Agreement, and (c) developed and owned or controlled by HMRI and its AFFILIATES, or TITAN and its AFFILIATES, after the date hereof and included within this definition of "KNOW-HOW" by operation of Section 2.3 hereof, which relates to COMPOUND or PRODUCT in the FIELD and which constitutes a proprietary "trade secret" or other valid intellectual property right under U.S. or other applicable law which is substantial, secret and identifiable, including, without limitation,

all biological, chemical, pharmacological, toxicological, clinical, regulatory, analytical, quality control and manufacturing data and any other information (whether technical or commercial) relating to COMPOUND or PRODUCT that may be useful for the development, regulatory approval, manufacture and commercialization of COMPOUND or PRODUCT.

1.15 "NDA" shall mean any and all applications (New Drug Applications) submitted to the FDA under Sections 505, 507 or 512 of the FD&C ACT and applicable regulations related to PRODUCT, including without limitation, full NDAs, "paper" NDAs and abbreviated NDAs (ANDAs) and all amendments and supplements thereto or equivalent applications in the EUROPEAN UNION.

1.16 "NET SALES" shall be calculated as follows: From the gross invoice price of PRODUCT sold by NOVARTIS or its AFFILIATES or SUBLICENSEES to independent, THIRD PARTIES in bona fide, arms-length transactions there shall be subtracted, if not previously deducted in the amount invoiced or received, (i) quantity and cash discounts actually allowed or taken, (ii) freight, postage and shipping insurance allocated in accordance with NOVARTIS' standard allocation procedure, (iii) customs duties and taxes, if any, directly related to the sale, (iv) amounts repaid or credited by reason of rejections, return of goods and retroactive price reductions mandated by or granted in response to state, provincial or federal law or regulation and specifically identifiable as relating to PRODUCT, (v) amounts incurred as a result of governmental (or governmental agency) mandated rebate programs, (vi) third party rebates and wholesaler chargebacks related to the sale of PRODUCT to the extent actually allowed and (vii) as agreed by the parties in writing, any other specifically identifiable amounts included in PRODUCT's gross

sales that were or ultimately will be credited and that are substantially similar to those listed hereinabove.

The computation of NET SALES shall not include sales between or among a party and its AFFILIATES or SUBLICENSEES, except where such AFFILIATES or SUBLICENSEES are end users. For purposes of this Sublicense Agreement, sales of PRODUCT to independent distributors, wholesalers or other parties who purchase and take title to PRODUCT are considered to be sales to THIRD PARTIES. If PRODUCT is sold through intermediaries such as agents or co-promoters who do not purchase and take title to PRODUCT, royalties shall be due on NET SALES to THIRD PARTIES who purchase PRODUCT through such intermediaries. It is agreed that there shall be no sales of COMPOUND to THIRD PARTIES by or on behalf of NOVARTIS, its AFFILIATES or SUBLICENSEES. In the event there are sales of COMPOUND to THIRD PARTIES by or on behalf of NOVARTIS, its AFFILIATES or SUBLICENSEES, such sales shall be subject to the payment of royalties by NOVARTIS to TITAN or HMRI (as the case may be) to the same extent as payments of royalties are due on sales of PRODUCT pursuant to this Agreement.

1.17 "PATENTS" shall mean all patents and patent applications set forth in Appendix A, including continuations, continuations-in-part, divisions, patents of addition, reissues, re-examinations, renewals or extensions thereof, along with supplementary protection certificates and other administrative protection of any kind in the TERRITORY owned or controlled by HMRI or its AFFILIATES to the extent they claim COMPOUND or PRODUCT, or use, formulations or manufacture thereof, for use in the FIELD, but not any other compound or use outside of the FIELD

disclosed or claimed in those patents or patent applications. Any patent

relating to COMPOUND or PRODUCT for use in the FIELD which is issued during the term of this Sublicense Agreement in any country of the TERRITORY shall automatically be deemed as of the date of such issuance to be included in PATENT, as defined hereunder.

1.18 "PRODUCT" shall mean any bulk or finished pharmaceutical composition containing COMPOUND as the sole pharmaceutically active ingredient for use in the FIELD.

1.19 "SEC" shall mean the United States Securities and Exchange Commission.

1.20 "SUBLICENSEE" shall mean a THIRD PARTY (as defined below) to whom a party sublicenses rights to manufacture and sell (or have manufactured and sold) COMPOUND under PATENTS, but shall not include any THIRD PARTIES to whom rights to manufacture COMPOUND have not been granted. Unless such party grants to such THIRD PARTY the right to manufacture COMPOUND, the following THIRD PARTIES shall not be considered SUBLICENSEES hereunder: agents, distributors, wholesalers, subcontractors, co-marketers, co-promoters, partners or joint venturers. SUBLICENSEES shall not include compulsory licensees as described in Section 4.1(a).

1.21 "TERRITORY" shall mean all countries and territories of the world except Japan; provided that any country(ies) in which this Sublicense Agreement is terminated shall be removed from the scope of this definition.

1.22 "THIRD PARTY" shall mean any party other than a party to this Sublicense Agreement or an AFFILIATE thereof.

2. GRANT.

2.1 TITAN hereby grants to NOVARTIS an EXCLUSIVE sublicense in the FIELD under the PATENTS (to the extent, but only to the extent, that such patents or patent applications claim COMPOUND or PRODUCT or the manufacture, formulation, or use thereof) and KNOW-HOW to develop, have developed, make, have made, use, import, sell, offer for sale and have sold COMPOUND and PRODUCT in the TERRITORY, subject to the terms and conditions of this Sublicense Agreement. The foregoing sublicense shall include the right to sublicense, but only upon HMRI's and TITAN's prior written consent, which consent shall not be unreasonably withheld. Any such sublicense(s) shall impose upon SUBLICENSEE(S) substantially the same terms and conditions as NOVARTIS assumes in this Sublicense Agreement, except no such sublicense(s) shall be required to contain obligations on the part of the SUBLICENSEE regarding payment of an upfront license fee, milestone payments or the same or similar royalty rates. As used in this Sublicense Agreement, the term "EXCLUSIVE" shall mean neither HMRI nor TITAN or any of their respective AFFILIATES shall grant any other license to, nor themselves exploit, the PATENTS and KNOW-HOW with respect to COMPOUND and PRODUCT in the FIELD (unless otherwise specified herein) and be limited as follows:

(a) With respect to all geographic areas in the TERRITORY outside of the EEA, such sublicense shall be exclusive for the duration and validity of the intellectual property rights constituting the PATENTS and/or KNOW-HOW.

(b) With respect to all geographic areas in the TERRITORY within the EEA, such sublicense shall be exclusive for the following time periods:

(i) For each of the countries within the EEA where only PATENTS (and not KNOW-HOW) exist and are sublicensed to NOVARTIS hereunder, the period of exclusivity for each such country shall be limited to the duration of the relevant PATENTS in such country, provided that "PATENTS" for purposes of the interpretation of this paragraph shall be limited to patents existing, and patents issuing from patent applications existing, and patents issuing from patent applications covering inventions existing as of the date of the License Agreement;

(ii) For each of the countries within the EEA where PATENTS and KNOW-HOW exist and are sublicensed to NOVARTIS hereunder, the period of exclusivity for each such country shall be limited to the duration of the relevant PATENTS in such country, provided that "PATENTS" for purposes of the interpretation of this paragraph shall be limited to patents existing, and patents issuing from patent applications existing, as of the date of the License Agreement and, provided, further, that if the duration of such PATENTS is less than ten (10) years from the date of first marketing of PRODUCT in the EEA but the KNOW-HOW continues to be sublicensed hereunder, the duration of exclusivity shall be for ten (10) years from the date of first marketing of PRODUCT in the EEA; and

(iii) For each of the countries within the EEA where KNOW-HOW (and not PATENTS) exists and is sublicensed to NOVARTIS

hereunder, the period of exclusivity for each such country shall be limited to ten (10) years from the date of first marketing of PRODUCT in the EEA;

Thereafter, such sublicense within the EEA shall be on a nonexclusive basis.

(c) Notwithstanding the provisions of clause 2.1(b), above, in the event that the TERRITORY (for whatever reason) does not include all countries within the EEA, this Sublicense Agreement shall be deemed to be amended in a reciprocal fashion to comply with applicable competition law requirements, while preserving the EXCLUSIVE rights of the parties hereto to the extent possible.

(d) For all purposes, such exclusivity shall be subject to Section 2.3 hereof.

(e) HMRI and its AFFILIATES and licensed THIRD PARTIES shall be entitled to utilize the PATENTS and KNOW-HOW in the FIELD within the TERRITORY for the development and manufacture of COMPOUND and PRODUCT for marketing, distribution and sale outside of the TERRITORY (where TITAN's rights under the License Agreement have been terminated).

(f) TITAN and its AFFILIATES and SUBLICENSEES shall also be entitled to utilize the PATENTS and KNOW-HOW in the FIELD within the TERRITORY for the development and manufacture of COMPOUND and PRODUCT for marketing, distribution and sale outside of the TERRITORY (in Japan and where NOVARTIS' rights under this Sublicense Agreement have been terminated).

The duration of the sublicense granted by this Section 2.1 shall be limited to the duration, on a country-by-country basis, of the intellectual property rights which comprise the PATENTS and KNOW-HOW with respect to a relevant country, provided that the termination of any portion of any

sublicense shall be without prejudice to the requirement of NOVARTIS to pay royalties pursuant to the terms of this Sublicense Agreement.

Notwithstanding the foregoing but subject to Sections 3.4 and 3.5 hereof, TITAN acknowledges and agrees that NOVARTIS shall as a matter of law have the right to continue to use on a royalty-free, nonexclusive basis the information which constitutes the PATENTS and KNOW-HOW on a country-by-country basis in the TERRITORY for the FIELD after the PATENTS expire or cease to be valid or enforceable and/or KNOW-HOW has entered into the public domain.

2.2 Subject to NOVARTIS' right of first negotiation under Section 5.6 hereof and TITAN's right of first negotiation under Section 5.6 of the License Agreement, with respect to uses or indications outside the FIELD, HMRI shall have the right for either HMRI, its AFFILIATES or SUBLICENSEES to develop, have developed, make, have made, use, import, sell, offer for sale and have sold COMPOUND and PRODUCT for uses outside the FIELD.

2.3 Subject to Sections 2.3(a) and 2.3(b) below, HMRI and TITAN also shall have the right to make and use COMPOUND or PRODUCT for the use in the FIELD limited solely to further study, investigation or experimentation purposes to further understand the category of compounds in the FIELD, how they work and their comparison to other compounds. The reservations stated in this provision shall be understood by the parties to comprise independent work by HMRI, TITAN and their respective AFFILIATES, SUBLICENSEES or collaborators (who are subject to obligations of nonuse and nondisclosure with respect thereto).

(a) In the event that the results of such work described in the immediately preceding paragraph would be relevant to COMPOUND or PRODUCTS with respect to the FIELD

and could appropriately be included within the PATENTS and KNOW-HOW licensed hereunder, and if HMRI or TITAN (as the case may be) has the legal right to do so, all as determined in the reasonable discretion of HMRI or TITAN (as the case may be), then if such work was conducted by HMRI, its AFFILIATES, SUBLICENSEES or collaborators, HMRI shall offer such results to TITAN and, if such work was conducted by TITAN, its AFFILIATES, SUBLICENSEES or collaborators, TITAN shall offer such results to NOVARTIS. If such results are offered to TITAN by HMRI, TITAN shall make such results available to NOVARTIS.

(b) If NOVARTIS notifies TITAN, within forty-five (45) days after receiving such results (whether offered by HMRI to TITAN or resulting from work conducted by TITAN, its AFFILIATES, SUBLICENSEES or collaborators), that NOVARTIS wishes such results to be included within the PATENTS and KNOW-HOW sublicensed hereunder, then with respect to results offered

by HMRI to TITAN, TITAN shall accept such results in writing, and such results shall be included, as appropriate, within the PATENTS and KNOW-HOW sublicensed hereunder. If such results are declined by NOVARTIS, and are not otherwise accepted by TITAN if such results were offered to TITAN by HMRI, such results may be used, assigned or licensed by HMRI or TITAN, as the case may be, subject to provisions of the License Agreement.

(c) It is mutually understood by the parties that independent experimental use of COMPOUND or PRODUCT or of results as described in this Section 2.3 shall not be used in any way that could be damaging or otherwise detrimental to COMPOUND or PRODUCT or their development, manufacture or commercialization by TITAN, NOVARTIS or HMRI or their respective AFFILIATES or SUBLICENSEES. Within twenty (20) days of HMRI's or TITAN's

request, NOVARTIS shall provide to HMRI or TITAN, as the case may be, free of charge reasonable quantities of COMPOUND or PRODUCT for such experimental use in laboratory or animal studies. This does not prevent HMRI or TITAN from making COMPOUND or PRODUCT for experimental use only in laboratory or animal studies.

2.4 TITAN grants to NOVARTIS a nonexclusive, worldwide sublicense to make or use any analytical reference standards, intermediate or metabolite of COMPOUND or PRODUCT not listed in Appendix B hereto which may be claimed in PATENTS limited solely to making or using the COMPOUND or PRODUCT. The foregoing sublicense shall include the right to sublicense, but only upon HMRI's prior written consent, which consent shall not be unreasonably withheld. Any such sublicense shall impose upon SUBLICENSEE(S) substantially the same terms and conditions as NOVARTIS assumes in this Sublicense Agreement, except no such sublicense(s) shall be required to contain obligations on the part of the SUBLICENSEE regarding payment of an upfront license fee, milestone payments or the same or similar royalty rates.

2.5 NOVARTIS shall promote, market and sell PRODUCT under a registered NOVARTIS trademark(s) approved by HMRI, which approval shall not be unreasonably withheld. NOVARTIS shall be responsible for the selection and registration of such trademark(s) in all countries of the TERRITORY at its own cost. In the event the sublicense granted hereunder is terminated in a particular country, other than pursuant to Section 10.3 or as a result of NOVARTIS' termination of this Sublicense Agreement for breach pursuant to Section 10.5, and HMRI or its designee(s) exercises the right to promote, market or sell PRODUCT in such country then upon HMRI's request (a) NOVARTIS shall grant HMRI or its designee(s) a trademark license at a royalty

*THE INFORMATION BELOW, MARKED BY * AND [ ], HAS BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT. THE OMITTED PORTION HAS BEEN SEPARATELY FILED WITH THE COMMISSION.*

*to be negotiated in good faith (which royalty shall not be less than [*] and no more than [*] on net sales of PRODUCT by HMRI and/or its designees) at such time to use such trademark in connection with marketing PRODUCT in such country, subject to reasonable quality control by NOVARTIS with respect to the PRODUCT sold under this Section 2.5(a), or (b) HMRI or its designee(s) shall select and register at HMRI's cost a trademark of its own in connection with the marketing of PRODUCT in such country, provided such HMRI trademark is not in any way confusingly similar to NOVARTIS' trademark. HMRI shall use an HMRI trademark (rather than a NOVARTIS trademark) in promoting, marketing or selling PRODUCT in any country that is a member of a free trade union or other economic grouping (e.g., the EUROPEAN UNION, EEA, NAFTA, ASEAN and ANDEAN PACT countries) where NOVARTIS is promoting, marketing or selling PRODUCT under a NOVARTIS trademark.*

2.6 If NOVARTIS notifies TITAN in writing that NOVARTIS (and/or its AFFILIATE(S)) is not willing or does not have the capability itself or cannot enter into a Sublicense or other agreement (providing the necessary expertise and resources) in country(ies) outside those covered by NAFTA and the EUROPEAN UNION to: (a) develop COMPOUND or PRODUCT (as the case may warrant), and (b) manufacture COMPOUND and/or market PRODUCT (as the case may warrant) at a COMPETITIVE INDUSTRY STANDARD LEVEL at the date of PRODUCT approval in such country(ies), then TITAN shall have the right to terminate the sublicense granted by this Sublicense Agreement but only with respect to such country(ies), unless the parties agree in writing to extend such time frame.

2.7 If PRODUCT is not launched in each of the United States, France and Germany, respectively, at a COMPETITIVE INDUSTRY STANDARD LEVEL by NOVARTIS, its AFFILIATE and/or SUBLICENSEE within six (6) months after the date of receiving the approvals necessary to commercialize PRODUCT in each of the United States, Germany and France, respectively, NOVARTIS, TITAN and HMRI shall review the progress of launch efforts, it being understood the parties, at the request of either party, may review the progress of launch efforts prior to the

end of such six (6) month period. NOVARTIS shall keep TITAN informed on a regular basis of the status of its launch efforts after receiving the approvals necessary to commercialize PRODUCT in each of the United States, Germany and France, respectively, until such time that launch is achieved in the United States, Germany or France. If launch in each of the United States, France or Germany, respectively, is not achieved within one (1) year after the date of receiving the approvals necessary to commercialize PRODUCT in such country(ies) (circumstances shall not include events of force majeure as defined in Section 13), or in any event within two (2) years after PRODUCT approval then the sublicense granted by this Sublicense Agreement shall terminate, but only with respect to the particular country where launch was not achieved within such one (1) year or two (2) year time frame, as the case may be, unless the parties agree in writing to extend such time frame (e.g., the parties shall discuss, in such event, factors including but not limited to the necessity to obtain approval of PRODUCT for its target indication(s)).

2.8 If an NDA or equivalent ex-U.S. regulatory approval in the EUROPEAN UNION (Marketing Authorization Application via the Centralized Procedure or marketing approvals

for the member countries of the EUROPEAN UNION via the mutual recognition procedure) for PRODUCT is not obtained within three (3) years of NOVARTIS' or its AFFILIATE's or SUBLICENSEE's filing of an NDA or such other equivalent ex-U.S. filing, and such failure is solely due to circumstances within NOVARTIS' reasonable control, then the parties shall discuss the reasons and proposed remedies for such failure in good faith; provided, however, that if the parties are unable to agree on any such remedies, TITAN shall have the right to terminate the sublicense granted by this Sublicense Agreement, but only with respect to the United States or the EUROPEAN UNION where such approval was not obtained, unless the parties agree in writing to extend such time frame. If, however, NOVARTIS, TITAN and HMRI determine that such failure is due to circumstances beyond the reasonable control of NOVARTIS (including without limitation delays on the part of the regulatory agencies), the three (3) year period shall be extended to take into account such circumstances, the duration of any such extension to be mutually agreed.

2.9 Subject to the provisions of Section 2.9(d), TITAN shall not be obligated to refund any upfront license fees and milestone payments paid to TITAN with respect to any country(ies) which cease to be included within the TERRITORY, and in the event that (i) TITAN, HMRI or their respective AFFILIATE(S) or SUBLICENSEE(S) elects to commercialize PRODUCT or COMPOUND in such country(ies) and (ii) NOVARTIS, its AFFILIATE(S) or SUBLICENSEE(S) has an NDA filing in the United States or an equivalent filing in the EUROPEAN UNION, then in consideration for use of any IND, NDA or other governmental approval or associated developmental work held or owned by NOVARTIS related to COMPOUND or PRODUCT:

*(a) At TITAN's request, and subject to Sections 6.3 and 11.5 hereof, NOVARTIS shall license or otherwise make available under applicable law the benefit of such approvals or work to TITAN or an AFFILIATE or THIRD PARTY designated by TITAN (which third party could be HMRI), who shall thereafter have the rights to develop, register, manufacture, market and sell COMPOUND and PRODUCT in such country(ies) utilizing such approvals or work, and TITAN (or such AFFILIATE or THIRD PARTY) shall pay to NOVARTIS a royalty to be negotiated in good faith at the time TITAN exercises such option, on net sales of PRODUCT by TITAN or its designees in such country to equitably recognize the value added by NOVARTIS to COMPOUND and/or PRODUCT through its development efforts. Such royalty shall not be greater than [*] on net sales of PRODUCT by TITAN or its designees. Upon expiration of PATENT in such country, only the royalty paid to NOVARTIS for HMRI's and/or TITAN's use of the NOVARTIS trademark under Section 2.5 shall be paid to NOVARTIS for so long as such trademark is utilized. If a trademark license has not been granted to HMRI or TITAN in such country, no royalty shall be paid to NOVARTIS upon expiration of PATENT.*

(b) TITAN shall share equally with NOVARTIS any upfront license fees, milestone payments or other payments such as prepaid royalties received from a THIRD PARTY in connection with the exercise of such option only. If NOVARTIS has not paid to TITAN the upfront license fee and all of the milestone payments provided for in Sections 3.1(a) through (c), then NOVARTIS' share of the amount shall be multiplied by a fraction, the numerator of which is equal to the total of the payments that have been made by NOVARTIS to TITAN under Sections 3.1(a) through (c), and the denominator of which is equal to the total of the payments that

NOVARTIS otherwise would have been required to pay to TITAN under Sections 3.1(a) through (c) had the sublicense not been terminated.

*(c) Notwithstanding anything contained herein to the contrary, TITAN shall not be required to pay to NOVARTIS a royalty on sales of PRODUCT that, when added to the royalty payments for a license under the NOVARTIS trademark that HMRI and/or TITAN may be required to pay to NOVARTIS under Section 2.5, exceeds in the aggregate [*].*

(d) If the circumstances leading up to the termination of the Sublicense Agreement pursuant to Section 2.8 are due to any misrepresentations, omissions (of information owned or controlled by HMRI or its AFFILIATES or TITAN or its AFFILIATES as of the date hereof) or falsifications with respect to such KNOW-HOW, information or data or fraud by HMRI or its AFFILIATES or TITAN or its AFFILIATES, then subject to the following sentence, TITAN shall repay to NOVARTIS, within ninety-five (95) days of such termination, that portion of the upfront license fee and milestone payments TITAN had received from NOVARTIS up to the date of such termination (including in the form of NOVARTIS' purchase of TITAN convertible preferred stock). In the case of misrepresentations, omissions (of information owned or controlled by HMRI or its AFFILIATES as of the date hereof) or falsifications with respect to such KNOW-HOW, information or data or fraud only by HMRI or its AFFILIATES, and a termination of the License Agreement pursuant to Section 2.5 of the License Agreement, TITAN shall be obligated to make the foregoing repayments to NOVARTIS if, and only if, HMRI has repaid the upfront license fee and milestone payments to TITAN under Section 2.6(d) of the License Agreement.

2.10 In the event NOVARTIS or a SUBLICENSEE intends to seek a co-promotion or co-marketing partner for PRODUCT in the United States, NOVARTIS shall notify TITAN thereof in writing. TITAN shall then notify HMRI thereof, and HMRI shall have a right of first negotiation with NOVARTIS or the SUBLICENSEE on such a collaboration. If HMRI exercises its right of first negotiation, then HMRI and NOVARTIS or the SUBLICENSEE shall negotiate in good faith for a period of ninety (90) days from the date of notification by TITAN to HMRI. If the negotiating parties are unable to enter into a separate definitive written agreement regarding such collaboration by the end of such ninety (90) day period, NOVARTIS or the SUBLICENSEE shall be free to enter into a collaboration with any THIRD PARTY subject to all other terms of this Sublicense Agreement and shall have no further obligation to negotiate with HMRI. For purposes of this Section 2.10, the term "co-promotion or co-marketing partner" will not include an independent contract field sales force that may be engaged by NOVARTIS or a SUBLICENSEE.

3. PAYMENTS AND ROYALTIES.

3.1 As consideration for the sublicenses granted to NOVARTIS by TITAN under this Sublicense Agreement, NOVARTIS shall make the following payments to TITAN:

(a) An upfront license fee of Twenty Million Dollars (U.S. $20,000,000) shall be paid by NOVARTIS to TITAN in cash within ten (10) business days of both parties' execution of this Sublicense Agreement. TITAN acknowledges that, as of the effective date of this Sublicense Agreement, NOVARTIS has already paid to TITAN Five Million Dollars (U.S. $5,000,000) of such Twenty Million Dollar (U.S. $20,000,0000) amount; therefore, as of the effective date of this Sublicense Agreement, NOVARTIS is obligated to pay to TITAN the

remaining Fifteen Million Dollars (U.S. $15,000,000) of such Twenty Million Dollar (U.S. $20,000,000) upfront license fee. Up to Five Million Dollars (U.S. $5,000,000) of such Twenty Million Dollar amount may, at NOVARTIS' option, be paid in the form of an equity investment made by NOVARTIS in TITAN convertible preferred stock at a price per share as provided for in the Convertible Preferred Stock Agreement between TITAN and NOVARTIS of even date herewith and attached hereto as Appendix C and incorporated herein by reference. NOTE: the immediately preceding sentence will be deleted from this Sublicense Agreement if the parties do not enter into the Convertible Preferred Stock Agreement referred to above simultaneously with the execution of this Sublicense Agreement. The Twenty Million Dollar payment provided for herein shall, unless otherwise expressly provided for herein, be non-refundable.

*(b) A first development milestone payment of [*] shall be payable by NOVARTIS to TITAN upon submission by TITAN to NOVARTIS of an*

invoice therefor substantially in the form of the sample invoice attached hereto as Appendix D (the "Invoice"), one time only upon the first NDA Filing (based on a full and complete regulatory package and for these purposes not to include an ANDA or "Paper" NDA) for PRODUCT in the FIELD in the United States (New Drug Application) or the Initial Filing in Europe (Marketing Authorization Application via the Central Procedure, or the mutual recognition procedure) by NOVARTIS, its AFFILIATE or SUBLICENSEE. As used in this Section, "NDA Filing" or "Initial Filing in Europe" (as the case may be) shall mean the notification in writing to NOVARTIS, its AFFILIATE or SUBLICENSEE from the FDA or an equivalent EUROPEAN UNION regulatory authority (via the Centralized Procedure or the mutual recognition procedure) that the NDA or Initial

*Filing in Europe (as the case may be) is sufficiently complete to permit a substantive review. Such milestone payment shall be paid in cash by NOVARTIS directly to HMRI within seven (7) business days of the date of such first filing, and NOVARTIS shall notify TITAN of such payment concurrently with such payment to HMRI. The [*] payment provided for herein shall, unless otherwise expressly provided for herein, be non-refundable.*

*(c) Following prior receipt by NOVARTIS of TITAN's Invoice therefor, a second development milestone payment of [*] which shall be payable one time only by NOVARTIS to HMRI as follows: (i) [*] shall be paid in cash by NOVARTIS directly to HMRI, within seven (7) business days of receipt by NOVARTIS, its AFFILIATE or SUBLICENSEE of the FDA approval letter or the regulatory agency for the EUROPEAN UNION (Marketing Authorization via the Centralized Procedure or mutual recognition procedure), that PRODUCT is approved for marketing and commercialization by NOVARTIS , its AFFILIATE or SUBLICENSEE (or their designee) for a major indication having an approval comparable to the principal indication(s) of leading competing products in the FIELD, and NOVARTIS shall notify TITAN of such payment concurrently with such payment to HMRI; and (ii) [*] shall be paid in cash by NOVARTIS directly to HMRI within six (6) months after receipt of such notification, and NOVARTIS shall notify TITAN of such payment concurrently with such payment to HMRI. The [*] payment provided for herein shall, unless otherwise expressly provided for herein, be non-refundable.*

(d) NOVARTIS shall notify TITAN in writing thirty (30) business days prior to NOVARTIS' estimated achievement of each milestone event described in Sections 3.1(b) and 3.1(c)(i) above. Upon the receipt of such notification, TITAN shall send NOVARTIS an Invoice for the milestone payment due as a result of the achievement of such milestone event, and NOVARTIS shall make each such payment within seven (7) business days of the achievement of the milestone event for which such payment is due.

3.2 (a) Unless TITAN instructs NOVARTIS in writing otherwise, all cash payments by NOVARTIS to TITAN (including, without limitation, upfront payments, milestone payments, and royalties) shall be made by bank wire transfer as follows:

Bank of America-San Francisco
ABA #121000358
Titan Pharmaceuticals, Inc.
Account #1493-0-04020

(b) All cash payments by NOVARTIS to HMRI (including, without limitation, milestone payments and royalties) shall be made by bank wire transfer as follows:

Citibank-New York
ABA#021000089
Hoechst Marion Roussel, Inc.
Account #-40552555

(c) At least two (2) business days prior to the planned wire transfer to either of the above accounts, NOVARTIS shall notify TITAN's Chief Financial Officer by facsimile (650) 244-4956, Attention: Mr. Robert Farrell) and HMRI's Treasurer (if applicable) by facsimile (816-966-3847, Attention: Cash Manager) of the amount and date the cash shall be transferred.

(d) In the event of a late payment hereunder by NOVARTIS to TITAN (or HMRI, as the case may be), NOVARTIS shall pay to TITAN (or HMRI, as the case may be) interest based on the prime rate as stated in The Wall Street Journal, New York edition, on the date such payment is due (or the immediately preceding business date if such payment date is not a business date) plus two percent (2%) on the outstanding balance until such balance, including interest, is paid in full to TITAN. The acceptance of such late payment shall act as a waiver of any rights TITAN may have hereunder due to a breach by NOVARTIS relating solely to such payment being made late.

*3.3 As consideration for the sublicense granted to NOVARTIS in this Sublicense Agreement, NOVARTIS shall pay to TITAN, in those countries where, and for the period, PATENTS claiming a priority date of May 19, 1989 and December 29, 1989 in a particular country in the TERRITORY for which a patent had been granted validly claiming Iloperidone or the manufacture, formulation or the use thereof for use in the FIELD exist: (a) a [*] royalty on annual NET SALES of PRODUCT in the TERRITORY up to [*], and (b) a [*] royalty on annual NET SALES of PRODUCT in the TERRITORY in excess of [*]; in each case on NOVARTIS', its AFFILIATES' and SUBLICENSEES' annual NET SALES of PRODUCT in the TERRITORY.*

3.4 (a) In order to spread royalty payments hereunder over a sufficient period of time, in each of those countries in the TERRITORY where PATENTS claiming a priority date of May 19, 1989 and December 29, 1989 in a particular country for which a patent had been granted

*validly claiming Iloperidone or the manufacture, formulation or use thereof for use in the FIELD have expired, NOVARTIS' obligations to pay royalties for use of PATENTS in such country shall cease, and NOVARTIS and/or any of its SUBLICENSEES shall pay directly to HMRI a royalty for KNOW-HOW not relating to manufacturing (whether or not such KNOW-HOW continues as a valid intellectual property right or is in the public domain) of [*] on NOVARTIS', its AFFILIATES' and any SUBLICENSEES' annual NET SALES of PRODUCT in each such country for a period of ten (10) years after the expiration of the final remaining PATENT in each such country. After the end of such ten (10) year period, no further royalties arising from sales of PRODUCT in such country shall be due to HMRI and NOVARTIS shall be entitled to continue to use the KNOW-HOW on a fully-paid, irrevocable basis in accordance with Section 10.3.*

*(b) In the event a THIRD PARTY's generic version of Iloperidone is actively marketed in a process patent country (that is, any country in which only protection in relation to processes for the manufacture of Iloperidone has been obtained and not protection for Iloperidone as a new chemical entity per se) in the TERRITORY where a PATENT(s) claiming a priority date of May 19, 1989 and December 29, 1989 has been granted validly claiming Iloperidone or the manufacture, formulation or use thereof for use in the FIELD exists, then subject to Sections 3.4(c) and (d) below, the royalty rate that NOVARTIS shall pay to TITAN on NOVARTIS' or its AFFILIATE's or SUBLICENSEE's annual NET SALES of PRODUCT in that process patent country shall be [*] until such PATENT(s) expires, provided:*

(i) NOVARTIS has obtained, or has made every effort to obtain, the maximum allowable period of exclusivity to which it is entitled based on PRODUCT's registration data in that process patent country to the extent such exclusivity is available; and

(ii) The PARTIES and HMRI, in accordance with Article 8 of this Sublicense Agreement, will implement an appropriate strategy for addressing the commercialization of Iloperidone by said THIRD PARTY. Unless otherwise agreed to by the PARTIES, NOVARTIS shall at its sole cost be obligated to diligently enforce PATENT(s) until there is a binding, unappealable judicial determination as to whether the manufacture, formulation or use of such generic version of Iloperidone infringes PATENT(s) or until it is demonstrated to the satisfaction of both PARTIES that PATENT(s) are not being infringed in such country

(c) If it is demonstrated to the satisfaction of both PARTIES. or the binding, unappealable judicial determination under Section 3.4(b)(ii) holds that PATENT(s) are not being infringed in such process patent country, the royalty rate that NOVARTIS shall pay to TITAN on NOVARTIS' or its AFFILIATE's or SUBLICENSEE's annual NET SALES of PRODUCT in that process patent country shall

*continue to be [*] until such PATENT(s) expires.*

(d) If the binding, unappealable judicial determination under Section 3.4(b)(ii) holds that PATENT(s) are being infringed in such process patent country, NOVARTIS shall take reasonable steps to have enforced such determination. If as a result, the commercialization of Iloperidone by the THIRD PARTY in that country is discontinued:

(i) the royalty rate(s) that NOVARTIS shall pay to TITAN on NOVARTIS' or its AFFILIATE's or SUBLICENSEE's annual NET SALES of PRODUCT in that process patent country shall be, commencing on the later of: (A) the date such binding, unappealable judicial determination is rendered, and (B) the date (if any) specified in such determination that commercialization of such THIRD PARTY generic version of PRODUCT is to be discontinued, those royalty rates provided for in Section 3.3 until such PATENT(s) expires; and

*(ii) NOVARTIS shall repay to TITAN, within thirty (30) days after the later of: (A) the date such binding, unappealable judicial determination was rendered, and (B) the date (if any) specified in such determination that commercialization of such THIRD PARTY generic version of PRODUCT is to be discontinued, an amount equal to the difference between the royalties that NOVARTIS would have paid to TITAN under Section 3.3, and the amount of royalties that NOVARTIS actually paid to TITAN at the [*] rate, for the period commencing on the date the royalty rate for that process patent country was reduced to [*] pursuant to Section 3.4(b), and ending on the later of: (A) the date such binding, unappealable judicial determination was rendered, and (B) the date (if any) specified in such determination that commercialization of such THIRD PARTY generic version of PRODUCT is to be discontinued.*

(e) After PATENT(s) in any process patent country expires, NOVARTIS and/or its SUBLICENSEE shall pay directly to HMRI royalties as provided for in Section 3.4(a).

3.5 As consideration for the sublicense granted to NOVARTIS under this Sublicense Agreement in those countries in the TERRITORY for which (a) a PATENT application

*for COMPOUND or PRODUCT is pending or (b) no PATENT application has been filed or (c) PATENTS have been abandoned or been held invalid or unenforceable by a decision of a court or tribunal of competent jurisdiction from which no appeal is or can be taken (collectively, "Non-Patent Countries"), NOVARTIS shall pay to TITAN, on a country-by-country basis, a [*] royalty for KNOW-HOW not relating to manufacturing (whether or not such KNOW-HOW continues as a valid intellectual property right or is in the public domain) on NOVARTIS', its AFFILIATES' and any SUBLICENSEES' annual NET SALES of PRODUCT in the Non-Patent Countries for a period of five (5) years from the date of the first commercial sale of PRODUCT in each such country by NOVARTIS, its AFFILIATES or SUBLICENSEES. After the end of such five (5) year period, no further royalties arising from sales of PRODUCT in such country shall be due. However, with respect to Section 3.5(a) or (b), if at any time during or after such five (5) year period a PATENT for COMPOUND or PRODUCT is issued in such country, subject to Section 3.4, NOVARTIS shall pay to TITAN, from the date the PATENT was issued, the same royalties as provided for in Sections 3.3(a) and (b) above. Upon expiration of NOVARTIS' obligation to pay a royalty under such PATENT, notwithstanding Section 3.4, a [*] royalty for KNOW-HOW not relating to manufacturing (whether or not such KNOW-HOW continues as a valid intellectual property right or is in the public domain), on NET SALES of PRODUCT in such country, shall be paid by NOVARTIS and/or any of its SUBLICENSEES directly to HMRI for a period of five (5) years after which NOVARTIS shall be entitled to continue to use the KNOW-HOW on a fully-paid, irrevocable basis in accordance with Section 10.3.*

4. COMPULSORY LICENSES AND THIRD PARTY LICENSES.

4.1 (a) In the event that during the term of this Sublicense Agreement a governmental agency in the TERRITORY grants or compels HMRI and/or TITAN to grant a license to any THIRD PARTY for COMPOUND or PRODUCT in a country(ies), it is the intent of the parties that NOVARTIS not be placed at a competitive disadvantage as a result of a lower royalty rate being granted to a THIRD PARTY compulsory licensee. Therefore, in the event TITAN or HMRI is compelled to grant a license to a THIRD PARTY, TITAN, NOVARTIS and HMRI will meet to discuss in good faith equitable arrangements, which could include adjustments to NOVARTIS' original royalty rates in Section 3.3 of this Sublicense Agreement which are to be paid on NET SALES of PRODUCT in such country, to accomplish the intent of TITAN and NOVARTIS set forth above. In such discussions, consideration will be given to TITAN's obligations to HMRI under Section 4.1(a) of the License Agreement.

(b) If a governmental authority in a country in the TERRITORY imposes a maximum royalty rate, such that lower royalty rates than would otherwise apply under this Sublicense Agreement are mandated in such country, then the royalty rates provided for herein shall be reduced to equal such lower rates for sales of PRODUCT in such country for the period such lower royalty rate is required by any governmental authority and shall cease when NOVARTIS' royalty payment obligations cease under this Sublicense Agreement.

4.2 If, during the term of this Sublicense Agreement, HMRI and NOVARTIS agree that a patent(s) of a THIRD PARTY exists in the TERRITORY covering the manufacture, use or sale of COMPOUND or PRODUCT, and if it should prove, in the reasonable judgment of NOVARTIS and HMRI, impractical or impossible for NOVARTIS or its AFFILIATES or

SUBLICENSEES to continue the activity or activities sublicensed hereunder in the FIELD without obtaining a royalty-bearing license from such THIRD PARTY under such patent(s) or if NOVARTIS and HMRI otherwise agree it is desirable for HMRI to acquire any THIRD PARTY patent or license in connection with the development or manufacture of COMPOUND or PRODUCT covered by PATENTS in the TERRITORY, then in either case the provisions of Section 8.8(c) shall apply.

4.3 If, after attempting in good faith to resolve the issue relating to licensing THIRD PARTY patents in Section 4.2 between themselves, NOVARTIS and HMRI are unable to agree within ninety (90) days as to whether it is impracticable or impossible for NOVARTIS , its AFFILIATES or SUBLICENSEES to continue the activity or activities sublicensed hereunder without obtaining a royalty-bearing license from a THIRD PARTY, the issue shall be submitted to a disinterested, competent and experienced patent attorney reasonably acceptable to both NOVARTIS and HMRI for resolution. If NOVARTIS and HMRI cannot agree on the selection of such patent attorney, then each party shall select a patent attorney and the selected patent attorneys shall select a mutually acceptable patent attorney who will determine whether such THIRD PARTY rights materially inhibit NOVARTIS' ability to manufacture, distribute or sell COMPOUND or PRODUCT. The compensation to, and expense of such patent attorney shall be borne by the party whose position is not upheld by such patent attorney (that is, for example, if the patent attorney determines that such THIRD PARTY rights do not materially inhibit NOVARTIS' ability to manufacture, distribute or sell COMPOUND or PRODUCT, then the costs of such patent attorney shall be borne by NOVARTIS).

5. DEVELOPMENT.

5.1 Upon the signing of this Sublicense Agreement, NOVARTIS shall have full legal and financial responsibility for all costs that are incurred and all activities that are undertaken after the signing of this Sublicense Agreement, which are related to development, safety and required periodic reporting to the FDA and equivalent ex-U.S. regulatory agencies, marketing, regulatory approvals, price registrations, and other activities required by NOVARTIS or its SUBLICENSEE(S) (or their respective agents or distributors) to obtain appropriate government approvals for, and to commercialize, COMPOUND and PRODUCT in the TERRITORY. Other than as expressly provided for in Section 5.4, NOVARTIS shall not assume, nor shall NOVARTIS be liable for, any costs or activities (whether scientific, financial or otherwise) relating to the COMPOUND or PRODUCT that were incurred or undertaken prior to the signing of this Sublicense Agreement (including without limitation any costs, expenses, damages, losses, fines, penalties or the like that may be awarded or assessed after the signing of this Sublicense Agreement, but which arise out of events and activities that occurred prior to the signing of this Sublicense Agreement).

5.2 Provided that the AFFILIATES, SUBLICENSEES and other THIRD PARTIES agree to substantially the same terms of confidentiality in Section 6.4 hereof, NOVARTIS may appoint such AFFILIATES, SUBLICENSEE(S) and other THIRD PARTIES to perform any and all development activities necessary to obtain government approvals for PRODUCT in the TERRITORY. The appointment of any SUBLICENSEE shall require HMRI's prior written consent, which consent shall not be unreasonably withheld.

5.3 NOVARTIS shall, in a manner consistent with the effort NOVARTIS devotes to its own products having the same or similar potential value as PRODUCT, exercise its reasonable efforts and diligence in developing and commercializing PRODUCT, and in undertaking those investigations and actions required to obtain appropriate governmental approvals to manufacture COMPOUND and market PRODUCT in the TERRITORY. All such activity shall be undertaken at NOVARTIS' expense. TITAN shall arrange with HMRI to provide assistance or consultation at NOVARTIS' expense in support of the development of COMPOUND or PRODUCT, but HMRI in its discretion may limit such assistance and consultation.

5.4 All direct costs incurred by, or on behalf of, TITAN relating to the development and registration of COMPOUND and PRODUCT in the TERRITORY will be reimbursed to TITAN by NOVARTIS within thirty (30) days of execution by both parties of this Sublicense Agreement. The parties agree that direct costs incurred by or on behalf of TITAN through August, 1997 are approximately one million seven hundred thousand dollars ($1,700,000). Additional direct costs estimated to be incurred by or on behalf of TITAN through date of execution of the Heads of Agreement between the parties dated October 21, 1997, are approximately three hundred thousand dollars ($300,000). Additional direct costs estimated to be incurred by or on behalf of TITAN in the period from the date of the Heads of Agreement until the effective date of this Sublicense Agreement will be determined by the scope of that part of the Phase III clinical program for PRODUCT that was initiated by TITAN prior to the date hereof and called "Clinical Protocol 300", but will not exceed one million dollars ($1,000,000). The PARTIES further agree that:

(a) TITAN will be informed by NOVARTIS on a timely and regular basis of the development, registration and commercialization of COMPOUND and PRODUCT in the TERRITORY, and will have an opportunity to regularly meet with NOVARTIS and provide input into the development and registration process, and

(b) all of TITAN's contractual obligations to THIRD PARTIES involved in the development and registration process for the COMPOUND and PRODUCT (including Contract Research Organizations (CROs) existing as of the date of this Sublicense Agreement, which CROs are identified in Appendix E), will be honored to the extent they are not inconsistent with NOVARTIS' Standard Operating Procedures. However, if any such contractual obligation is terminated by or at the request of NOVARTIS, NOVARTIS will be responsible for the payment of any amounts that may be due as a result of such termination.

(c) NOVARTIS shall be solely responsible for negotiation of contracts with any CROs and other organizations it desires to work on development activities relating to COMPOUND and/or PRODUCT and NOVARTIS shall bear all legal and financial responsibility under such contracts.

5.5 Any inventions or discoveries or improvements which arise from NOVARTIS', its AFFILIATES' or SUBLICENSEES' work relating to the development and/or manufacture of the COMPOUND and/or PRODUCT shall be owned by NOVARTIS , but shall be licensed to HMRI, at HMRI's option on a worldwide, nonexclusive, perpetual basis, at a license fee and/or royalty to be negotiated at such time. Furthermore, it is agreed that NOVARTIS and TITAN's sublicensee for Japan (if any) shall license to each other, for use in the other party's

TERRITORY in the FIELD, on a non-exclusive royalty-free basis, any discoveries, improvements or inventions relating to COMPOUND and PRODUCT, and TITAN will require such reciprocal rights for NOVARTIS from TITAN's sublicensee for Japan (if any). To the extent permitted under the License Agreement, NOVARTIS shall have the right to license or sublicense, as the case may be, its discoveries, improvements or inventions.

5.6 (a) In the event uses or indications for COMPOUND outside the FIELD are identified by HMRI, TITAN or NOVARTIS, NOVARTIS shall notify TITAN of such other uses or indications if identified by NOVARTIS, and TITAN shall notify NOVARTIS of such other uses or indications if identified by HMRI or TITAN. If so desired by NOVARTIS, TITAN shall transfer to NOVARTIS, TITAN's right of first negotiation under Section 5.6 of the License Agreement, for a separate license from HMRI to develop and commercialize such other uses and indications under terms to be negotiated in good faith at such time. Such right of first negotiation shall mean that HMRI shall offer to NOVARTIS the right to develop and commercialize such uses and indications under a separate license, the financial terms of which may be no less favorable than the financial terms provided for in the License Agreement, except that NOVARTIS shall not be required to pay to HMRI or TITAN any upfront license fees or milestone payments. If TITAN has transferred to NOVARTIS such right of first negotiation, HMRI and NOVARTIS shall negotiate in good faith for a period of ninety (90) days and, if the parties are unable to enter into a separate definitive written agreement regarding such license by the end of such ninety (90) day period, HMRI or an

AFFILIATE shall be free to develop and commercialize such other use or indication itself or to enter

into a license or other agreement with TITAN or a THIRD PARTY, and shall have no further obligations to negotiate with NOVARTIS or further license obligations with respect thereto.

(b) If NOVARTIS acquires the right to develop and commercialize a use or indication outside the FIELD for the COMPOUND pursuant to Section 5.6(a), this Sublicense Agreement shall be amended by the parties to include such other use or indication, such that the FIELD will be expanded to include such other use or indication, and NOVARTIS will be obligated to develop and commercialize such other use or indication in the TERRITORY to the extent required under this Sublicense Agreement.

(c) To the extent TITAN acquires the right to develop and commercialize a use or indication outside the FIELD for the COMPOUND under the License Agreement, such other use or indication will be offered first to NOVARTIS for the TERRITORY. If NOVARTIS accepts such offer, the parties will negotiate in good faith an amendment to this Sublicense Agreement to include such other use or indication, such that the FIELD will be expanded to include such other use or indication, and NOVARTIS will be obligated to develop and commercialize such other use or indication in the TERRITORY to the extent required under this Sublicense Agreement. If NOVARTIS does not accept such other use or indication, TITAN will be free to offer such other use or indication to a THIRD PARTY, even in the TERRITORY, without further obligation to NOVARTIS with respect to such other use or indication; provided, however, that TITAN, if requested and with the support of NOVARTIS, will use reasonable efforts to ensure that such "new product" can be commercially differentiated in such a way (formulation, dosage, delivery system and/or other measures of distinctiveness) as to discourage interchangeability and free substitution

between such "new product" and PRODUCT on the marketplace. If a license to such other use or indication is granted to a THIRD PARTY, it will be limited solely to such other use or indication, and the THIRD PARTY licensee will not have the right to develop or sell COMPOUND in the FIELD in the TERRITORY during the term of this Sublicense Agreement.

(d) If neither TITAN nor NOVARTIS acquires the right to develop and commercialize such other use or indication outside the FIELD for COMPOUND under the License Agreement, HMRI or an AFFILIATE shall be free to develop and commercialize such other use or indication itself or to enter into a license or other agreement with a THIRD PARTY, and shall have no further obligations to negotiate with TITAN or NOVARTIS or further license obligations with respect thereto.

5.7 In addition to that which is required under Section 5.4(a), NOVARTIS shall provide to TITAN regular written reports at least every six (6) months setting forth significant developments and improvements, including the status and progress of the development and/or registration activities, that affect COMPOUND or PRODUCT.

5.8 NOVARTIS, or its SUBLICENSEES, shall promptly advise TITAN in writing upon the submission and filing for government regulatory approval to manufacture and market PRODUCT, and upon the receipt of government regulatory approval to market PRODUCT, in each case in each country in the TERRITORY, and shall commence marketing PRODUCT in such country in accordance with Section 5.3.

5.9 Subject to applicable laws and regulations, labeling on all PRODUCT sold by or on behalf of NOVARTIS pursuant to this Sublicense Agreement, and all advertising,

marketing and promotional materials used in connection therewith, will identify TITAN as the licensor of the PRODUCT.

5.10 If at any time during the term hereof a product is developed by NOVARTIS or any of its AFFILIATES or SUBLICENSEES, which product contains COMPOUND and one or more other pharmaceutically active ingredients for use in the FIELD (a "Combination Product"), TITAN shall negotiate in good faith with HMRI an amendment to the License Agreement, which amendment will provide, inter alia, for how royalties to be paid by TITAN to HMRI for NET SALES of such Combination Product will be calculated and for how long such royalties shall be paid. After such amendment to the License Agreement has been executed by TITAN and HMRI, this Sublicense Agreement shall be similarly amended by TITAN and NOVARTIS to provide for such Combination Product.

6. EXCHANGE OF INFORMATION AND CONFIDENTIALITY.

6.1 Upon the signing of this Sublicense Agreement, TITAN shall deliver to NOVARTIS, all available KNOW-HOW, documents, information and data which is owned or controlled by TITAN and its AFFILIATES, which may be reasonably expected to assist NOVARTIS in developing, registering, manufacturing and marketing COMPOUND and PRODUCT in the TERRITORY. After the execution of this Sublicense Agreement, there shall be a sixty (60) day transition period during which TITAN shall provide, at its own cost, reasonable resources, expertise, and documents to effectively transfer the KNOW-HOW and development activity to NOVARTIS. Upon TITAN's receipt of the upfront license fee referred to in Section 3.1(a) hereof, NOVARTIS and TITAN each shall promptly provide written notification to the FDA that TITAN

assigns and that NOVARTIS assumes sponsorship of the U.S. IND No. 36,827 (as specified in 21 CFR 314.72). Within ten (10) days after the date of such written notification, TITAN shall transfer the U.S. IND for COMPOUND or PRODUCT to NOVARTIS. Until such transfer is made, NOVARTIS shall have the right to make reference to such COMPOUND or PRODUCT owned or controlled by TITAN or its AFFILIATES. Furthermore, upon TITAN's receipt of the upfront license fee referred to in Section 3.1(a), TITAN shall arrange for the transfer by HMRI to NOVARTIS of Canadian IND Control No. 27740.

6.2 NOVARTIS shall have EXCLUSIVE use, subject to the terms of this Sublicense Agreement and in particular Section 2.3, of all KNOW-HOW, documents, information, data and material for the development, registration, manufacture and marketing of COMPOUND and PRODUCT for use in the FIELD in the TERRITORY. HMRI (under the License Agreement), TITAN and their respective AFFILIATES shall keep confidential all KNOW-HOW, documents, information and data in their possession or received from or generated by or on behalf of NOVARTIS that is not already in the public domain relating to COMPOUND and PRODUCT regarding the use in the FIELD with the same level of care TITAN uses for its own confidential information. Upon TITAN's request during the term of this Sublicense Agreement, NOVARTIS shall deliver to TITAN a copy of all such information and data in a form to be mutually agreed upon, within thirty (30) days after TITAN's request, it being understood and agreed that any and all such information and data will be made available by TITAN to HMRI, upon HMRI's request.

6.3 Subject to the confidentiality obligations of this Article 6, NOVARTIS shall make available and HMRI and TITAN shall be able to freely use KNOW-HOW and documents,

information and data relating to COMPOUND and/or PRODUCT disclosed or generated by NOVARTIS, its AFFILIATES and SUBLICENSEES and applications for government approvals (United States or EUROPEAN UNION), reports on the status and progress of the development of COMPOUND or PRODUCT and the like in any country(ies) deleted from the TERRITORY and as to which this Sublicense Agreement has been terminated pursuant to the terms hereof. Furthermore, if TITAN grants a sublicense(s) to a THIRD PARTY(IES) for Japan, NOVARTIS agrees to share with such THIRD PARTY(IES) any data and information (including pre-clinical and clinical results) requested by such THIRD PARTY (IES) that have been generated by or on behalf of NOVARTIS regarding the COMPOUND and PRODUCT and all regulatory submissions relating thereto, but only to the extent such THIRD PARTY(IES) agree to share with NOVARTIS, if requested, all such similar data and information generated by or on behalf of such THIRD PARTY(IES); provided, however, that should NOVARTIS or such THIRD PARTY(IES) submit to any regulatory agency(ies) said data generated by the other, or modifications thereof, the benefiting party shall compensate the party supplying said data, for the supplying party's contributions to the data required for the benefiting party's regulatory submissions, which compensation shall be agreed to in good faith.

6.4 During the period of time during which NOVARTIS is obligated to pay royalties hereunder and for seven (7) years thereafter, irrespective of any termination with respect to a particular country or countries in the TERRITORY, NOVARTIS shall not reveal or disclose to THIRD PARTIES or use for any purpose other than to perform its obligations herein any Confidential Information (as defined below) without first obtaining the written consent of TITAN,

except as may be otherwise provided herein, or for securing essential or desirable authorizations, privileges, licenses, registration or rights from governmental agencies, or is required to be disclosed to a governmental agency or is necessary to file or prosecute PATENT applications concerning COMPOUND or PRODUCT or to carry out any litigation concerning COMPOUND or PRODUCT; provided, however, that NOVARTIS notifies TITAN in writing in a reasonably sufficient time frame prior to making such disclosure that NOVARTIS intends to make such disclosures and the details thereof, and NOVARTIS seeks confidential treatment

where available of such Confidential Information from such governmental agencies. This confidentiality obligation shall not apply to such information which is or becomes a matter of public knowledge through no fault of NOVARTIS', or is already in the possession of NOVARTIS as evidenced by written records, or is disclosed to NOVARTIS by a THIRD PARTY having the right to do so, or is subsequently and independently developed by employees of NOVARTIS or its AFFILIATES who had no knowledge of the Confidential Information. NOVARTIS shall take reasonable measures to assure that no unauthorized use or disclosure is made by others to whom access to such information is granted. As used herein, "Confidential Information" means, any confidential or proprietary information of HMRI or TITAN or their AFFILIATES, including any present or future formulas, research project, work in process, inventions, procedures, development, scientific, engineering, manufacturing, marketing, business or financial plan or records, products, sales, suppliers, customers, or investors, whether such confidential or proprietary information is in oral, written, graphic or electronic form (including all copies in whole or in part of any of the foregoing) and which derives value from being known to the disclosure or owner.

6.5 After transfer of the United States and Canadian INDs to NOVARTIS under Section 6.1, TITAN and NOVARTIS shall cooperate with respect to the exchange of adverse event and safety information associated with COMPOUND and PRODUCT, and such information shall be coordinated by NOVARTIS' central Clinical Safety and Epidemiology organization. Details of the obligations of the parties with respect to reporting such information to each other, and processing of this data shall be covered in an addendum following execution of this Sublicense Agreement.

6.6 Nothing herein shall be construed as preventing NOVARTIS from disclosing any information received from TITAN to an AFFILIATE, SUBLICENSEE, distributor, contractor, agent, consultant, legal counsel or other THIRD PARTY involved in the development, manufacture, marketing, promotion or sale of COMPOUND or PRODUCT, provided such AFFILIATE or SUBLICENSEE or other THIRD PARTY has undertaken a similar obligation of confidentiality with respect to the Confidential Information.

6.7 In the event that a court or other legal or administrative tribunal, directly or through an appointed master, trustee or receiver, assumes partial or complete control over the assets of NOVARTIS based on the insolvency or bankruptcy of NOVARTIS, NOVARTIS shall promptly notify the court or other tribunal (i) that Confidential Information received from TITAN remains the property of HMRI or TITAN, or their respective AFFILIATES, as the case may be, and (ii) of the confidentiality obligations under this Sublicense Agreement. In addition, NOVARTIS shall, to the extent permitted by law, take all steps reasonably necessary or desirable to maintain the confidentiality of the Confidential Information of HMRI or TITAN, as the case may be, and to

ensure that the court, other tribunal or appointee maintains such information in confidence in accordance with the terms of this Sublicense Agreement.

6.8 No public announcement or other disclosure to THIRD PARTIES concerning the existence of or terms of this Sublicense Agreement shall be made, either directly or indirectly, by either party to this Sublicense Agreement, except as may be legally required, without first obtaining the approval of the other party, which approval shall not be unreasonably withheld, and shall be given within a reasonable time. The party desiring to make any such public announcement or other disclosure shall provide the other party with a written copy of the proposed announcement or disclosure in sufficient time prior to proposed public release, to allow such other party to comment upon the nature, text and timing of such announcement or disclosure, prior to proposed public release.

6.9 Neither party shall submit for written or oral publication any manuscript, abstract or the like which includes KNOW-HOW, data or other information generated and/or provided by HMRI, TITAN or NOVARTIS pursuant to this Sublicense Agreement without first obtaining the prior written consent of the party generating or providing such information, which consent shall not be unreasonably withheld. The contribution of each party shall be noted in all publications or presentations by acknowledgment or co-authorship, whichever is appropriate.

7. TITAN SUPPLY OF COMPOUND AND PRODUCT TO NOVARTIS.

7.1 TITAN shall supply COMPOUND and PRODUCT to NOVARTIS under the following conditions:

(a) Within a reasonable period of time after the effective date of this Sublicense Agreement as agreed to by the PARTIES in good

faith, TITAN will, at no cost to NOVARTIS, arrange for the transfer by HMRI to NOVARTIS, to a single site to be designated by NOVARTIS, all quantities of unmilled COMPOUND available as of the effective date of this Sublicense Agreement at HMRI, Frankfurt, Germany. The PARTIES recognize, however, that a portion of the COMPOUND, not to exceed one hundred (100) kilograms, must be reserved for use by TITAN's sublicensee for Japan, subject to Section 7.1(d).

(b) At no cost to NOVARTIS, TITAN will arrange, upon written request by NOVARTIS, for the transfer to a single site in the United States to be designated by NOVARTIS, of all quantities of COMPOUND and PRODUCT available as of the effective date of this Sublicense Agreement at Bio-Pharm Pharmaceutics Services, Ft. Washington, Pennsylvania.

(c) The PARTIES will agree in good faith on a procedure which will allow NOVARTIS to transfer COMPOUND and PRODUCT to Japan for use by the Japanese sublicensee.

(d) Title to, and risk of loss with respect to, all COMPOUND and PRODUCT supplied by TITAN to NOVARTIS under this Section 7.1 shall pass to NOVARTIS upon the receipt of such COMPOUND and PRODUCT by NOVARTIS or its designee at its point of delivery; provided that with respect to the one hundred (100) kilograms of COMPOUND reserved for use by TITAN's SUBLICENSEE for Japan under Section 7.1(a), NOVARTIS shall not be liable for any loss of such COMPOUND except where such loss is the result of NOVARTIS' negligence or willful misconduct.

(e) TITAN shall provide to NOVARTIS an HMRI certificate of analysis for any shipment of COMPOUND or PRODUCT.

(f) All COMPOUND and PRODUCT supplied by TITAN to NOVARTIS for clinical trials will conform to the IND specifications therefor as well as all laws and regulatory requirements, including current Good Manufacturing Practices, applicable to the COMPOUND and PRODUCT when used in said clinical trials in accordance with said IND.

7.2 TITAN shall provide information and assistance to NOVARTIS with respect to COMPOUND and PRODUCT as follows:

(a) Within sixty (60) days after the full execution and delivery of this Sublicense Agreement, TITAN shall deliver to NOVARTIS any and all KNOW-HOW, documentation, data and other information owned or controlled by TITAN and its AFFILIATES, that NOVARTIS may reasonably require for the manufacture of COMPOUND and PRODUCT. Such information shall include without limitation the specifications for COMPOUND and PRODUCT and methods of analysis for testing COMPOUND and PRODUCT, as currently described within the IND regulatory documentation, including Chemistry-Manufacturing/Controls (CMC) information amendments and the technology transfer file.

(b) TITAN shall arrange for HMRI to provide to NOVARTIS or its designated THIRD PARTY assistance for the transfer of manufacturing technology, through documentation, consultation and face-to-face meetings, to enable NOVARTIS or such THIRD PARTY to proceed with development of commercial-scale manufacturing. If requested by NOVARTIS or such THIRD PARTY, TITAN shall visit the designated commercial manufacturing

facility, with the limitation of three (3) visits, not to exceed a total of ten (10) business days, for which NOVARTIS shall bear all the costs of reasonable travel and other out-of-pocket expenses.

7.3 HMRI has represented and warranted to TITAN, and TITAN has relied in good faith upon such representation and warranty that:

(a) all COMPOUND and PRODUCT supplied hereunder shall meet the specifications therefor at the time COMPOUND and PRODUCT are delivered to NOVARTIS or its designee;

(b) all COMPOUND and PRODUCT supplied hereunder shall be manufactured, stored and shipped in accordance with GMPs and all other applicable laws and regulations; and

(c) none of the COMPOUND or PRODUCT supplied hereunder shall be adulterated or misbranded as provided for under applicable laws and regulations.

7.4 TITAN represents and warrants that:

(a) the specifications for COMPOUND and PRODUCT are consistent with those set out in the INDs sponsored by TITAN; and

(b) as of the date of this Sublicense Agreement, the raw materials for the manufacture of COMPOUND are readily available in the marketplace.

7.5 NOVARTIS shall return to HMRI all unused COMPOUND or PRODUCT supplied by TITAN to NOVARTIS hereunder.

8. PATENT PROSECUTION; MAINTENANCE AND EXTENSION; INFRINGEMENT.

8.1 HMRI shall be responsible for the filing, prosecution (including oppositions) and maintenance of the PATENTS at HMRI's expense. For so long as the license grants set forth in Article 2 remain in effect, HMRI agrees to file and prosecute and maintain the PATENTS in the TERRITORY, provided that the foregoing is subject to HMRI's reasonable business judgment. TITAN shall keep NOVARTIS informed, to the same extent HMRI keeps TITAN informed, of important issues relating to the preparation, filing, prosecution and maintenance of such patent applications and patents. NOVARTIS, through TITAN, shall have the right to comment on HMRI's preparation, filing, prosecution and maintenance of patent applications and PATENTS, and HMRI shall give due consideration to NOVARTIS' comments, but HMRI shall make all decisions regarding same.

8.2 If HMRI elects not to seek patent protection in countries listed in Appendix F or to maintain patent protection on PATENTS listed in Appendix A in any country in the TERRITORY to the extent that PATENTS claim COMPOUND or PRODUCT (or formulations, use or manufacture thereof), NOVARTIS shall have the right, at its option and at HMRI's expense, which expense must be approved in advance by HMRI (approval which shall not be unreasonably withheld), to file, prosecute (including oppositions) and maintain any such patent applications and patents in HMRI's name, and any patent issued therefrom shall be owned by HMRI. TITAN shall advise NOVARTIS of HMRI's decision not to seek or maintain patent protection in a reasonably timely manner. In the event that a PATENT is issued covering COMPOUND or PRODUCT in any country in the TERRITORY under the conditions of this Section 8.2, NOVARTIS shall pay directly to HMRI a three percent (3%) royalty on NET SALES of PRODUCT in such country, for a period

of five (5) years from the date of such patent issuance in such country, in recognition of HMRI's KNOW-HOW and manufacturing rights and the right to make and sell COMPOUND or PRODUCT in such country. Legal fees and expenses, as confirmed by HMRI, incurred by NOVARTIS shall be deducted from the royalty paid to HMRI.

8.3 Each of HMRI, TITAN and NOVARTIS shall make available to the other, its employees, agents, subcontractors or consultants (including its authorized attorneys) to the extent reasonably necessary or appropriate to enable the appropriate party to file, prosecute and maintain patent applications and resulting patents subject to this Sublicense Agreement to the extent that PATENTS claim COMPOUND or PRODUCT (or formulations, use or manufacture thereof). Where appropriate, each of HMRI, TITAN and NOVARTIS shall sign or cause to have signed all documents relating to said patent applications or patents at no charge to the other.

8.4 Promptly after it is notified by HMRI, TITAN shall notify NOVARTIS in writing of (a) the issuance of each PATENT giving the date of issue and patent number for each patent, and (b) each notice pertaining to any PATENT which HMRI receives as patent owner pursuant to the Drug Price Competition and Patent Term Restoration Act of 1984, or other similar laws now or hereafter in effect which extend the PATENT life, or pursuant to comparable laws or regulations in other countries in the TERRITORY. At HMRI's expense, HMRI, TITAN and NOVARTIS shall cooperate with each other in applying for patent term extensions (including Supplementary Protection Certificate in EUROPEAN UNION member states) where applicable in any country of the TERRITORY. HMRI shall have full responsibility and authority in the decisions regarding filing for the foregoing PATENT extensions at its own expense although NOVARTIS,

through TITAN, shall be consulted and its opinions given due consideration in such decision-making process. If HMRI elects not to pursue extension of any PATENTS, NOVARTIS shall have the right (but not the obligation) to apply for such extension in HMRI's name and at NOVARTIS' expense, and HMRI shall reasonably cooperate in the filing and procurement thereof.

8.5 Except as otherwise expressly provided in this Sublicense Agreement, under no circumstances shall a party hereto, as a result of this Sublicense Agreement, obtain any ownership interest in or other right to any technology, KNOW-HOW, patents, pending patent applications, products, or biological material of the other party, or HMRI, including items owned, controlled, discovered, invented or developed by the other party, or HMRI, or transferred by the other party or HMRI to said party, at any time pursuant to this Sublicense Agreement which is not a direct result of the study, KNOW-HOW and experimentation of COMPOUND and PRODUCT. It is understood and agreed that

this Sublicense Agreement does not grant NOVARTIS any license to other uses for COMPOUND or PRODUCT outside the FIELD.

8.6 Each of NOVARTIS, TITAN and HMRI shall promptly, but in any event no later than ten (10) business days after receipt of notice of such action, notify the other in writing of any PATENT nullity actions, any declaratory judgment actions or any alleged or threatened infringement of PATENTS or misappropriation of intellectual property comprising PATENTS, or if NOVARTIS, HMRI or TITAN, or any of their respective AFFILIATES or SUBLICENSEES, shall be individually named as a defendant in a legal proceeding by a THIRD PARTY alleging infringement of a patent or other intellectual property right of such THIRD PARTY as a result of

the manufacture, production, use, development, marketing, selling or distribution of COMPOUND or PRODUCT, or of any information or notification regarding the PATENTS.

8.7 HMRI shall have the first right to respond to, defend or prosecute any actions, challenges, infringements, misappropriations or proceedings by a THIRD PARTY alleging infringement described in Section 8.6. In the event HMRI elects to do so, NOVARTIS will cooperate with HMRI and its legal counsel, join in such suits as may be brought by HMRI, and be available at HMRI's reasonable request to be an expert witness or otherwise to assist in such proceedings and at HMRI's expense. Through TITAN, HMRI will cooperate with NOVARTIS and its legal counsel and keep NOVARTIS and its counsel reasonably informed at all times as to the status of HMRI's response or defense.

8.8 In the event that HMRI elects to respond to, defend or prosecute any actions, challenges, infringements, misappropriations or proceedings by a THIRD PARTY claiming infringement described in Section 8.6 hereof, then:

(a) legal fees and other costs and expenses of HMRI associated with such response or defense shall be paid by HMRI;

(b) legal fees and other costs and expenses associated with such response or defense incurred by NOVARTIS at HMRI's request, shall be paid by HMRI;

(c) costs of acquiring THIRD PARTY patents or licenses and any settlement, court award, judgment or other damages shall be paid by HMRI to such THIRD PARTIES out of royalties projected to be received from NOVARTIS (either directly or through TITAN); provided, however, HMRI shall not be obligated to pay for any patents or licenses for uses

of COMPOUND or PRODUCTS not disclosed in PATENTS as of the date of the execution of the License Agreement; and

(d) any amounts recovered from THIRD PARTIES in connection with such response or defense shall be applied fifty percent (50%) to NOVARTIS (through TITAN), and fifty percent (50%) to HMRI, subject first to reimbursement of expenses of HMRI, NOVARTIS and TITAN.

8.9 In the event that HMRI elects not to respond to, defend or prosecute any actions, challenges, infringements, misappropriations or proceedings by a THIRD PARTY alleging infringement described in Section 8.6 hereof or HMRI abandons any such action, TITAN shall notify NOVARTIS promptly after receiving notification from HMRI of such actions, challenges, infringements, misappropriations, proceeding or HMRI's decision to abandon any such action. In such event, NOVARTIS shall have the option to respond, defend or prosecute such action at NOVARTIS' sole cost, provided that HMRI shall cooperate with and provide assistance to NOVARTIS at HMRI's expense. All amounts recovered from any THIRD PARTY shall be applied fifty percent (50%) to NOVARTIS and fifty percent (50%) to HMRI, subject first to reimbursement of expenses of HMRI, NOVARTIS and TITAN.

8.10 In the event that HMRI and NOVARTIS mutually agree that it is desirable for HMRI to acquire any THIRD PARTY patent or license in connection with the development or manufacture of COMPOUND or PRODUCT covered by PATENTS in the TERRITORY, then the costs of acquiring such THIRD PARTY patent or license shall be paid by HMRI to such THIRD PARTIES out of royalties received from NOVARTIS (either directly or through TITAN). HMRI

shall not be obligated to pay for any patents or licenses for uses of COMPOUND or PRODUCT not disclosed in PATENTS as of the date of the execution of the License Agreement.

8.11 NOVARTIS recognizes that HMRI has reserved certain rights in the patents set forth in Appendix A and that there may be a legitimate dispute between the parties whether a legal action should be brought against a THIRD PARTY which could effect HMRI's reserved rights under those patents and NOVARTIS' sublicense rights under this Sublicense Agreement. In the event that there is a dispute between NOVARTIS and HMRI regarding whether there is an infringement of PATENTS by a THIRD PARTY and therefore whether a legal action should be initiated, NOVARTIS and HMRI shall submit the issue to a disinterested, competent and experienced patent attorney reasonably acceptable to NOVARTIS and HMRI to determine whether or not there is an infringement and legal actions should be taken. If NOVARTIS and HMRI cannot agree on the selection of such a patent attorney, then NOVARTIS and HMRI shall each select a patent attorney and those selected patent attorneys shall select a mutually acceptable patent attorney. That selected patent attorney shall determine whether or not there is an infringement and legal action should be taken and then NOVARTIS and HMRI may decide whether or not to initiate a legal action as described by this Article 8. The compensation to, and expenses of, such patent attorney shall be borne by the losing party.

9. STATEMENTS AND REMITTANCES.

9.1 NOVARTIS shall keep, and require its AFFILIATES and SUBLICENSEES to keep complete and accurate records of all NET SALES of PRODUCT under the sublicenses granted herein. HMRI and TITAN shall have the right, at their expense, through a certified public

accountant or like independent person reasonably acceptable to NOVARTIS , and following reasonable notice, to examine such records under conditions of confidentiality during regular business hours during the period of time during which royalties are due and payable hereunder and for two (2) years thereafter; provided, however, that such examination shall not take place more often than once a year and shall not cover such records for more than the preceding two (2) years; and provided further, that such accountant shall report to HMRI and TITAN only as to the accuracy of the NET SALES computation and royalty statements and payments. It is agreed that if this Sublicense Agreement is terminated with respect to a particular country(ies), then HMRI's and TITAN's examination rights shall continue with respect to sales of PRODUCT in such country(ies) only for a period of two (2) years after the termination of sublicense rights in that country. Copies of all such accountant's reports shall be supplied to NOVARTIS .

9.2 Within forty-five (45) days after the close of each calendar quarter, NOVARTIS shall deliver to TITAN a true accounting of all PRODUCT sold by NOVARTIS , its AFFILIATES and SUBLICENSEES during such quarter and shall at the same time pay all earned royalties due. Such accounting shall show NET SALES of PRODUCT on a country-by-country and product-by-product basis and such other particulars as are reasonably necessary for accounting of the royalties payable hereunder.

9.3 Any tax paid or required to be withheld by NOVARTIS on account of royalties payable by NOVARTIS under this Sublicense Agreement shall be indicated on the accounting described in Section 9.2 hereof and deducted from the amount of royalties otherwise due. NOVARTIS shall secure and send to TITAN or HMRI, as the case may be, proof of any such taxes

withheld and paid by NOVARTIS. Any withholding or other tax arising on or following permitted assignment of this Sublicense Agreement by NOVARTIS or a SUBLICENSEE shall be for the account of and paid by NOVARTIS .

9.4 Unless otherwise indicated herein, and subject to foreign exchange regulations then prevailing, to the extent free conversion from local currency to United States dollars is permitted, all payments and royalties payable under this Sublicense Agreement shall be paid in cash in U.S. dollars by wire transfer in accordance with Section 3.2 hereof. If governmental regulations prevent remittances from a foreign country with respect to sales made in that country, the obligation of NOVARTIS to pay royalties on sales in that country shall be suspended until such remittances are possible, but such royalties shall accrue as an accounts payable by NOVARTIS to TITAN or HMRI, as the case may be. TITAN or HMRI, as the case may be, shall have the right, upon giving written notice to NOVARTIS, to receive payment in that country in local currency.

9.5 Royalty payments and NET SALES shall be calculated on the basis of NOVARTIS' quarterly standard account of internal sales which represents the conversion of all local currency sales for a calendar quarter into Swiss francs at the average exchange rate (as routinely derived via NOVARTIS' standard methodology) for such calendar quarter in which the sales are recorded. The exchange rate between the Swiss franc and the U.S. dollar for the quarterly royalty payments to TITAN or HMRI (as the case may be) shall be the exchange rates published in the Foreign Exchange column of The Wall Street Journal, New York edition, or other qualified source mutually acceptable to the parties on the last business day of the calendar quarter for which the royalties are being paid. Notwithstanding the foregoing, if there is a difference between any amount

that NOVARTIS pays to TITAN or HMRI (as the case may be) under Sections 3.3, 3.4 or 3.5, and the amount that TITAN is required to pay to HMRI under the License Agreement (which difference arises as a result of using the method for calculating royalties that are due and payable under this Section 9.5, and the method for calculating such royalties under Section 9.5 of the License Agreement), the shortfall or excess (as the case may be) in royalty payments made by NOVARTIS under this Section 9.5 shall be paid by NOVARTIS to HMRI or TITAN (as the case may be) in the case of a shortfall, and by TITAN to NOVARTIS in the case of an excess payment by NOVARTIS to TITAN under Section 3.3 or 3.5.

10. TERM AND TERMINATION.

10.1 (a) NOVARTIS will have the right to terminate the sublicense for the TERRITORY or on a country-by-country basis for major problems associated with PRODUCT as reasonably determined by NOVARTIS . For this purpose "major problems" are ones which would substantially negatively impact PRODUCT's chances for successful development, registration and/or commercialization in the TERRITORY or such country, as applicable; and would include, but not be limited to, major safety issues, lack of efficacy, unacceptable pharmaceutical properties or extraordinary unforeseen competitive developments which, in each case, would have the substantial negative impact referred to above.

(b) In the event of termination in the entire TERRITORY by NOVARTIS pursuant to this Section 10.1, NOVARTIS shall, within thirty (30) days of such termination, return to TITAN any and all information and data (including new information and data) relating to the COMPOUND and PRODUCT, whether generated by or on behalf of TITAN, HMRI or

NOVARTIS, and make no further use thereof. Additionally, in such event, this Sublicense Agreement shall terminate in its entirety and the sublicense granted hereunder shall revert back to TITAN. TITAN shall retain all upfront license fees and milestone payments it had received up to the date of termination if, and only if, termination was not due to any misrepresentations, omissions (of information owned or controlled by HMRI or its AFFILIATES or TITAN or its AFFILIATES as of the date hereof) or falsifications with respect to such KNOW-HOW, information or data or fraud by HMRI or its AFFILIATES or TITAN or its AFFILIATES, in which case, subject to the following sentence, TITAN shall repay to NOVARTIS, within ninety-five (95) days of such termination, that portion of the upfront license fee and milestone payments TITAN had received from NOVARTIS up to the date of such termination (including in the form of NOVARTIS' purchase of TITAN convertible preferred stock). In the case of misrepresentations, omissions (of information owned or controlled by HMRI or its AFFILIATES as of the date hereof) or falsifications with respect to such KNOW-HOW, information or data or fraud only by HMRI or its AFFILIATES, and a termination of the License Agreement pursuant to Section 10.1 of the License Agreement, TITAN shall be obligated to make the foregoing repayments to NOVARTIS if, and only if, HMRI has repaid the upfront license fee and milestone payments to TITAN under Section 10.1 of the License Agreement.

10.2 In the event the development of COMPOUND and PRODUCT is terminated altogether by NOVARTIS by or before January 1, 1998, for reasons other than those described in Section 10.1, then this Sublicense Agreement shall terminate in its entirety and the sublicense granted hereunder shall revert back to TITAN. TITAN shall retain all upfront license fees it had

THE INFORMATION BELOW, MARKED BY * AND [ ], HAS BEEN OMITTED PURSUANT TO A REQUEST FOR CONFIDENTIAL TREATMENT. THE OMITTED PORTION HAS BEEN SEPARATELY FILED WITH THE COMMISSION.

received up to the date of termination and NOVARTIS shall also pay a [*] penalty payment to TITAN if, and only if, termination was not due to any misrepresentations, omissions (of information owned or controlled by HMRI or its AFFILIATES or TITAN or its AFFILIATES as of the date hereof) or falsifications with respect to KNOW-HOW, information or data or fraud by HMRI or its AFFILIATES or TITAN or its AFFILIATES, in which case, subject to the following sentence, TITAN shall repay to NOVARTIS, within ninety-five (95) days of such termination, that portion of the upfront license fee and milestone payments TITAN had received from NOVARTIS up to the date of such termination (including in the form of NOVARTIS' purchase of TITAN convertible preferred stock). In the case of misrepresentations, omissions (of information owned or controlled by HMRI or its AFFILIATES as of the date hereof) or falsifications with respect to KNOW-HOW, information or data or fraud only by HMRI or its AFFILIATES, and a termination of the License Agreement pursuant to Section 10.2 of the License Agreement, TITAN shall be obligated to make the foregoing repayments to NOVARTIS if, and only if, HMRI has repaid the upfront license fee and milestone payments to TITAN under Section 10.2 of the License Agreement.

10.3 Unless otherwise terminated, this Sublicense Agreement shall expire on a country-by-country basis upon the expiration of NOVARTIS'

obligation to pay royalties under this Sublicense Agreement in each such country. Expiration of this Sublicense Agreement under this provision shall not preclude NOVARTIS, its AFFILIATES and SUBLICENSEES from continuing directly or indirectly to manufacture COMPOUND and market and sell PRODUCT and to use KNOW-HOW without further royalty payments.

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10.4 In the event there is a change in the control of NOVARTIS, NOVARTIS shall give TITAN thirty (30) days written notice of such event and that the development and commercialization of COMPOUND and PRODUCT will continue per the terms of this Sublicense Agreement.

10.5 (a) If either party materially defaults in its performance of this Sublicense Agreement and if such default is not corrected or if the party in default is not exercising reasonably diligent efforts to cure such default within ninety (90) days after receiving written notice from the other party with respect to such default, or if such default is not correctable within ninety (90) days then such other party shall have the right to terminate this Sublicense Agreement at the end of such period in its entirety by giving written notice to the party in default. In the event NOVARTIS materially defaults in its performance under this Sublicense Agreement with respect to a particular country, then, subject to Section 11.4 hereof, TITAN's right to terminate shall be limited to termination of the sublicense granted hereunder in such country only.

(b) If TITAN materially defaults in its performance of the License Agreement, then NOVARTIS shall have the right but not the obligation to correct or cure such default in the place of TITAN at NOVARTIS' own cost and expense within the ninety (90) day period provided for in Section 10.5 of the License Agreement without prejudice to any other rights NOVARTIS may have under this Sublicense Agreement, provided that (i) NOVARTIS notifies TITAN in writing of NOVARTIS' election to do so, and (ii) NOVARTIS' correction or cure of such default does not increase TITAN's liability under the License Agreement.

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(c) It is agreed that a material default by TITAN under the License Agreement shall be a material default by TITAN under this Sublicense Agreement.

10.6 Subject to applicable bankruptcy laws, either party may terminate this Sublicense Agreement if, at any time, the other party shall file in any court pursuant to any statute of the United States or of any individual state or foreign country, a voluntary petition in bankruptcy or insolvency or for reorganization in bankruptcy or for an arrangement or for the appointment of a receiver or trustee of the party or of its assets, or if the other party shall be served with an involuntary petition against it, filed in any insolvency proceeding, and such petition shall not be dismissed within ninety (90) days after the filing thereof, or if the other party shall propose or be a party to any dissolution, or if the other party shall make an assignment for the benefit of creditors.

(a) Without limitation, NOVARTIS' rights under this Sublicense Agreement shall include those rights afforded by 11 U.S.C. Section 365(n) of the United States Bankruptcy Code and any successor thereto (the "Code"). If the bankruptcy trustee of TITAN as a debtor or debtor-in-possession rejects this Sublicense Agreement under 11 U.S.C. Section 365(n) of the Code, NOVARTIS may elect to retain its rights sublicensed from TITAN hereunder (and any other supplementary agreements hereto) for the duration of this Sublicense Agreement and avail itself of all rights and remedies to the full extent contemplated by this Sublicense Agreement and 11 U.S.C. Section 365(n) of the Code, and any other relevant sections of the Code and other relevant non-bankruptcy law.

11. RIGHTS AND DUTIES UPON TERMINATION.

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11.1 Upon termination of this Sublicense Agreement, TITAN shall have the right to retain any sums already paid by NOVARTIS hereunder, and NOVARTIS shall pay all sums accrued hereunder which are then due except as otherwise defined in this Sublicense Agreement.

11.2 Upon early termination of this Sublicense Agreement in its entirety under Sections 10.1 or 11.6 or with respect to any country, or due to a breach hereof by NOVARTIS, NOVARTIS shall notify TITAN of the amount of PRODUCT that NOVARTIS, its AFFILIATES and SUBLICENSEES then have on hand for sale in each country, the sale of which would, but for the termination, be subject to royalty, and NOVARTIS , its AFFILIATES and SUBLICENSEES shall thereupon be permitted to sell that amount of PRODUCT, provided that NOVARTIS shall pay the royalty thereon to TITAN or HMRI, as the case may be, at the time herein provided for.

11.3 Expiration or termination of this Sublicense Agreement or

termination on a country-by-country basis shall terminate all outstanding obligations and liabilities between the parties arising from this Sublicense Agreement except those described in Sections 6.2 (with sole respect to TITAN confidentiality) 6.3, 6.4, 6.5, 6.6, 6.8, 9.1, 9.2, 10.1(b), 10.2, 10.3, 11.1, 11.2, 11.4, 11.5, 11.6, 12.5, 12.6, 12.7, 14.1 and 14.2, which sections shall survive such termination. In addition, any other provision required to interpret and enforce the parties' rights and obligations under this Sublicense Agreement shall also survive, but only to the extent required for the full observation and performance of the surviving obligations under this Sublicense Agreement.

11.4 Except as otherwise specifically provided for herein, termination, in whole or in part, of the Sublicense Agreement in accordance with the provisions hereof shall not limit remedies to the parties which may be otherwise available in law or equity, including consequential,

incidental or indirect damages (such as loss of sales, profits, or goodwill) arising out of a party's performance or nonperformance under this Sublicense Agreement.

11.5 Subject to Section 11.2 and other express provisions hereof, upon early termination of this Sublicense Agreement in its entirety due to breach hereof by NOVARTIS and pursuant to Sections 10.1, 10.2 or 11.6, NOVARTIS' rights in COMPOUND and PRODUCT shall cease, NOVARTIS, its AFFILIATES and SUBLICENSEES shall cease manufacture, development, marketing and sale of COMPOUND and PRODUCT in the TERRITORY, and all originals and copies of KNOW-HOW, data, results and other information collected and/or generated by NOVARTIS, its AFFILIATES and SUBLICENSEES relating to COMPOUND or PRODUCT prior to termination shall be delivered to TITAN within thirty (30) days thereafter, except for one copy thereof which may be retained in NOVARTIS' legal or other appropriately restricted files solely for the purpose of establishing the extent of its obligations hereunder. Any IND or other regulatory filing effected prior to termination shall be assigned by NOVARTIS to TITAN (or its designee(s), which designee could be HMRI), at TITAN's request and expense, if not already assigned to TITAN. NOVARTIS shall provide to TITAN, within thirty (30) days of TITAN 's request, copies of all regulatory correspondence, including, but not limited to, IND Information Amendments, IND Reports, IND Safety Reports, NDA submission, NDA Postmarketing Reports, and reports of written/phone contacts to/from regulatory agencies, as well as the safety database for PRODUCT.

11.6 If (a) NOVARTIS is precluded from selling PRODUCT in a particular country(ies) in the TERRITORY by virtue of infringement of THIRD PARTY patent rights, or (b) there is a holding of invalidity or unenforceability of any PATENT, from which no further appeal

can be taken, that materially affects NOVARTIS' ability to commercialize PRODUCT in a particular country(ies) in the TERRITORY, NOVARTIS shall have the right (but not the obligation) to terminate this Sublicense Agreement in such country(ies). At NOVARTIS' option, this Sublicense Agreement may be terminated in its entirety if the events described in subsection (a) or (b) of this Section 11.6 occur in the United States and/or, the EUROPEAN UNION. Within ninety-five (95) days of any such termination, subject to the following sentence, TITAN shall repay to NOVARTIS if the Sublicense Agreement has been terminated in its entirety, that portion of the upfront license fee and milestone payments (including in the form of NOVARTIS' purchase of TITAN convertible preferred stock) it has received from NOVARTIS up to the date of termination. In the event the License Agreement is terminated pursuant to Section 11.6 of the License Agreement, TITAN shall be obligated to make the foregoing repayments to NOVARTIS, but only to the extent HMRI has repaid the upfront license fee and milestone payments to TITAN under Section 11.6 of the License Agreement. If this Sublicense Agreement has been terminated only with respect to certain country(ies), the parties shall negotiate in good faith what smaller portion of the upfront license fee and milestone payments TITAN has received from NOVARTIS up to such date shall be repaid to NOVARTIS; provided, however, if the License Agreement has been terminated only with respect to such certain countries under Section 11.6 of the License Agreement, TITAN shall be obligated to make such repayments to NOVARTIS but only to the extent HMRI has repaid a portion of the upfront license fee and milestone payments to TITAN under Section 11.6 of the License Agreement. If the parties are unable to agree on such smaller portion within ninety (90) days, the issue shall be submitted for determination by arbitration in accordance with Section 14.2.

12. WARRANTIES, INDEMNIFICATIONS AND REPRESENTATIONS.

12.1 TITAN represents and warrants that to the best of its knowledge at the date of this Sublicense Agreement: (a) all currently issued or pending patents and patent applications owned or controlled by HMRI or its AFFILIATES claiming the COMPOUND or PRODUCT are listed in Appendix A, and (b)

HMRI or its AFFILIATES owns or controls the entire right, title and interest in PATENTS and KNOW-HOW. If TITAN becomes aware of any patents or patent applications owned or controlled by HMRI or its AFFILIATES claiming COMPOUND or PRODUCT or manufacture, formulation or use thereof not listed in Appendix A and is within the rights granted to NOVARTIS in this Sublicense Agreement, such patents and patent applications shall be added to Appendix A at no cost to NOVARTIS . TITAN further represents and warrants that to the best of its knowledge as of the date of this Sublicense Agreement: (c) TITAN's written contracts with CROs relating to COMPOUND or PRODUCT that are in effect as of the effective date of this Sublicense Agreement (which contracts are identified in Appendix E) are in full force and effect and neither TITAN nor any of the CROs is in default of any of their obligations under such contracts, (d) the License Agreement is in full force and effect and neither HMRI nor TITAN is in default of any of their obligations thereunder, and (e) subject to obtaining HMRI's prior written consent, TITAN has the legal power, right and authority to enter into this Sublicense Agreement. NOVARTIS represents and warrants that it has the legal power, right and authority to enter into this Sublicense Agreement. TITAN will obtain all assignments or licenses from the patent holder of the PATENTS, to the same extent as TITAN is entitled to receive such assignments or licenses from HMRI under the License Agreement, to provide NOVARTIS with the same degree of exclusivity

in the TERRITORY under the PATENTS as TITAN is granted by HMRI under the License Agreement.

12.2 Nothing in this Sublicense Agreement shall be construed as a warranty that PATENTS are valid or enforceable or that their exercise does not infringe any patent rights of THIRD PARTIES. TITAN hereby represents and warrants that it has no present knowledge that (i) PATENTS are invalid or unenforceable, (ii) the exercise of PATENTS infringes any patent rights of THIRD PARTIES, and (iii) THIRD PARTY licenses are necessary for the development, manufacture or commercialization of COMPOUND or PRODUCT. A holding of invalidity or unenforceability of any PATENT, from which no further appeal is or can be taken, shall not affect any obligation already accrued hereunder, but shall only eliminate future royalties otherwise due under such PATENT from the date such holding becomes final.

12.3 Each party represents to the other that it is not currently debarred, suspended or otherwise excluded by any U.S. Government agencies from receiving federal contracts.

12.4 NOVARTIS agrees that during the term of this Sublicense Agreement, neither it or a SUBLICENSEE shall license, develop, have developed, manufacture, have manufactured, sell or have sold any of the following compounds or products classified as an atypical antipsychotic: (i.e. Olanzapine, Sertindole, Seroquel, Ziprasadone, Risperidone); provided that such restriction shall not apply within the EEA. In the event that NOVARTIS or a SUBLICENSEE undertakes any of the foregoing actions within the EEA, then TITAN may not terminate this Sublicense Agreement or seek damages or equitable remedies for such actions, but may at its option by notice to NOVARTIS (i) terminate the EXCLUSIVE nature of the licenses granted pursuant to Article 2

hereof in the EEA, so that all use of PATENTS and KNOW-HOW in the EEA will thereafter be on a nonexclusive basis at a reduced royalty rate to be negotiated at such time of change in exclusivity; (ii) cease providing improvements to NOVARTIS pursuant to Section 2.3; and/or (iii) require NOVARTIS to prove to TITAN's reasonable satisfaction that the KNOW-HOW is not being used for such activities.

Notwithstanding the foregoing, TITAN and NOVARTIS agree that in the event NOVARTIS acquires rights to one or more of the five compounds or products listed in the first paragraph of this Section 12.4 (the "Acquired Compounds or Products") as part of a corporate transaction such as an acquisition of assets or stock, a merger, or consolidation, TITAN shall use its good faith efforts to cause HMRI to waive any rights that it may have against NOVARTIS or TITAN under this Section 12.4 and Section 12.4 of the License Agreement. To assist TITAN in obtaining such waiver from HMRI, NOVARTIS will provide TITAN with arguments supporting how NOVARTIS intends to prevent PRODUCT from being negatively impacted by the Acquired Compounds or Products. In the event HMRI will not waive such rights and NOVARTIS does not agree to divest the Acquired Compounds or Products or, alternatively, sublicense PRODUCT to a mutually acceptable third party (which third party must also be acceptable to HMRI), TITAN agrees that its sole and exclusive remedy against NOVARTIS shall be to terminate the exclusive nature of the Sublicense Agreement in the EEA as provided for in this Section 12.4, and to terminate this Sublicense Agreement elsewhere in the TERRITORY.

12.5 NOVARTIS shall indemnify, defend and hold TITAN, HMRI and their respective AFFILIATES harmless from and against any and all liabilities, claims, demands,

damages, costs, expenses, fines, penalties or money judgments including without limitation court costs and reasonable attorney's fees (hereinafter referred to as "Liabilities"), during the term of this Sublicense Agreement and after its expiration or termination, incurred by or rendered against TITAN, HMRI and their respective AFFILIATES which arise out of the clinical testing, use or labeling, or the manufacture, processing, packaging, sale or distribution of COMPOUND or PRODUCT (as the case may be) by NOVARTIS, its AFFILIATES and SUBLICENSEES, or the breach of this Sublicense Agreement by NOVARTIS (including without limitation any breach of NOVARTIS' representations and warranties under this Sublicense Agreement) or any negligence or misconduct of NOVARTIS , except to the extent that such Liabilities are directly attributable to the breach of this Sublicense Agreement by TITAN or breach of the License Agreement by HMRI (including without limitation any breach of TITAN's representations or warranties under this Sublicense Agreement or any breach of HMRI's representations or warranties under the License Agreement) or any negligence or misconduct by TITAN or HMRI. NOVARTIS shall also indemnify, defend and hold TITAN, HMRI and their respective AFFILIATES harmless from and against any and all Liabilities incurred by or rendered against TITAN, HMRI and their respective AFFILIATES which arise out of the COMPOUND or PRODUCT supplied by NOVARTIS to HMRI and/or TITAN and for use pursuant to Section 2.3, or which arise out of any contracts or arrangements with THIRD PARTIES (including CROs) relating to the development and/or registration process for the COMPOUND or PRODUCT from and after the effective date of this Sublicense Agreement, whether such contracts or arrangements with THIRD PARTIES were entered into prior to or following the effective date of this Sublicense Agreement, except to the extent that

such Liabilities are directly attributable to the breach of this Sublicense Agreement by TITAN or breach of the License Agreement by HMRI (including without limitation any breach of TITAN's representations or warranties under this Sublicense Agreement or any breach of HMRI's representations or warranties under the License Agreement) or any negligence or misconduct by TITAN or HMRI.

12.6 TITAN shall indemnify, defend and hold NOVARTIS , its AFFILIATES and SUBLICENSEES harmless from and against any and all Liabilities (as defined in Section 12.5 hereof), incurred by or rendered against NOVARTIS, its AFFILIATES and SUBLICENSEES, which arise out of the breach of this Sublicense Agreement by TITAN (including without limitation any breach of TITAN's representations or warranties under this Sublicense Agreement), or any negligence or misconduct by TITAN, except to the extent that such Liabilities are directly attributable to the breach of this Sublicense Agreement by NOVARTIS (including without limitation any breach of NOVARTIS' representations and warranties under this Sublicense Agreement), or any negligence or misconduct by NOVARTIS. TITAN shall also indemnify, defend and hold NOVARTIS, its AFFILIATES and SUBLICENSEES harmless from and against any and all Liabilities incurred by or rendered against NOVARTIS, and its AFFILIATES and SUBLICENSEES which arise out of the manufacture, use or sale of COMPOUND and PRODUCT that has been manufactured or sold by or on behalf of TITAN and its AFFILIATES or SUBLICENSEES in Japan or those countries where NOVARTIS' sublicense rights hereunder have been terminated (including the clinical testing, use and labeling of PRODUCT and the manufacture, processing, packaging, sale or distribution of PRODUCT by TITAN and its AFFILIATES and SUBLICENSEES) or subject to

Section 5.4(b), which arise out of the activities of any CRO which occurred prior to the execution of this Sublicense Agreement and that were undertaken pursuant to a written contract between TITAN and such CRO relating to COMPOUND or PRODUCT.

12.7 Each party shall give the other prompt notice in writing of any claim or demand referred to in Sections 12.5 or 12.6. In addition, the obligations of any indemnifying party shall be subject to the indemnified party fulfilling the following obligations:

(a) With respect to third party claims, indemnified party shall fully cooperate with the indemnifying party in the defense of such claim or demand which defense shall be controlled by the indemnifying party; and

(b) With respect to third party claims, indemnified party shall not, except at its own cost, voluntarily make any payment or incur any expense with respect to any claim, demand or suit (including without limitation retaining its own counsel) without the prior written consent of the indemnifying party, which such party shall not be required to give.

13. FORCE MAJEURE.

13.1 If the performance of any part of this Sublicense Agreement by either party, or if any obligation under this Sublicense Agreement, is prevented, restricted, interfered with or delayed by reason of any cause beyond the reasonable control of the party required to perform, the party so

affected, upon giving written notice and written evidence of such force majeure to the other party, shall be excused from such performance to the extent of such prevention, restriction, interference or delay, provided that the affected party shall use its reasonable commercial efforts to avoid or remove such causes of nonperformance and shall continue performance with the utmost

dispatch whenever the force majeure is removed. In the event of a force majeure, the parties shall also discuss whether modification of the terms of this Sublicense Agreement are necessary to alleviate the hardship or loss caused by the force majeure.

14. GOVERNING LAW AND ARBITRATION.

14.1 This Sublicense Agreement shall be deemed to have been made in the State of New York and its form, execution, validity, construction and effect shall be determined in accordance with the laws of the State of New York (without regard to New York's or any other jurisdiction's choice of law principles).

14.2 In the event of any controversy or claim arising out of or relating to any provision of this Sublicense Agreement, the parties shall try to settle their differences amicably between themselves. Any unresolved disputes arising between the parties relating to, arising out of or in any way connected with this Sublicense Agreement or any term or condition hereof, or the performance by either party of its obligations hereunder, whether before or after termination of this Sublicense Agreement, shall be resolved by final and binding arbitration. Whenever a party shall decide to institute arbitration proceedings, it shall give written notice to that effect to the other party. Except in the case of a determination to be made where payments are to be made to by one party to the other, the party giving such notice shall refrain from instituting the arbitration proceedings for a period of sixty (60) days following such notice to allow the parties time to further attempt to come to an amicable resolution of the dispute. Arbitration shall be held in New York City, New York according to the commercial rules of the American Arbitration Association ("AAA"). The arbitration will be conducted by a panel of three arbitrators appointed in accordance with AAA

rules; provided, however, that each party shall within thirty (30) days after the institution of the arbitration proceedings appoint a party arbitrator, and the party-arbitrators shall select a neutral arbitrator, to be chairman of the arbitration panel, within thirty (30) days thereafter. If the party-arbitrators are unable to select a neutral within such period, the neutral shall be appointed in accordance with AAA rules. All arbitrator(s) eligible to conduct the arbitration must agree to render their opinion(s) within thirty (30) days of the final arbitration hearing. No arbitrator (nor the panel of arbitrators) shall have the power to award punitive damages under this Sublicense Agreement and such award is expressly prohibited. Decisions of the arbitrator(s) shall be final and binding on all of the parties. Judgment on the award so rendered may be entered in a court having jurisdiction thereof. In any arbitration pursuant to this Sublicense Agreement, the arbitrators shall interpret the express terms hereof and apply the laws of the State of New York. The losing party to the arbitration as determined by the arbitrators shall pay the costs of arbitration.

15. SEPARABILITY.

15.1 In the event any portion of this Sublicense Agreement not material to the remaining portions shall be held illegal, void or ineffective, the remaining portions hereof shall remain in full force and effect.

15.2 If any of the terms or provisions of this Sublicense Agreement are in conflict with any applicable statute or rule of law, then such terms or provisions shall be deemed inoperative to the extent that they may conflict therewith and shall be deemed to be modified to conform with such statute or rule of law.

15.3 In the event that the terms and conditions of this Sublicense Agreement are materially altered as a result of Sections 15.1 or 15.2, the parties shall renegotiate the terms and conditions of this Sublicense Agreement so as to accomplish as nearly as possible the original intentions of the parties.

16. ENTIRE AGREEMENT.

16.1 This Sublicense Agreement and the Appendices attached hereto, entered into as of the date written above, constitutes the entire agreement between the parties relating to the subject matter hereof and supersedes all previous writings and understandings, including without

limitation the Heads of Agreement between the parties dated October 21, 1997 and the Confidentiality Agreement between the parties dated February 21, 1997 (it being understood and agreed that all Confidential Information of HMRI and TITAN disclosed to NOVARTIS prior to the effective date of this Sublicense Agreement shall be subject to Sections 6.4, 6.6, 6.7 and 6.9 of this Sublicense Agreement). No terms or provisions of this Sublicense Agreement shall be varied or modified by any prior or subsequent statement, conduct or act of either of the parties, except that the parties may amend this Sublicense Agreement by written instruments specifically referring to and executed in the same manner as this Sublicense Agreement.

17. NOTICES.

17.1 Any notice required or permitted under this Sublicense Agreement shall be in writing and in English and shall be sent by airmail, postage prepaid, or facsimile or courier to the following address of each party or to such other address as may be designated in writing by the respective parties:

If to NOVARTIS :
Novartis Pharma A.G.
Legal Services
Lichtstrasse 35
CH 4002 Basel
Switzerland
Attention: General Counsel

With copies to:
Business Development and Licensing
Novartis Pharma A.G.
Lichtstrasse 35
CH 4002 Basel
Switzerland
Attention: Head of Department

If to TITAN:
Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd., Suite 505
South San Francisco, CA 94080
Attention: Louis R. Bucalo, M.D.
President & CEO
Telephone: (650) 244-4990
Facsimile: (650) 244-4956

With copies to:
Titan Pharmaceuticals, Inc.
400 Oyster Point Blvd., Suite 505
South San Francisco, CA 94080
Attention: Sunil R. Bhonsle
Executive V.P. & COO
Telephone: (650) 244-4990
Facsimile: (650) 244-4956

and

Heller Ehrman White & McAuliffe
525 University Avenue
Palo Alto, CA 94301-1900
Attention: Neil Flanzraich, Esq.
Telephone: (650) 324-7118
Facsimile: (650) 324-0638

17.2 Any notice required or permitted to be given concerning this Sublicense Agreement shall be effective upon receipt by the party to whom it is addressed.

18. ASSIGNMENT.

18.1 This Sublicense Agreement or any portions thereof and the sublicenses herein granted shall be binding upon and inure to the benefit of the successors in interest and assignees of the respective PARTIES.

18.2 NOVARTIS may assign this Sublicense Agreement to an AFFILIATE without the prior written consent of TITAN, and in such event NOVARTIS will continue to guarantee the obligations of such AFFILIATE hereunder. Subject to the foregoing, NOVARTIS shall not have the right to assign this Sublicense Agreement to any THIRD PARTY without the prior written consent of TITAN, not to be unreasonably withheld.

18.3 In the event of a consolidation, merger or acquisition which involves a change in the control of NOVARTIS, this Sublicense Agreement shall remain in full force and effect, and NOVARTIS agrees to notify TITAN pursuant to Section 10.4.

19. FAILURE TO ENFORCE.

19.1 The failure of either party to enforce at any time any provisions hereof shall not be construed to be a waiver of such provision nor of the right of such party thereafter to enforce each and every such provision.

20. NO AGENCY.

20.1 Except as expressly set forth in this Sublicense Agreement, nothing in this Sublicense Agreement authorizes either party to act as agent for the other or, as to any third party, to indicate or imply the existence of any such agency relationship. The relationship between the parties is that of independent contractors.

21. FURTHER ASSURANCES.

21.1 Each party hereto agrees to execute, acknowledge and deliver such further instruments, and to do all such other acts, as may be necessary or appropriate in order to carry out the purposes and intent of this Sublicense Agreement.

22. CAPTIONS.

22.1 Captions are inserted for convenience only and in no way are to be construed to define, limit or affect the construction or interpretation hereof.

23. MISCELLANEOUS.

23.1 Both parties agree to discuss matters arising during the term of this Sublicense Agreement in the spirit of cooperation and good faith and endeavor to resolve any differences by mutual agreement whenever possible. If the parties fail to reach agreement, either party may submit the matter for resolution pursuant to Section 14.2.

23.2 NOVARTIS covenants to TITAN that during the term of this Sublicense Agreement, NOVARTIS, its AFFILIATES and SUBLICENSEES shall not violate the Federal Foreign Corrupt Practices Act in the performance of its negotiations or obligations hereunder.

23.3 NOVARTIS acknowledges that it has received and reviewed the License Agreement (a copy of which is attached hereto as Appendix G), and agrees that the terms and conditions of this Sublicense Agreement must be consistent with the License Agreement.

IN WITNESS WHEREOF, the parties, through their authorized officers, have executed this Sublicense Agreement as of the date first written above.

NOVARTIS PHARMA A.G.	*TITAN PHARMACEUTICALS, INC.*
By:	*By:*
Name:	*Name:*
Title:	*Title:*

NOVARTIS PHARMA A.G.

By:
Name:
Title:

APPENDIX A
PATENTS AND PATENT APPLICATIONS (PER SECTION 1.17)

<TABLE>
<CAPTION>

COUNTRY	*PATENT APPL. NO.*	*FILING DATE*	*TYPE*	*STATUS*	*PATENT NO.*	*ISSUE DATE*	*EXPIRATION DATE*
<S>	*<C>*	*<C>*	*<C>*	*<C>*	*<C>*	*<C>*	*<C>*
US	*07/354,411*	*5/19/89*		*abandoned*			
US	*07/456,790*	*12/29/89*	*CIP+*	*abandoned*			
EP	*90109208.0*	*05/16/90*		*granted*	*0 402 644*	*08/16/95*	*05/15/2010*
Austria	*90109208.0*	*05/16/90*	*national*	*converted*	*E 126512*	*08/16/95*	*05/15/2010*
Belgium	*90109208.0*	*05/16/90*	*national*	*converted*	*0 402 644*	*08/16/95*	*05/15/2010*
Denmark	*90109208.0*	*05/16/90*	*national*	*converted*	*0 402 644*	*08/16/95*	*05/15/2010*
France	*90109208.0*	*05/16/90*	*national*	*converted*	*0 402 644*	*08/16/95*	*05/15/2010*
Germany	*90109208.0*	*05/16/90*	*national*	*converted*	*69021645.9*	*08/16/95*	*05/15/2010*
Great Britain	*90109208.0*	*05/16/90*	*national*	*converted*	*0 402 644*	*08/16/95*	*05/15/2010*
Greece	*90109208.0*	*05/16/90*	*national*	*converted*	*3017447*	*08/16/95*	*05/15/2010*
Israel	*94425*	*05/17/90*		*issued*	*P/94425*	*05/29/94*	*05/17/2010*

Italy	90109208.0	05/16/90	national	converted	52158/BE/95	08/16/95	05/15/2010
Luxembourg	90109208.0	05/16/90	national	converted	0 402 644	08/16/95	05/15/2010
Netherlands	09109208.0	05/16/90	national	converted	0 402 644	08/16/95	05/15/2010
Spain	09109208.0	05/16/90	national	converted	ES2076253T3	08/16/95	05/15/2010
Switzerland	0909208.0	05/16/90	national	converted	0 402 644	08/16/95	05/15/2010
Sweden	0909208.0	05/16/90	national	converted	0 402 644	08/16/95	05/15/2010
Australia	55770/90	05/22/90		issued	640,653	09/02/93	05/22/2010
Canada	2,017,193-6	05/18/90					
China	90103721.4	05/19/90					
Czech Republic	2425-90	05/17/90					
Finland	902449	05/17/90					
Hungary	3090/90	05/18/90					
Ireland	1809/90	05/18/90		issued	68431	05/23/96	05/18/2010
Israel	94425	05/17/90					
Korea	90/7102	05/18/90					

COUNTRY	PATENT APPL. NO.	FILING DATE	TYPE	STATUS	PATENT NO.	ISSUE DATE	EXPIRATION DATE
Mexico	20787	05/18/90					
New Zealand	233710	05/17/90		issued	233710		
Norway	P902214	05/18/90			177301	08/23/95	05/18/201
Philippines	40530	05/17/90					
Poland	P-285247	05/18/90			163965	12/09/93	
Portugal	94084	05/18/90		issued	94084	09/18/96	05/18/201
Russia	4743876/04	05/18/90					
South	90/2820	05/18/90		issued	90/38230	02/27/91	05/18/2010
Taiwan	79104996	06/19/90		issued	54190	01/11/92	06/19/2010
US	07/619,825	11/29/90	continuation	abandoned			
US	07/944,705	09/05/91	continuation	abandoned			
US	07/788,269	11/05/91	CIP	abandoned			
US	07/969,383	10/30/92	CIP	issued	5,364,866	11/15/94	11/15/2011
PCT	92/09276	11/04/92		WO/93/09102			
EP	92/924151.1	11/04/92		pending			
EP (Portugal)	92118982.5	11/05/92		pending			
Australia	30570/92	11/04/92					
Belarus	1715	11/04/92					
Canada	2,121,253	11/04/92					
Czech Republic	PV 1102-94	11/04/92					
Finland	942052	11/04/92					
Georgia	001977	11/04/92					
Hungary	P9401316	11/04/92					
Israel	103622	11/03/92					
Korea	94-701524	11/04/92					
Kazakhstan	941593.1	11/04/92					
Mexico	926370	11/05/92					
Norway	941647	11/04/92					
New	245006	11/03/92		issued	245006	05/17/96	11/03/2012

COUNTRY	PATENT APPL. NO.	FILING DATE	TYPE	STATUS	PATENT NO.	ISSUE DATE	EXPIRATION DATE
Philippines	45259	11/12/92					
Poland	P-303452	11/04/92					
Romania	9400761	11/04/92					
Russia	94028105.04	11/04/92					
Slovak Republic	PV 0456-94	11/04/92					
Taiwan	81108831	11/05/92					
Uzbekistan	9500706.1	11/04/92					
US	08/144,265	10/28/93	CIP	abandoned			
US	08/309,395	09/20/94	CIP**	pending			
US	08/329,000*	10/25/94	CIP**	issued	5,658,911	08/19/97	08/19/2014
US	08/468,611	06/06/95	DIV**	pending			
PCT	94/12054	10/27/94		WO95/11680			
EP	9590039.6	10/27/94		pending			
Brazil	PI 1101001.0	05/14/97	Pipeline				
Canada	2175212	10/27/94					

China	94194302	10/27/94					
Czech Republic	PV 1238-96	10/27/94					
Hungary	P/P 00576	06/29/95		granted	211,853	11/06/95	06/29/2015
Indonesia	951058	06/08/95					
Israel	111,498	10/27/94					
Korea	96-702162	10/27/94					
Mexico	94 8405	10/27/94					
Norway	p961686	10/27/94					
New Zealand	275941	10/27/94					
Poland	P314135	10/27/94					
Romania	96-00888	10/27/94					
Russia	96110214	10/27/94					
Taiwan	83110396	11/10/94					

COUNTRY	PATENT APPL. NO.	FILING DATE	TYPE	STATUS	PATENT NO.	ISSUE DATE	EXPIRATION DATE
South Africa	95/2653	10/28/94					

* subject to a 60 way restriction requirement; 329,000 survived as one to the 60 divisionals
** pending as one of the 60 divisionals
\+ CIP (Continuation-in-part)

APPENDIX B

MAJOR METABOLITES (PER SECTION 1.6)

Compound No.	Name	R1	R2	R3
rP88 8991	4-[3-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]propoxy]-3-methoxy-[alpha]-methyl-benzenemethanol	H	CH(OH)CH3	OCH3
P89 9124	1-[4-[3-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]propoxy]-3-hydroxyphenyl]-ethanone	H	C(O)CH3	OH
P94 11840	1-[4-[3-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]propoxy]-3-methoxyphenyl]-2-hydroxyethanone	H	C(O)CH2OH	OCH3
P89 9430	4-[3-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]propoxy]-3-hydroxy-[alpha]-methylbenzenemethanol	H	CH(OH)CH3	OH
P94 11677	4-[3-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]propoxy]-2-hydroxy-5-methoxy-[alpha]-methylbenzenemethanol	OH	CH(OH)CH3	OCH3

Compound No.	Name	R1	R2	R3
P94 11679	1-[4-[3-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]propoxy]-2-hydroxy-5-methoxyphenyl]ethanone	OH	C(O)CH3	OCH3
P94 11702	1-[4-[3-[4-(6-fluoro-1,2-	OH	C(O)CH3	OH

benzisoxazol-3-yl)-1-
piperidinyl]propoxy]-2,5-
dihydroxyphenyl]-ethanone

APPENDIX D

Sample Invoice
TITAN PHARMACEUTICALS, INC.

[Date]

Novartis Pharma AG
Zentraler Faktureneingang
Attn: Ms. M. Gnehm
BD&L Contract Administration
Lichstrasse 35
CH 4002 Basel
Switzerland

Dear Ms. Gnehm:

Re: Titan Pharmaceuticals, Inc./Sublicense Agreement - Iloperidone

This is an invoice requesting payment in connection with the above-captioned agreement between Titan Pharmaceuticals, Inc. and Novartis Pharma AG.

Novartis Contract Code No.:	[will be assigned by BD&L following execution]
Novartis Creditor No.:	[will be assigned by BD&L following execution]
Reason for Payment:	[please cite specific section or article in the agreement]
Amount and Currency:	[self-explanatory]
Bank Address and Account No.:	[insert the name and address of the bank to which the payment should be sent and the account number to which it should be credited]

Sincerely yours,

APPENDIX E
TITAN CONTRACTS WITH RESEARCH ORGANIZATIONS

IBAH, Inc. CLINICAL AND PHARMACEUTICS SERVICES MASTER AGREEMENT AND ITS ENABLING EXHIBITS 1 THROUGH 8

EXHIBIT 1.	ILOPERIDONE STUDY 300
EXHIBIT 2.	ILOPERIDONE STUDY 302
EXHIBIT 3.	ILOPERIDONE STUDY 306
EXHIBIT 4.	RECEIPT AND STORAGE OF CLINICAL MATERIAL FOR ILOPERIDONE CLINICAL STUDIES
EXHIBIT 5.	ILOPERIDONE CLINICAL STABILITY PROGRAM
EXHIBIT 6.	CLINICAL SUPPLY MATERIAL HANDLING OF ILOPERIDONE
EXHIBIT 7.	ENCAPSULATION OF HALOPERIDOL TABLETS
EXHIBIT 8.	ANALYTICAL TESTING TO EXTEND EXPIRATION DATES; ANALYTICAL TESTING OF 40C/75RH SAMPLES; DESTRUCTION OF RISPERIDONE, RESPERIDAL, AND HALOPERIDOL SUPPLIES; DOCUMENTATION SUPPORT FOR IND FILING

(copies of exhibits will be provided by TITAN to NOVARTIS separately)

WIL RESEARCH LABORATORIES COMPLETION OF RODENT ONCOGENICITY STUDIES

A 24-MONTH ORAL ONCOGENICITY STUDY OF HP-873 IN MICE
A 24-MONTH ORAL ONCOGENICITY STUDY OF HP-873 IN RATS

(RESPONSIBILITY FOR THESE STUDIES WAS TRANSFERRED FROM HMRI TO TITAN)

APPENDIX F

SPECIAL COUNTRIES IN TERRITORY REGARDING
HMRI'S PATENT PROTECTION (PER SECTION 8.2)

United States

PCT

- *Australia*
- *Brazil*
- *Bulgari*
- *Canada*
- *China*
- *Czech Republic*
- *Kazakhstan*
- *EPO*
  - *Austria*
  - *Belgium*
  - *Denmark*
  - *Finland*
  - *France*
  - *Germany*
  - *Great Britain*
  - *Greece*
  - *Iceland*
  - *Ireland*
  - *Italy*
  - *Latvia*
  - *Lithuania*
  - *Luxembourg*
  - *Monaco*
  - *Netherlands*
  - *Portugal*
  - *Romania*
  - *Singapore*
  - *Slovenia*
  - *Spain*
  - *Sweden*
  - *Switzerland with Liechtenstein*
  - *Turkey*
  - *Ukraine*

PCT (cont.)

- *Estonia*
- *Hungary*
- *Israel*
- *Mexico*
- *New Zealand*
- *Norway*
- *Poland*
- *Russian*
- *Slovakia*
- *South Korea*

Non-PCT

- *Argentina*
- *Chile*
- *Egypt*
- *Hong Kong*
- *India*
- *Indonesia*
- *Malaysia*
- *Philippines*
- *Saudi Arabia*
- *South Africa*
- *Taiwan*
- *Thailand*

Venezuela