

AS FILED WITH THE SECURITIES AND EXCHANGE COMMISSION ON FEBRUARY 13, 1997.

REGISTRATION NO. 333-20941

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SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549  
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AMENDMENT NO. 1

TO

FORM S-3  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933  
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PROTEIN DESIGN LABS, INC.  
(Exact Name of Registrant as Specified in its Charter)  
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DELAWARE  
(State or Other Jurisdiction  
of Incorporation or Organization)

94-3023969  
(I.R.S. Employer  
Identification Number)

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2375 GARCIA AVENUE  
MOUNTAIN VIEW, CALIFORNIA 94043  
(415) 903-3700  
(Address, Including Zip Code, and Telephone Number, Including Area Code, of  
Registrant's Principal Executive Offices)  
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DOUGLAS O. EBERSOLE, ESQ.  
VICE PRESIDENT, LICENSING AND CORPORATE SERVICES,  
GENERAL COUNSEL AND SECRETARY  
PROTEIN DESIGN LABS, INC.  
2375 GARCIA AVENUE  
MOUNTAIN VIEW, CALIFORNIA 94043  
(415) 903-3700  
(Name, Address, Including Zip Code, and Telephone Number, Including Area Code,  
of Agent For Service)  
COPIES TO:

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FIVE PALO ALTO SQUARE  
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(415) 843-5000

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APPROXIMATE DATE OF COMMENCEMENT 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 a 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 securities offered only in connection with dividend or interest  
reinvestment plans, check the following box. [ ]

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, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. [ ]

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

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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.  
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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 FEBRUARY 13, 1997

2,750,000 SHARES

PDL (LOGO)

PROTEIN DESIGN LABS, INC.

COMMON STOCK

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Of the 2,750,000 shares of Common Stock offered hereby, 2,000,000 shares are being sold by Protein Design Labs, Inc. ("PDL" or the "Company") and 750,000 shares are being sold by a Selling Stockholder. See "Principal and Selling Stockholders." The Company will not receive any proceeds from the sale of shares by the Selling Stockholder. The Company's Common Stock is listed on the Nasdaq National Market under the symbol "PDLI." On January 30, 1997, the last reported sale price of the Common Stock on the Nasdaq National Market was \$35.75 per share. See "Price Range of Common Stock."

THE COMMON STOCK OFFERED HEREBY INVOLVES A HIGH DEGREE OF RISK.  
SEE "RISK FACTORS" BEGINNING ON PAGE 6.

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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.

	PRICE TO PUBLIC	UNDERWRITING DISCOUNT(1)	PROCEEDS TO COMPANY(2)(3)	PROCEEDS TO SELLING STOCKHOLDER
Per Share.....	\$	\$	\$	\$
Total (3).....	\$	\$	\$	\$

- (1) See "Underwriting" for information concerning indemnification of the Underwriters and other information.
- (2) Before deducting expenses of the offering payable by the Company estimated at \$400,000.
- (3) The Company has granted the Underwriters an option, exercisable within 30 days of the date hereof, to purchase up to 412,500 additional shares of Common Stock at the Price to Public per share, less the Underwriting Discount, for the purpose of covering over-allotments, if any. If the Underwriters exercise such option in full, the total Price to Public, Underwriting Discount and Proceeds to Company will be \$ , and \$ , respectively. See "Underwriting."

The shares of Common Stock are offered severally by the Underwriters when, as and if delivered to and accepted by them, subject to their right to withdraw, cancel or reject orders in whole or in part and subject to certain other conditions. It is expected that delivery of the certificates representing the shares will be made against payment on or about at the office of Oppenheimer & Co., Inc., Oppenheimer Tower, One World Financial Center, New York, New York 10281.

The date of this Prospectus is \_\_\_\_\_, 1997.

## PRODUCTS IN DEVELOPMENT

The following table summarizes the potential therapeutic indications, development status and commercial rights for certain of PDL's clinical and preclinical product candidates and is qualified in its entirety by the more detailed information appearing elsewhere in this Prospectus. The development and commercialization of the Company's product candidates are subject to numerous risks and uncertainties. See "Risk Factors."

PRODUCT	POTENTIAL THERAPEUTIC INDICATIONS	DEVELOPMENT STATUS	COMMERCIAL RIGHTS
Zenapax (SMART Anti-Tac Antibody)	Organ transplant rejection	Completed two Phase III trials (kidney)	Roche
SMART M195 Antibody	Certain autoimmune diseases Tropical spastic paraparesis Uveitis Psoriasis Certain blood cancers Acute myelogenous leukemia Acute promyelocytic leukemia Myeloid leukemia	Phase I/II Phase I/II Phase I/II planned Phase II Phase II/III Phase II Phase I (Japan)	PDL and Kanebo
OST 577 (Human Anti-Hepatitis B Antibody)	Chronic hepatitis B ("CHB") Liver transplantation due to CHB	Phase II Completed Phase I/II	PDL, Boehringer Mannheim and Novartis
PROTOVIR (Human Anti-Cytomegalovirus Antibody)	CMV infections in BMT	Phase II	PDL, Boehringer Mannheim and Novartis
SMART Anti-L-Selectin Antibody	Trauma, adult respiratory distress syndrome ("ARDS"), reperfusion injury	Preclinical	PDL and Boehringer Mannheim
SMART Anti-E/P-Selectin Antibody	Stroke, trauma, certain autoimmune diseases (e.g., psoriasis), asthma	Preclinical	PDL
SMART Anti-CD3 Antibody	Organ transplant rejection and certain autoimmune diseases	Preclinical	PDL
SMART Anti-Gamma Interferon Antibody	Certain autoimmune diseases (e.g., inflammatory bowel disease)	Preclinical	PDL
SMART 1D10 Antibody	B-cell lymphoma	Preclinical	PDL
SMART ABL 364 Antibody	Certain epithelial cell cancers including breast, lung and colon	Preclinical	PDL and Novartis
Human Anti-VZV Antibody	Shingles (herpes zoster)	Preclinical	PDL and Novartis
Human Anti-HSV Antibody	Neonatal and genital herpes	Preclinical	PDL and Novartis

IN CONNECTION WITH THIS OFFERING, THE UNDERWRITERS MAY OVER-ALLOT OR EFFECT TRANSACTIONS WHICH STABILIZE OR MAINTAIN THE MARKET PRICE OF THE COMPANY'S COMMON STOCK AT A LEVEL ABOVE THAT WHICH MIGHT OTHERWISE PREVAIL IN THE OPEN MARKET. SUCH TRANSACTIONS MAY BE EFFECTED ON THE NASDAQ NATIONAL MARKET, OR OTHERWISE. SUCH STABILIZING, IF COMMENCED, MAY BE DISCONTINUED AT ANY TIME.

IN CONNECTION WITH THIS OFFERING, THE UNDERWRITERS AND OTHER SELLING GROUP MEMBERS MAY ENGAGE IN PASSIVE MARKET MAKING TRANSACTIONS IN THE COMPANY'S COMMON

STOCK ON THE NASDAQ NATIONAL MARKET IN ACCORDANCE WITH RULE 10B-6A UNDER THE EXCHANGE ACT. SEE "UNDERWRITING."

## PROSPECTUS SUMMARY

The following summary is qualified in its entirety by the more detailed information and financial statements (including the notes thereto) appearing elsewhere in this Prospectus or incorporated herein by reference. Unless otherwise indicated, all information in this Prospectus assumes no exercise of the over-allotment option granted to the Underwriters. An investment in the shares of Common Stock offered hereby involves a high degree of risk. Prospective investors should consider carefully the information provided under "Risk Factors."

Protein Design Labs, Inc. ("PDL" or the "Company") is a leader in the development of humanized and human monoclonal antibodies for the prevention and treatment of a variety of disease conditions, including autoimmune diseases, inflammatory conditions, cancers and viral infections. The Company uses proprietary computer software and other technologies to develop its SMART humanized antibodies for potential use as effective pharmaceuticals without the limitations of mouse-derived (murine) antibodies. PDL believes that its technologies are broadly applicable to a variety of diseases, as demonstrated by the Company's diverse product development pipeline and its collaborative arrangements with eight pharmaceutical companies. The Company and its collaborative partners currently have four product candidates in multiple clinical trials and numerous additional product candidates in preclinical studies. The Company's most advanced potential product, Zenapax, has successfully completed two multinational Phase III clinical trials for the prevention of kidney transplant rejection. In 1996, PDL received U.S. and European patents that the Company believes cover most humanized antibodies, and that may lead to additional corporate partnering, patent licensing and other revenue opportunities.

The Company's four compounds in clinical development are as follows:

**Zenapax (SMART Anti-Tac Antibody).** Zenapax is a humanized antibody developed for the prevention of organ transplant rejection and the potential treatment of certain autoimmune diseases and cancers. The Company has licensed to Roche exclusive worldwide marketing rights to Zenapax. In addition to bearing all development costs for Zenapax, Roche has provided PDL \$19.5 million in licensing fees, milestone payments, research funding and equity investments. In two multinational Phase III clinical trials conducted by Roche, Zenapax, in conjunction with standard immunosuppressive therapies, reduced the incidence of rejection episodes in kidney transplant recipients by 37% and 40%, respectively, compared to standard therapies alone. Roche has stated that it plans to file in the first half of 1997 for approval to market Zenapax in the U.S., Canada and Europe. In addition, the Company believes that Zenapax may have potential to treat certain autoimmune diseases. Proof-of-concept clinical trials have commenced for uveitis and are planned for psoriasis.

**SMART M195 Antibody.** SMART M195 is a humanized antibody developed for the treatment of myeloid leukemia, the most prevalent form of leukemia in adults. SMART M195 currently is in a Phase II/III trial for the treatment of acute myelogenous leukemia ("AML") in combination with conventional chemotherapy, and a separate Phase II trial for acute promyelocytic leukemia ("APL"), a subtype of AML.

**OST 577 (Human Anti-Hepatitis B Antibody).** OST 577 is a fully human antibody for the treatment of chronic hepatitis B ("CHB"). OST 577 has completed Phase I/II trials in patients with CHB and in patients undergoing liver transplantation for end-stage liver disease due to CHB. A Phase II trial in CHB patients is being conducted by the Company's collaborative partner Boehringer Mannheim, which has licensed development and marketing rights to this product candidate outside of North America, and a Phase II/III trial in liver transplant patients is being designed. In addition to sharing in product development costs, Boehringer Mannheim has provided PDL \$117 million in equity investments, license fees, milestone payments and research and development funding for this and other products.

**PROTOVIR (Human Anti-Cytomegalovirus Antibody).** PROTOVIR is a fully human antibody in a Phase II clinical trial for the prevention of cytomegalovirus ("CMV") infections in bone marrow transplant ("BMT") recipients, for which patient accrual has been completed.

PDL's business strategy is to leverage its technologies, research expertise and intellectual property in the field of antibodies to become a profitable, research-based biopharmaceutical company that manufactures and, in North America, markets its own products. Key aspects of PDL's strategy are to: (i) expand the Company's product portfolio to provide multiple product candidates to treat a variety of diseases and conditions; (ii) establish collaborative relationships with pharmaceutical companies to reduce development costs and risks and to enhance commercial opportunities; (iii) leverage its patent position by licensing certain rights in exchange for near-term revenues and future royalty opportunities; and (iv) retain and obtain North American marketing or co-promotion rights to certain products to provide for greater revenue opportunities.

The Company actively seeks partnerships with pharmaceutical companies. The breadth of the Company's antibody technology and its patent position are key assets in attracting other companies to enter into such collaborative relationships with the Company. In one type of collaborative arrangement, the Company licenses certain marketing rights to one or more potential products developed by PDL in return for a licensing fee, research funding and milestone payments, and royalties on potential product sales. In another type of arrangement, PDL uses its proprietary technology to develop a SMART antibody based on a promising murine antibody developed by its corporate partner. In such cases, PDL typically receives a licensing fee and other payments, royalties on potential sales and, in some cases, an option to co-promote in North America.

The following table lists the Company's collaborative relationships. For additional information concerning these arrangements, see "Business -- Collaborative and Licensing Arrangements."

PARTNER	POTENTIAL PRODUCTS	YEAR INITIATED	RIGHTS OF PARTNER
Roche	Zenapax	1989	Worldwide
Novartis	SMART ABL 364 Antibody	1990	Co-promotion worldwide
	Human anti-viral antibodies	1993	Certain co-promotion rights
Yamanouchi	SMART Anti-Platelet Antibody	1991	Worldwide
Kanebo	SMART M195 Antibody	1992	Asia
Boehringer Mannheim	OST 577	1993	Rights in various geographic regions outside North America
	PROTOVIR		
	SMART Anti-L-Selectin Antibody		
Mochida	SMART antibody for certain infectious diseases	1995	Worldwide; PDL has option to co-promote in North America
Japanese collaborator	SMART antibody for cancer and certain other diseases	1996	Worldwide; PDL has option to co-promote in North America
Roche	SMART antibody for rheumatoid arthritis	1996	Worldwide
Genetics Institute (a subsidiary of American Home Products)	SMART antibodies for autoimmune diseases	1996	Worldwide; PDL has option to co-promote in North America

The Company was incorporated in Delaware in July 1986. The Company's executive offices are located at 2375 Garcia Avenue, Mountain View, California 94043 and its telephone number at that location is (415) 903-3700.

Protein Design Labs, the PDL logo and PROTOVIR are registered trademarks of the Company, and SMART is a trademark of the Company. Zenapax and CellCept are registered U.S. trademarks of Hoffmann-La Roche Inc. All other company names and trademarks included in this Prospectus are trademarks, registered trademarks or trade names of their respective owners.

## THE OFFERING

Common Stock offered by the Company.....	2,000,000 shares
Common Stock offered by the Selling Stockholder.....	750,000 shares
Common Stock to be outstanding after the offering.....	17,759,089 shares(1)
Use of proceeds.....	Working capital and general corporate purposes; manufacturing, preclinical and clinical development; research activities, including investigation of new technologies; leasing or acquiring additional facilities; and potential acquisition of complementary technologies, product candidates or companies. See "Use of Proceeds."
Nasdaq National Market symbol.....	PDLI

SUMMARY FINANCIAL INFORMATION  
(IN THOUSANDS, EXCEPT PER SHARE DATA)

	YEARS ENDED DECEMBER 31,				
	1992	1993	1994	1995	1996
STATEMENTS OF OPERATIONS DATA:					
Total revenues.....	\$8,385	\$16,800	\$15,209	\$17,613	\$ 22,600
Total costs and expenses.....	9,305	22,732	20,425	25,967	34,396
Net loss.....	\$ (920)	\$(5,932)	\$(5,216)	\$(8,354)	\$(11,796)
Net loss per share.....	\$(0.07)	\$ (0.47)	\$ (0.37)	\$ (0.54)	\$ (0.76)
Common shares used in computation of net loss per share.....	12,491	12,747	14,060	15,343	15,604

	DECEMBER 31, 1996	
	ACTUAL	AS ADJUSTED(2)
BALANCE SHEET DATA:		
Cash, cash equivalents and investments.....	\$ 99,667	\$166,835
Working capital.....	74,221	141,389
Total assets.....	110,331	177,499
Accumulated deficit.....	(35,507)	(35,507)
Total stockholders' equity.....	105,112	172,280

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- (1) Based on shares outstanding as of December 31, 1996. Excludes options outstanding at December 31, 1996, to purchase 1,941,432 shares at a weighted average exercise price of \$18.44, of which options to purchase 774,813 shares were then exercisable.
- (2) As adjusted to give effect to the sale by the Company of 2,000,000 shares of Common Stock being offered hereby at an assumed public offering price of \$35.75 per share and the application of the estimated net proceeds therefrom. See "Use of Proceeds."

This Prospectus contains forward-looking statements which involve risks and uncertainties. The Company's actual results may differ significantly from the results discussed in the forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed in "Risk Factors" as well as those discussed elsewhere in this Prospectus.

## RISK FACTORS

An investment in the shares of Common Stock offered hereby is speculative in nature and involves a high degree of risk. In addition to the other information contained in the Prospectus, the following factors should be considered carefully in evaluating the Company and its business before purchasing the shares of Common Stock offered hereby. This Prospectus contains forward-looking statements. Discussions containing such forward-looking statements may be found in the material set forth under "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Business" as well as in the Prospectus generally. Actual events or results may differ materially from those discussed in this Prospectus.

**HISTORY OF LOSSES; FUTURE PROFITABILITY UNCERTAIN.** The Company has a history of operating losses and expects to incur substantial additional expenses with resulting quarterly losses over at least the next several years as it continues to develop its potential products and to devote significant resources to preclinical studies, clinical trials, and manufacturing. As of December 31, 1996, the Company had accumulated net losses of approximately \$35.5 million. To date, the Company has not received regulatory approval to distribute any products. The time and resource commitment required to achieve market success for any individual product is extensive and uncertain and in some cases controlled by the Company's collaborators. No assurance can be given that the Company's, or any of its collaborative partners', product development efforts will be successful, that required regulatory approvals can be obtained, that potential products can be manufactured at an acceptable cost and with appropriate quality, or that any approved products can be successfully marketed.

The Company has not generated any material revenues from product sales or royalties from licenses to the Company's technology, and potential products that may be marketed by the Company, if any, are not expected to be approved for marketing for at least the next several years. The Company's revenues to date have consisted, and for the near future are expected to consist, principally of research and development funding, licensing and signing fees and milestone payments from pharmaceutical companies under collaborative research and development agreements. These revenues may vary considerably from quarter to quarter and from year to year, and revenues in any period may not be predictive of revenues in any subsequent period, and variations may be significant depending on the terms of the particular agreements. In particular, revenues for the fourth quarter of 1996, which included several non-recurring payments in connection with new licensing agreements, may not be indicative of revenues in future quarters. While the Company historically has received significant revenue pursuant to certain of its collaborations, the Company has recognized substantially all of the research and development and milestone revenue due under these collaborations. Although the Company anticipates entering into new collaborations from time to time, the Company presently does not anticipate realizing non-royalty revenue from its new and proposed collaborations at levels commensurate with the revenue historically recognized under its older collaborations. Moreover, the Company anticipates that its operating expenses will continue to increase significantly as the Company increases its research and development, manufacturing, preclinical, clinical, administrative and patent activities. Accordingly, in the absence of substantial revenues from new corporate collaborations, royalties on Zenapax sales or other sources, the Company expects to incur substantial and increased operating losses in the foreseeable future as certain of its earlier stage potential products move into later stage clinical development, as additional potential products are selected as clinical candidates for further development, as the Company invests in additional manufacturing facilities or capacity, as the Company defends or prosecutes its patents and patent applications, and as the Company invests in research or acquires additional technologies, product candidates or businesses. The amount of net losses and the time required to reach sustained profitability are highly uncertain. To achieve sustained profitable operations, the Company, alone or with its collaborative partners, must successfully discover, develop, manufacture, obtain regulatory approvals for and market its potential products. No assurances can be given that the Company will be able to achieve or sustain profitability, and results are expected to fluctuate from quarter to quarter.

**UNCERTAINTY OF CLINICAL TRIAL RESULTS.** Before obtaining regulatory approval for the commercial sale of any of its potential products, the Company must demonstrate through preclinical studies and clinical trials that the product is safe and efficacious for use in the clinical indication for which approval is sought. There can be no assurance that the Company will be permitted to undertake or continue clinical trials for any of its potential products or, if permitted, that such products will be demonstrated to be safe and efficacious. Moreover, the

results from preclinical studies and early clinical trials may not be predictive of results that will be obtained in later-stage clinical trials. Thus there can be no assurance that the Company's present or future clinical trials will demonstrate the safety and efficacy of any potential products or will result in approval to market products.

In advanced clinical development, numerous factors may be involved that may lead to different results in larger, later-stage trials from those obtained in earlier stage trials. For example, early stage trials usually involve a small number of patients and thus may not accurately predict the actual results regarding safety and efficacy that may be demonstrated with a large number of patients in a later-stage trial. Also, differences in the clinical trial design between an early-stage and late-stage trial may cause different results regarding the safety and efficacy of a product to be obtained. In addition, many early stage trials are unblinded and based on qualitative evaluations by clinicians involved in the performance of the trial, whereas later stage trials are generally required to be blinded in order to provide more objective data for assessing the safety and efficacy of the product. The Company may at times elect to aggressively enter potential products into Phase I/II trials to determine preliminary efficacy in specific indications. In addition, in certain cases the Company has commenced clinical trials without conducting preclinical animal testing where an appropriate animal model does not exist. Similarly, the Company or its partners at times will conduct potentially pivotal Phase II/III or Phase III trials based on limited Phase I or Phase I/II data. As a result of these and other factors, the Company anticipates that only some of its potential products will show efficacy in clinical trials and that the number of products that fail to show efficacy may be significant.

The Company is conducting a Phase II trial evaluating PROTOVIR for the prevention of CMV infections in bone marrow transplant recipients based on very limited and inconclusive data from Phase I trials primarily designed to obtain safety data. Thus, there can be no assurance that the results of this trial will be favorable.

The Company and a number of other companies in the biotechnology industry have suffered significant setbacks in advanced clinical trials, even after promising results in earlier-stage trials. For example, in June 1995, Roche Holding Ltd and its subsidiary Hoffmann-La Roche Inc. ("Roche") and the Company announced the results of a Phase II/III clinical trial using the Company's SMART Anti-Tac Antibody, Zenapax, for the prevention of graft-versus-host disease ("GvHD"). The analysis of this data led Roche to conclude that Zenapax was not effective in reducing the incidence of GvHD in the patient population studied. In addition, in August 1996, the Company announced the halt of a Phase II/III clinical trial using PROTOVIR for treatment of CMV retinitis in AIDS patients conducted by the National Eye Institute ("NEI SOCA") due to lack of evidence of efficacy. Based on the findings and actions in the above study, enrollment in a Phase II clinical trial for treatment of CMV retinitis in AIDS patients conducted by the National Institute of Allergy and Infectious Disease ("NIAID ACTG") had been suspended, and the trial was recently terminated.

**DEPENDENCE ON COLLABORATIVE PARTNERS.** The Company has collaborative agreements with several pharmaceutical companies to develop, manufacture and market certain potential products, which include the most advanced products under development by the Company. The Company granted to its collaborative partners certain exclusive rights to commercialize the products covered by these collaborative agreements. In some cases, the Company is relying on its collaborative partners to conduct clinical trials, to compile and analyze the data received from such trials, to obtain regulatory approvals and, if approved, to manufacture and market these licensed products, including Zenapax and the Company's Human Anti-Hepatitis B Virus Antibody (OST 577). As a result, the Company often has little or no control over the development of these potential products and little or no opportunity to review clinical data prior to or following public announcement.

The Company's collaborative research agreements are generally terminable by its partners on short notice. Suspension or termination of certain of the Company's current collaborative research agreements could have a material adverse effect on the Company's operations and could significantly delay the development of the affected products. Continued funding and participation by collaborative partners will depend not only on the timely achievement of research and development objectives by the Company and the successful achievement of clinical trial goals, neither of which can be assured, but also on each collaborative partner's

own financial, competitive, marketing and strategic considerations. Such considerations include, among other things, the commitment of management of the collaborative partners to the continued development of the licensed products, the relationships among the individuals responsible for the implementation and maintenance of the collaborative efforts, the relative advantages of alternative products being marketed or developed by the collaborators or by others, including their relative patent and proprietary technology positions, and their ability to manufacture potential products successfully. In this regard, the Company has, at times, experienced difficulty in its continuing relationship with Boehringer Mannheim GmbH ("Boehringer Mannheim") due to a number of factors, including disagreements regarding the timing of the initiation and design of certain proposed clinical trials involving the development of certain products licensed to Boehringer Mannheim, particularly OST 577.

In addition, certain collaborative partners have developed and may be developing competitive products that may result in delay or a relatively smaller resource commitment to product launch and support efforts than might otherwise be obtained if the potentially competitive product were not under development or being marketed. For example, Roche controls the development of Zenapax, the most advanced of the Company's products in development, and the Company is dependent upon the resources and activities of Roche to pursue commercialization of Zenapax in order for the Company to achieve milestones or royalties from the development of this product. There can be no assurance that Roche will proceed to bring this product to market in a rapid and timely manner, if at all, or if marketed, that other independently developed products of Roche (including its recently introduced product CellCept) or others will not compete with or prevent Zenapax from achieving meaningful sales. Also Roche has stated that it plans to conduct or support other clinical trials of Zenapax in autoimmune indications. There can be no assurance that Roche will continue or pursue additional clinical trials in these indications or that, even if the additional clinical trials are completed, Zenapax will be shown to be safe and efficacious, or that the trials will result in approval to market Zenapax in these indications. Any adverse event or announcement related to Zenapax would have a material adverse effect on the business and financial condition of the Company.

Further, because the Company expects, in some cases, to rely on its contractual rights to access data collected by its collaborative partners in various phases of its clinical development efforts, the Company is dependent on the continued satisfaction by such parties of their contractual obligations to provide such access and cooperate with the Company in the preparation and submission of appropriate filings with the FDA and equivalent foreign government regulatory agencies. The Company currently relies on Boehringer Mannheim for the manufacturing and clinical development of OST 577. Boehringer Mannheim has marketing rights to this antibody in countries outside of North America. There can be no assurance that Boehringer Mannheim will provide timely access to the manufacturing and clinical data, that the U.S. Food and Drug Administration ("FDA") will permit the Company to rely on that data or that the trials conducted by Boehringer Mannheim will produce data appropriate for approval by the FDA. If the Company were unable to rely on the clinical data collected by Boehringer Mannheim or its other collaborative partners, the Company may be required to repeat clinical trials or perform supplemental clinical trials in order to achieve regulatory approval in North America. Compliance with these requirements could significantly delay commercialization efforts and require substantially greater investment by the Company, either of which would have a material adverse effect on the business and financial condition of the Company.

The Company's ability to enter into new collaborations and the willingness of the Company's existing collaborators to continue development of the Company's potential products is dependent upon, among other things, the Company's patent position with respect to such products. In this regard, the Company recently was issued patents by the U.S. Patent and Trademark Office ("PTO") and European Patent Office ("EPO") with claims that the Company believes, based on its survey of the scientific literature, cover most humanized antibodies. Eighteen notices of opposition to the European patent have been filed with the EPO, and either or both patents may be further challenged through administrative or judicial proceedings. The Company has applied for similar patents in Japan and other countries. The Company recently entered into several new collaborations related to the humanization of certain antibodies whereby it granted nonexclusive licenses to its patent rights relating to such antibodies, and the Company anticipates entering into additional collaborations partially as a result of the Company's patent and patent applications with respect to humanized antibodies.

As

a result, the inability of the Company to successfully defend the opposition proceeding before the EPO or, if necessary, to defend patents granted by the PTO or EPO or to successfully prosecute the corresponding patent applications in Japan or other countries could adversely affect the ability of the Company to enter into additional collaborations and could therefore have a material adverse effect on the Company's business or financial condition.

**LIMITED EXPERIENCE WITH CLINICAL TRIALS; RISK OF DELAY.** The Company has conducted only a limited number of clinical trials to date. There can be no assurance that the Company will be able to successfully commence and complete all of its planned clinical trials without significant additional resources and expertise. In addition, there can be no assurance that the Company will meet its contemplated development schedule for any of its potential products. The inability of the Company or its collaborative partners to commence or continue clinical trials as currently planned, to complete the clinical trials on a timely basis or to demonstrate the safety and efficacy of its potential products, would have a material adverse effect on the business and financial condition of the Company.

The rate of completion of the Company's or its collaborators' clinical trials is significantly dependent upon, among other factors, the rate of patient enrollment. Patient enrollment is a function of many factors, including, among others, the size of the patient population, perceived risks and benefits of the drug under study, availability of competing therapies, access to reimbursement from insurance companies or government sources, design of the protocol, proximity of and access by patients to clinical sites, patient referral practices, eligibility criteria for the study in question and efforts of the sponsor of and clinical sites involved in the trial to facilitate timely enrollment in the trial. Delays in the planned rate of patient enrollment may result in increased costs and expenses in completion of the trial or may require the Company to undertake additional studies in order to obtain regulatory approval if the applicable standard of care changes in the therapeutic indication under study. For example, patient accrual in the Company's ongoing Phase II/III trial of the SMART M195 Antibody in myeloid leukemia has been negatively affected by changes in referral patterns, with such patients now more commonly being treated in local hospitals rather than being referred to tertiary care hospitals where the Company's trial is being conducted. There can be no assurance that any actions by the Company to accelerate accrual in this trial will be successful or, to the extent that they involve modifications in the design of the trial, will not cause that trial to be considered a Phase II clinical trial and thereby require one or more additional potentially pivotal trials to be conducted.

**UNCERTAINTY OF PATENTS AND PROPRIETARY TECHNOLOGY; OPPOSITION PROCEEDINGS.** The Company's success is significantly dependent on its ability to obtain patent protection for its products and technologies and to preserve its trade secrets and operate without infringing on the proprietary rights of third parties. PDL files and prosecutes patent applications to protect its inventions. No assurance can be given that the Company's pending patent applications will result in the issuance of patents or that any patents will provide competitive advantages or will not be invalidated or circumvented by its competitors. Moreover, no assurance can be given that patents are not issued to, or patent applications have not been filed by, other companies which would have an adverse effect on the Company's ability to use, manufacture or market its products or maintain its competitive position with respect to its products. Other companies obtaining patents claiming products or processes useful to the Company may bring infringement actions against the Company. As a result, the Company may be required to obtain licenses from others or not be able to use, manufacture or market its products. Such licenses may not be available on commercially reasonable terms, if at all.

Patents in the U.S. are issued to the party that is first to invent the claimed invention. Since patent applications in the U.S. are maintained in secrecy until patents issue, PDL cannot be certain that it was the first inventor of the inventions covered by its pending patent applications or that it was the first to file patent applications for such inventions. The patent positions of biotechnology firms generally are highly uncertain and involve complex legal and factual questions. No consistent policy has emerged regarding the breadth of claims in biotechnology patents, and patents of biotechnology products are uncertain so that even issued patents may later be modified or revoked by the PTO or the courts in proceedings instituted by third parties. Moreover, the issuance of a patent in one country does not assure the issuance of a patent with similar claims in another country and claim interpretation and infringement laws vary among countries, so the extent of any patent protection may vary in different territories.

PDL has several patents and has exclusively licensed certain patents from Novartis. In particular with respect to humanization technology, in June 1996, PDL was issued a U.S. patent covering Zenapax and certain related antibodies against the IL-2 receptor. In addition, PDL is currently prosecuting other patent applications with the PTO and in other countries, including members of the European Patent Convention, Canada, Japan and Australia. The patent applications are directed to various aspects of PDL's SMART and human antibodies, antibody technology and other programs, and include claims relating to compositions of matter, methods of preparation and use of a number of PDL's compounds. However, PDL does not know whether any pending applications will result in the issuance of patents or whether such patents will provide protection of commercial significance. Further, there can be no assurance that PDL's patents will prevent others from developing competitive products using related technology.

In January and December 1996, PDL was issued patents by the EPO and PTO, respectively. PDL believes the patent claims cover Zenapax and, based on its review of the scientific literature, most humanized antibodies. The EPO (but not PTO) procedures provide for a nine-month opposition period in which other parties may submit arguments as to why the patent was incorrectly granted and should be withdrawn or limited. The entire opposition process, including appeals, may take several years to complete, and during this lengthy process, the validity of the EPO patent will be at issue, which may limit the Company's ability to negotiate or collect royalties or to negotiate future collaborative research and development agreements based on this patent. Eighteen notices of opposition to PDL's European patent were filed during the opposition period, including oppositions by major pharmaceutical and biotechnology companies, which cited references and made arguments not considered by the EPO and PTO before grant of the respective patents. The oppositions currently are being reviewed by the Company's patent counsel. PDL intends to vigorously defend the European and, if necessary, the U.S. patent; however, there can be no assurance that the Company will prevail in the opposition proceedings or any litigation contesting the validity or scope of these patents. In addition, such proceedings or litigation, or any other proceedings or litigation to protect the Company's intellectual property rights or defend against infringement claims by others, could result in substantial costs and a diversion of management's time and attention, which could have a material adverse effect on the business and financial condition of the Company.

A number of companies, universities and research institutions have filed patent applications or received patents in the areas of antibodies and other fields relating to PDL's programs. Some of these applications or patents may be competitive with PDL's applications or contain claims that conflict with those made under PDL's patent applications or patents. Such conflict could prevent issuance of patents to PDL, provoke an interference with PDL's patents or result in a significant reduction in the scope or invalidation of PDL's patents, if issued. An interference is an administrative proceeding conducted by the PTO to determine the priority of invention and other matters relating to the decision to grant patents. Moreover, if patents are held by or issued to other parties that contain claims relating to PDL's products or processes, and such claims are ultimately determined to be valid, no assurance can be given that PDL would be able to obtain licenses to these patents at a reasonable cost, if at all, or to develop or obtain alternative technology.

The Company is aware that Celltech Limited ("Celltech") has been granted a patent by the EPO covering certain humanized antibodies, which PDL has opposed, and Celltech has announced that it has received a notice of allowance of a corresponding U.S. patent (the "U.S. Adair Patent") and expects the patent to issue in early 1997. Because U.S. patent applications are maintained in secrecy, PDL cannot review the scope of the claims in the U.S. Adair Patent. Accordingly, there can be no assurance that such claims would not cover any of PDL's SMART antibodies or be competitive with or conflict with claims in PDL's patents or patent applications. If the U.S. Adair Patent issues and if it is determined to be valid and to cover any of PDL's SMART antibodies, there can be no assurance that PDL would be able to obtain a license on commercially reasonable terms, if at all. If the claims of the U.S. Adair Patent conflict with claims in PDL's patents or patent applications, there can be no assurance that an interference would not be declared by the PTO, which could take several years to resolve and could involve significant expense to the Company. Also, such conflict could prevent issuance of patents to PDL relating to humanization of antibodies or result in a significant reduction in the scope or invalidation of PDL's patents, if issued. Moreover, uncertainty as to the validity or scope of patents issued to PDL relating generally to humanization of antibodies may limit the

Company's ability to negotiate or collect royalties or to negotiate future collaborative research and development agreements based on these patents.

PDL has obtained a nonexclusive license under a patent held by Celltech (the "Boss Patent") relating to PDL's current process for producing SMART and human antibodies. An interference proceeding was declared in early 1991 by the PTO between the Boss Patent and a patent application filed by Genentech, Inc. ("Genentech") to which PDL does not have a license. PDL is not a party to this proceeding, and the timing and outcome of the proceeding or the scope of any patent that may be subsequently issued cannot be predicted. If the Genentech patent application were held to have priority over the Boss Patent, and if it were determined that PDL's processes and products were covered by a patent issuing from such patent application, PDL may be required to obtain a license under such patent or to significantly alter its processes or products. There can be no assurance that PDL would be able to successfully alter its processes or products to avoid infringing such patent or to obtain such a license on commercially reasonable terms, if at all, and the failure to do so could have a material adverse effect on PDL.

The Company is aware that Lonza Biologics, Inc. has a patent issued in Europe to which PDL does not have a license (although Roche has advised the Company that it has a license covering Zenapax), which may cover the process the Company uses to produce its potential products. If it were determined that PDL's processes were covered by such patent, PDL may be required to obtain a license under such patent or to significantly alter its processes or products, if necessary to manufacture or import its products in Europe. There can be no assurance that PDL would be able to successfully alter its processes or products to avoid infringing such patent or to obtain such a license on commercially reasonable terms, if at all, and the failure to do so could have a material adverse effect on the business and financial condition of the Company.

Also, Genentech has patents in the U.S. and Europe that relate to chimeric antibodies. The European patent is currently in the opposition process. If Genentech were to assert that the Company's SMART antibodies infringe these patents, PDL may have to choose whether to seek a license or to challenge in court the validity of such patents or Genentech's claim of infringement. There can be no assurance that PDL would be successful in either obtaining such a license on commercially reasonable terms, if at all, or that it would be successful in such a challenge of the Genentech patents, and the failure to do so would have a material adverse effect on the business and financial condition of the Company.

In addition to seeking the protection of patents and licenses, PDL also relies upon trade secrets, know-how and continuing technological innovation which it seeks to protect, in part, by confidentiality agreements with employees, consultants, suppliers and licensees. There can be no assurance that these agreements will not be breached, that PDL would have adequate remedies for any breach or that PDL's trade secrets will not otherwise become known or independently developed by competitors.

**ABSENCE OF MANUFACTURING EXPERIENCE; DEPENDENCE ON MANUFACTURING BY BOEHRINGER MANNHEIM.** Of the products developed by the Company which are currently in clinical development, Roche is responsible for manufacturing Zenapax and Boehringer Mannheim is responsible for manufacturing OST 577. The Company intends to manufacture the SMART M195 Antibody, PROTOVIR and some of its other products in preclinical development. PDL currently leases approximately 45,000 square feet housing its manufacturing facility in Plymouth, Minnesota. PDL intends to continue to manufacture potential products for use in preclinical and clinical trials using this manufacturing facility in accordance with standard procedures that comply with current Good Manufacturing Practices ("cGMP") and appropriate regulatory standards. The manufacture of sufficient quantities of antibody products in accordance with such standards is an expensive, time-consuming and complex process and is subject to a number of risks that could result in delays. For example, PDL has experienced some difficulties in the past in manufacturing certain potential products on a consistent basis. Production interruptions, if they occur, could significantly delay clinical development of potential products, reduce third party or clinical researcher interest and support of proposed clinical trials, and possibly delay commercialization of such products and impair their competitive position, which would have a material adverse effect on the business and financial condition of the Company.

PDL has no experience in manufacturing commercial quantities of its potential products and currently does not have sufficient capacity to manufacture its potential products on a commercial scale. In order to

obtain regulatory approvals and to expand its capacity to produce its products for commercial sale at an acceptable cost, PDL will need to improve and expand its existing manufacturing capabilities, including demonstration to the FDA of its ability to manufacture its products using controlled, reproducible processes. Accordingly, the Company is evaluating plans to improve and expand the capacity of its current manufacturing facility. Such plans, if instituted, would result in substantial costs to the Company and may require a suspension of manufacturing operations during construction. There can be no assurance that construction delays would not occur, and any such delays could impair the Company's ability to produce adequate supplies of its potential products for clinical use or commercial sale on a timely basis. There can be no assurance that PDL will successfully improve and expand its manufacturing capability sufficiently to obtain necessary regulatory approvals and to produce adequate commercial supplies of its potential products on a timely basis. Failure to do so could delay commercialization of such products and impair their competitive position, which could have a material adverse effect on the business or financial condition of the Company.

In addition, PDL and Boehringer Mannheim have agreed to negotiate additional agreements under which each company could manufacture and supply the other with certain of the antibodies covered by the agreement. There can be no assurance that the parties will enter into an agreement that will provide for the Company's potential product requirements to be met in a consistent, timely and cost effective manner. Specifically, with respect to OST 577, the Company currently does not manufacture this product and has no alternative manufacturing sources for this product. In the event that Boehringer Mannheim and the Company are unable to reach an acceptable agreement, or if material is not supplied in accordance with such an agreement, there can be no assurance that the Company could make alternative manufacturing arrangements on a timely basis, if at all, and the inability to do so could have a material adverse effect on the business and financial condition of the Company.

**UNCERTAINTIES RESULTING FROM MANUFACTURING CHANGES.** Manufacturing of antibodies for use as therapeutics in compliance with regulatory requirements is complex, time-consuming and expensive. When certain changes are made in the manufacturing process, it is necessary to demonstrate to the FDA that the changes have not caused the resulting drug material to differ significantly from the drug material previously produced, if results of prior preclinical studies and clinical trials performed using the previously produced drug material are to be relied upon in regulatory filings. Such changes could include, for example, changing the cell line used to produce the antibody, changing the fermentation or purification process or moving the production process to a new manufacturing plant. Depending upon the type and degree of differences between the newer and older drug material, various studies could be required to demonstrate that the newly produced drug material is sufficiently similar to the previously produced drug material, possibly requiring additional animal studies or human clinical trials. Manufacturing changes have been made or are likely to be made for the production of PDL's products currently in clinical development. There can be no assurance that such changes will not result in delays in development or regulatory approvals or, if occurring after regulatory approval, in reduction or interruption of commercial sales. Such delays could have an adverse effect on the competitive position of those products and could have a material adverse effect on the business and financial condition of the Company.

Roche has equipped a manufacturing facility that is expected to be used to produce Zenapax. Phase III trials of Zenapax in kidney transplantation were conducted using material produced for Roche by a third party contract manufacturer at a different facility using a different cell line and a different manufacturing process. Roche has produced Zenapax at its facility using the new cell line and process and has produced data indicating that the newly produced material is substantially similar to the material used in the Phase III clinical trials. However, there can be no assurance that changes in the manufacturing site or any other manufacturing changes by Roche will not cause delays in the development or commercialization of Zenapax. Such delays could have an adverse effect on the competitive position of Zenapax and could have a material adverse effect on the business and financial condition of the Company.

In addition, with respect to two of the antibodies in clinical development licensed from Novartis Pharmaceuticals Corporation ("Novartis") (formerly known as Sandoz Pharmaceuticals Corporation), PROTOVIR and OST 577, the cell lines developed by PDL for both antibodies and the production processes developed by PDL for PROTOVIR and Boehringer Mannheim for OST 577 are different from those utilized by Novartis for the manufacture of the antibody supplies used in earlier clinical trials. There can be no

assurance that this new material, when used in humans, will have the same characteristics or produce results similar to the antibody material originally developed and used by Novartis in earlier clinical trials. Accordingly, Boehringer Mannheim or the Company may be required to conduct additional laboratory or clinical testing, which could result in significant delays and/or additional expenses and could have a material adverse effect on the competitive position of these potential products and on the business and financial condition of the Company.

**DEPENDENCE ON SUPPLIERS.** The Company is dependent on outside vendors for the supply of raw materials used to produce its product candidates. The Company currently qualifies only one or a few vendors for its source of certain raw materials. Therefore, once a supplier's materials have been selected for use in the Company's manufacturing process, the supplier in effect becomes a sole or limited source of such raw materials to the Company due to the extensive regulatory compliance procedures governing changes in manufacturing processes. Although the Company believes it could qualify alternative suppliers, there can be no assurance that the Company would not experience a disruption in manufacturing if it experienced a disruption in supply from any of these sources. Any significant interruption in the supply of any of the raw materials currently obtained from such sources, or the time and expense necessary to transition a replacement supplier's product into the Company's manufacturing process, could disrupt its operations and have a material adverse effect on the business and financial condition of the Company. A problem or suspected problem with the quality of raw materials supplied could result in a suspension of clinical trials, notification of patients treated with products or product candidates produced using such materials, potential product liability claims, a recall of products or product candidates produced using such materials, and an interruption of supplies, any of which could have a material adverse effect on the business or financial condition of the Company.

**COMPETITION; RAPID TECHNOLOGICAL CHANGE.** The Company's potential products are intended to address a wide variety of disease conditions, including autoimmune diseases, inflammatory conditions, cancers and viral infections. Competition with respect to these disease conditions is intense and is expected to increase. This competition involves, among other things, successful research and development efforts, obtaining appropriate regulatory approvals, establishing and defending intellectual property rights, successful product manufacturing, marketing, distribution, market and physician acceptance, patient compliance, price and potentially securing eligibility for reimbursement or payment for the use of the Company's product. The Company believes its most significant competitors may be fully integrated pharmaceutical companies with substantial expertise in research and development, manufacturing, testing, obtaining regulatory approvals, marketing and securing eligibility for reimbursement or payment, and substantially greater financial and other resources than the Company. Smaller companies also may prove to be significant competitors, particularly through collaborative arrangements with large pharmaceutical companies. Furthermore, academic institutions, governmental agencies and other public and private research organizations conduct research, seek patent protection, and establish collaborative arrangements for product development, clinical development and marketing. These companies and institutions also compete with the Company in recruiting and retaining highly qualified personnel. The biotechnology and pharmaceutical industries are subject to rapid and substantial technological change. The Company's competitors may develop and introduce other technologies or approaches to accomplishing the intended purposes of the Company's products which may render the Company's technologies and products noncompetitive and obsolete.

In addition to currently marketed competitive drugs, the Company is aware of potential products in research or development by its competitors that address all of the diseases being targeted by the Company. These and other products may compete directly with the potential products being developed by the Company. In this regard, the Company is aware that potential competitors are developing antibodies or other compounds for treating autoimmune diseases, inflammatory conditions, cancers and viral infections. In particular, a number of other companies have developed and will continue to develop human anti-viral antibodies and humanized antibodies. In addition, protein design is being actively pursued at a number of academic and commercial organizations, and several companies have developed or may develop technologies that can compete with the Company's SMART and human antibody technologies. There can be no assurance that competitors will not succeed in more rapidly developing and marketing technologies and products that are more effective than the products being developed by the Company or that would render the Company's products or technology obsolete or noncompetitive. Further, there can be no assurance that the Company's

collaborative partners will not independently develop products competitive with those licensed to such partners by the Company, thereby reducing the likelihood that the Company will receive revenues under its agreements with such partners.

Any potential product that the Company succeeds in developing and for which it gains regulatory approval must then compete for market acceptance and market share. For certain of the Company's potential products, an important factor will be the timing of market introduction of competitive products. Accordingly, the relative speed with which the Company and competing companies can develop products, complete the clinical testing and approval processes, and supply commercial quantities of the products to the market is expected to be an important determinant of market success. Other competitive factors include the capabilities of the Company's collaborative partners, product efficacy and safety, timing and scope of regulatory approval, product availability, marketing and sales capabilities, reimbursement coverage, the amount of clinical benefit of the Company's products relative to their cost, method of administration, price and patent protection. There can be no assurance that the Company's competitors will not develop more efficacious or more affordable products, or achieve earlier product development completion, patent protection, regulatory approval or product commercialization than the Company. The occurrence of any of these events by the Company's competitors could have a material adverse effect on the business and financial condition of the Company.

**BROAD MANAGEMENT DISCRETION OVER USE OF PROCEEDS.** The primary purposes of the offering are to increase the Company's working capital and funds available for general corporate purposes, manufacturing, preclinical and clinical development, research activities, including investigations of new technologies, leasing or acquiring additional facilities and potential acquisition of complementary technologies, product candidates or businesses. The Company has not designated specific amounts of the net proceeds for particular purposes and expects that the funds generated from operations, if any, will contribute to meeting the Company's capital needs. Management of the Company will have broad discretion with respect to the use of the proceeds derived from the offering.

**NO ASSURANCE OF REGULATORY APPROVAL; GOVERNMENT REGULATION.** The manufacturing, testing and marketing of PDL's products are subject to regulation by numerous governmental authorities in the U.S. and other countries based upon their safety and efficacy. In the U.S., pharmaceutical products are subject to rigorous FDA regulation. The federal Food, Drug and Cosmetic Act ("FD&C Act"), Public Health Service Act ("PHS Act") and other federal, state and local regulations govern the manufacture, testing, labeling, storage, record keeping, clinical and nonclinical studies to assess safety and efficacy, approval, advertising and promotion of pharmaceutical products. The process of developing and obtaining approval for a new pharmaceutical product within this regulatory framework requires a number of years and the expenditure of substantial resources. There can be no assurance that necessary approvals will be obtained on a timely basis, if at all.

In addition to the requirement for FDA approval of each pharmaceutical product, each pharmaceutical product manufacturing facility must be registered with, and approved by, the FDA. The manufacturing and quality control procedures must conform to cGMP in order to receive FDA approval. Pharmaceutical product manufacturing establishments are subject to inspections by the FDA and local authorities as well as inspections by authorities of other countries. To supply pharmaceutical products for use in the U.S., foreign manufacturing establishments must comply with cGMP and are subject to periodic inspection by the FDA or by corresponding regulatory agencies in such countries under reciprocal agreements with the FDA. Moreover, pharmaceutical product manufacturing facilities may also be regulated by state, local and other authorities.

For marketing of pharmaceutical products outside the U.S., PDL is subject to foreign regulatory requirements governing marketing approval, and FDA and other U.S. export provisions should the pharmaceutical product be manufactured in the U.S. Requirements relating to the manufacturing, conduct of clinical trials, product licensing, promotion, pricing and reimbursement vary widely in different countries. Difficulties or unanticipated costs or price controls may be encountered by PDL or its licensees or marketing partners in their respective efforts to secure necessary governmental approvals to market the potential pharmaceutical products, which could delay or preclude PDL or its licensees or its marketing partners from marketing their potential pharmaceutical products.

The basic steps required by the FDA before a new pharmaceutical product for human use may be marketed in the U.S. include (i) preclinical laboratory and animal tests, (ii) submission to the FDA of an application for an Investigational New Drug ("IND") which must be reviewed by the FDA before clinical trials may begin, (iii) completion of adequate and well-controlled human clinical trials to establish the safety and efficacy of the pharmaceutical product for its intended use, (iv) as of May 1996 for therapeutic monoclonal antibodies, submission of a Biologics License Application ("BLA") to the FDA, and (v) FDA approval of the BLA prior to any commercial sale or shipment of the pharmaceutical product.

The FDA reviews the results of the trials and may discontinue them at any time for safety reasons or other reasons if they were deemed to be non-compliant with FDA regulations. There can be no assurance that Phase I, II or III clinical trials will be completed successfully within any specific time period, if at all, with respect to any of the Company's or its collaborators' pharmaceutical products, each of which is subject to such testing requirements.

Both before and after approval is obtained, a pharmaceutical product, its manufacturer and the holder of the BLA for the pharmaceutical product are subject to comprehensive regulatory oversight. The FDA may deny a BLA if applicable regulatory criteria are not satisfied, require additional testing or information or require postmarketing testing and surveillance to monitor the safety or efficacy of the pharmaceutical product. Moreover, even if regulatory approval is granted, such approval may be subject to limitations on the indicated uses for which the pharmaceutical product may be marketed. Further, approvals may be withdrawn if compliance with regulatory standards is not maintained or if problems with the pharmaceutical product occur following approval. Among the conditions for BLA approval is the requirement that the manufacturer of the pharmaceutical product comply with cGMP. In addition, under a BLA, the manufacturer continues to be subject to facility inspection and the applicant must assume responsibility for compliance with applicable pharmaceutical product and establishment standards. Violations of regulatory requirements at any stage may result in various adverse consequences, including FDA refusal to accept a license application, total or partial suspension of licensure, delay in approving or refusal to approve the pharmaceutical product or pending marketing approval applications, warning letters, fines, injunctions, withdrawal of the previously approved pharmaceutical product or marketing approvals and/or the imposition of criminal penalties against the manufacturer and/or BLA holders. In addition, later discovery of previously unknown problems may result in new restrictions on such pharmaceutical product, manufacturer and/or BLA holders, including withdrawal of the pharmaceutical product or marketing approvals and pharmaceutical product recalls or seizures.

**LIMITED SALES AND MARKETING EXPERIENCE.** The Company intends to market and sell certain of its products, if successfully developed and approved, through a direct sales force in the U.S. and through sales and marketing partnership arrangements outside the U.S. However, PDL does not expect to establish a direct sales capability for at least the next few years. The Company has no history or experience in sales, marketing or distribution. To market its products directly, the Company must either establish a marketing group and direct sales force or obtain the assistance of another company. There can be no assurance that the Company will be able to establish sales and distribution capabilities or succeed in gaining market acceptance for its products. If the Company enters into co-promotion or other marketing or licensing arrangements with established pharmaceutical companies, the Company's revenues will be subject to the payment provisions of such arrangements and dependent on the efforts of third parties. There can be no assurance that the Company will be able to successfully establish a direct sales force or that its collaborators will effectively market any of the Company's potential products, and the inability of the Company or its collaborators to do so could have a material adverse effect on the business and financial condition of the Company.

**DEPENDENCE ON KEY PERSONNEL.** The Company's success is dependent to a significant degree on its key management personnel. To be successful, the Company will have to retain its qualified clinical, manufacturing, scientific and management personnel. The Company faces competition for personnel from other companies, academic institutions, government entities and other organizations. There can be no assurance that the Company will be successful in hiring or retaining qualified personnel, and its failure to do so could have a material adverse effect on the business and financial condition of the Company.

**PRODUCT LIABILITY AND INSURANCE.** The Company faces an inherent business risk of exposure to product liability claims in the event that the use of products during research and development efforts or after commercialization results in adverse effects. There can be no assurance that the Company will avoid significant product liability exposure. The Company maintains product liability insurance for clinical trials. However, there can be no assurance that such coverage will be adequate or that adequate insurance coverage for future clinical trials or commercial activities will be available at an acceptable cost, if at all, or that a product liability claim would not materially adversely affect the business or financial condition of the Company.

**POTENTIAL VOLATILITY OF STOCK PRICE.** The market for the Company's securities is volatile and investment in these securities involves substantial risk. The market prices for securities of biotechnology companies (including the Company) have been highly volatile, and the stock market from time to time has experienced significant price and volume fluctuations that may be unrelated to the operating performance of particular companies. Factors such as results of clinical trials, delays in manufacturing or clinical trial plans, fluctuations in the Company's operating results, disputes or disagreements with collaborative partners, market reaction to announcements by other biotechnology or pharmaceutical companies, announcements of technological innovations or new commercial therapeutic products by the Company or its competitors, initiation, termination or modification of agreements with collaborative partners, failures or unexpected delays in manufacturing or in obtaining regulatory approvals or FDA advisory panel recommendations, developments or disputes as to patent or other proprietary rights, loss of key personnel, litigation, public concern as to the safety of drugs developed by the Company, regulatory developments in either the U.S. or foreign countries (such as opinions, recommendations or statements by the FDA or FDA advisory panels, health care reform measures or proposals), and general market conditions could result in the Company's failure to meet the expectations of securities analysts or investors. In such event, or in the event that adverse conditions prevail or are perceived to prevail with respect to the Company's business, the price of PDL's common stock would likely drop significantly. In the past, following significant drops in the price of a company's common stock, securities class action litigation has often been instituted against such a company. Such litigation against the Company could result in substantial costs and a diversion of management's attention and resources, which would have a material adverse effect on the Company's business and financial condition.

**FUTURE REQUIREMENTS FOR SIGNIFICANT ADDITIONAL CAPITAL.** The Company's operations to date have consumed substantial amounts of cash. Negative cash flow from operations is expected to increase significantly beyond current levels over at least the next two years as the Company expects to spend substantial funds in conducting clinical trials, to expand its research and development programs and to develop and expand its manufacturing capability. The Company's future capital requirements will depend on numerous factors, including, among others, the progress of the Company's product candidates in clinical trials; the continued or additional support by collaborative partners or other third parties of research and clinical trials; enhancement of research and development programs; the time required to gain regulatory approvals; the resources the Company devotes to self-funded products, manufacturing methods and advanced technologies; third party manufacturing commitments; the ability of the Company to obtain and retain funding from third parties under collaborative agreements; the development of internal marketing and sales capabilities; the demand for the Company's potential products, if and when approved; potential acquisitions of technology, product candidates or businesses by the Company; and the costs of defending or prosecuting any patent opposition or litigation necessary to protect the Company's proprietary technology. In order to develop and commercialize its potential products, the Company may need to raise substantial additional funds following this offering through equity or debt financings, collaborative arrangements, the use of sponsored research efforts or other means. No assurance can be given that such additional financing will be available on acceptable terms, if at all, and such financing may only be available on terms dilutive to existing stockholders. The inability of the Company to secure adequate funds on a timely basis could result in the delay or cancellation of programs that the Company might otherwise pursue and, in any event, could have a material adverse effect on the business and financial condition of the Company.

**ENVIRONMENTAL REGULATION.** The Company is subject to federal, state and local laws and regulations governing the use, generation, manufacture, storage, discharge, handling and disposal of certain materials and

wastes used in its operations, some of which are classified as "hazardous." There can be no assurance that the Company will not be required to incur significant costs to comply with environmental laws, the Occupational Safety and Health Act, and state, local and foreign counterparts to such laws, rules and regulations as its manufacturing and research activities are increased or that the operations, business and future profitability of the Company will not be adversely affected by current or future laws, rules and regulations. The risk of accidental contamination or injury from hazardous materials cannot be eliminated. In the event of such an accident, the Company could be held liable for any damages that result and any such liability could exceed the resources of the Company. In any event, the cost of defending claims arising from such contamination or injury could be substantial. In addition, the Company cannot predict the extent of the adverse effect on its business or the financial and other costs that might result from any new government requirements arising out of future legislative, administrative or judicial actions.

**UNCERTAINTY RELATED TO HEALTH CARE INDUSTRY.** The health care industry is subject to changing political, economic and regulatory influences that may significantly affect the purchasing practices and pricing of human therapeutics. Cost containment measures, whether instituted by health care providers or enacted as a result of government health administration regulators or new regulations, such as pricing limitations or formulary eligibility for dispensation by medical providers, could result in greater selectivity in the availability of treatments. Such selectivity could have an adverse effect on the Company's ability to sell its products and there can be no assurance that adequate third-party coverage will be available for the Company to maintain price levels sufficient to generate an appropriate return on its investment in product development. Third-party payors are increasingly focusing on the cost-benefit profile of alternative therapies and prescription drugs and challenging the prices charged for such products and services. Also, the trend towards managed health care in the U.S. and the concurrent growth of organizations such as health maintenance organizations, which could control or significantly influence the purchase of health care services and products, as well as legislative proposals to reform health care or reduce government insurance programs, may all result in lower prices or reduced markets for the Company's products. The cost containment measures that health care providers and payors are instituting and the effect of any health care reform could adversely affect the Company's ability to sell its products and may have a material adverse effect on the Company. To date, the Company has conducted limited marketing studies on certain of its potential products and has not undertaken any pharmacoeconomic analysis with respect to its products under development. The cost containment measures and reforms that government institutions and third party payors are considering instituting could result in significant and unpredictable changes to the marketing, pricing and reimbursement practices of biopharmaceutical companies such as the Company. The adoption of any such measures or reforms could have a material adverse effect on the business and financial condition of the Company.

**SHARES ELIGIBLE FOR FUTURE SALE; REGISTRATION RIGHTS.** Future sales of shares by certain existing stockholders could adversely affect the market price of the Company's Common Stock. Based on shares held on December 31, 1996, after giving effect to the offering, directors, officers, Roche and Corange International Limited ("Corange"), an affiliated company of Boehringer Mannheim, will hold approximately 25.3% of the outstanding shares of the Company's Common Stock. See "Business -- Collaborative and Licensing Arrangements" and "Principal and Selling Stockholders." These outstanding shares are all freely tradable, subject to restrictions imposed by Rule 144 under the Securities Act of 1933, as amended, with respect to sales by affiliates and sales of restricted stock. Except under certain limited circumstances, the Company and its officers and directors have agreed not to sell or otherwise dispose of any of their shares for a period of 90 days after the effective date of the offering without the consent of Oppenheimer & Co., Inc. ("Oppenheimer"), and, subject to Corange's selling 750,000 shares in this offering, Corange has agreed not to sell or otherwise dispose of any of its shares for a period of 365 days after the effective date without the prior written consent of Oppenheimer and the Company. Oppenheimer may, in its sole discretion (except with respect to shares held by Corange, which also requires the consent of the Company) and at any time without notice, release all or any portion of the securities subject to lock-up agreements. In addition, Roche and, subject to their respective lock-up agreements, Laurence Jay Korn, Cary L. Queen, and Corange have certain registration rights with respect to their shares of the Company's Common Stock.

## USE OF PROCEEDS

The net proceeds to be received by the Company from the sale of the Common Stock offered hereby are estimated to be approximately \$67.2 million (\$81.1 million if the Underwriter's over-allotment option is exercised in full) at an assumed offering price of \$35.75 per share. The Company will not receive any of the proceeds from the sale of Common Stock by the Selling Stockholder. See "Principal and Selling Stockholders."

The Company intends to use the proceeds of this offering for working capital and general corporate purposes; manufacturing, preclinical and clinical development; research activities, including investigation and support of new technologies; and leasing or acquiring additional facilities. Proceeds may also be used to acquire technologies, product candidates or companies that complement the business of the Company. While the Company from time to time engages in preliminary discussions with respect to such transactions, the Company is not a party to any agreements, understandings or commitments with respect to such acquisitions.

The amounts and timing of expenditures for each purpose may vary significantly depending on the terms of any collaborative arrangements entered into by the Company, the progress and focus of the Company's research and development programs, the progress and results of the Company's clinical trials and preclinical studies, regulatory approvals and technological advances, determinations as to the commercial potential of PDL's products, the success of the Company's manufacturing efforts, the need for additional capital equipment, the need for additional manufacturing capabilities or facilities, potential oppositions or litigation related to the Company's proprietary rights, the status of competitive products, the establishment of sales and marketing capabilities, and the availability of other financing. The Company believes that its available cash resources, the net proceeds from the offering and the interest thereon will be adequate to satisfy its capital needs for at least the next three years.

Pending application of the proceeds as described above, the Company intends to invest the net proceeds of this offering primarily in investment grade, interest-bearing securities.

## PRICE RANGE OF COMMON STOCK

The Company's Common Stock trades on the Nasdaq National Market under the symbol "PDLI". The following table presents quarterly information on the price range of the Company's Common Stock on the Nasdaq National Market since January 1, 1995. This information indicates the high and low sale prices reported by the Nasdaq National Market for the periods indicated.

	HIGH -----	LOW -----
1995		
-----		
First Quarter.....	\$22.25	\$13.88
Second Quarter.....	26.75	19.25
Third Quarter.....	20.63	13.13
Fourth Quarter.....	24.00	14.63
1996		
-----		
First Quarter.....	28.38	20.38
Second Quarter.....	30.00	22.00
Third Quarter.....	27.25	12.00
Fourth Quarter.....	38.38	21.75
1997		
-----		
First Quarter (through January 30, 1997).....	38.00	31.75

On January 30, 1997, the closing price of the Common Stock as reported by the Nasdaq National Market was \$35.75 per share. As of December 31, 1996, there were approximately 224 holders of record of the Common Stock. The market for the Company's securities is volatile. See "Risk Factors -- Potential Volatility of Stock Price."

## DIVIDEND POLICY

The Company has not paid any dividends since inception and does not anticipate paying any dividends on its Common Stock in the foreseeable future.

## CAPITALIZATION

The following table sets forth the actual capitalization of the Company as of December 31, 1996, and as adjusted to reflect the sale of 2,000,000 shares of Common Stock offered by the Company hereby at an assumed public offering price of \$35.75 per share and the receipt of the estimated net proceeds therefrom. See "Use of Proceeds."

	DECEMBER 31, 1996	
	ACTUAL	AS ADJUSTED
	(IN THOUSANDS)	
Stockholders' equity:		
Preferred stock, par value \$0.01 per share, 10,000,000 shares authorized; no shares issued and outstanding.....	\$ --	\$ --
Common stock, par value \$0.01 per share, 40,000,000 shares authorized; 15,759,089 issued and outstanding actual, 17,759,089 shares outstanding as adjusted(1).....	158	178
Additional paid-in capital.....	140,328	207,476
Accumulated deficit.....	(35,507)	(35,507)
Unrealized gains (losses) on investments.....	133	133
Total stockholders' equity.....	105,112	172,280
Total capitalization.....	\$105,112	\$172,280

(1) Excludes options outstanding at December 31, 1996 to purchase 1,941,432 shares at a weighted average exercise price of \$18.44, of which options to purchase 774,813 shares were then exercisable.

## DILUTION

As of December 31, 1996, the net tangible book value of the Company's Common Stock was \$105,112,000 or \$6.67 per share of Common Stock. "Net tangible book value" per share represents the amount of total tangible assets of the Company reduced by the total liabilities and divided by the number of shares of Common Stock outstanding. After giving effect to the sale by the Company of 2,000,000 shares of Common Stock offered hereby, less underwriting discounts and commissions and estimated offering expenses payable by the Company, the Company's pro forma net tangible book value as of December 31 1996, would have been \$172,280,000, or \$9.70 per share of Common Stock. This represents an immediate increase in pro forma net tangible book value of \$3.03 per share to existing holders of Common Stock and an immediate dilution per share of \$26.05 to new investors purchasing shares of Common Stock in this offering. "Dilution per share to new investors" represents the difference between the price per share of Common Stock paid for the shares issued in this offering and the pro forma net tangible book value per share at December 31, 1996, as adjusted to give effect to this offering.

Assumed public offering price per share (1).....		\$35.75
Pro forma net tangible book value per share before offering.....	\$ 6.67	
Increase per share attributable to new investors.....	3.03	
	-----	
Pro forma net tangible book value per share after offering.....		9.70
		-----
Dilution per share to new investors.....		\$26.05
		=====

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 (1) Before deduction of underwriting discounts and commissions and estimated offering expenses payable by the Company.

At December 31, 1996, a total of 1,941,432 shares of Common Stock were subject to outstanding options, at a weighted average exercise price of \$18.44 per share. Any exercise of such options may result in further dilution to new investors.

## SELECTED FINANCIAL DATA

The following selected financial data for the five years ended December 31, 1996 are derived from audited financial statements of PDL. The data should be read in conjunction with the financial statements, related notes, and other financial information incorporated herein by reference.

	YEARS ENDED DECEMBER 31,				
	1992	1993	1994	1995	1996
	(IN THOUSANDS, EXCEPT PER SHARE DATA)				
STATEMENTS OF OPERATIONS DATA:					
Revenues:					
Research and development revenue under collaborative agreements -- related parties.....	\$ 3,400	\$ 14,233	\$ 10,233	\$ 10,408	\$ 11,500
Research and development revenue -- other.....	2,746	456	1,627	1,000	5,000
Interest and other income.....	2,239	2,111	3,349	6,205	6,100
Total revenues.....	8,385	16,800	15,209	17,613	22,600
Costs and expenses:					
Research and development.....	7,264	12,329	16,367	20,803	28,795
Purchase of in-process technology.....	--	7,725	--	--	--
General and administrative.....	1,997	2,653	4,051	5,163	5,601
Interest expense.....	44	25	7	1	--
Total costs and expenses.....	9,305	22,732	20,425	25,967	34,396
Net loss.....	\$ (920)	\$ (5,932)	\$ (5,216)	\$ (8,354)	\$ (11,796)
Net loss per share.....	\$ (0.07)	\$ (0.47)	\$ (0.37)	\$ (0.54)	\$ (0.76)
Shares used in computation of net loss per share.....	12,491	12,747	14,060	15,343	15,604

	DECEMBER 31,				
	1992	1993	1994	1995	1996
	(IN THOUSANDS)				
BALANCE SHEET DATA:					
Cash, cash equivalents and investments.....	\$ 50,904	\$ 72,732	\$113,245	\$107,065	\$ 99,667
Working capital.....	18,188	29,843	95,450	43,522	74,221
Total assets.....	55,623	80,294	121,054	116,412	110,331
Accumulated deficit.....	(4,209)	(10,141)	(15,357)	(23,711)	(35,507)
Total stockholders' equity.....	53,534	77,921	117,783	112,856	105,112

MANAGEMENT'S DISCUSSION AND ANALYSIS OF  
FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Prospectus contains forward-looking statements which involve risks and uncertainties. The Company's actual results may differ significantly from the results discussed in the forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed in "Risk Factors" as well as those discussed elsewhere in this Prospectus.

OVERVIEW

Since the Company's founding in 1986, a primary focus of its operations has been research and development. Achievement of successful research and development and commercialization of products derived from such efforts is subject to high levels of risk and significant resource commitments. The Company has a history of operating losses and expects to incur substantial additional expenses over at least the next few years, as it continues to develop its proprietary products and devote significant resources to preclinical studies, clinical trials, and manufacturing. The Company's revenues to date have consisted, and for the near future are expected to consist, principally of research and development funding, licensing and signing fees and milestone payments from pharmaceutical companies under collaborative research and development and licensing agreements. These revenues may vary considerably from quarter to quarter and from year to year and revenues in any period may not be predictive of revenues in any subsequent period, and variations may be significant depending on the terms of the particular agreements. In particular, revenues for the fourth quarter of 1996, which included several non-recurring payments in connection with new licensing agreements, may not be indicative of revenues in future quarters.

While the Company historically has received significant revenue pursuant to certain of its research and development agreements, the Company has recognized substantially all of the research and development and milestone revenue due under these collaborations. Although the Company anticipates entering into new collaborations from time to time, the Company presently does not anticipate realizing non-royalty revenue from its new and proposed collaborations at levels commensurate with the non-royalty revenue historically recognized under its older collaborations. Moreover, the Company anticipates that its operating expenses will continue to increase significantly as the Company increases its research and development, manufacturing, preclinical and clinical activity, and administrative and patent activities. Accordingly, in the absence of substantial revenues from new corporate collaborations or licensing agreements, royalties on Zenapax sales, if any, or other sources, the Company expects to incur substantial and increased operating losses in the foreseeable future as certain of its earlier stage potential products move into later stage clinical development, as additional potential products are selected as clinical candidates for further development, as the Company invests in additional manufacturing facilities or capacity, as the Company defends or prosecutes its patents and patent applications and as the Company invests in research or acquires additional technologies or businesses.

The preparation of financial statements in conformity with generally accepted accounting principles requires the use of management's estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. For example, certain of the Company's accrued liabilities with respect to clinical trials represent management's estimates of the timing and expenses associated with patient accrual and the termination or winding down of the Company's clinical trials. These estimates and assumptions could differ significantly from the amounts which may actually be realized.

Nonrefundable signing or licensing fee payments that are not dependent on future performance under collaborative agreements are recognized as revenue when received. Payments for research and development performed by the Company under contractual arrangements are recognized as revenue ratably over the quarter in which the payment is received and the related work is performed. Revenue from achievement of milestone events is recognized when the funding party agrees that the scientific or clinical results stipulated in the agreement have been met. Deferred revenue arises principally due to timing of cash payments received under research and development contracts.

## RESULTS OF OPERATIONS

Years ended December 31, 1996, 1995 and 1994

The Company's total revenues were \$22.6 million in 1996 as compared to \$17.6 million in 1995 and \$15.2 million in 1994. Total research and development revenues represented \$16.5 million, \$11.4 million and \$11.9 million of total revenues in 1996, 1995 and 1994, respectively. Interest and other income were \$6.1 million in 1996, \$6.2 million in 1995, and \$3.3 million in 1994.

The increase in total research and development revenues in 1996 over the prior years was primarily attributable to an increase in up-front licensing and signing fees, and receipt of a milestone payment from Boehringer Mannheim in January 1996. Increased funding during 1995 and 1994 from Boehringer Mannheim was partially offset by reduced funding from Roche, whose funding arrangement ended in January 1995. Reimbursement funding under the agreement with Boehringer Mannheim ended in October 1996. The Company received \$5.0 million in up-front licensing and signing fees in 1996, compared to \$1.0 million and \$2.5 million in 1995 and 1994 respectively. Of the amounts spent by the Company for research and development, \$10.0 million in 1996, \$10.4 million in 1995 and \$9.2 million in 1994 represented third-party funded research and development activities (not including licensing fees, milestone payments and product sales).

Interest and other income of \$6.1 million in 1996 was comparable to \$6.2 million in 1995. The increase in 1995 from \$3.3 million in 1994 was attributable primarily to higher cash and investment balances in 1995 resulting from the sale of stock to Corange, an affiliate of Boehringer Mannheim, in December 1994.

Total costs and expenses increased to \$34.4 million in 1996 from \$26.0 million in 1995 and \$20.4 million in 1994. The increase in costs and expenses in 1996 compared to 1995 and 1994 was due primarily to increases in research and development expenses in each of those periods.

Research and development expenses in 1996 increased to \$28.8 million from \$20.8 million in 1995 and \$16.4 million in 1994, primarily as a result of the Company's conducting additional development efforts independently and under its agreements with its collaborative partner, Boehringer Mannheim. These expenses included the addition of staff, the initiation and continuation of clinical trials, costs of conducting preclinical tests, expansion of pharmaceutical development capabilities including support for both clinical development and manufacturing process development, and higher costs in the expanded operation of the manufacturing facility.

General and administrative expenses for 1996 increased to \$5.6 million from \$5.2 million in 1995 and \$4.1 million in 1994. These increases were primarily the result of increased staffing and associated expenses necessary to manage and support the Company's expanding operations.

## LIQUIDITY AND CAPITAL RESOURCES

To date the Company has financed its operations primarily through public and private placements of equity, research and development revenue, capital lease financing and interest income on invested capital. At December 31, 1996, the Company had cash, cash equivalents and investments in the aggregate of \$99.7 million, compared to \$107.1 million at December 31, 1995 and \$113.2 million at December 31, 1994. Pursuant to the agreement with Boehringer Mannheim, the Company may be required to reimburse Boehringer Mannheim up to \$2.0 million for Phase II studies and up to \$8.8 million for Phase III studies of OST 577 in the event certain conditions are met.

Net cash used in operating activities was approximately \$7.0 million for the year ended December 31, 1996 compared to approximately \$7.1 million in 1995 and \$1.9 million in 1994.

The Company's future capital requirements will depend on numerous factors, including, among others, the progress of the Company's product candidates in clinical trials; the continued or additional support by collaborative partners or other third parties of research and clinical trials; enhancement of research and development programs; the time required to gain regulatory approvals; the resources the Company devotes to self-funded products, manufacturing methods and advanced technologies; third party manufacturing commit-

ments; the ability of the Company to obtain and retain funding from third parties under collaborative agreements; the development of internal marketing and sales capabilities; the demand for the Company's potential products, if and when approved; potential acquisitions of technology, product candidates or businesses by the Company; and the costs of defending or prosecuting any patent opposition or litigation necessary to protect the Company's proprietary technology. In order to develop and commercialize its potential products the Company may need to raise substantial additional funds following this offering through equity or debt financings, collaborative arrangements, the use of sponsored research efforts or other means. No assurance can be given that such additional financing will be available on acceptable terms, if at all, and such financing may only be available on terms dilutive to existing stockholders. The Company believes that the proceeds received from this offering, together with existing capital resources, will be adequate to satisfy its capital needs for at least the next three years. See "Risk Factors -- History of Losses; Profitability Uncertain."

## BUSINESS

## OVERVIEW

PDL is a leader in the development of humanized and human monoclonal antibodies for the prevention and treatment of a variety of disease conditions, including autoimmune diseases, inflammatory conditions, cancers and viral infections. The Company uses proprietary computer software and other technologies to develop its SMART humanized antibodies for potential use as effective pharmaceuticals without the limitations of mouse-derived (murine) antibodies. PDL believes that its technologies are broadly applicable to a variety of diseases, as demonstrated by the Company's diverse product development pipeline and its collaborative arrangements with eight pharmaceutical companies. The Company and its collaborative partners currently have four product candidates in multiple clinical trials and numerous additional product candidates in preclinical studies. The Company's most advanced potential product, Zenapax, has successfully completed two multinational Phase III clinical trials for the prevention of kidney transplant rejection. In 1996, PDL received U.S. and European patents that the Company believes cover most humanized antibodies, and that may lead to additional corporate partnering, patent licensing and other revenue opportunities.

Antibodies have long had promise as therapeutic compounds to treat a variety of disease conditions. Murine antibodies, however, have significant drawbacks which in most cases prevent them from becoming effective therapeutics. The most important of these is the human anti-mouse antibody ("HAMA") response, whereby the murine antibody is recognized by the body's immune system as being foreign and is rapidly neutralized and rendered ineffective. PDL's antibodies are designed to avoid these drawbacks, including the HAMA response. PDL's SMART antibodies are predominantly human antibodies that incorporate the structural information from the binding region of promising murine antibodies. By applying its proprietary SMART antibody technology, the Company is able to create such recombinant antibodies with molecular structures that are approximately 90% human and 10% murine. The Company also has technologies to produce fully human antibodies to treat additional diseases using antibody therapy.

PDL's business strategy is to leverage its technologies, research expertise and intellectual property in the field of antibodies to become a profitable, research-based biopharmaceutical company that manufactures and, in North America, markets its own products. Key aspects of PDL's strategy are to: (i) expand the Company's product portfolio to provide multiple product candidates to treat a variety of diseases and conditions; (ii) establish collaborative relationships with pharmaceutical companies to reduce development costs and risks and to enhance commercial opportunities; (iii) leverage its patent position by licensing certain rights in exchange for near-term revenues and future royalty opportunities; and (iv) retain and obtain North American marketing or co-promotion rights to certain products to provide for greater revenue opportunities.

The Company actively seeks partnerships with pharmaceutical companies. The breadth of the Company's antibody technology and its patent position are key assets in attracting other companies to enter into such collaborative relationships with the Company. In one type of collaborative arrangement, the Company licenses certain marketing rights to one or more potential products developed by PDL in return for a licensing fee, research funding and milestone payments, and royalties on potential product sales. In another type of arrangement, PDL uses its proprietary technology to develop a SMART antibody based on a promising murine antibody developed by its corporate partner. In such cases, PDL typically receives a licensing fee and other payments, royalties on potential sales and, in some cases, an option to co-promote in North America.

## PRODUCTS UNDER DEVELOPMENT

The Company believes it is a leader in the development of antibody-based therapeutics and has one of the broadest product pipelines in this area. The Company has four product candidates under clinical development and a number of product candidates in preclinical development for the treatment of a variety of disease conditions, including autoimmune diseases, inflammatory conditions, cancers and viral infections.

## CLINICAL PRODUCT CANDIDATES

The following table summarizes the potential therapeutic indications, development status and commercial rights for the four PDL products that have entered clinical trials. The development and commercialization of the Company's clinical product candidates are subject to numerous risks and uncertainties. See "Risk Factors."

PRODUCT	POTENTIAL THERAPEUTIC INDICATIONS	DEVELOPMENT STATUS	COMMERCIAL RIGHTS(1)
Zenapax (SMART Anti-Tac Antibody)	Organ transplant rejection	Completed two Phase III trials (kidney)	Roche
	Certain autoimmune diseases	Phase I/II	
	Tropical spastic paraparesis	Phase I/II	
	Uveitis	Phase I/II	
	Psoriasis	Phase I/II planned	
	Certain blood cancers	Phase II	
SMART M195 Antibody	Acute myelogenous leukemia	Phase II/III	PDL and Kanebo
	Acute promyelocytic leukemia	Phase II	
	Myeloid leukemia	Phase I (Japan)	
OST 577 (Human Anti-Hepatitis B Antibody)	CHB	Phase II	PDL, Boehringer Mannheim and Novartis
	Liver transplantation due to CHB	Completed Phase I/II	
PROTOVIR (Human Anti-Cytomegalovirus Antibody)	CMV infections in BMT	Phase II	PDL, Boehringer Mannheim and Novartis

(1) The development and marketing rights for each of these products differ. See "-- Collaborative and Licensing Arrangements."

ZENAPAX (SMART ANTI-TAC ANTIBODY). Zenapax is a humanized antibody, developed by PDL and licensed exclusively to Roche, which binds to the IL-2 receptor on T cells. IL-2 is a lymphokine which stimulates T cells to divide and participate in an immune response. By blocking the binding of IL-2 to its receptor, Zenapax inhibits the proliferation of activated T cells, and thus could be useful in preventing or treating organ transplant rejection or certain autoimmune diseases. Such an agent might be more specific and less toxic than current immunosuppressive drugs such as cyclosporine or OKT3, because it would suppress only activated T cells involved in an immune response rather than all T cells and possibly other unrelated cells.

Organ transplantation. In September 1996, the Company's partner, Roche, announced results from two multinational Phase III studies of Zenapax for the prevention of acute rejection episodes in a total of 535 cadaveric kidney transplant recipients. As set forth in the following table, a preliminary analysis of the data by Roche indicated that, when administered with a standard immunosuppressive regimen, Zenapax is effective in reducing the incidence of acute rejection episodes within six months of transplant, the primary endpoint. In the double therapy trial, in which all patients received a background therapy of cyclosporine and prednisone, acute rejection episodes were reduced by 40% in patients treated with Zenapax. In the triple therapy trial, in

which all patients received background therapy of cyclosporine, prednisone and azathioprine, the incidence of acute rejection episodes was reduced by 37% in patients treated with Zenapax.

TRIAL	INCIDENCE OF KIDNEY REJECTION EPISODES			P VALUE
	WITHOUT ZENAPAX	WITH ZENAPAX	REDUCTION WITH ZENAPAX	
Double Therapy.....	47%	28%	40%	0.001
Triple Therapy.....	35%	22%	37%	0.03

Roche also noted that secondary endpoints of reduction in the total number of rejection episodes per patient and increase in the time to first rejection episode were achieved with Zenapax in both clinical trials. The addition of Zenapax to the standard immunosuppressive regimen did not result in an increase in drug-related serious adverse events.

Based on these trials, Roche stated that it intends to file in the first half of 1997 for regulatory approval to market Zenapax in the U.S., Canada and Europe.

In addition to the studies described above, Roche has completed enrollment in a controlled pharmacokinetics/safety study with 61 evaluable patients to assess Zenapax in combination with CellCept in kidney transplant patients. CellCept, marketed by Roche, is used to prevent kidney transplant rejection. Roche also plans to conduct a study of Zenapax in pediatric kidney transplantation.

According to industry sources, approximately 20,000 solid organs are transplanted into patients in the U.S. each year, with kidney transplants accounting for about 12,000 of the total. A comparable number of kidney transplants are performed outside of the U.S. The majority of kidney transplant patients receive cadaveric kidneys.

Roche previously evaluated Zenapax in a Phase II/III trial for the prevention of graft-versus-host disease ("GvHD"), a complication of bone marrow transplants. Analysis of the trial results led Roche to conclude that Zenapax was not effective in reducing the incidence of GvHD in the patient population studied. The reason for this lack of efficacy of Zenapax in GvHD despite its effectiveness in kidney transplantation is unknown. However, Roche stated that Zenapax was found to be safe and well-tolerated in the GvHD trial.

Autoimmune disease. Because of the ability of Zenapax to inhibit the proliferation of T cells, the Company believes that Zenapax may have potential for the treatment of certain autoimmune diseases. Investigators at the National Institutes of Health ("NIH") are evaluating Zenapax in a preliminary clinical trial in patients with tropical spastic paraparesis, a rare autoimmune disease of the nerves considered by these investigators to be a model for multiple sclerosis. In addition, proof-of-concept clinical trials of Zenapax have commenced for uveitis and are planned for psoriasis.

Cancer. The Company believes that Zenapax may also have potential for the treatment of certain blood cancers, because the IL-2 receptor is present on these types of cancer cells. The murine anti-Tac antibody has been tested at NIH in patients with adult T-cell leukemia, and several of the patients experienced remissions, especially when the antibody was linked to a radioisotope. A pilot Phase I clinical trial of Zenapax for the treatment of certain cancers was completed in 1993 at the National Cancer Institute ("NCI") of NIH, and a Phase II trial of a radiolabeled form of Zenapax for certain blood cancers is in progress at NCI.

There can be no assurance that Roche will file for or receive regulatory approval to market Zenapax for use in preventing kidney transplant rejections in a timely manner, if at all, or that it will pursue or continue clinical trials in autoimmune diseases or other indications.

SMART M195 ANTIBODY. The SMART M195 Antibody is a humanized antibody that binds to the cancer cells of most patients with myeloid leukemia. Myeloid leukemia, the major form of leukemia in adults, is classified into two types -- acute myelogenous leukemia ("AML") and chronic myelogenous leukemia ("CML"). There are at least 11,000 new cases of myeloid leukemia in the U.S.

each year, of which more than half are AML. Currently, the survival rate of myeloid leukemia patients is very low, despite aggressive chemotherapy and multiple, expensive hospitalizations.

PDL has adopted strategies designed to achieve improved efficacy of antibodies in certain cancers. First, PDL's anti-cancer antibodies are humanized, which allows for longer term treatment by minimizing the HAMA response, and potentially makes the antibodies more effective in killing cancer cells. Second, the Company is initially focusing on treatment of blood cancers, such as myeloid leukemia, which may be more susceptible to antibody therapy than solid tumors because the cancer cells are more readily accessible. Third, PDL will often conduct trials of its antibodies in combination with, or following, other chemotherapeutic agents.

PDL is conducting a randomized Phase II/III trial of the SMART M195 Antibody for AML, which was initiated in June 1994. Patients in the trial first receive a specific regimen of chemotherapy. Those patients entering clinical remission are randomized either to observation or to receive 20 doses of SMART M195 given over an eight month period. The primary clinical endpoint is the median duration of disease-free survival, which in the absence of SMART M195 therapy has historically been about eight months. The study is planned to evaluate 112 patients in remission, but a substantially larger number will need to receive chemotherapy in order to reach that number of patients in remission. The study is currently expected to require several additional years to complete. The Company is exploring the addition of other U.S. or foreign medical centers and other actions to accelerate patient accrual in the study. See "Risk Factors -- Limited Experience with Clinical Trials; Risk of Delay."

SMART M195 is also being studied in a Phase II trial under a physician-sponsored IND at the Memorial Sloan-Kettering Cancer Center ("Sloan-Kettering"), in patients with acute promyelocytic leukemia ("APL"), one of several types of AML. This trial is designed to examine whether SMART M195 alone can eliminate minimal residual leukemia that remains after treatment with retinoic acid, a drug recently approved to treat APL. The effectiveness is measured by elimination of cells having the characteristic genetic mutation found in APL to below detectable levels ("molecular remission"). Four of seven evaluable newly diagnosed patients have entered complete molecular as well as clinical remission after therapy with retinoic acid and SMART M195 prior to receiving chemotherapy. In the more difficult relapsed setting, one of seven APL patients entered molecular remission. Normally, one to three rounds of expensive and toxic chemotherapy are required to bring newly diagnosed APL patients into molecular remission after therapy with retinoic acid. More patients and longer-term follow-up are necessary to evaluate the significance of the observed remissions. While these results suggest that SMART M195 may be biologically active in APL, the Company currently has no plans to conduct pivotal clinical trials in this subpopulation of AML patients.

A Phase I clinical trial of the SMART M195 Antibody linked to Bismuth-213, an alpha particle-emitting isotope, was initiated in 1996 under a physician-sponsored IND at Sloan-Kettering in advanced myeloid leukemia patients. The Company is supporting this trial to obtain preliminary evidence of the safety and potential efficacy of SMART M195-Bismuth-213 used as a single agent to induce remissions of advanced myeloid leukemia. Generators to produce the Bismuth-213 isotope are being supplied by PharmActinium Inc. and associated companies. The Company believes that this study is the first clinical trial of an antibody combined with an alpha-emitting isotope. In previous clinical trials of radiolabeled antibodies, the antibodies have been linked to radioisotopes that emit beta or gamma particles. Alpha particles release more energy over a shorter path than beta or gamma particles and, therefore, may be more effective in destroying the targeted cancer cells without damaging nearby normal cells.

Exclusive development and marketing rights for therapeutic uses of SMART M195 in Asia have been licensed to PDL's collaborative partner, Kanebo, which is currently conducting a Phase I trial in Japan in patients with AML.

OST 577 (HUMAN ANTI-HEPATITIS B ANTIBODY). OST 577 is a human antibody, developed using the trioma technology and licensed by PDL from Novartis. OST 577 binds to the major protein present on hepatitis B virus ("HBV"), the hepatitis B surface antigen. Infection with HBV is a common cause of liver disease. In most cases of infection, the patient's immune response is sufficient to ultimately eliminate the virus. However, an estimated 2% to 10% of HBV-infected patients become chronic carriers of the virus, and about one-fourth of these patients develop chronic hepatitis B ("CHB"), which is characterized by progressive liver damage and often cirrhosis and liver cancer. In the U.S. there are an estimated one million

chronic carriers of HBV, with 300,000 new HBV infections and more than 10,000 patients hospitalized due to HBV infections each year. While interferon-alpha is approved in the U.S. for treatment of CHB, only 30-40% of treated patients respond to this treatment, which must be given over four months and has significant side effects.

In patients receiving liver transplants due to end-stage CHB, the virus remaining after the transplant usually will rapidly infect and in many cases destroy the new liver. An initial Phase I/II clinical trial of OST 577 enrolled five patients receiving liver transplants due to end-stage CHB. In the clinical trial, each patient received doses of OST 577 for up to 18 months after transplantation. Three of the five treated patients showed no evidence of viral recurrence more than one year after transplantation. The other two patients did develop recurrence but remained asymptomatic for four years, after which one of them developed symptoms.

A Phase I/II clinical trial of OST 577 has also been completed in 12 patients with CHB. OST 577 was well tolerated by patients treated at the two lower dose levels, but some reversible side effects were seen at the highest level. Key markers for HBV infection decreased at least temporarily by 50% or more in many of the patients during treatment. Specifically, such reductions were seen in 5 of 10 patients for liver enzyme levels; in 10 of 12 for hepatitis B surface antigen; and in 5 of 9 for viral DNA levels. Results obtained in early clinical trials may not be predictive of results in larger, later-stage trials. See "Risk Factors -- Uncertainty of Clinical Trial Results."

PDL's development partner, Boehringer Mannheim, which has development and marketing rights for therapeutic applications to OST 577 outside of North America, has primary clinical development responsibility for this potential product. In 1996, Boehringer Mannheim initiated a multinational, controlled Phase II trial in patients with CHB, and has stated that it is designing a Phase II/III trial in patients receiving liver transplants for end-stage liver disease due to CHB. The Phase II trial in CHB is planned to enroll 200 patients and will evaluate OST 577 both as a single agent and in combination with interferon-alpha. PDL is considering the possibility of conducting independent clinical trials with designs complementary to the Boehringer Mannheim trials. In addition, Novartis has certain rights to co-promote or co-market this antibody in North America or to receive royalties on product sales. See "-- Collaborative and Licensing Arrangements -- Novartis."

PROTOVIR (HUMAN ANTI-CMV ANTIBODY). PROTOVIR is a human antibody, derived using the trioma technology, that binds to all tested strains of human cytomegalovirus ("CMV"). CMV is an important cause of morbidity and death in patients with suppressed immune systems, such as AIDS patients and recipients of solid organ and bone marrow transplants ("BMT").

Bone marrow transplantation. In BMT patients, CMV can cause often fatal infections, such as pneumonia. Many transplant centers treat patients with pooled human immunoglobulin preparations in an attempt to prevent CMV infection, despite the high cost and limited efficacy of this treatment. The Company has completed enrollment in a randomized, placebo-controlled, double-blinded Phase II trial to assess the potential safety and efficacy of PROTOVIR for the prevention of CMV infections in allogeneic (non-self) bone marrow transplant patients. The study is comparing two dose levels of PROTOVIR against placebo in approximately 168 evaluable patients. The primary endpoint of this study is the incidence of CMV infections during the 100 days following the BMT. Historically, such infections occur in 50-60% of these patients. Results of the study are expected to be available in the first half of 1997 but there can be no assurance that the results of the trial will be favorable. See "Risk Factors -- Uncertainty of Clinical Trial Results."

CMV retinitis. The potential safety and efficacy of PROTOVIR was evaluated in a Phase II/III clinical trial conducted by NEI SOCA for the treatment of CMV retinitis, a common ophthalmic condition in AIDS patients that often leads to blindness. In August 1996, NEI SOCA, acting on the recommendation of an independent data and safety monitoring board, halted the study based on lack of evidence of efficacy. Concurrently with the NEI SOCA trial, PROTOVIR also was being evaluated in a Phase II clinical trial being conducted by NIAID ACTG for treatment of CMV retinitis. Based on the NEI SOCA findings and actions, enrollment in the Phase II trial had been suspended, and the trial was recently terminated.

Exclusive rights for the therapeutic application of this antibody outside of North America and Asia have been licensed to Boehringer Mannheim. In addition, Novartis, from whom PDL licensed the antibody, has certain rights to co-promote or co-market this antibody in North America and Asia or to receive royalties on product sales. See "-- Collaborative and Licensing Arrangements."

#### PRECLINICAL PRODUCT CANDIDATES

The following table summarizes the potential therapeutic indications and commercial rights for certain of PDL's preclinical product candidates. "Preclinical" development includes in vitro testing, efficacy and toxicology testing in animals, process development and manufacturing scale-up prior to initiation of clinical trials. The Company has other compounds in development in addition to those described in the table below and is conducting research in other areas. The development and commercialization of the Company's preclinical product candidates are subject to numerous risks and uncertainties. See "Risk Factors."

PRODUCT	POTENTIAL THERAPEUTIC INDICATIONS	COMMERCIAL RIGHTS(1)
<b>AUTOIMMUNE AND INFLAMMATORY CONDITIONS</b>		
SMART Anti-L-Selectin Antibody	Trauma, adult respiratory distress syndrome ("ARDS"), reperfusion injury	PDL and Boehringer Mannheim
SMART Anti-E/P-Selectin Antibody	Stroke, trauma, certain autoimmune diseases (e.g., psoriasis), asthma	PDL
SMART Anti-CD3 Antibody	Organ transplant rejection and certain autoimmune diseases	PDL
SMART Anti-Gamma Interferon Antibody	Certain autoimmune diseases (e.g., inflammatory bowel disease)	PDL
<b>CANCER</b>		
SMART 1D10 Antibody	B-cell lymphoma	PDL
SMART ABL 364 Antibody	Certain epithelial cell cancers including breast, lung and colon	PDL and Novartis
<b>VIRAL INFECTIONS</b>		
Human Anti-Varicella Zoster Antibody	Shingles (herpes zoster)	PDL and Novartis
Human Anti-Herpes Antibody	Neonatal and genital herpes	PDL and Novartis

(1) The development and marketing rights for each of these products differ. See "-- Collaborative and Licensing Arrangements."

**AUTOIMMUNE DISEASE AND INFLAMMATION.** Recent discoveries in immunology have made possible a new therapeutic approach to inflammation resulting from such causes as injury or autoimmune disease. Certain proteins called adhesion molecules, located on the surface of various types of cells, play a key role in inflammation by directing the movement of white blood cells from the bloodstream into the sites of tissue inflammation. In laboratory experiments conducted by PDL and others, antibodies have been shown to block the function of these adhesion molecules, and in animal models these anti-adhesion antibodies have been shown to be effective at reducing many types of inflammation.

PDL has developed several SMART antibodies against adhesion molecules. One of these antibodies, the SMART Anti-L-Selectin Antibody, binds to L-selectin, an adhesion molecule on the surface of white blood cells. The Company believes that potential indications for this antibody may include trauma, ARDS, reperfusion injury (e.g., due to myocardial infarction or stroke) and possibly certain autoimmune diseases. In studies conducted by independent investigators, treatment with the SMART Anti-L-Selectin Antibody resulted in a statistically significant improvement in survival in a primate model that simulates severe trauma.

Boehringer Mannheim, which has licensed rights to this antibody outside of North America and Asia from PDL, plans to begin clinical trials of the antibody in 1997, with an initial indication of trauma.

PDL's SMART Anti-E/P-Selectin Antibody binds to two different adhesion molecules, E- and P-selectin, that occur on the surface of the cells on the inner lining of blood vessels. The Company believes that potential indications for such an antibody may include stroke, trauma, certain autoimmune diseases, psoriasis and asthma. The Company is developing additional forms of the SMART Anti-E/P-Selectin Antibody, from which it intends to select the final form.

PDL's SMART Anti-CD3 Antibody binds to the CD3 antigen, a key receptor for stimulation of T cells. The Company believes that potential indications for this antibody may include treatment of organ transplant rejection and certain autoimmune diseases.

PDL's SMART Anti-Gamma-Interferon Antibody binds to and neutralizes gamma interferon, a lymphokine that stimulates several types of white blood cells. The Company believes that potential indications for this antibody may include inflammatory bowel disease, multiple sclerosis, and other autoimmune diseases.

CANCER. B-cell lymphomas, like leukemias, are a type of blood cancer that the Company believes may be accessible to antibody-based treatments. PDL has developed the SMART 1D10 Antibody, which binds to many malignant B cells, and is currently evaluating it in preclinical studies. The Company is also evaluating a bispecific antibody that incorporates the SMART 1D10 Antibody. To date bispecific antibodies developed by PDL have not been tested in humans.

PDL's SMART ABL 364 Antibody has potential for the treatment of many solid tumors, including colon, lung and breast cancer. Initial laboratory tests have shown that the SMART ABL 364 Antibody, in conjunction with other components of the immune system, can kill cancer cells.

VIRAL INFECTIONS. Varicella zoster virus ("VZV") is the virus responsible for causing chickenpox and shingles (herpes zoster). Shingles, a painful blistering condition of the skin, results from reactivation of the latent VZV that initially infected the patient years earlier. In the U.S., 10-20% of the population will develop shingles, with the incidence and severity increasing with age. A significant percentage of patients with shingles experience post-herpetic neuralgia, a very painful nerve condition which may last from weeks to years in some patients. Current anti-viral therapies are moderately effective in treating shingles, but have little or no effect on post-herpetic neuralgia. PDL's Human Anti-Varicella Zoster Antibody effectively neutralizes all tested strains of VZV in in vitro studies.

Herpes simplex virus ("HSV") causes a painful recurring genital infection. The virus also causes neonatal herpes, an uncommon but very serious disease of newborn infants. PDL's Human Anti-Herpes Antibody binds to and effectively neutralizes all strains of HSV tested, and is well-tolerated and non-immunogenic in primates. In animal studies sponsored by the National Institute of Allergy and Infectious Disease Collaborative Antiviral Studies Group ("NIAID-CASG"), the antibody effectively protected mice from a lethal herpes infection when administered up to 72 hours after the virus. The Company believes that competition from antiviral drugs and the present reimbursement environment may limit the market opportunities for the Human Anti-Herpes Antibody in treating genital herpes. The Company is currently exploring the possibility of providing the antibody to NIAID-CASG under a Cooperative Research and Development Agreement primarily for studies in neonatal herpes.

## PDL TECHNOLOGIES

**BACKGROUND ON ANTIBODIES.** Antibodies are protective proteins released by the immune system's B cells, a type of white blood cell, in response to the presence of a foreign substance in the body, such as a virus. B cells produce millions of different kinds of antibodies, which have slightly different shapes that enable them to bind to and thereby inactivate different targets. Antibodies of identical molecular structure that bind to a specific target are called monoclonal antibodies. Typically mice have been used to produce monoclonal antibodies to a wide variety of molecular targets, including targets to which the human body does not normally produce antibodies. In particular, many murine antibodies have been developed as potential therapeutics to neutralize viruses, destroy cancer cells or inhibit immune function.

Although murine monoclonal antibodies are relatively easy to generate, they have significant drawbacks as therapeutics. Murine antibodies have a relatively short half-life in human patients, requiring them to be administered frequently. Moreover, murine antibodies are not adapted to work effectively with the human immune system and therefore often have limited ability to destroy the target, such as cancer cells. Most importantly, when injected into human patients, a murine antibody is usually recognized by the body's immune system as being foreign. The immune system therefore responds with a HAMA response, which rapidly neutralizes the murine antibody and renders it ineffective for further therapy. These problems have largely prevented murine antibodies from fulfilling their promise as therapeutics.

More recently, improved forms of antibodies, such as humanized and chimeric antibodies, have been developed using recombinant DNA technology. These new antibodies can minimize or avoid many of the problems associated with murine antibodies and have led to a resurgence of interest in antibody therapeutics by the pharmaceutical and biotechnology industries. As a result of these advances, many recombinant antibodies are now progressing into clinical trials. In a list of biotechnology medicines under clinical development published in 1996 by the Pharmaceutical Research and Manufacturers of America, antibodies comprised the single largest category, representing 78 of 284 products listed. In particular, PDL is aware of more than twenty recombinant antibodies in clinical trials, including several antibodies addressing large markets that are being developed by major pharmaceutical companies. Furthermore, ReoPro, a recombinant antibody fragment developed by Centocor for reducing complications in patients undergoing angioplasty is being marketed by Eli Lilly.

**PDL'S SMART ANTIBODY TECHNOLOGY.** PDL believes that its patented SMART antibody technology has positioned the Company as a leader in the development of therapeutic antibodies that overcome the problems associated with murine antibodies. PDL's SMART antibodies are human-like antibodies designed using structural information from promising murine antibodies to capture the benefits of such antibodies while overcoming many of their limitations in treating humans. Clinical trials and preclinical studies have shown that PDL's SMART antibodies generally avoid a HAMA response and have a longer half-life than murine antibodies.

Every antibody contains two regions, a variable domain that binds to the target and a constant domain that interacts with other portions of the immune system. The variable domain is composed of the complementarity determining regions ("CDRs") that directly bind to the target and the framework region that holds the CDRs in position and helps maintain their required shape (see figure below). Researchers have used genetic engineering to construct "humanized" antibodies that consist of the CDRs from a murine antibody with the framework region and constant domain from a human antibody. However, when the CDRs from the murine antibody are combined with the framework of the human antibody, the human framework often distorts the shape of the CDRs so they no longer bind well to the target. Therefore, it is usually necessary to substitute one or more amino acids from the murine antibody into the framework of the humanized antibody for it to maintain the binding ability of the murine antibody.

[COMPUTER-GENERATED SPACE-FILLING MODEL OF A HUMANIZED ANTIBODY]

A SMART antibody is a humanized antibody designed by using PDL's proprietary computer technology to guide the choice of substitutions of amino acids from the murine antibody into the human antibody framework, based on structural information derived from the murine antibody. The construction of a SMART antibody starts with the identification of a murine antibody that has demonstrated favorable results in laboratory, animal or human studies. A model of the murine antibody is generated using proprietary computer modeling software that predicts the shapes of antibodies and eliminates the need for more time-consuming laboratory techniques. The resulting model is carefully analyzed to identify the few key amino acids in the framework most responsible for maintaining the shape of the CDRs. Software developed at PDL as well as the experience of the Company's computational chemists is important in this analysis. These few key murine amino acids are substituted into the human framework of the SMART antibody along with the murine CDRs in order to maintain their ability to bind well to the target. The resulting SMART antibody retains most or all of the binding ability of the murine antibody, but is about 90% human.

In 1996, the Company was issued U.S. and European patents which cover, in most circumstances, humanized antibodies that contain amino acid substitutions from the murine antibody in their framework. The Company believes that most humanized antibodies require such amino acid substitutions in order to maintain high binding ability. The patents also cover pharmaceutical compositions containing such humanized antibodies and other aspects of PDL's SMART antibody technology. PDL has filed similar patent applications in Japan and other countries. See "-- Patents and Proprietary Technology."

OTHER PDL TECHNOLOGIES. In addition to its SMART antibody technology, PDL employs additional antibody-based drug development technologies to overcome shortcomings of murine antibodies. The Company is also pursuing a rational drug design program that leverages its computer expertise to potentially develop new drug candidates.

Human Antibodies. The use of fully human monoclonal antibodies is another approach to avoiding many of the problems associated with murine antibodies. In April 1993, PDL exclusively licensed from Novartis its patented "trioma" technology to generate certain human antibodies, along with four human anti-viral antibodies. Two of these human antibodies, OST 577 and PROTOVIR, are in clinical development. The trioma technology is used to produce fully human antibodies against viruses and potentially other organisms which infect humans. A key aspect of the technology is the use of a mouse-human hybrid cell line as the fusion partner to immortalize human antibody-producing B cells. Trioma cell lines generated in this manner often stably produce human antibodies. As with SMART antibodies, clinical trials and preclinical studies have shown that PDL's human antibodies generally avoid a HAMA response and have a longer half-life than murine antibodies. See "-- Collaborative and Licensing Arrangements -- Novartis."

New Technologies. The Company is pursuing a rational drug design program focusing on small molecules by extending the Company's computer modeling tools originally developed for its SMART antibody program. Rational drug design utilizes computer models of proteins and their interactions with smaller molecules in order to accelerate discovery and optimization of new drug compounds. Although PDL's technology is at an early stage, the Company believes that this application of its modeling algorithms may ultimately be used to develop non-antibody drug candidates. In addition, the Company plans to extend its research activities into other new areas, potentially including the development of novel classes of antibiotics for treating infections.

#### BUSINESS STRATEGY

PDL's objective is to leverage its research expertise and intellectual property in the field of antibodies to become a profitable, research-based biopharmaceutical company that manufactures and, in North America, markets its own products. PDL's strategy to achieve this objective involves the following elements:

Expand Product Portfolio. The Company believes that its SMART antibody technology is capable of converting essentially any promising murine antibody into a humanized antibody better suited for therapeutic use. As a result, the Company has been able to rapidly develop a broad portfolio of product candidates with potential applications to the prevention and treatment of autoimmune and inflammatory conditions, cancers, viral infections, and other diseases. This diverse product pipeline enhances commercial opportunities and reduces the Company's reliance on individual products.

Establish Collaborative Arrangements. The Company actively seeks corporate partnerships with pharmaceutical companies, and to date has entered into partnerships with eight such companies. Typically, the Company receives a licensing fee, research funding and/or milestone payments, and royalties on potential product sales in return for certain marketing rights to one or more potential products developed at PDL. These revenues help to defray PDL's own product development expenses, while the partner typically bears significant direct responsibility for certain product development activities and expenses.

Leverage Patent Position. An important new aspect of PDL's business strategy is to obtain both near-term revenues and potential royalties by licensing limited rights under its issued humanized antibody patents and corresponding patent applications to other companies developing humanized antibodies. In December 1996, PDL entered into its first such licensing agreement, with Sankyo Co., Ltd. ("Sankyo"). The Company's patents are also helpful in inducing other companies to enter into collaborative relationships with the Company, in which PDL uses its proprietary technology to develop SMART antibodies based on promising murine antibodies developed by the other companies. PDL has entered into six such relationships, including four since December 1995. In addition to paying PDL license and other fees, in some cases the other companies have granted PDL options to obtain North American co-promotion rights.

Retain and Obtain North American Marketing Rights. Where appropriate, PDL retains and obtains North American marketing or co-promotion rights to many of its potential products. This strategy provides the Company with future opportunities to generate greater revenues.

## COLLABORATIVE AND LICENSING ARRANGEMENTS

Roche. In 1989, PDL entered into agreements with Roche to collaborate on the research and development of SMART antibodies against the IL-2 receptor, including Zenapax. Under these agreements, Roche has exclusive, worldwide rights to manufacture, market and sell Zenapax. The arrangement provides for research and development funding, milestone and bonus payments and future royalties that could be received by PDL under the agreements. Most of such milestone and bonus payments have already been received from Roche, and Roche has completed its research funding to PDL under these agreements, although Roche will continue to fund its own clinical development activities.

In October 1996, PDL entered into a collaborative agreement with Roche providing for the humanization by PDL of a murine antibody that has potential for treating rheumatoid arthritis. PDL received a licensing and signing fee and can earn milestone payments and royalties on potential product sales of this compound by Roche.

Corange/Boehringer Mannheim. In October 1993, PDL and Corange entered into a collaborative arrangement providing for the grant of exclusive marketing rights in certain territories for a number of products in development. In consideration for these rights, Corange paid to PDL a \$10 million licensing and signing fee and \$30 million in research and development funding over three years and agreed to certain milestone payments and the payment of royalties on future product sales. As part of this arrangement, PDL and Corange further committed to negotiate additional agreements under which each company would manufacture and supply the other with certain of the antibodies covered by the collaborative arrangement for use in clinical trials and potential future product sales. As part of this collaborative arrangement, PDL and Corange also entered into a stock purchase agreement, a standstill agreement and a registration rights agreement pursuant to which Corange invested an aggregate of \$75 million in PDL through the purchase of approximately 2.433 million newly issued shares of common stock in December 1993 and 1994. Product rights and duties under this arrangement were subsequently assigned and delegated to Corange's subsidiary, Boehringer Mannheim.

In 1994 and 1995, the parties amended certain of the agreements in this collaborative arrangement. As part of these amendments, the parties agreed to terminate Boehringer Mannheim's rights to certain preclinical products. As a result, Boehringer Mannheim currently has exclusive marketing rights outside of North America and Asia for PROTOVIR and the SMART Anti-L-Selectin Antibody, exclusive marketing rights outside of North America for OST 577, and North American co-promotion rights and exclusive marketing rights outside of North America for an additional antibody to an undisclosed cardiovascular target. The parties further agreed to allocate primary responsibility for clinical development and manufacturing of PDL's Human Anti-Hepatitis B Antibody to Boehringer Mannheim and for clinical development and manufacturing of PROTOVIR to PDL. In addition, as part of these amendments, Boehringer Mannheim agreed to provide certain clinical material manufactured by Boehringer Mannheim to PDL without charge for PDL's use in preclinical and clinical research. The amendment also provides that Boehringer Mannheim will assume the development and manufacturing expenses related to the OST 577 Human Anti-Hepatitis B Antibody, subject to reimbursement of certain clinical trial expenses by PDL of up to \$2 million toward Phase II studies and up to \$8.8 million for Phase III studies, if certain conditions are met. As a result of these amendments, PDL is no longer eligible to receive milestone payments with respect to OST 577 and PROTOVIR. In the first quarter of 1996, Boehringer Mannheim made a milestone payment to PDL with respect to the SMART Anti-L-Selectin Antibody.

Yamanouchi. In February 1991, PDL and Yamanouchi Pharmaceutical Co., Ltd ("Yamanouchi") entered into a collaborative agreement providing for the humanization of a murine anti-platelet (anti-gpIIb/IIIa) antibody developed by Yamanouchi for potentially treating certain cardiovascular disorders. PDL has completed humanization of the antibody and Yamanouchi is currently in the preclinical stage of development with this humanized antibody. Yamanouchi has exclusive, worldwide rights to the resulting SMART antibody and is responsible for all clinical trials and for obtaining necessary government regulatory approvals. The agreement provides for milestone payments, all of which have been received, and royalties on future product sales.

Kanebo. In February 1992, PDL and Kanebo, Ltd. ("Kanebo") entered into a product licensing agreement whereby Kanebo received an exclusive license to the SMART M195 Antibody for therapeutic uses in certain Asian countries including Japan in exchange for a licensing and signing fee, research funding, milestone payments and royalties on future product sales. The research funding period under the agreement expired in September 1993. Also in September 1993 and May 1995, PDL entered into purchase agreements with Kanebo pursuant to which PDL sold Kanebo preclinical and clinical quantities of the SMART M195 Antibody. Kanebo is currently conducting a Phase I clinical trial of the SMART M195 Antibody in Japan.

Novartis. In April 1993, PDL and Novartis entered into agreements providing for the grant of exclusive licenses to PDL of four human anti-viral antibodies and other related technology and antibodies from Novartis. The human monoclonal antibodies target cytomegalovirus, the hepatitis B virus, herpes simplex viruses, and varicella zoster virus. In addition, PDL received an exclusive license to the SMART ABL 364 Antibody, an antibody previously humanized by PDL for Novartis, and the related murine antibody, ABL 364, of Novartis. This arrangement also included exclusive licenses to the Novartis trioma human antibody technology and patents as well as the purchase of certain antibody supplies and related manufacturing equipment. In consideration for the licenses and assets transferred, PDL initially paid Novartis \$5 million and agreed to provide up to an additional \$5 million in future milestone payments in the event of certain product approvals under the agreements.

Under the terms of the Novartis agreements, PDL has the right to manufacture and market the antibodies acquired from Novartis throughout the world. Novartis retained certain co-promotion and co-marketing rights, and rights to royalties on sales by PDL of licensed products in countries where Novartis does not sell these antibodies with PDL under the co-promotion and co-marketing arrangements. In November 1993, PDL paid Novartis an additional \$2.75 million to amend the April 1993 agreement relating to the human antibodies in order to terminate certain of Novartis' co-promotion and co-marketing rights in countries outside of the U.S., Canada and Asia and to reduce royalties Novartis may earn from the sale of human antibody products in countries outside of the U.S., Canada and Asia.

Mochida. In December 1995, PDL and Mochida Pharmaceutical Co., Ltd, ("Mochida") entered into a collaborative agreement providing for the humanization by PDL of a murine antibody that has potential for treating certain infectious diseases. To date, PDL has received a licensing and signing fee and milestone payment and can earn a further milestone payment and royalties on potential product sales of this compound by Mochida. In addition, PDL has an option to co-promote the compound in North America.

Japanese Collaborator. In September 1996, PDL entered into a collaborative agreement with another Japanese company providing for the humanization by PDL of a murine antibody that has potential for treating cancer. PDL received a licensing and signing fee and can earn milestone payments and royalties on potential product sales of this compound by the Japanese company. PDL also has an option to co-promote the compound in North America. The name of the Japanese company has not been disclosed.

Sankyo. In December 1996, PDL entered into a patent license agreement with Sankyo pursuant to which PDL granted a worldwide, nonexclusive license under its humanized antibody patents to that company for an antibody to a specific target antigen. PDL received a \$1 million licensing and signing fee and will receive royalties on future product sales. The name of the antibody target has not been disclosed.

Genetics Institute. In December 1996, PDL and Genetics Institute, Inc. ("Genetics Institute"), a wholly-owned subsidiary of American Home Products, entered into a collaborative agreement pursuant to which PDL will initially develop three humanized monoclonal antibodies based on murine antibodies developed by Genetics Institute that modulate the immune co-stimulatory pathway. In addition, Genetics Institute received a worldwide, nonexclusive license for those antibodies under PDL's humanized antibody patents. PDL received a \$2.5 million licensing and signing fee and is entitled to receive milestone payments and royalties on potential product sales. In addition, PDL received an option to co-promote the products in North America (U.S. and Canada). The agreement contemplates that PDL may collaborate with Genetics Institute to humanize

additional antibodies in the field.

For a discussion of certain risks related to the Company's collaborations, see "Risk Factors -- Dependence on Collaborative Partners."

Molecular Applications Group. PDL has licensed from Molecular Applications Group exclusive rights to certain protein modeling software. PDL uses this software in designing its SMART antibodies. PDL paid an initial license fee upon execution of this license and is obligated to pay an additional fixed fee each year, subject to certain adjustments.

Certain Patent Licenses. In July 1989, PDL obtained a nonexclusive license under certain patents from the Medical Research Council of the United Kingdom ("MRC License") to an antibody "reshaping" process, which allows the exchange of complementarity determining regions from different antibodies. PDL paid an initial license fee upon execution of the MRC License and is obligated to pay royalties on sales of products covered by the licensed patents. Each of PDL's SMART antibody products may be within the scope of the MRC License. In addition, the MRC License includes a sublicense to the Boss Patent held by Celltech relating to PDL's current process for producing SMART antibodies. In October 1994, PDL obtained a non-exclusive license from Celltech to the Boss Patent relating to PDL's current process for producing certain other PDL potential products, including OST 577 and PROTOVIR.

#### MANUFACTURING

PDL currently leases approximately 45,000 square feet housing its manufacturing facility in Plymouth, Minnesota. The Company intends to manufacture the SMART M195 Antibody, PROTOVIR, if clinical trials warrant continued development, and some of its other products in preclinical development. PDL intends to continue to manufacture potential products for use in preclinical studies and clinical trials using this manufacturing facility in accordance with standard procedures that comply with cGMP and appropriate regulatory standards. Roche is responsible for manufacturing Zenapax and Boehringer Mannheim is responsible for manufacturing OST 577.

In order to obtain regulatory approvals and to expand its capacity to produce its products for commercial sale at an acceptable cost, PDL will need to improve and expand its existing manufacturing capabilities and demonstrate to the FDA its ability to manufacture its products using controlled, reproducible processes. Accordingly, the Company is evaluating plans to improve and expand the capacity of its current facility. Such plans, if instituted, would result in substantial costs to the Company and may require a suspension of manufacturing operations during construction. See "Risk Factors -- Absence of Manufacturing Experience; Dependence on Manufacturing by Boehringer Mannheim" and "-- Uncertainties Resulting From Manufacturing Changes."

#### PATENTS AND PROPRIETARY TECHNOLOGY

The Company's success is significantly dependent on its ability to obtain patent protection for its products and technologies and to preserve its trade secrets and operate without infringing on the proprietary rights of third parties. PDL files and prosecutes patent applications to protect its inventions. No assurance can be given that the Company's pending patent applications will result in the issuance of patents or that any patents will provide competitive advantages or will not be invalidated or circumvented by its competitors. Moreover, no assurance can be given that patents are not issued to, or patent applications have not been filed by, other companies which would have an adverse effect on the Company's ability to use, manufacture or market its products or maintain its competitive position with respect to its products. Other companies obtaining patents claiming products or processes useful to the Company may bring infringement actions against the Company. As a result, the Company may be required to obtain licenses from others or not be able to use, manufacture or market its products. Such licenses may not be available on commercially reasonable terms, if at all.

PDL has several patents and has exclusively licensed certain patents regarding the trioma technique and related antibodies from Novartis. In particular with respect to humanization technology, in June 1996, PDL was issued a U.S. patent covering Zenapax and certain related antibodies against the IL-2 receptor. In addition, PDL is currently prosecuting other patent applications with the PTO and in other countries, including members of the European Patent Convention, Canada, Japan and Australia. The patent applications

are directed to various aspects of PDL's SMART and human antibodies, antibody technology and other programs, and include claims relating to compositions of matter, methods of preparation and use of a number of PDL's compounds. However, PDL does not know whether any pending applications will result in the issuance of patents or whether such patents will provide protection of commercial significance. Further, there can be no assurance that PDL's patents will prevent others from developing competitive products using related technology.

Patents in the U.S. are issued to the party that is first to invent the claimed invention. Since patent applications in the U.S. are maintained in secrecy until patents issue, PDL cannot be certain that it was the first inventor of the invention covered by its pending patent applications or patents or that it was the first to file patent applications for such inventions. The patent positions of biotechnology firms generally are highly uncertain and involve complex legal and factual questions. No consistent policy has emerged regarding the breadth of claims in biotechnology patents, and patents of biotechnology products are uncertain, so that even issued patents may later be modified or revoked by the PTO or the courts. Moreover, the issuance of a patent in one country does not assure the issuance of a patent with similar claims in another country, and claim interpretation and infringement laws vary among countries, so the extent of any patent protection may vary in different territories.

In January and December 1996, PDL was issued patents by the EPO and PTO, respectively. PDL believes the patent claims cover Zenapax and, based on its review of the scientific literature, most humanized antibodies. The EPO patent applies in the United Kingdom, Germany, France, Italy and eight other Western European countries. The EPO (but not PTO) procedures provide for a nine-month opposition period in which other parties may submit arguments as to why the patent was incorrectly granted and should be withdrawn or limited. The entire opposition process, including appeals, may take several years to complete, and during this lengthy process, the validity of the EPO patent will be at issue, which may limit the Company's ability to negotiate or collect royalties or to negotiate future collaborative research and development agreements based on this patent. Eighteen notices of opposition to PDL's European patent were filed during the opposition period, including oppositions by major pharmaceutical and biotechnology companies, which cited references and made arguments not considered by the EPO and PTO before grant of the respective patents. The oppositions currently are being reviewed by the Company's patent counsel. PDL intends to vigorously defend the European and, if necessary, the U.S. patent; however there can be no assurance that the Company will prevail in the opposition proceedings or any litigation contesting the validity or scope of these patents. In addition, such proceedings or litigation, or any other proceedings or litigation to protect the Company's intellectual property rights or defend against infringement claims by others, could result in substantial costs and a diversion of management's time and attention, which could have a material adverse effect on the business and financial condition of the Company.

A number of companies, universities and research institutions have filed patent applications or received patents in the areas of antibodies and other fields relating to PDL's programs. Some of these applications or patents may be competitive with PDL's applications or contain claims that conflict with those made under PDL's patent applications or patents. Such conflict could prevent issuance of patents to PDL, provoke an interference with PDL's patents or result in a significant reduction in the scope or invalidation of PDL's patents, if issued. An interference is an administrative proceeding conducted by the PTO to determine the priority of invention and other matters relating to the decision to grant patents. Moreover, if patents are held by or issued to other parties that contain claims relating to PDL's products or processes, and such claims are ultimately determined to be valid, no assurance can be given that PDL would be able to obtain licenses to these patents at a reasonable cost, if at all, or to develop or obtain alternative technology.

The Company is aware that Celltech has been granted a patent by the EPO covering certain humanized antibodies, which PDL has opposed, and Celltech has announced that it has received a notice of allowance of a corresponding U.S. patent (the "U.S. Adair Patent") and expects the patent to issue in early 1997. Because U.S. patent applications are maintained in secrecy, PDL cannot review the scope of the claims in the U.S. Adair Patent. Accordingly, there can be no assurance that such claims would not cover any of PDL's SMART antibodies or be competitive with or conflict with claims in PDL's patents or patent applications. If the U.S. Adair Patent issues and if it is determined to be valid and to cover any of PDL's SMART antibodies, there can

be no assurance that PDL would be able to obtain a license on commercially reasonable terms, if at all. If the claims of the U.S. Adair Patent conflict with claims in PDL's patents or patent applications, there can be no assurance that an interference would not be declared by the PTO, which could take several years to resolve and could involve significant expense to the Company. Also, such conflict could prevent issuance of patents to PDL relating to humanization of antibodies or result in a significant reduction in the scope or invalidation of PDL's patents, if issued. Moreover, uncertainty as to the validity or scope of patents issued to PDL relating generally to humanization of antibodies may limit the Company's ability to negotiate or collect royalties or to negotiate future collaborative research and development agreements based on this patent.

PDL has obtained a nonexclusive license under a patent held by Celltech (the "Boss Patent") relating to PDL's current process for producing SMART and human antibodies. An interference proceeding was declared in early 1991 by the PTO between the Boss Patent and a patent application filed by Genentech to which PDL does not have a license. PDL is not a party to the interference proceeding, and the timing and outcome of the proceeding or the scope of any patent that may be subsequently issued cannot be predicted. If the Genentech patent application were held to have priority over the Boss Patent, and if it were determined that PDL's processes and products were covered by a patent issuing from such patent application, PDL may be required to obtain a license under such patent or to significantly alter its processes or products. There can be no assurance that PDL would be able to successfully alter its processes or products to avoid infringing such patent or to obtain such a license on commercially reasonable terms, if at all, and the failure to do so could have a material adverse effect on PDL.

The Company is aware that Lonza Biologics, Inc. has a patent issued in Europe to which PDL does not have a license (although Roche has advised the Company that it has a license covering Zenapax), which may cover the process the Company uses to produce its potential products. If it were determined that PDL's processes were covered by such patent, PDL may be required to obtain a license under such patent or to significantly alter its processes or products, if necessary to manufacture or import its products in Europe. There can be no assurance that PDL would be able to successfully alter its processes or products to avoid infringing such patent or to obtain such a license on commercially reasonable terms, if at all, and the failure to do so could have a material adverse effect on the business and financial condition of the Company.

Also, Genentech has patents in the U.S. and Europe that relate to chimeric antibodies. The European patent is currently in the opposition process. If Genentech were to assert that the Company's SMART antibodies infringe these patents, PDL may have to choose whether to seek a license or to challenge in court the validity of such patents or Genentech's claim of infringement. There can be no assurance that PDL would be successful in either obtaining such a license on commercially reasonable terms, if at all, or that it would be successful in such a challenge of the Genentech patents, and the failure to do so would have a material adverse effect on the business and financial condition of the Company.

In addition to seeking the protection of patents and licenses, PDL also relies upon trade secrets, know-how and continuing technological innovation which it seeks to protect, in part, by confidentiality agreements with employees consultants, suppliers and licensees. There can be no assurance that these agreements will not be breached, that PDL would have adequate remedies for any breach or that PDL's trade secrets will not otherwise become known or independently developed by competitors.

#### GOVERNMENT REGULATION

The manufacturing, testing and marketing of PDL's products are subject to regulation by numerous governmental authorities in the U.S. and other countries based upon their safety and efficacy. In the U.S., pharmaceutical (biologic) products are subject to rigorous FDA regulation. The federal Food, Drug and Cosmetic Act ("FD&C Act"), Public Health Service Act ("PHS Act") and other federal, state and local regulations govern the manufacture, testing, labeling, storage, record keeping, clinical and nonclinical studies to assess safety and efficacy, approval, advertising and promotion of pharmaceutical products. The process of developing and obtaining approval for a new pharmaceutical product within this regulatory framework requires a number of years and the expenditure of substantial resources. There can be no assurance that necessary approvals will be obtained on a timely basis, if at all.

In addition to the requirement for FDA approval of each pharmaceutical product, each pharmaceutical product manufacturing facility must be registered with, and approved by, the FDA. The manufacturing and quality control procedures must conform to cGMP in order to receive FDA approval. Pharmaceutical product manufacturing establishments are subject to inspections by the FDA and local authorities as well as inspections by authorities of other countries. To supply pharmaceutical products for use in the U.S., foreign manufacturing establishments must comply with cGMP and are subject to periodic inspection by the FDA or by corresponding regulatory agencies in such countries under reciprocal agreements with the FDA. Moreover, pharmaceutical product manufacturing facilities may also be regulated by state, local and other authorities.

For marketing of pharmaceutical products outside the U.S., PDL is subject to foreign regulatory requirements governing marketing approval, and FDA and other U.S. export provisions should the pharmaceutical product be manufactured in the U.S. Requirements relating to the manufacturing, conduct of clinical trials, product licensing, promotion, pricing and reimbursement vary widely in different countries. Difficulties or unanticipated costs or price controls may be encountered by PDL or its licensees or its marketing partners in their respective efforts to secure necessary governmental approvals to market the potential pharmaceutical products, which could delay or preclude PDL or its licensees or its marketing partners from marketing their potential pharmaceutical products.

The basic steps required by the FDA before a new pharmaceutical product for human use may be marketed in the U.S. include (i) preclinical laboratory and animal tests, (ii) submission to the FDA of an application for an Investigational New Drug ("IND") which must be reviewed by the FDA before clinical trials may begin, (iii) completion of adequate and well-controlled human clinical trials to establish the safety and efficacy of the pharmaceutical product for its intended use, (iv) as of May 1996 for therapeutic monoclonal antibodies, submission of a Biologics License Application ("BLA") to the FDA, and (v) FDA approval of the BLA prior to any commercial sale or shipment of the pharmaceutical product.

Preclinical tests for safety are conducted in the laboratory and in animals in compliance with FDA good laboratory practices regulations and other additional tests are conducted to assess the potential safety and biological activity of the pharmaceutical product in order to support a sponsor's contention that it is reasonably safe to conduct proposed clinical investigations. The results of these studies are submitted to the FDA as part of an IND. Testing in humans may begin 30 days after filing an IND unless the FDA requests additional information or raises questions or concerns that must be resolved before the FDA will permit the study to proceed. In such cases, there can be no assurance that resolution will be achieved in a timely manner, if at all.

Clinical trials are conducted in accordance with good clinical practices based on regulations promulgated by the FDA and under protocols that include detail on the objectives of the trial, the parameters to be used to monitor safety, and the efficacy criteria to be evaluated. Each protocol must be submitted to the FDA as part of an IND. Further, each clinical trial must be reviewed and approved by an independent institutional review board ("IRB") at each of the medical institutions at which the trial will be conducted. There can be no assurance that submission of a protocol to an IRB or an IND to the FDA will result in the initiation or completion of a clinical investigation. Clinical trials are typically conducted in three sequential phases, although the phases may overlap. In Phase I, the pharmaceutical product is typically tested in a small number of healthy people or patients to initially determine safety, dose tolerance (including side effects associated with increasing doses), metabolism, distribution and excretion. Phase II usually involves studies in a limited patient population to obtain a preliminary determination of efficacy, to identify an optimal dose and to further identify safety risks. Phase III trials are larger, multi-center trials undertaken to provide further confirmation of efficacy and provide additional safety information in a specific patient population. The FDA reviews the results of the trials and may discontinue them at any time for safety reasons or other reasons if they were deemed to be non-compliant with FDA regulations. There can be no assurance that Phase I, II or III clinical trials will be completed successfully within any specific time period, if at all, with respect to any of the Company's or its collaborators' pharmaceutical products, each of which is subject to such testing requirements.

Recently, the FDA has been engaged in regulatory reform efforts aimed at reducing the regulatory burden on manufacturers of certain biotechnology products. For example, in May 1996, the FDA issued regulations that eliminate the previous requirement of a separate establishment license application, in addition



to the product license application, for certain categories of biotechnology products, including the pharmaceutical products of the Company. Furthermore, the FDA has announced its intention to adopt a single approval application for all pharmaceutical products. There can be no assurance, however, that implementation of these changes will benefit the Company or otherwise reduce the regulatory requirements applicable to the Company or that these changes will not result in the imposition of other, more burdensome obligations on the Company in connection with regulatory review of the Company's products. In any event, the results of the preclinical and clinical trials and a description of the manufacturing process and tests to control the quality of the pharmaceutical product must be submitted to the FDA in a BLA for approval. The approval process is likely to require substantial time and resource commitment by an applicant. Approval is influenced by a number of factors, including the severity of the disease being treated, availability of alternative treatments, and the risks and benefits of the proposed therapeutic as demonstrated in the clinical trials. Additional data or clinical trials may be requested by the FDA and may delay approval. There is no assurance that FDA approval will be granted on a timely basis, if at all. After FDA approval for the initial indications and dosage forms, further studies may be required by the FDA to gain approval for labeling of the pharmaceutical product for other disease indications or dosage forms, or to monitor for adverse effects. Both before and after approval is obtained, a pharmaceutical product, its manufacturer and the holder of the BLA for the pharmaceutical product are subject to comprehensive regulatory oversight. The FDA may deny a BLA if applicable regulatory criteria are not satisfied, require additional testing or information or require postmarketing testing and surveillance to monitor the safety or efficacy of the pharmaceutical product. Moreover, even if regulatory approval is granted, such approval may be subject to limitations on the indicated uses for which the pharmaceutical product may be marketed. Further, approvals may be withdrawn if compliance with regulatory standards is not maintained or if problems with the pharmaceutical product occur following approval. Among the conditions for BLA approval is the requirement that the manufacturer of the pharmaceutical product comply with cGMP. In addition, under a BLA, the manufacturer continues to be subject to facility inspection and the applicant must assume responsibility for compliance with applicable pharmaceutical product and establishment standards. Violations of regulatory requirements at any stage may result in various adverse consequences, including FDA refusal to accept a license application, total or partial suspension of licensure, delay in approving or refusal to approve the pharmaceutical product or pending marketing approval applications, warning letters, fines, injunctions, withdrawal of the previously approved pharmaceutical product or marketing approvals and/or the imposition of criminal penalties against the manufacturer and/or BLA holders. In addition, later discovery of previously unknown problems may result in new restrictions on such pharmaceutical product, manufacturer and/or BLA holders, including withdrawal of the pharmaceutical product or marketing approvals and pharmaceutical product recalls or seizures.

In addition to regulations enforced by the FDA, the Company is subject to federal, state and local laws and regulations governing the use, generation, manufacture, storage, discharge, handling and disposal of certain materials and wastes used in its operations, some of which are classified as "hazardous." There can be no assurance that the Company will not be required to incur significant costs to comply with environmental laws, the Occupational Safety and Health Act, and state, local and foreign counterparts to such laws, rules and regulations as its manufacturing and research activities are increased or that the operations, business and future profitability of the Company will not be adversely affected by current or future laws, rules and regulations.

Although the Company believes that its safety processes and procedures and its handling and disposing of materials and wastes comply with applicable laws, rules and regulations, the risk of accidental contamination or injury from these materials cannot be eliminated. In the event of such an accident, the Company could be held liable for any damages that result and any such liability could exceed the resources of the Company. In addition, the Company cannot predict the extent of the adverse effect on its business or the financial and other costs that might result from any new government requirements arising out of future legislative, administrative or judicial actions. Compliance with such laws, rules and regulations does not have, nor is such compliance presently expected to have, a material adverse effect on its business. However, the Company cannot predict the extent of the adverse effect on its business or the financial and other costs that might result from any new government requirements arising out of future legislative, administrative or judicial actions.

## COMPETITION

The Company's potential products are intended to address a wide variety of disease conditions, including autoimmune diseases, inflammatory conditions, cancers and viral infections. Competition with respect to these disease conditions is intense and is expected to increase. This competition involves, among other things, successful research and development efforts, obtaining appropriate regulatory approvals, establishing and defending intellectual property rights, successful product manufacturing, marketing, distribution, market and physician acceptance, patient compliance, price and potentially securing eligibility for reimbursement or payment for the use of the Company's product. The Company believes its most significant competitors may be fully integrated pharmaceutical companies with substantial expertise in research and development, manufacturing, testing, obtaining regulatory approvals, marketing and securing eligibility for reimbursement or payment, and substantially greater financial and other resources than the Company. Smaller companies also may prove to be significant competitors, particularly through collaborative arrangements with large pharmaceutical companies. Furthermore, academic institutions, governmental agencies and other public and private research organizations conduct research, seek patent protection, and establish collaborative arrangements for product development, clinical development and marketing. These companies and institutions also compete with the Company in recruiting and retaining highly qualified personnel. The biotechnology and pharmaceutical industries are subject to rapid and substantial technological change. The Company's competitors may develop and introduce other technologies or approaches to accomplishing the intended purposes of the Company's products which may render the Company's technologies and products noncompetitive and obsolete.

In addition to currently marketed competitive drugs, the Company is aware of potential products in research or development by its competitors that address all of the diseases being targeted by the Company. These and other products may compete directly with the potential products being developed by the Company. In this regard, the Company is aware that potential competitors are developing antibodies or other compounds for treating autoimmune diseases, inflammatory conditions, cancers and viral infections. In particular, a number of other companies have developed and will continue to develop human antibodies and humanized antibodies. In addition, protein design is being actively pursued at a number of academic and commercial organizations, and several companies have developed or may develop technologies that can compete with the Company's SMART and human antibody technologies. There can be no assurance that competitors will not succeed in more rapidly developing and marketing technologies and products that are more effective than the products being developed by the Company or that would render the Company's products or technology obsolete or noncompetitive. Further, there can be no assurance that the Company's collaborative partners will not independently develop products competitive with those licensed to such partners by the Company, thereby reducing the likelihood that the Company will receive revenues under its agreements with such partners.

Any potential product that the Company succeeds in developing and for which it gains regulatory approval must then compete for market acceptance and market share. For certain of the Company's potential products, an important factor will be the timing of market introduction of competitive products. Accordingly, the relative speed with which the Company and competing companies can develop products, complete the clinical testing and approval processes, and supply commercial quantities of the products to the market is expected to be an important determinant of market success. Other competitive factors include the capabilities of the Company's collaborative partners, product efficacy and safety, timing and scope of regulatory approval, product availability, marketing and sales capabilities, reimbursement coverage, the amount of clinical benefit of the Company's products relative to their cost, method of administration, price and patent protection. There can be no assurance that the Company's competitors will not develop more efficacious or more affordable products, or achieve earlier product development completion, patent protection, regulatory approval or product commercialization than the Company. The occurrence of any of these events by the Company's competitors could have a material adverse effect on the business and financial condition of the Company.

## HUMAN RESOURCES

As of December 31, 1996, PDL had 208 full-time employees, of whom 25 hold Ph.D. or M.D. degrees. Of the total, 72 employees were engaged in research and development, 35 in quality assurance and

compliance, 17 in clinical and regulatory, 55 in manufacturing and 29 in general and administrative functions. PDL's scientific staff members have diversified experience and expertise in molecular and cell biology, biochemistry, virology, immunology, protein chemistry, computational chemistry and computer modeling. PDL's success will depend in large part on its ability to attract and retain skilled and experienced employees. None of PDL's employees are covered by a collective bargaining agreement, and PDL considers its relations with its employees to be good.

#### FACILITIES

The Company leases approximately 43,000 square feet of laboratory and office space in Mountain View, California. The Company's lease will terminate on December 31, 2000. The Company has also leased an additional 10,000 square feet of office space located adjacent to its current facility in Mountain View, California through May 31, 1998. The Company believes that it will need to obtain additional laboratory and office space in 1997 to supplement or replace the facilities at its Mountain View site.

The Company also leases approximately 45,000 square feet of manufacturing, laboratory and office space in Plymouth, Minnesota. The Company's lease will terminate on February 29, 2004, subject to the Company's options to extend the lease for two additional five year terms. Although these facilities currently leased by the Company are sufficient for its present manufacturing operations, the Company believes that it may have to obtain additional manufacturing space in the future and may lease or acquire additional space as required.

## MANAGEMENT

## EXECUTIVE OFFICERS AND DIRECTORS

Information with respect to the executive officers and directors of the Companies as of December 31, 1996 is set forth below:

NAME	AGE	POSITION
Laurence Jay Korn, Ph.D.....	47	Chief Executive Officer and Chairperson of the Board of Directors
Jon S. Saxe.....	60	President and Director
Cary L. Queen, Ph.D.....	46	Senior Vice President, Vice President, Research and Director
Christine Booker.....	55	Vice President, Quality and Compliance
Douglas O. Ebersole.....	40	Vice President, Licensing and Corporate Services, General Counsel and Secretary
Fred Kurland.....	46	Vice President and Chief Financial Officer
Daniel J. Levitt, M.D., Ph.D.....	49	Senior Vice President, Clinical and Regulatory Affairs
Mark D. Young, Ph.D.....	46	Vice President, Technical Operations
Stanley Falkow, Ph.D.(1).....	62	Distinguished Investigator (consultant) and Director
George M. Gould(1)(2).....	59	Director
Max Link, Ph.D.(2).....	56	Director

(1) Member of the Audit Committee.

(2) Member of the Compensation Committee.

Laurence Jay Korn, Ph.D., has served as a director and Chairperson of the Board since July 1986 and Chief Executive Officer since January 1987. Previously, Dr. Korn headed a research laboratory and served on the faculty of the Department of Genetics at the Stanford University School of Medicine from March 1981 to December 1986. Dr. Korn received his Ph.D. from Stanford University and was a Helen Hay Whitney Postdoctoral Fellow at the Carnegie Institution of Washington and a Staff Scientist at the MRC Laboratory of Molecular Biology in Cambridge, England, before becoming an Assistant Professor at Stanford.

Jon S. Saxe has been a director of the Company since March 1989 and has served as President of the Company since January 1995. Mr. Saxe was a consultant to the Company from June 1993 to December 1994. He has served as President of Saxe Associates, a biotechnology consulting firm, since May 1993. Mr. Saxe served as the President, Chief Executive Officer and a director of Synergen, Inc., a biopharmaceutical company, from October 1989 to April 1993. Mr. Saxe served as Vice President, Licensing & Corporate Development for Roche from August 1984 through September 1989, and Head Patent Law from September 1978 through September 1989. Mr. Saxe is also a director of InSite Vision Incorporated, Microcide Pharmaceuticals, Inc., Incyte Pharmaceuticals Inc. and ID Biomedical Corporation. Mr. Saxe received his J.D. from George Washington University School of Law and his LL.M. from New York University School of Law.

Cary L. Queen, Ph.D., has served as a director since January 1987, as Vice President, Research, since April 1989 and as Senior Vice President since June 1993. Previously, Dr. Queen held positions at the National Institutes of Health from 1983 to 1986, where he studied the regulation of genes involved in the synthesis of antibodies. Dr. Queen received his Ph.D. in Mathematics from the University of California at Berkeley and subsequently served as an Assistant Professor of Mathematics at Cornell University.

Christine Booker has served as the Company's Vice President, Quality and Compliance since February 1996. Prior to joining the Company, from February 1995 through January 1996, Ms. Booker served as a consultant to the Company. Since August 1994, Ms. Booker has served as the principal consultant for Booker Associates. From March 1992 to October 1994, Ms. Booker served as Director, Quality Assurance for Synergen, Inc. From October 1980 to February 1992, Ms. Booker served in various positions at Genentech, Inc., including Associate Director, Technical Operations. Ms. Booker received her B.S. in Chemistry from DePaul University.

Douglas O. Ebersole has served as the Company's Vice President, Licensing, General Counsel and Secretary since July 1992 and in April 1996 was appointed to the additional position of Vice President, Corporate Services. Prior to joining the Company, he served first as Associate General Counsel and later as General Counsel at NeXT Computer, Inc. Prior to joining NeXT in 1989, he was a partner in the corporate department of the law firm Ware & Freidenrich (now known as Gray Cary Ware & Freidenrich). Mr. Ebersole received his J.D. from Stanford Law School.

Fred Kurland has served as the Company's Vice President and Chief Financial Officer since February 1996. Prior to joining the Company, from May 1995 to January 1996, Mr. Kurland served as the Vice President, Chief Financial Officer and Secretary of Applied Immune Sciences, Inc., a biotechnology company. From February 1991 to April 1995, Mr. Kurland served as Vice President and Controller of Syntex Corporation, a pharmaceutical company ("Syntex"). From 1981 to February 1991, Mr. Kurland served in various senior financial positions in corporate and operations functions at Syntex. Mr. Kurland received his J.D. and M.B.A. degrees from the University of Chicago.

Daniel J. Levitt, M.D., Ph.D., has served as Senior Vice President, Clinical and Regulatory Affairs of the Company since November 1996. From February 1995 to October 1996 he served as Vice President of Drug Development and Chief Medical Officer of Geron Corporation, a biotechnology company. From 1990 until January 1995, Dr. Levitt held various positions at Sandoz Pharma Ltd. (now known as Novartis Pharma Ltd.), a pharmaceutical company, most recently as Worldwide Head of Oncology Clinical Research and Development. From 1986 to 1990, Dr. Levitt held various positions with Roche, including Director of Clinical Oncology and Immunology. He received post-graduate training at Yale-New Haven Hospital and the University of Chicago Pritzker School of Medicine. Dr. Levitt holds an M.D. and Ph.D. from the University of Chicago Pritzker School of Medicine.

Mark D. Young, Ph.D., has served as the Company's Vice President, Technical Operations since September 1995. From February 1995 through August 1995, Dr. Young served as acting Head of Manufacturing of the Company. From 1989 through January 1995, Dr. Young served in various senior management positions at Synergen Inc. and its successor Amgen, a biotechnology company, including Vice President, Process Development and Executive Vice President, Technical Operations. Dr. Young has over 20 years experience in fermentation and biotechnology-based pharmaceutical process development and manufacturing. Dr. Young received his Ph.D. in Chemical Engineering from the University of Michigan and his M.S. in Chemical Engineering from Columbia University.

Stanley Falkow, Ph.D., has been a director of the Company since December 1991, a consultant to the Company since 1987 and a Distinguished Investigator for the Company since 1991. Dr. Falkow has served as a Professor of Microbiology, Immunology and Medicine at the Stanford University School of Medicine since 1981. Dr. Falkow is a recipient of the Paul Erlich Prize from the German Federal Republic and the Squibb Award of the Infectious Diseases Society of America and is a member of the U.S. National Academy of Sciences and the American Academy of Arts and Sciences. Dr. Falkow is also a director of GalaGen Inc.

George M. Gould has been a director of the Company since October 1989. Mr. Gould is of counsel to the law firm Crummy, Del Deo, Dolan, Griffinger & Vecchione. From May 1996 to December 1996, Mr. Gould was a Senior Vice President of PharmaGenics, Inc., a biotechnology company. Prior to that time Mr. Gould served as Vice President of Licensing & Corporate Development and Chief Patent Counsel for Roche from October 1989 to May 1996.

Max Link, Ph.D., has been a director of the Company since June 1993. Dr. Link served as the Chief Executive Officer of Boehringer Mannheim -- Therapeutics from October 1993 to May 1994 and as the Chief Executive Officer of Corange Ltd. from May 1993 to May 1994. Dr. Link served as the Chairman of Sandoz Pharma Ltd. (now known as Novartis Pharma Ltd.) from April 1992 to April 1993. Dr. Link served in various management positions at Sandoz Ltd. (now known as Novartis Ltd.) and Sandoz Pharmaceuticals Corporation (now known as Novartis Pharmaceuticals Corporation) from October 1971 to April 1992. Dr. Link is also a director of Access Pharmaceuticals, Inc., Alexion Pharmaceutical Inc., CyTRx Corp., Human Genome Sciences, Inc. and Procept, Inc.

## PRINCIPAL AND SELLING STOCKHOLDERS

The following table sets forth certain information regarding beneficial ownership of the Company's Common Stock as of December 31, 1996, and as adjusted to reflect the sale of shares offered by this Prospectus by (i) each person who is known by the Company, based on the records of the Company's transfer agent and relevant documents filed with the Commission, to own beneficially more than 5% of the outstanding shares of the Company's Common Stock, (ii) each member of the Company's Board of Directors, (iii) the Chief Executive Officer and the five other most highly compensated executive officers of the Company for the year ended December 31, 1996, (iv) all members of the Board of Directors and executive officers of the Company as a group, and (v) the Selling Stockholder. Except as set forth below, the address of each named individual is the address of the Company.

NAME OF BENEFICIAL OWNER OR GROUP AND NATURE OF BENEFICIAL OWNERSHIP(1)	SHARES BENEFICIALLY OWNED PRIOR TO OFFERING		NUMBER OF SHARES OFFERED	SHARES BENEFICIALLY OWNED AFTER OFFERING	
	NUMBER	PERCENT		NUMBER	PERCENT
Corange International Limited..... 22 Church Street P.O. Box HM2026 Hamilton HM HX, Bermuda	2,432,877	15.44%	750,000	1,682,877	9.48%
LGT Asset Management, Inc.(2)..... Chancellor LGT Asset Management, Inc. Chancellor LGT Trust Company 50 California St., 27th Floor San Francisco, CA 94111	1,989,500	12.62	--	1,989,500	11.20
Hoffmann-La Roche Inc..... 340 Kingsland Street Nutley, NJ 07110	1,321,418	8.39	--	1,321,418	7.44
FMR Corp.(2)..... 82 Devonshire Street Boston, MA 02109	860,300	5.46	--	860,300	4.84
Cary L. Queen, Ph.D.(3).....	881,750	5.54	--	881,750	4.92
Laurence Jay Korn, Ph.D.(4).....	853,949	5.36	--	853,949	4.76
Jon S. Saxe(5).....	127,688	*	--	127,688	*
Stanley Falkow, Ph.D.(6).....	70,167	*	--	70,167	*
Douglas O. Ebersole(7).....	64,069	*	--	64,069	*
Mark D. Young, Ph.D.(8).....	36,228	*	--	36,228	*
George M. Gould(9).....	22,666	*	--	22,666	*
Max Link, Ph.D.(10).....	18,333	*	--	18,333	*
Paul I. Nadler, M.D.(11).....	250	*	--	250	*
All directors and executive officers as a group (11 persons)(3), (4), (5), (6), (7), (8), (9), (10), (12).....	2,089,642	12.76%	--	2,089,642	11.37%

\* Less than 1%

- (1) Assumes no exercise of the Underwriters' over-allotment option. Except as indicated in the footnotes to this table, the persons named in the table have sole voting and investment power with respect to all shares of Common Stock shown as beneficially owned by them, subject to community property laws where applicable.
- (2) Based solely on information provided in Schedule 13G as filed with the Commission.
- (3) Includes 145,000 shares issuable upon the exercise of options that were exercisable within 60 days of December 31, 1996. Also includes 1,600 shares held in trusts for the benefit of certain of Dr. Queen's relatives with respect to which Dr. Queen disclaims beneficial ownership.

- (4) Includes 181,250 shares issuable upon the exercise of options that were exercisable within 60 days of December 31, 1996. Also includes 12,067 shares held as separate property by Dr. Korn's spouse with respect to which Dr. Korn disclaims beneficial ownership.
- (5) Includes 111,000 shares issuable upon the exercise of options that were exercisable within 60 days of December 31, 1996.
- (6) Includes 25,167 shares issuable upon the exercise of options that were exercisable within 60 days of December 31, 1996.
- (7) Includes 62,708 shares issuable upon the exercise of options that were exercisable within 60 days of December 31, 1996.
- (8) Includes 35,000 shares issuable upon the exercise of options that were exercisable within 60 days of December 31, 1996.
- (9) Includes 1,000 shares held for the benefit of Mr. Gould's daughter, with respect to which Mr. Gould disclaims beneficial ownership. Also includes 21,666 shares issuable upon the exercise of options that were exercisable within 60 days of December 31, 1996.
- (10) Includes 2,500 shares issuable upon the exercise of options that were exercisable within 60 days of December 31, 1996.
- (11) Dr. Nadler resigned as an officer and employee of the Company effective as of November 1, 1996.
- (12) Includes all directors and officers who served in that capacity as of December 31, 1996 and includes 611,791 shares issuable upon the exercise of options beneficially owned by those directors and officers that were exercisable within 60 days of December 31, 1996.

## UNDERWRITING

Subject to the terms and conditions of the Underwriting Agreement, the Underwriters named below for whom Oppenheimer & Co., Inc. ("Oppenheimer"), Lehman Brothers Inc. and PaineWebber Incorporated (collectively, the "Representatives") are acting as Representatives, have severally agreed to purchase from the Company and the Selling Stockholder, and the Company and the Selling Stockholder have agreed to sell to each Underwriter, the respective number of shares of Common Stock set forth opposite the name of each Underwriter below.

NAME	NUMBER OF SHARES
-----	-----
Oppenheimer & Co., Inc. ....	
Lehman Brothers Inc. ....	
PaineWebber Incorporated.....	
	-----
Total.....	2,750,000 =====

The Underwriters propose to offer the shares of Common Stock directly to the public initially at the public offering price set forth on the cover page of this Prospectus and in part to certain securities dealers at such price less a concession of \$                      per share. The Underwriters may allow, and such dealers may reallow, a concession not in excess of \$                      per share to certain other brokers and dealers. After the shares of Common Stock are released for sale to the public, the offering price and other selling terms may from time to time be varied by the Representatives. The Underwriters are obligated to take and pay for all of the shares of Common Stock offered hereby (other than those covered by the over-allotment option described below) if any are taken.

The Company has granted to the Underwriters an option, exercisable for up to 30 days after the date of this Prospectus, to purchase up to an aggregate of 412,500 additional shares of Common Stock to cover over-allotments, if any. If the Underwriters exercise such option, the Underwriters have severally agreed, subject to certain conditions, to purchase approximately the same percentage thereof that the number of shares to be purchased by each of them bears to the 2,750,000 shares of Common Stock offered hereby. The Underwriters may exercise such option only to cover over-allotments made in connection with the sale of the shares of Common Stock offered hereby.

The Company and the Selling Shareholder have agreed to indemnify the Representatives and the several Underwriters against certain liabilities, including, without limitations, liabilities under the Securities Act, and to contribute to certain payments that the Underwriters may be required to make in respect thereof.

In connection with the offering, the Underwriters may engage in passive market making transactions in the Company's Common Stock on the Nasdaq National Market immediately prior to the commencement of the sale of shares in the offering, in accordance with Rule 10b-6A under the Exchange Act. Passive market making consists of displaying bids on the Nasdaq National Market limited by the bid prices of market makers not connected with the offering and purchases limited by such prices and effected in response to order flow. Net purchases by a passive market maker on each day are limited in amount to 30% of the passive market maker's average daily trading volume in the Common Stock during a period of two months prior to the filing with the Commission of the Registration Statement of which this Prospectus is a part and must be discontinued when such limit is reached. Passive market making may stabilize the market price of the Common Stock at a level above that which might otherwise prevail and, if commenced, may be discontinued at any time.

The Company's executive officers and directors and Corange, who after giving effect to the offering will collectively own an aggregate of approximately 3,160,728 shares of Common Stock, have agreed that they will not directly or indirectly, sell, offer, contract to sell, make a short sale, pledge or otherwise dispose of any shares of Common Stock (or any securities convertible into or exchangeable or exercisable for any other rights to purchase or acquire Common Stock other than shares of Common Stock issuable upon exercise of outstanding options) owned by them, for specified periods after the date of this Prospectus (90 days for officers and directors and 365 days for Corange, subject to its sale of 750,000 shares in this offering), without the prior written consent of Oppenheimer, subject to certain limited exceptions. The Company has also agreed not to issue, sell or register with the Commission, or otherwise dispose of, directly or indirectly, any equity securities of the Company (or any securities convertible into or exercisable or exchangeable for equity securities of the Company) for a period of 90 days after the date of this Prospectus, without the prior written consent of Oppenheimer, subject to certain limited exceptions. Oppenheimer may, in its sole discretion (except with respect to shares held by Corange, which also requires the consent of the Company,) and at any time without notice, release all or any portion of the securities subject to lock-up agreements.

The Representatives have advised the Company that the Underwriters do not intend to confirm sales in excess of 5% of the shares offered hereby to any account over which they exercise discretionary authority.

#### LEGAL MATTERS

The validity of the shares of Common Stock offered hereby will be passed upon for the Company by Gray Cary Ware & Freidenrich, A Professional Corporation, Palo Alto, California. Certain legal matters will be passed upon for the Underwriters by Cooley Godward LLP, Palo Alto, California. As of the date of this Prospectus, attorneys of Gray Cary Ware & Freidenrich participating in this matter beneficially own an aggregate of 250 shares of Common Stock of the Company.

#### EXPERTS

The financial statements of Protein Design Labs, Inc. appearing in the Protein Design Labs, Inc. Annual Report (Form 10-K) for the year ended December 31, 1996, have been audited by Ernst & Young LLP, independent auditors, as set forth in their report thereon included therein and incorporated herein by reference. Such financial statements are incorporated herein by reference in reliance upon such report given upon the authority of such firm as experts in accounting and auditing.

## AVAILABLE INFORMATION

The Company is subject to the information requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and in accordance therewith files reports, proxy statements and other information with the Securities and Exchange Commission (the "Commission"). Such reports, proxy statements and other information filed by the Company may be inspected and copied at the public reference facilities maintained by the Commission at 450 Fifth Street, N.W., Judiciary Plaza, Washington, D.C. 20549; on the Internet at <http://www.sec.gov>; and at the Commission's following regional offices: Chicago Regional Office, 500 West Madison Street, Suite 1400, Chicago, Illinois 60661; and New York Regional Office, Seven World Trade Center, New York, New York 10048. Copies of such material can also be obtained at prescribed rates from the Public Reference Section of the Commission at 450 Fifth Street, N.W., Judiciary Plaza, Washington, D.C. 20549. The Common Stock of the Company is quoted on the Nasdaq National Market. Reports, proxy statements and other information concerning the Company may also be inspected at the National Association of Securities Dealers, Inc., 1735 K. Street, N.W., Washington, D.C. 20006.

The Company has filed with the Commission a Registration Statement on Form S-3 under the Securities Act of 1933, as amended (the "Securities Act"), with respect to the Common Stock offered hereby. This Prospectus does not contain all of the information set forth in the Registration Statement, certain parts of which are omitted in accordance with the rules and regulations of the Commission. For further information with respect to the Company and the Common Stock offered hereby, reference is made to the Registration Statement and the exhibits and schedules thereto, which may be inspected without charge at, and copies thereof may be obtained at prescribed rates from, the Public Reference Section of the Commission.

## INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents, filed with the Commission under the Exchange Act, are hereby incorporated by reference into this Prospectus: (a) The Company's Annual Report on Form 10-K for the fiscal year ended December 31, 1996; and (b) The description of the Company's Common Stock which is contained in its Registration Statement on Form 8-A filed under the Exchange Act on December 23, 1991, including any amendment or reports filed for the purpose of updating such description. All documents filed with the Commission pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this Prospectus and prior to the termination of the offering shall be deemed to be incorporated by reference into this Prospectus and to be a part hereof from the date of filing of such documents. Any statement contained in any document incorporated by reference herein shall be deemed modified or superseded, for purposes of this Prospectus, to the extent that a statement contained herein or in any other 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, including any beneficial owner, to whom this Prospectus is delivered, upon written or oral request of such person, a copy of any and all of the documents that have been or may be incorporated by reference herein (other than exhibits to such documents which are not specifically incorporated by reference into such documents). Such requests should be directed to the Director, Corporate Communications at the Company's principal executive offices at 2375 Garcia Avenue, Mountain View, California 94043, (415) 903-3700.

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 NO DEALER, SALESPERSON OR ANY OTHER PERSON HAS BEEN AUTHORIZED TO GIVE ANY INFORMATION OR TO MAKE ANY REPRESENTATIONS IN CONNECTION WITH THIS OFFERING 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, THE SELLING STOCKHOLDER OR ANY UNDERWRITER. THIS PROSPECTUS DOES NOT CONSTITUTE AN OFFER TO SELL OR A SOLICITATION OF AN OFFER TO BUY BY ANYONE IN ANY JURISDICTION IN WHICH SUCH OFFER TO SELL OR SOLICITATION IS NOT AUTHORIZED, OR IN WHICH THE PERSON MAKING SUCH OFFER OR SOLICITATION IS NOT QUALIFIED TO DO SO, OR TO ANY PERSON TO WHOM IT IS UNLAWFUL TO MAKE SUCH OFFER OR SOLICITATION. NEITHER THE DELIVERY OF THIS PROSPECTUS NOR ANY SALE HEREUNDER SHALL, UNDER ANY CIRCUMSTANCES, CREATE ANY IMPLICATION THAT THERE HAS BEEN NO CHANGE IN THE AFFAIRS OF THE COMPANY SINCE THE DATE AS OF WHICH INFORMATION IS FURNISHED.

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 -----  
 -----  
 -----  
 2,750,000 SHARES

LOGO

COMMON STOCK  
 -----

PROSPECTUS  
 -----

OPPENHEIMER & CO., INC.

LEHMAN BROTHERS

PAINWEBBER INCORPORATED  
 , 1997  
 -----  
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## PART II

## INFORMATION NOT REQUIRED IN PROSPECTUS

## ITEM 14. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION.

The following table sets forth the various expenses in connection with the sale and distribution of the securities being registered, other than underwriting discounts and commissions. All of the amounts shown are estimates except the Securities and Exchange Commission registration and listing and filing fees.

	TO BE PAID BY THE REGISTRANT -----
Securities and Exchange Commission registration fee.....	\$ 33,905
Nasdaq National Market Additional Listing Fee.....	17,500
NASD filing fee.....	11,689
Accounting fees and expenses.....	45,000
Printing and engraving expenses.....	130,000
Transfer agent and registrar fees and expenses.....	5,000
Blue Sky fees and expenses (including counsel fees).....	10,000
Legal fees and expenses.....	125,000
Miscellaneous expenses.....	21,906
	-----
Total.....	\$400,000 =====

## ITEM 15. INDEMNIFICATION OF DIRECTORS AND OFFICERS.

In 1986 Delaware enacted legislation which authorizes corporations to eliminate the personal liability of directors to corporations and their stockholders for monetary damages for breach or alleged breach of such directors' fiduciary "duty of care." Prior to enactment of this legislation, directors were accountable to corporations and their stockholders for monetary damages for conduct constituting gross negligence in the exercise of their duty of care. Numerous complaints alleging breach of directors' duty of care have been filed in connection with corporate mergers and acquisitions, and although the new statute does not change directors' duty of care, it enables corporations to limit available relief to equitable remedies such as injunction or rescission. The legislation has no effect on directors' (1) duty of loyalty, (2) acts or omissions not in good faith or involving intentional misconduct or knowing violations of law, (3) illegal payment of dividends or (4) approval of any transaction from which a director derives an improper personal benefit. The validity and scope of the new statute has not been interpreted to any significant extent by the Delaware courts. The statute has no effect on claims arising under the federal securities laws.

The Company's Restated Certificate of Incorporation includes the provision authorized by the statute to eliminate the personal liability of its directors for monetary damages for breach or alleged breach of their duty of care. The Company's Bylaws provide that the Company shall indemnify its directors, officers, employees and agents to the full extent permitted by the Delaware General Corporation Law, including in circumstances in which indemnification is otherwise discretionary under such law. In addition, with the approval of the Board of Directors and the stockholders, the Company has entered into separate indemnification agreements with its directors, officers, and certain employees which require the Company, among other things, to indemnify them against certain liabilities which may arise by reason of their status or service (other than liabilities arising from a breaches of their confidentiality agreements entered into with the Company or liabilities arising from willful misconduct of a culpable nature) and to obtain directors' and officers' insurance, if available on reasonable terms.

Section 145 of the Delaware General Corporation Law provides for the indemnification of officers, directors and other corporate agents in terms sufficiently broad to indemnify such persons, under certain circumstances, for liabilities (including reimbursement of expenses incurred) arising under the Securities Act.

## ITEM 16. EXHIBITS.

(a) The following exhibits are filed with this Registration Statement:

EXHIBIT NUMBER	EXHIBIT TITLE
1.1	-- Form of Underwriting Agreement.
4.1*	-- Registration Rights Agreement between the Company and certain holders of Preferred Stock and Common Stock, dated August 21, 1986. (Incorporated by reference to Exhibit 4.1 to Registration Statement No. 33-44562 effective January 28, 1992.)
4.2*	-- Amendment to Registration Rights Agreement between the Company and certain holders of Preferred Stock and Common Stock, dated March 16, 1989. (Incorporated by reference to Exhibit 4.2 to Registration Statement No. 33-44562 effective January 28, 1992.)
4.3*	-- Registration Rights Agreement between the Company and Hoffmann-La Roche Inc., dated March 16, 1989. (Incorporated by reference to Exhibit 4.3 to Registration Statement No. 33-44562 effective January 28, 1992.)
4.4*	-- Standstill Agreement between the Company and Hoffmann-La Roche Inc., dated March 16, 1989. (Incorporated by reference to Exhibit 4.4 to Registration Statement No. 33-44562 effective January 28, 1992.)
4.5*	-- Registration Rights Agreement between the Company and Corange International Limited, dated October 28, 1993. (Incorporated by Reference to Exhibit 4.5 to Annual Report on Form 10-K filed March 31, 1994.)
4.6*	-- Standstill Agreement between the Company and Corange International Limited, dated October 28, 1993. (Incorporated by Reference to Exhibit 4.5 to Annual Report on Form 10-K filed March 31, 1994.)
4.7*	-- Amendment No. 1 to Stock Purchase Agreement, Registration Rights Agreement and Joint Development, Marketing and Licensing Agreement. (Incorporated by Reference to Exhibit 5.2 to Current Report on Form 8-K filed December 15, 1994.)
4.8*	-- Restated Certificate of Incorporation. (Incorporated by reference from Exhibit 3.1 to Annual Report on Form 10-K filed March 31, 1993).
4.9*	-- Amended and Restated Bylaws. (Incorporated by reference from Exhibit 3.1 to Annual Report on Form 10-K filed March 31, 1995).
5.1*	-- Opinion and Consent of Gray Cary Ware & Freidenrich, A Professional Corporation.
23.1	-- Consent of Ernst & Young LLP, Independent Auditors.
23.2*	-- Consent of Gray Cary Ware & Freidenrich, A Professional Corporation. Reference is made to Exhibit 5.1.
24.1*	-- Power of Attorney (see signature page).
27.1*	-- Financial Data Schedule (available in EDGAR format only) (For SEC Use Only).

\* Previously filed.

All Schedules have been omitted because the information required to be set forth therein is not applicable or is shown in the Financial Statements or notes thereto.

## ITEM 17. UNDERTAKINGS.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, as amended (the "Securities Act"), each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) 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.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers, or controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been informed that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer, or controlling person of the registrant in the successful defense of any action, suit, or proceeding) is asserted by such director, officer, or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus 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

Pursuant to 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 duly caused this Amendment No. 1 to Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Mountain View, State of California, on February 13, 1997.

PROTEIN DESIGN LABS, INC.  
(Registrant)

By: /s/ JON S. SAXE

-----  
Jon S. Saxe,

President

Pursuant to the requirements of the Securities Act of 1933, this Amendment No. 1 has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

SIGNATURE	TITLE	DATE
LAURENCE JAY KORN* (Laurence Jay Korn)	Chief Executive Officer and Chairperson of the Board of Directors (Principal Executive Officer)	February 13, 1997
FRED KURLAND* (Fred Kurland)	Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	February 13, 1997
CARY L. QUEEN* (Cary L. Queen)	Director	February 13, 1997
/s/ JON S. SAXE (Jon S. Saxe)	Director	February 13, 1997
STANLEY FALKOW* (Stanley Falkow)	Director	February 13, 1997
GEORGE M. GOULD* (George M. Gould)	Director	February 13, 1997
MAX LINK* (Max Link)	Director	February 13, 1997
*By: /s/ JON S. SAXE (Jon S. Saxe, Attorney-in-fact)		

## EXHIBIT INDEX

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23.2*	-- Consent of Gray Cary Ware & Freidenrich, A Professional Corporation. Reference is made to Exhibit 5.1.....
24.1*	-- Power of Attorney (see signature page).....
27.1*	-- Financial Data Schedule (available in EDGAR format only) (For SEC Use Only).....

\*Previously filed.

PROTEIN DESIGN LABS, INC.

COMMON STOCK

UNDERWRITING AGREEMENT

\_\_\_\_\_, 1997

Oppenheimer & Co., Inc.  
Lehman Brothers  
PaineWebber Incorporated  
c/o Oppenheimer & Co., Inc.  
Oppenheimer Tower  
World Financial Center  
New York, New York 10281

On behalf of the Several  
Underwriters named on  
Schedule I attached hereto.

Ladies and Gentlemen:

PROTEIN DESIGN LABS, INC., a Delaware corporation (the "Company"), proposes, subject to the terms and conditions contained herein, to sell to you and the other underwriters named on Schedule I to this Agreement (the "Underwriters"), for whom you are acting as Representatives (the "Representatives"), an aggregate of 2,000,000 shares and Corange International Limited (the "Selling Securityholder") proposes, subject to the terms and conditions contained herein, to sell to the Underwriters an aggregate of 750,000 shares (together with the shares to sold by the Company, the "Firm Shares") of the Company's Common Stock, \$.01 par value per share (the "Common Stock"). The respective amounts of the Firm Shares to be so purchased by the several Underwriters are set forth opposite their names in Schedules I and II hereto. The Company also proposes to grant to the Underwriters an option to purchase up to an additional 412,500 shares of Common Stock (the "Option Shares") for the purpose of covering over-allotments in connection with the sale of the Firm Shares. The Firm Shares and the Option Shares are together called the "Shares."

1. SALE AND PURCHASE OF THE SHARES. On the basis of the representations, warranties and covenants contained in, and subject to the terms and conditions of, this Agreement:

(a) The Company agrees to sell to the Underwriters, and each Underwriter agrees, severally and not jointly, to purchase from the Company, at a price of \$\_\_\_\_\_ per share (the "Initial Price"), the number of Firm Shares set forth opposite the name of such Underwriter in Schedule I to this Agreement, subject to adjustment in accordance with

Section 11 hereof. The Selling Securityholder agrees to sell to the Underwriters, and each Underwriter agrees severally and not jointly, to purchase from the Selling Securityholder, at the Initial Price, the number of Firm Shares set forth opposite the name of such Underwriter in Schedule II to this Agreement, subject to adjustment in accordance with Section 11 hereof.

(b) The Company grants to the several Underwriters an option to purchase all or any part of the Option Shares at the Initial Price. The number of Option Shares to be purchased by each Underwriter shall be the same percentage (adjusted by the Representatives to eliminate fractions) of the total number of Option Shares to be purchased by the Underwriters as such Underwriter is purchasing of the Firm Shares. Such option may be exercised only to cover over-allotments in the sales of the Firm Shares by the Underwriters and may be exercised in whole or in part at any time on or before 12:00 noon, New York City time, on the business day two days before the Firm Shares Closing Date (as defined below), and only once thereafter within 30 days after the date of this Agreement, upon written or telegraphic notice, or verbal or telephonic notice confirmed by written or telegraphic notice, by the Representatives to the Company no later than 12:00 noon, New York City time, on the business day two days before the Firm Shares Closing Date or at least two business days before the Option Shares Closing Date (as defined below), as the case may be, setting forth the number of Option Shares to be purchased and the time and date (if other than the Firm Shares Closing Date) of such purchase.

2. DELIVERY AND PAYMENT. Delivery by the Company and the Selling Securityholder of the Firm Shares to the Representatives for the respective accounts of the Underwriters, and payment of the purchase price by either wire transfer or certified or official bank check or checks payable in same-day funds drawn to the order of the Company for the shares purchased from the Company and to the Selling Securityholder (or in the discretion of the Underwriters, to the Custodian) for the shares purchased from the Selling Securityholder, against delivery of the respective certificates therefor to the Representatives for the several accounts of the Underwriters, shall take place at the offices of Oppenheimer & Co., Inc., at Oppenheimer Tower, World Financial Center, New York, New York 10281, at 10:00 a.m., New York City time, (a) on the third full business day following the first day that the Shares are traded, (b) if this Agreement is executed and delivered after 4:30 p.m. New York City Time, on the fourth business day following the date of this Agreement, or (c) at such other time or date, but not later than the fourth full business day following the Effective Date (as hereinafter defined), as shall be agreed upon by the Company, the Selling Securityholder and the Representatives (such time and date of delivery and payment are called the "Firm Shares Closing Date").

In the event the option with respect to the Option Shares is exercised, delivery by the Company of the Option Shares to the Representatives for the respective accounts of the Underwriters and payment of the purchase price by certified or official bank check or checks or wire transfers payable in same day funds to the order of the Company shall take place at the offices of Oppenheimer & Co., Inc. specified above at the time and on the date (which may be the same date as, but in no event shall be earlier than, the Firm Shares Closing Date) specified in the notice referred to in Section 1(b) (such time and date of delivery and payment are called the "Option Shares Closing Date"). The Firm Shares Closing Date and the Option Shares Closing Date are called, individually, a "Closing Date" and, together, the "Closing Dates."

Certificates evidencing the Shares shall be registered in such names and shall be in such denominations as the Representatives shall request at least two full business days before the Firm Shares Closing Date or, in the case of Option Shares, on the day of notice of exercise of the option as described in Section 1(b) and shall be made available to the Representatives for checking and packaging, at such place as is designated by the Representatives, on the Firm Shares Closing Date (or the Option Shares Closing Date in the case of the Option Shares).

3. REGISTRATION STATEMENT AND PROSPECTUS; PUBLIC OFFERING. The Company has prepared in conformity with the requirements of the Securities Act of 1933, as amended (the "Securities Act"), and the published rules and regulations thereunder (the "Rules") adopted by the Securities and Exchange Commission (the "Commission") a registration statement on Form S-3 (No. 333-20941), including a preliminary prospectus relating to the Shares, and has filed with the Commission the Registration Statement (as hereinafter defined) and such amendments thereof as may have been required to the date of this Agreement. The number of executed copies requested by you of such Registration Statement (including all amendments thereof) and of the related preliminary prospectus have heretofore been delivered by the Company to you. The term "preliminary prospectus" means any preliminary prospectus (as described in Rule 430 of the Rules), including the documents incorporated by reference therein, included at any time as a part of the Registration Statement. The Registration Statement, as amended at the time and on the date it became effective (the "Effective Date"), including all documents incorporated by reference therein and all exhibits and information, if any, deemed to be part of the Registration Statement pursuant to Rule 424(b), Rule 430A, Rule 434 and Rule 462(b) of the Rules, is called the "Registration Statement." The term "Prospectus" means the prospectus, including the documents incorporated by reference therein, in the form first used to confirm sales of the Shares (whether such prospectus was included in the Registration Statement at the time of effectiveness or was subsequently filed with the Commission pursuant to Rule 424(b) of the Rules).

The Company and the Selling Securityholder understand that the Underwriters propose to make a public offering of the Shares, as set forth in and pursuant to the Prospectus, as soon after the Effective Date and the date of this Agreement as the Representatives deem advisable. The Company and the Selling Securityholder hereby confirm that the Underwriters and dealers have been authorized to distribute or cause to be distributed each preliminary prospectus and are authorized to distribute the Prospectus (as from time to time amended or supplemented if the Company furnishes amendments or supplements thereto to the Underwriters).

4. REPRESENTATIONS AND WARRANTIES OF THE COMPANY. The Company hereby represents and warrants to each Underwriter as follows:

(a) On the Effective Date, the Registration Statement complied, and on the date of the Prospectus, on the date any post-effective amendment to the Registration Statement shall become effective, on the date any supplement or amendment to the Prospectus is filed with the Commission and on each Closing Date, the Registration Statement and the Prospectus (and any amendment thereof or supplement thereto) will comply in all material respects with the applicable provisions of the Securities Act and the Rules and the Securities Exchange Act of

1934, as amended (the "Exchange Act") and the rules and regulations of the Commission thereunder; the Registration Statement did not, as of the Effective Date, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading; and on the other dates referred to above neither the Registration Statement nor the Prospectus, nor any amendment thereof or supplement thereto, will contain any untrue statement of a material fact or will omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading. When any related preliminary prospectus was first filed with the Commission (whether filed as part of the Registration Statement or any amendment thereto or pursuant to Rule 424(a) of the Rules) and when any amendment thereof or supplement thereto was first filed with the Commission, such preliminary prospectus as amended or supplemented complied in all material respects with the applicable provisions of the Securities Act and the Rules and the Exchange Act and the rules and regulations of the Commission thereunder and did not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however, that none of the representations and warranties in this paragraph 4(a) shall apply to statements in, or omissions from, the Registration Statement or the Prospectus made in reliance upon, and in conformity with, information herein or otherwise furnished in writing to the Company by or on behalf of the Underwriters for use in the Registration Statement or the Prospectus. With respect to the preceding sentence, the only information furnished in writing by the Representatives on behalf of the several Underwriters specifically for inclusion in the Registration Statement, any preliminary prospectus or the Prospectus is the last paragraph on the cover page, the paragraphs with respect to stabilization and passive market making on the inside front cover page of the Prospectus and to paragraphs 1, 2 and 5 under the caption "Underwriting" in the Prospectus. Notwithstanding the foregoing, if any revised prospectus shall be provided to the Underwriters by the Company for use in connection with the offering of the Shares that differs from the prospectus referred to in the immediately preceding sentence (whether or not such revised prospectus is required to be filed with the Commission pursuant to Rule 424(b) of the Rules), the term "Prospectus" shall refer to such revised prospectus from and after the time it is first provided to the Underwriters for such use.

(b) The financial statements of the Company (including all notes and schedules thereto) included in the Registration Statement and Prospectus present fairly the financial position, the results of operations, the statements of cash flows and the statements of stockholders' equity and the other information purported to be shown therein of the Company at the respective dates and for the respective periods to which they apply and such financial statements have been prepared in conformity with generally accepted accounting principles, consistently applied throughout the periods involved. The summary and selected financial data included in the Prospectus present fairly the information shown therein as at the respective dates and for the respective periods specified, and the summary and selected financial data have been presented on a basis consistent with the financial statements so set forth in the Prospectus and other financial information.

(c) To the knowledge of the Company, Ernst & Young LLP, whose reports are filed with the Commission as a part of the Registration Statement, are and, during the periods covered by their reports, were independent public accountants as required by the Securities Act and the Rules.

(d) The Company is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware. The Company has no subsidiary or subsidiaries and does not control, directly or indirectly, any corporation, partnership or joint venture. The Company is duly qualified as a foreign corporation in each jurisdiction in which the character or location of its assets or properties (owned, leased or licensed) or the nature of its business makes such qualification necessary except for such jurisdictions where the failure to so qualify would not have a material adverse effect on the assets or properties, business, results of operations, prospects or condition (financial or otherwise) of the Company (a "Material Adverse Effect"). The Company has all requisite corporate power and authority, and all necessary authorizations, approvals, consents, orders, licenses, certificates and permits of and from all governmental or regulatory bodies or any other person or entity, to own, lease and license its assets and properties and conduct its businesses as now being conducted and as described in the Registration Statement and the Prospectus except for such authorizations, approvals, consents, orders, licenses, certificates and permits the failure of which to obtain would not have a Material Adverse Effect.

(e) To the best of the Company's knowledge, the Company owns, or possesses adequate and enforceable rights to use, each of the patents listed in the Registration Statement and each preliminary prospectus under the caption "Business -- Patents and Proprietary Technology" (the "Patents") and, except as disclosed in the Registration Statement and the Prospectus, owns or possesses adequate and enforceable rights to use all trademarks, trademark applications, trade names, service marks, copyrights, copyright applications, licenses, know-how and other similar rights and proprietary knowledge (collectively with the Patents, the "Intangibles") necessary for the conduct of its business as described and as contemplated in the Registration Statement and the Prospectus. Except as disclosed in the Registration Statement and the Prospectus, to the best of the Company's knowledge, the Company has not infringed, nor is it infringing on, nor has it received any notice of, any infringement of or conflict with asserted rights of others with respect to any Intangibles which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would have a Material Adverse Effect.

(f) The Company has good and marketable title to each of the items of personal property which are reflected in the financial statements referred to in Section 4(b) or are referred to in the Registration Statement and the Prospectus as being owned by it and valid and enforceable leasehold interests in each of the items of real and personal property which are referred to in the Registration Statement and the Prospectus as being leased by it, in each case free and clear of all liens, encumbrances, claims, security interests and defects, other than those described in the Registration Statement and the Prospectus and those which do not and will not have a Material Adverse Effect.

(g) Except as disclosed in the Registration Statement and the Prospectus, there is no action, suit or proceeding before or by any court or governmental agency or body, domestic or foreign, pending or, to the Company's best knowledge, threatened (and the Company does not know of any basis therefor) against, or involving the assets, properties or business of, the Company (i) which is required to be disclosed in the Prospectus or (ii) which is reasonably likely to have a Material Adverse Effect.

(h) Subsequent to the respective dates as of which information is given in the Registration Statement and the Prospectus, except as described therein, (i) there has not been any material adverse change in the assets or properties, business, results of operations, prospects or condition (financial or otherwise), of the Company, whether or not arising from transactions in the ordinary course of business; (ii) the Company has not sustained any material loss or interference with its assets, businesses or properties (whether owned or leased) from fire, explosion, earthquake, flood or other calamity, whether or not covered by insurance, or from any labor dispute or any court or legislative or other governmental action, order or decree which would have a Material Adverse Effect; and (iii) since the date of the latest balance sheet included in the Registration Statement and the Prospectus, except as reflected therein, the Company has not (1) issued any securities other than the issuance of securities pursuant to the exercise of options granted under stock option plans or agreements existing prior to the date of the latest balance sheet included in the Registration Statement and Prospectus or incurred any liability or obligation, direct or contingent, for borrowed money, except such liabilities or obligations incurred in the ordinary course of business, (2) entered into any material transaction not in the ordinary course of business or (3) declared or paid any dividend or made any distribution on any shares of its capital stock or redeemed, purchased or otherwise acquired or agreed to redeem, purchase or otherwise acquire any shares of its capital stock.

(i) There is no document or contract of a character required to be described in the Registration Statement or Prospectus or to be filed as an exhibit to the Registration Statement which is not described or filed as required. Each agreement described in the Registration Statement and the Prospectus or listed in the Exhibits to the Registration Statement is in full force and effect and is valid and enforceable by the Company in accordance with its terms, assuming the due authorization, execution and delivery thereof by each of the other parties thereto except (i) as the enforceability thereof may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the enforcement of creditors' rights generally and by general equitable principles and (ii) to the extent that rights to indemnity or contribution thereunder may be limited by Federal and state securities laws or the public policy underlying such laws.. Neither the Company nor, to the Company's knowledge, any other party is in default in the observance or performance of any term or obligation to be performed by it under any such agreement, and no event has occurred which with notice or lapse of time or both would constitute such a default, in any such case where such default or event would have a Material Adverse Effect. No default exists, and no event has occurred which with notice or lapse of time or both would constitute a default, in the due performance and observance of any term, covenant or condition, by the Company of any other agreement or instrument to which the Company is a party or by which it or its properties or business may be bound or affected where such default or event would have a Material Adverse Effect.

(j) The Company is not in violation of any franchise, license, permit, judgment, decree, order, statute, rule or regulation, where the consequences of such violation would have a Material Adverse Effect or of any term or provision of its Certificate of Incorporation or Bylaws.

(k) Neither the execution, delivery and performance of this Agreement by the Company nor the consummation of any of the transactions contemplated hereby (including, without limitation, the issuance and sale by the Company of the Shares) will give rise to a right to terminate or accelerate the due date of any payment due under, or conflict with or result in the breach of any term or provision of, or constitute a default (or an event which with notice or lapse of time or both would constitute a default) under, or require any consent or waiver under, or result in the execution or imposition of any lien, charge or encumbrance upon any properties or assets of the Company pursuant to the terms of, any indenture, mortgage, deed of trust or other agreement or instrument to which the Company is a party or by which it or any of its properties or businesses is bound, or any franchise, license, permit, judgment, decree, order, statute, rule or regulation applicable to the Company or violate any provision of the Certificate of Incorporation or Bylaws of the Company, except for such consents or waivers which have already been obtained and are in full force and effect and except for applicable requirements under the Securities Act and state Blue Sky laws.

(l) The Company has authorized, and, at December 31, 1996 had outstanding, capital stock as set forth in the Registration Statement and Prospectus under the heading "Capitalization"; there have been no changes in the outstanding capital stock of the Company since that date except to the extent that certain outstanding options and warrants set forth in the footnotes thereto may have been exercised. The certificates evidencing the Shares to be sold by the Company are in due and proper legal form and have been duly authorized for issuance by the Company. Except as set forth in the Registration Statement and any Prospectus, all of the issued and outstanding shares of Common Stock have been duly authorized and validly issued and are fully paid and nonassessable and none of them was issued in violation of any preemptive or other similar right. The Shares to be sold by the Company, when issued and sold pursuant to this Agreement, will be duly authorized and validly issued and fully paid and nonassessable. Except as set forth in the Registration Statement and the Prospectus, there are no preemptive rights or other similar rights to subscribe for or to purchase, or any restriction upon the voting or transfer of the Shares to be sold by the Company or any of the Common Stock of the Company pursuant to the Company's Certificate of Incorporation, Bylaws or other governing documents or any agreement or other instrument to which the Company is a party or by which it may be bound. No further approval or authority will be required on behalf of the Company or pursuant to agreements by which it is bound for the transfer and sale of the Shares to be sold by the Selling Securityholder. Except as disclosed in the Registration Statement and the Prospectus, there is no outstanding option, warrant or other right calling for the issuance of, and there is no commitment, plan or arrangement to issue, any shares of the Common Stock of the Company or any security convertible into, or exercisable or exchangeable for Common Stock of the Company.

(m) There are no holders of securities of the Company who, by reason of the filing of the Registration Statement under the Securities Act or the execution by the Company of this Agreement, have the right, not previously satisfied or waived, to request or demand that the Company register under the Securities Act such securities held by them. Each director and executive officer of the Company, holding in the aggregate \_\_\_\_\_ shares of Common Stock and options to purchase \_\_\_\_\_ shares of Common Stock have delivered to the Representatives his or her enforceable written agreement that he or she will not, directly or indirectly, for a period of 90 days, after the date of this Agreement, sell, offer, contract to sell, make a short sale, pledge or otherwise dispose of any shares of Common Stock (or any securities convertible into or exchangeable or exercisable for any other rights to purchase or acquire Common Stock owned by him or her, without the prior written consent of the Oppenheimer & Co., Inc.; and (ii) the Selling Securityholder has delivered to the Representatives its written agreement that it will not, directly or indirectly, for a period of 365 days after the date of this Agreement sell, offer, contract to sell, make a short sale, pledge or otherwise dispose of any shares of Common Stock (or any securities convertible into or exchangeable or exercisable for any other rights to purchase or acquire Common Stock) owned by it, without the prior written consent of the Representatives. The written agreements referred to in (i) and (ii) hereof are herein collectively referred to as the "Lock-Up Agreements".

(n) All necessary corporate action has been duly and validly taken by the Company to authorize the execution, delivery and performance of this Agreement and the issuance and sale of the Shares by the Company. This Agreement has been duly and validly authorized, executed and delivered by the Company and constitutes a legal, valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except (i) as the enforceability hereof may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the enforcement of creditors' rights generally and by general equitable principles and (ii) to the extent that rights to indemnity or contribution under this Agreement may be limited by Federal and state securities laws or the public policy underlying such laws.

(o) No labor dispute with the employees of the Company exists or, to the knowledge of the Company, is threatened; and the Company is not aware of any existing or imminent labor disturbance by the employees of any of its principal suppliers or contractors which would have a Material Adverse Effect.

(p) No transaction has occurred between or among the Company and any of its officers or directors or any affiliate or affiliates of any such officer or director that is required to be described in and is not described in the Registration Statement and the Prospectus.

(q) The Company has not taken, nor will it take, directly or indirectly, any action designed to or which might reasonably be expected to cause or result in, or which has constituted or which might reasonably be expected to constitute, the stabilization or manipulation of the price of the Common Stock of the Company.

(r) The Company has filed all federal, state, local and foreign tax returns which were required to be filed to the date hereof, or has received extensions thereof, and such returns are each true, correct and complete in all material respects, and has paid all taxes shown on such returns and all assessments received by it to the extent that the same are material and have become due, and there are no tax audits or investigations pending.

(s) The books, records and accounts of the Company accurately and fairly reflect, in reasonable detail, the transactions in, and dispositions of, the assets of, and the results of operations of, the Company. The Company maintains a system of internal accounting controls sufficient to provide reasonable assurances that (i) transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management's general or specific authorization and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

(t) Neither the Company nor any director, officer or employee of the Company has, in the course of such person's actions for, or on behalf of, the Company, used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity or made any direct or indirect unlawful payment to any foreign or domestic government official or employee from corporate funds; and neither the Company, nor to the Company's knowledge, any director, officer, employee, agent or other person acting on behalf of the Company, has, in the course of his actions for, or on behalf of, the Company violated or is in violation of any provision of the Foreign Corrupt Practices Act of 1977 or made any bribe, rebate, payoff, influence payment, kickback or other unlawful payment.

(u) Each approval, consent, order, authorization, designation, declaration or filing of, by or with any regulatory, administrative or other governmental body necessary in connection with the execution and delivery by the Company of this Agreement and the consummation of the transactions herein contemplated required to be obtained or performed by the Company (except such additional steps as may be required by the National Association of Securities Dealers, Inc. (the "NASD") or may be necessary to qualify the Shares for public offering by the Underwriters under the Securities Act or state securities or Blue Sky laws has been obtained or made and is in full force and effect.

(v) The Shares have been duly authorized for quotation on the Nasdaq National Market.

(w) Except for FMR Corp., there are no affiliations with the NASD among the Company's officers, directors or, any 5% or greater shareholder of the Company.

(x) (i) The Company is in compliance in all material respects with all rules, laws and regulation relating to the use, treatment, storage and disposal of toxic substances and protection of health or the environment ("Environmental Laws") which are applicable to its

business, (ii) the Company has not received any notice from any governmental authority or third party of an asserted claim under Environmental Laws, (iii) except with respect to the improvement or expansion of its manufacturing or laboratory facilities, to the Company's knowledge, no facts currently exist that will require the Company to make future material capital expenditures to comply with Environmental Laws, and (iv) no property which is or has been owned, leased or occupied by the Company has been designated as a Superfund site pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. Section 9601, et seq.), or otherwise designated as a contaminated site under applicable state or local law.

(y) The Company is not an "investment company" within the meaning of the Investment Company Act of 1940, as amended (the "Investment Company Act").

(z) The Company has complied, and at all times will comply, with all provisions of Section 517.075 and further, as of such Closing Date, neither the Company nor any of its affiliates does business with the government of Cuba or with any person or affiliate located in Cuba.

5. ADDITIONAL REPRESENTATIONS AND WARRANTIES AND COVENANTS OF THE SELLING SECURITYHOLDER. The Selling Securityholder represents and warrants and covenants to each Underwriter as follows:

(a) The Selling Securityholder has good and marketable title to the Shares to be sold by such Selling Securityholder hereunder, free and clear of all liens, encumbrances, equities, security interests and claims whatsoever, with full right and authority to deliver the same hereunder, subject, in the case of each Selling Securityholder, to the rights of Chase Mellon Shareholder Services, as Custodian (the "Custodian"), and that upon the delivery of and payment for such Shares hereunder, the several Underwriters will receive good and marketable title thereto, free and clear of all liens, encumbrances, equities, security interests and claims whatsoever.

(b) Certificates in negotiable form for the Shares to be sold by the Selling Securityholder have been placed in custody under a Custody Agreement for delivery under this Agreement with the Custodian; the Selling Securityholder specifically agrees that the Shares represented by the certificates so held in custody for the Selling Securityholder are subject to the interests of the several Underwriters pursuant to the Custody Agreement, that the arrangements made by the Selling Securityholder for such custody, including the Power of Attorney provided for in such Custody Agreement, are to that extent irrevocable, and that the obligations of the Selling Securityholder shall not be terminated by any act of the Selling Securityholder or by operation of law, the dissolution or liquidation of the Selling Securityholder or the occurrence of any other event; if any such dissolution, liquidation or other such event should occur before the delivery of such Shares, certificates for the Shares shall be delivered by the Custodian in accordance with the terms and conditions of this Agreement as if such dissolution, liquidation or other event had not occurred, regardless of whether the Custodian shall have received notice of such dissolution, liquidation or other event.

(c) The Selling Securityholder has reviewed the Registration Statement and Prospectus and, although the Selling Securityholder has not independently verified the accuracy or completeness of all the information contained therein, nothing has come to the attention of the Selling Securityholder that would lead the Selling Securityholder to believe that (i) on the Effective Date, the Registration Statement contained any untrue statement of a material fact or omitted to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading; and, (ii) on the Effective Date the Prospectus contained and, on the Closing Date contains, any untrue statement of a material fact or omitted or omits to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(d) All information in the Registration Statement or the Prospectus, or any amendment or supplement thereto, relating to the Selling Securityholder (including, without limitation, the information relating to the Selling Securityholder which is set forth in the Prospectus under the caption "Principal Selling Stockholders") such information being deemed to have been provided to the Company pursuant to the Registration Rights Agreement, as amended, between the Company and the Selling Securityholder, and all representations and warranties of the Selling Securityholder in the Custody Agreement are true and correct in all respects and do not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the information in the light of the circumstances under which they were made not misleading. The sale of the Shares by the Selling Securityholder pursuant hereto is not prompted by the Selling Securityholder's knowledge of any material information concerning the Company which is not set forth in the Prospectus or the documents incorporated by reference therein.

(e) The Selling Securityholder has full power and authority to enter into this Agreement and the Custody Agreement and perform the transactions contemplated hereby and thereby. This Agreement and the Custody Agreement have been duly authorized, executed and delivered by or on behalf of the Selling Securityholder and the form of such Custody Agreement has been delivered to you.

(f) The making and performance of this Agreement and the Custody Agreement and the consummation of the transactions contemplated hereby and thereby will not result in a breach or violation by the Selling Securityholder of any of the terms or provisions of, or constitute a default by the Selling Securityholder under, any indenture, mortgage, deed of trust, trust (constructive or other), loan agreement, lease, franchise, license or other agreement or instrument to which the Selling Securityholder is a party or by which the Selling Securityholder or any of its properties is bound, any statute, or any judgment, decree, order, rule or regulation of any court or governmental agency or body applicable to the Selling Securityholder or any of its properties.

(g) The Selling Securityholder has not taken and will not take, directly or indirectly, any action designed to or that might reasonably be expected to cause or result in stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares.

(h) The Selling Securityholder has no actual knowledge that any representation or warranty of the Company set forth in Section 4 above is untrue or inaccurate in any material respect.

6. CONDITIONS OF THE UNDERWRITERS' OBLIGATIONS. The obligations of the Underwriters under this Agreement are several and not joint. The respective obligations of the Underwriters to purchase the Shares are subject to each of the following terms and conditions:

(a) Notification that the Registration Statement has become effective shall have been received by the Representatives, and the Prospectus shall have been timely filed with the Commission in accordance with Section 7(a)(i) of this Agreement.

(b) No order preventing or suspending the use of any preliminary prospectus or the Prospectus shall have been or shall be in effect and no order suspending the effectiveness of the Registration Statement shall be in effect and no proceedings for such purpose shall be pending before or threatened by the Commission, and any requests for additional information on the part of the Commission (to be included in the Registration Statement or the Prospectus or otherwise) shall have been complied with to the satisfaction of the Representatives.

(c) The representations and warranties of the Company and the Selling Securityholder contained in this Agreement and in the certificates delivered pursuant to Section 6(d) hereof shall be true and correct in all material respects when made and on and as of each Closing Date as if made on such date and the Company and the Selling Securityholder shall have performed all covenants and agreements and satisfied all the conditions in all material respects contained in this Agreement required to be performed or satisfied by them at or before such Closing Date.

(d) The Representatives shall have received on each Closing Date a certificate, addressed to the Representatives and dated such Closing Date, from each of (a) the chief executive officer and the chief financial officer of the Company and (b) the Managing Director of the Selling Securityholder to the effect that (i) the signers of each such certificate have examined the Registration Statement, the Prospectus and this Agreement and that the representations and warranties of the Company or the Selling Securityholder, as the case may be, in this Agreement are true and correct in all material respects on and as of such Closing Date with the same effect as if made on such Closing Date and the Company and the Selling Securityholder, as the case may be, have performed all covenants and agreements and satisfied all conditions contained in this Agreement in all material respects required to be performed or satisfied by them at or prior to such Closing Date, and (ii) no stop order suspending the effectiveness of the Registration Statement has been issued and to the best of their knowledge, no proceedings for that purpose have been instituted or are pending under the Act.

(e) The Representatives shall have received from Ernst & Young LLP, on the date this Agreement is executed and on each Closing Date, a letter dated such date, in form and substance satisfactory to the Representatives, to the effect that they are independent public

accountants with respect to the Company within the meaning of the Securities Act and the Rules and that:

(i) in their opinion the audited financial statements and the related financial statement schedules, if any, included in the Registration Statement and the Prospectus and covered by their reports therein comply as to form in all material respects with the applicable accounting requirements of the Securities Act and the Rules;

(ii) on the basis of a reading of the amounts included in the Registration Statement and the Prospectus under the heading "Summary Financial Data" and "Selected Financial Data" carrying out certain procedures (but not an audit in accordance with generally accepted auditing standards) which would not necessarily reveal matters of significance with respect to the comments set forth in such letter, a reading of the minutes of the meetings of the stockholders and directors of the Company, and inquiries of certain officials of the Company who have responsibility for financial and accounting matters of the Company as to transactions and events subsequent to the date of the latest audited financial statements, except as disclosed in the Registration Statement and the Prospectus, nothing came to their attention which caused them to believe that:

(A) the amounts in "Summary Financial Data" and "Selected Financial Data" included in the Registration Statement and the Prospectus do not agree with the corresponding amounts in the audited and unaudited financial statements from which such amounts were derived; or

(B) with respect to the Company there were, at a specified date not more than five business days prior to the date of the letter, any change in the capital stock of the Company (other than from the exercise of stock options), increase in long-term debt of the Company or decreases in net current assets of the Company or decreases in the stockholders' equity of the Company, as compared with the amounts shown on the Company's audited December 31, 1996 balance sheet included in the Registration Statement.

(iii) they have performed certain other procedures as may be permitted under Generally Acceptable Auditing Standards as a result of which they determined that certain information of an accounting, financial or statistical nature (which is limited to accounting, financial or statistical information derived from the general accounting records of the Company) set forth in the Registration Statement and the Prospectus and reasonably specified by the Representatives agrees with the accounting records of the Company.

References to the Registration Statement and the Prospectus in this paragraph (e) are to such documents as amended and supplemented as of the date of the letter.

(f) The Representatives shall have received on each Closing Date from Gray Cary Ware & Freidenrich, counsel for the Company, an opinion, addressed to the Representatives and dated such Closing Date, stating in effect that:

(i) The Company was duly incorporated and is validly existing and in good standing under the laws of the State of Delaware. To the best of such counsel's knowledge, the Company has no subsidiary and does not control, directly or indirectly, any corporation, partnership, joint venture, association or other business organization. The Company is duly qualified and in good standing as a foreign corporation in all United States jurisdictions in which it is required to qualify as a foreign corporation, except where the failure to qualify would have a Material Adverse Effect.

(ii) The Company has the corporate power and corporate authority under its Certificate of Incorporation and the Delaware General Corporation Law, as amended (the "DGCL"), to own, lease, license and operate its assets and properties and conduct its business as described in the Prospectus and to enter into, deliver and perform this Agreement and to issue and sell the Shares to be sold by the Company.

(iii) The Company has authorized and outstanding capital stock as of the date of the Capitalization table in the Prospectus as set forth in the Prospectus under the heading "Capitalization"; the form of certificate evidencing the Shares complies with the requirements of Section 158 of the DGCL; all of the outstanding shares of Common Stock of the Company have been duly authorized and validly issued and, assuming receipt of the consideration therefor as provided in resolutions of the Company's Board of Directors authorizing issuance thereof, are fully paid and nonassessable under the DGCL. Except as set forth in the Registration Statement, there are no preemptive or other similar rights to subscribe for or to purchase any shares of Common Stock of the Company pursuant to the Company's Certificate of Incorporation or Bylaws, or any agreement known to such counsel. The Shares to be sold by the Company, when issued and sold pursuant to this Agreement, will be validly issued, fully paid and nonassessable under the DGCL. To such counsel's knowledge, except as disclosed in the Registration Statement and the Prospectus, there is no outstanding option, warrant or other right calling for the issuance of any shares of Common Stock of the Company or any security convertible into or exercisable or exchangeable for shares of Common Stock of the Company.

(iv) To such counsel's knowledge, no holders of securities of the Company have rights, which have not been waived or complied with, to the registration of shares of Common Stock or other securities, because of the filing of the Registration Statement by the Company or the offering contemplated hereby.

(v) All necessary corporate action has been duly and validly taken by the Company to authorize the execution, delivery and performance of this Agreement. This Agreement has been duly and validly authorized, executed and delivered by the Company and this Agreement constitutes the legal, valid and binding obligation of the Company enforceable against the Company in accordance with their respective terms except (A) as such enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the enforcement of creditors' rights generally and by general equitable

principles and (B) to the extent that rights to indemnity or contribution under this Agreement may be limited by Federal or state securities laws or the public policy underlying such laws.

(vi) The execution, delivery and performance as of the date hereof of this Agreement by the Company do not (i) violate the DGCL or the Certificate of Incorporation or the Bylaws of the Company or (ii) breach or constitute a default under any contract or agreement known to such counsel.

(vii) No consent, approval, authorization or order of any governmental or regulatory body is required for the performance of this Agreement by the Company as of the date of such opinion, except such as have been obtained.

(viii) To such counsel's knowledge, no default exists, and no event has occurred which with notice or lapse of time, or both, would constitute a default, in the due performance and observance of any term, covenant or condition by the Company of any contract or agreement included as an Exhibit to the Registration Statement where the consequences of such default would have a material and adverse effect on the assets, properties, business, results of operations, or condition (financial or otherwise) of the Company.

(ix) To such counsel's knowledge, except as disclosed in the Registration Statement, there is no litigation or governmental or other proceeding or investigation, before any court or before or by any public body or board pending or threatened against, or involving the assets, properties or businesses of, the Company which would have a material adverse effect upon the assets or properties, business, results of operations, or condition (financial or otherwise) of the Company.

(x) The Registration Statement, all preliminary prospectuses and the Prospectus and each amendment or supplement thereto (except as to patent matters and for the financial statements and supporting schedules and other financial and statistical data included therein or omitted therefrom, as to which such counsel need express no opinion) comply as to form in all material respects with the requirements of the Securities Act and the Rules.

(xi) The Registration Statement has become effective under the Securities Act; and, to such counsel's knowledge, no stop order suspending the effectiveness of the Registration Statement or suspending or preventing the use of the Prospectus has been issued and no proceedings for that purpose have been instituted or are threatened under the Securities Act; any required filing of the Prospectus and any supplement thereto pursuant to Rule 424(b) of the Rules has been made in the manner and within the time period required by such Rule 424(b).

(xii) All contracts and other agreements to which the Company is a party described in the Registration Statement are fairly described in the Registration Statement, and to the knowledge of such counsel, there are no contracts or documents of a character required to be described in the Registration Statement or to be filed as exhibits to the Registration Statement or the Prospectus that are not described or referred to therein or so filed.

(xiii) The description of the Common Stock of the Company contained in the Company's Form 8-A filed with the Commission is accurate, and complete.

(xiv) The statements in the Prospectus and Registration Statement under the caption "Business - Licensing and Collaborative Agreements" have been reviewed by such counsel and are accurate in all material respects and fairly present the information disclosed therein.

(xv) To such counsel's knowledge, the Shares have been approved for quotation on the Nasdaq National Market System.

To the extent deemed advisable by such counsel, they may rely as to matters of fact on certificates of responsible officers of the Company and public officials and on the opinions of the counsel satisfactory to the Representatives as to matters which are governed by laws other than the laws of the State of Delaware or the Federal laws of the United States; provided that such counsel shall state that in their opinion the Underwriters and they are justified in relying on such other opinions. Copies of such certificates and other opinions shall be furnished to the Representatives and counsel for the Underwriters.

In addition, such counsel shall state that such counsel has participated in conferences with officers and other representatives of the Company, representatives of the Representatives, and representatives of the independent certified public accountants of the Company, at which conferences the contents of the Registration Statement and the Prospectus and related matters were discussed and, although such counsel is not passing upon and does not assume any responsibility for, and has not independently verified, the accuracy, completeness or fairness of the statements contained in the Registration Statement and the Prospectus (except as specified in the foregoing opinion), on the basis of the foregoing, no facts have come to the attention of such counsel which lead such counsel to believe that the Registration Statement at the time it became effective contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary to make the statements therein not misleading, or that the Prospectus as of its date and as of the Closing Date contained or contains any untrue statement of a material fact or omitted or omits to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(g) The Representatives shall have received on each Closing Date from Bryan, Cave LLP, counsel for the Selling Securityholder, an opinion addressed to the Representatives and dated such Closing Date substantially in the form attached hereto as Annex A.

(h) The Representatives shall have received on each Closing Date from Townsend and Townsend and Crew, patent counsel for the Company, an opinion addressed to the Representatives and dated such Closing Date, and stating in effect that:

(i) The statements with respect to patent matters in the Prospectus and Registration Statement under the captions "Risk Factors - Uncertainty of Patents and Proprietary

Technology; Opposition Proceedings," "Business - Patents, and Proprietary Technology" have been reviewed by such patent counsel and are accurate in all material respects and fairly present the information disclosed therein.

(ii) To such patent counsel's knowledge, such patent counsel believes the statements in the Registration Statement and the Prospectus under the captions "Risk Factors - Uncertainty of Patents and Proprietary Technology" and "Business - Patents and Proprietary Technology" do not contain any untrue statement of material fact, or do not omit to state any material fact which would be required to be stated in the Registration Statement and the Prospectus or are necessary to make the statements therein not misleading.

(iii) Except as set forth in the Registration Statement and the Prospectus, to such patent counsel's knowledge, there is no claim or action by any person pertaining to, or proceeding, pending or threatened, which challenges the rights of the Company with respect to the Company's patents or intellectual property licenses.

(i) All proceedings taken in connection with the sale of the Firm Shares and the Option Shares as herein contemplated shall be reasonably satisfactory in form and substance to the Representatives and their counsel, and the Underwriters shall have received from Cooley Godward LLP, counsel for the Underwriters, an opinion, addressed to the Representatives and dated such Closing Date, with respect to the Shares, the Registration Statement and the Prospectus, and such other related matters, as the Representatives may reasonably request, and the Company shall have furnished to Cooley Godward LLP such documents as they may reasonably request for the purpose of enabling them to pass upon such matters.

(j) The Representatives shall have received copies of the Lock-up Agreements executed by each person described in Section 4(m).

(k) The Representatives shall have received on each Closing Date a certificate, addressed to the Representatives, and dated such Closing Date, of an executive officer of the Selling Securityholder to the effect that the signer of such certificate has reviewed and understands the provisions of Section 517.075 of the Florida Statutes, and represents that the Selling Securityholder has complied, and at all times will comply, with all provisions of Section 517.075 and further, that as of such Closing Date, neither the Selling Securityholder nor any of its affiliates does business with the government of Cuba or with any person or affiliate located in Cuba.

#### 7. COVENANTS OF THE COMPANY.

(a) The Company covenants and agrees with the several Underwriters as follows:

(i) The Company shall prepare the Prospectus in a form approved by the Representatives and file such Prospectus pursuant to Rule 424(b) under the Securities Act not later than the Commission's close of business on the second business day following the

execution and delivery of this Agreement, or, if applicable, such earlier time as may be required by Rule 430A(a)(3) under the Securities Act, and shall promptly advise the Representatives (i) when any amendment to the Registration Statement shall have become effective, (ii) of any request by the Commission for any amendment of the Registration Statement or the Prospectus or for any additional information, (iii) of the prevention or suspension of the use of any preliminary prospectus or the Prospectus or of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or the institution or threatening of any proceeding for that purpose and (iv) of the receipt by the Company of any notification with respect to the suspension of the qualification of the Shares for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose. The Company shall not file any amendment of the Registration Statement or supplement to the Prospectus unless the Company has furnished the Representatives a copy for their review prior to filing and shall not file any such proposed amendment or supplement to which the Representatives reasonably and timely object. The Company shall use its best efforts to prevent the issuance of any such stop order and, if issued, to obtain as soon as possible the withdrawal thereof.

(ii) If, at any time when a prospectus relating to the Shares is required to be delivered under the Securities Act and the Rules, any event occurs as a result of which the Prospectus as then amended or supplemented would include any untrue statement of a material fact or omit to state any material fact necessary to make the statements therein in the light of the circumstances under which they were made not misleading, or if it shall be necessary to amend or supplement the Prospectus to comply with the Securities Act or the Rules, the Company promptly shall prepare and file with the Commission, subject to the second sentence of paragraph (i) of this Section 7(a), an amendment or supplement which shall correct such statement or omission or an amendment which shall effect such compliance.

(iii) The Company shall make generally available to its security holders and to the Representatives as soon as practicable, but not later than 45 days after the end of the 12-month period beginning at the end of the fiscal quarter of the Company during which the Effective Date occurs (or 90 days if such 12-month period coincides with the Company's fiscal year), an income statement (which need not be audited) of the Company, covering such 12-month period, which shall satisfy the provisions of Section 11(a) of the Securities Act or Rule 158 of the Rules.

(iv) The Company shall furnish to the Representatives and counsel for the Underwriters, without charge, signed copies of the Registration Statement (including all exhibits thereto and amendments thereof) and to each other Underwriter a copy of the Registration Statement (without exhibits thereto) and all amendments thereof and, so long as delivery of a prospectus by an Underwriter or dealer may be required by the Securities Act or the Rules, as many copies of any preliminary prospectus and the Prospectus and any amendments thereof and supplements thereto as the Representatives may reasonably request.

(v) The Company shall cooperate with the Representatives and their counsel in endeavoring to qualify the Shares for offer and sale in connection with this offering under the state Blue Sky laws of such jurisdictions as the Representatives may designate and

shall maintain such qualifications in effect so long as required for the distribution of the Shares; provided, however, that the Company shall not be required in connection therewith, as a condition thereof, to qualify as a foreign corporation or to execute a general consent to service of process in any jurisdiction or subject itself to taxation as doing business in any jurisdiction.

(vi) For a period of five years after the date of this Agreement, the Company shall supply to the Representatives, and to each other Underwriter who may so request in writing, copies of such financial statements and other periodic and special reports as the Company may from time to time distribute generally to the holders of any class of its capital stock and to furnish to the Representatives a copy of each annual or other report it shall be required to file with the Commission.

(vii) Without the prior written consent of the Representatives, for a period of 90 days after the date of this Agreement, the Company shall not issue, sell or register with the Commission, or otherwise dispose of, directly or indirectly, any equity securities of the Company (or any securities convertible into or exercisable or exchangeable for equity securities of the Company), except for the issuance of the Shares pursuant to the Registration Statement, the issuance of shares pursuant to the Company's existing stock option plans or purchase rights (as amended or supplemented from time to time), employee share purchase plan outstanding as of the date hereof, and in each case, as described in or contemplated by the Prospectus or the issuance of securities in private transactions to corporate partners at prices greater than or equal to the then current fair market value of the Common Stock.

(viii) On or before completion of this offering, the Company shall make all filings required under applicable securities laws and by Nasdaq (including any required registration under the Exchange Act).

(b) The Company agrees to pay, or reimburse if paid by the Representatives, whether or not the transactions contemplated hereby are consummated or this Agreement is terminated, all costs and expenses of the Company incident to the public offering of the Shares and the performance of the obligations under this Agreement including those relating to: (i) the preparation, printing, filing and distribution of the Registration Statement, including all exhibits thereto, each preliminary prospectus, the Prospectus, all amendments and supplements to the Registration Statement and the Prospectus, and the filing and distribution of this Agreement; (ii) the preparation and delivery of certificates for the Shares to the Representatives; (iii) the registration or qualification of the Shares for offer and sale under the securities or Blue Sky laws of the various jurisdictions referred to in Section 7(a)(v), including the reasonable fees and disbursements of counsel for the Underwriters in connection with such registration and qualification and the preparation, printing, distribution and shipment of preliminary and supplementary Blue Sky memoranda; (iv) the furnishing (including costs of shipping and mailing) to the Representatives and to the Underwriters of copies of each preliminary prospectus, the Prospectus and all amendments or supplements to the Prospectus, and of the several documents required by this Section to be so furnished, as may be reasonably requested for use in connection with the offering and sale of the Shares by the Underwriters or by dealers to whom Shares may be sold; (v) the filing fees of the NASD in connection with its review of the terms of the public offering and reasonable fees and disbursements of counsel of the Underwriters in connection with such review; (vi) the furnishing (including costs of shipping and mailing) to the

Representatives and to the Underwriters of copies of all reports and information required by Section 7(a)(vi); (vii) the inclusion of the Shares for quotation on the Nasdaq National Market; and (viii) all transfer taxes, if any, with respect to the sale and delivery of the Shares by the Company and the Selling Securityholder to the Underwriters. Subject to the provisions of Section 10, the Underwriters agree to pay, whether or not the transactions contemplated hereby are consummated or this Agreement is terminated, all costs and expenses incident to the performance of the obligations of the Underwriters under this Agreement not payable by the Company pursuant to the preceding sentence, including, without limitation, the fees and disbursements of counsel for the Underwriters. Nothing in this Section 7 shall affect existing agreements between the Company and the Selling Securityholder with respect to reimbursement or allocation of costs and expenses associated with the offering and sale of the Shares.

#### 8. INDEMNIFICATION.

(a) The Company and the Selling Securityholder, severally and not jointly, agree to indemnify and hold harmless each Underwriter and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act against any and all losses, claims, damages and liabilities, joint or several (including any reasonable investigation, legal and other expenses incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claim asserted), to which they, or any of them, may become subject under the Securities Act, the Exchange Act or other Federal or state law or regulation, at common law or otherwise, insofar as such losses, claims, damages or liabilities arise out of or are based upon (i) any untrue statement or alleged untrue statement of a material fact contained in any preliminary prospectus, the Registration Statement or the Prospectus or any amendment thereof or supplement thereto, or arise out of or are based upon any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading; provided, however, that such indemnity shall not inure to the benefit of any Underwriter (or any person controlling such Underwriter) on account of any losses, claims, damages or liabilities arising from the sale of the Shares to any person by such Underwriter if such untrue statement or omission or alleged untrue statement or omission was made in such preliminary prospectus, the Registration Statement or the Prospectus, or such amendment or supplement, in reliance upon and in conformity with information furnished in writing to the Company by the Representatives on behalf of any Underwriter specifically for use therein; provided, further, that the foregoing indemnity agreement with respect to any preliminary prospectus shall not inure to the benefit of any Underwriter or any person controlling such Underwriter, from whom the person asserting any such losses, claims, damages or liabilities purchased Shares, if a copy of the Prospectus (as then amended or supplemented, if the Company shall have furnished any amendments or supplements thereto) was not sent or given by or on behalf of such Underwriter to such person, if required by law so to have been delivered, at or prior to the written confirmation of the sale of the Shares to such person, and if the Prospectus (as so amended or supplemented) would have cured the defect giving rise to such loss, claim, damage or liability. The obligation of each Selling Securityholder to indemnify the Underwriter (including any controlling person, director or officer thereof) shall be limited to the net proceeds received by the Selling Securityholder in

connection with the sale of its Shares hereby. This indemnity agreement will be in addition to any liability which the Company and the Selling Securityholder may otherwise have.

(b) Each Underwriter agrees, severally and not jointly, to indemnify and hold harmless the Company, each person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, each director of the Company, each officer of the Company who signs the Registration Statement and the Selling Securityholder to the same extent as the foregoing indemnity from the Company and the Selling Securityholder to each Underwriter, but only insofar as such losses, claims, damages or liabilities arise out of or are based upon any untrue statement or omission or alleged untrue statement or omission which was made in any preliminary prospectus, the Registration Statement or the Prospectus, or any amendment thereof or supplement thereto, contained in the last paragraph of the cover page, in the paragraphs relating to stabilization and passive market making on the inside front cover page of the Prospectus and the statements contained in paragraphs 1, 2 and 5 under the caption "Underwriting" in the Prospectus.

(c) Any party that proposes to assert the right to be indemnified under this Section will, promptly after receipt of notice of commencement of any action, suit or proceeding against such party in respect of which a claim is to be made against an indemnifying party or parties under this Section, notify each such indemnifying party of the commencement of such action, suit or proceeding, enclosing a copy of all papers served. No indemnification provided for in Section 8(a) or 8(b) shall be available to any party who shall fail to give notice as provided in this Section 8(c) if the party to whom notice was not given was unaware of the proceeding to which such notice would have related and was prejudiced by the failure to give such notice but the omission so to notify such indemnifying party of any such action, suit or proceeding shall not relieve it from any liability that it may have to any indemnified party for contribution or otherwise other than under this Section. In case any such action, suit or proceeding shall be brought against any indemnified party and it shall notify the indemnifying party of the commencement thereof, the indemnifying party shall be entitled to participate in, and, to the extent that it shall wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof, with counsel reasonably satisfactory to such indemnified party, and after notice from the indemnifying party to such indemnified party of its election so to assume the defense thereof and the approval by the indemnified party of such counsel, the indemnifying party shall not be liable to such indemnified party for any legal or other expenses, except as provided below and except for the reasonable costs of investigation subsequently incurred by such indemnified party in connection with the defense thereof. The indemnified party shall have the right to employ its counsel in any such action, but the fees and expenses of such counsel shall be at the expense of such indemnified party unless (i) the employment of counsel by such indemnified party has been authorized in writing by the indemnifying parties, (ii) the indemnified party shall have reasonably concluded that there may be a conflict of interest between the indemnifying parties and the indemnified party in the conduct of the defense of such action (in which case the indemnifying parties shall not have the right to direct the defense of such action on behalf of the indemnified party) or (iii) the indemnifying parties shall not have employed counsel to assume the defense of such action within a reasonable time after notice of the commencement thereof, in each of which cases the fees and expenses of one counsel shall

for all similarly situated indemnified parties be at the expense of the indemnifying parties. An indemnifying party shall not be liable for any settlement of any action, suit, proceeding or claim effected without its written consent.

9. CONTRIBUTION. In order to provide for just and equitable contribution in circumstances in which the indemnification provided for in Section 8(a) or 8(b) is due in accordance with its terms but for any reason is held to be unavailable from the Company or the Selling Securityholder, the Company, the Selling Securityholder and the Underwriters shall contribute to the aggregate losses, claims, damages and liabilities (including any investigation, legal and other expenses reasonably incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claims asserted, but after deducting any contribution received by the Company or the Selling Securityholder from persons other than the Underwriters, such as persons who control the Company within the meaning of the Securities Act, officers of the Company who signed the Registration Statement and directors of the Company, who may also be liable for contribution) to which the Company, the Selling Securityholder and one or more of the Underwriters may be subject in such proportion as is appropriate to reflect the relative benefits received by the Company and the Selling Securityholder on the one hand and the Underwriters on the other from the offering of the Shares or, if such allocation is not permitted by applicable law or indemnification is not available as a result of the indemnifying party not having received notice as provided in Section 8 hereof, in such proportion as is appropriate to reflect not only the relative benefits referred to above but also the relative fault of the Company and the Selling Securityholder on the one hand and the Underwriters on the other in connection with the statements or omissions which resulted in such losses, claims, damages, liabilities or expenses, as well as any other relevant equitable considerations. The relative benefits received by the Company and the Selling Securityholder and the Underwriters shall be deemed to be in the same proportion as (x) the total proceeds from the offering (net of underwriting commissions but before deducting expenses) received by the Company and the Selling Securityholder, as set forth in the table on the cover page of the Prospectus, bear to (y) the underwriting commissions received by the Underwriters, as set forth in the table on the cover page of the Prospectus. The relative fault of the Company and the Selling Securityholder or the Underwriters shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact related to information supplied by the Company, the Selling Securityholder or the Underwriters and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company, the Selling Securityholder and the Underwriters agree that it would not be just and equitable if contribution pursuant to this Section 9 were determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to above. Notwithstanding the provisions of this Section 9, (i) in no case shall any Underwriter (except as may be provided in the Agreement Among Underwriters) be liable or responsible for any amount in excess of the underwriting discount applicable to the Shares purchased by such Underwriter hereunder, and (ii) the Company and the Selling Securityholder shall be liable and responsible for any amount in excess of such underwriting discount; provided, however, that no person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such

fraudulent misrepresentation. For purposes of this Section 9, each person, if any, who controls an Underwriter within the meaning of Section 15 of the Securities Act or Section 20(a) of the Exchange Act shall have the same rights to contribution as such Underwriter, and each person, if any, who controls the Company within the meaning of the Section 15 of the Securities Act or Section 20(a) of the Exchange Act, each officer of the Company who shall have signed the Registration Statement and each director of the Company shall have the same rights to contribution as the Company, subject in each case to clauses (i) and (ii) in the immediately preceding sentence of this Section 9. Any party entitled to contribution will, promptly after receipt of notice of commencement of any action, suit or proceeding against such party in respect of which a claim for contribution may be made against another party or parties under this Section, notify such party or parties from whom contribution may be sought, but the omission so to notify such party or parties from whom contribution may be sought shall not relieve the party or parties from whom contribution may be sought from any other obligation it or they may have hereunder or otherwise than under this Section. No party shall be liable for contribution with respect to any action, suit, proceeding or claim settled without its written consent; provided, however, that such consent shall not be unreasonably withheld. The Underwriters' obligations to contribute pursuant to this Section 9 are several in proportion to their respective underwriting commitments and not joint.

10. TERMINATION. This Agreement may be terminated with respect to the Shares to be purchased on a Closing Date by the Representatives by notifying the Company and the Selling Securityholder at any time:

(a) in the absolute discretion of the Representatives at or before any Closing Date: (i) if on or prior to such date, any domestic or international event or act or occurrence has materially disrupted, or in the opinion of the Representatives will materially disrupt, the securities markets; (ii) if there has occurred any new outbreak or material escalation of hostilities or other calamity or crisis the effect of which on the financial markets of the United States is such as to make it, in the judgment of the Representatives, inadvisable to proceed with the offering; (iii) if there shall be such a material adverse change in general financial, political or economic conditions or the effect of international conditions on the financial markets in the United States is such as to make it, in the judgment of the Representatives, inadvisable or impracticable to market the Shares; (iv) if trading in the Shares has been suspended by the Commission or trading generally on the New York Stock Exchange, Inc. or Nasdaq has been suspended or limited, or minimum or maximum ranges for prices for securities shall have been imposed, or maximum ranges for prices for securities have been required, by said exchanges or by order of the Commission, the NASD or any other governmental or regulatory authority; or (v) if a banking moratorium has been declared by any state or Federal authority, or

(b) at or before any Closing Date, that any of the conditions specified in Section 6 shall not have been fulfilled when and as required by this Agreement.

If this Agreement is terminated pursuant to any of its provisions, neither the Company nor the Selling Securityholder shall be under any liability to any Underwriter, and no Underwriter shall be under any liability to the Company or the Selling Securityholder, except

that (y) if this Agreement is terminated by the Representatives or the Underwriters because of any failure, refusal or inability on the part of the Company and the Selling Securityholder to comply with the terms or to fulfill any of the conditions of this Agreement, the Company will reimburse the Underwriters for all out-of-pocket expenses (including the reasonable fees and disbursements of their counsel) incurred by them in connection with the proposed purchase and sale of the Shares or in contemplation of performing their obligations hereunder and (z) no Underwriter who shall have failed or refused to purchase the Shares agreed to be purchased by it under this Agreement, without some reason sufficient hereunder to justify cancellation or termination of its obligations under this Agreement, shall be relieved of liability to the Company and the Selling Securityholder or to the other Underwriters for damages occasioned by its failure or refusal.

11. SUBSTITUTION OF UNDERWRITERS. If one or more of the Underwriters shall fail (other than for a reason sufficient to justify the cancellation or termination of this Agreement under Section 10) to purchase on any Closing Date the Shares agreed to be purchased on such Closing Date by such Underwriter or Underwriters, the Representatives may find one or more substitute underwriters to purchase such Shares or make such other arrangements as the Representatives may deem advisable or one or more of the remaining Underwriters may agree to purchase such Shares in such proportions as may be approved by the Representatives, in each case upon the terms set forth in this Agreement. If no such arrangements have been made by the close of business on the business day following such Closing Date,

(a) if the number of Shares to be purchased by the defaulting Underwriters on such Closing Date shall not exceed 10% of the Shares that all the Underwriters are obligated to purchase on such Closing Date, then each of the nondefaulting Underwriters shall be obligated to purchase such Shares on the terms herein set forth in proportion to their respective obligations hereunder; provided, that in no event shall the maximum number of Shares that any Underwriter has agreed to purchase pursuant to Section 1 be increased pursuant to this Section 11 by more than one-ninth of such number of Shares without the written consent of such Underwriter, or

(b) if the number of Shares to be purchased by the defaulting Underwriters on such Closing Date shall exceed 10% of the Shares that all the Underwriters are obligated to purchase on such Closing Date, then the Company shall be entitled to an additional business day within which it may, but is not obligated to, find one or more substitute underwriters reasonably satisfactory to the Representatives to purchase such Shares upon the terms set forth in this Agreement.

In any such case, either the Representatives, or the Company shall have the right to postpone the applicable Closing Date for a period of not more than five business days in order that necessary changes and arrangements (including any necessary amendments or supplements to the Registration Statement or Prospectus) may be effected by the Representatives, the Company and the Selling Securityholder. If the number of Shares to be purchased on such Closing Date by such defaulting Underwriter or Underwriters shall exceed 10% of the Shares that all the Underwriters are obligated to purchase on such Closing Date, and none of the nondefaulting Underwriters or the Company shall make arrangements pursuant to this

Section within the period stated for the purchase of the Shares that the defaulting Underwriters agreed to purchase, this Agreement shall terminate with respect to the Shares to be purchased on such Closing Date without liability on the part of any nondefaulting Underwriter to the Company or the Selling Securityholder and without liability on the part of the Company or the Selling Securityholder, except in both cases as provided in Sections 7(b), 8, 9 and 10. The provisions of this Section shall not in any way affect the liability of any defaulting Underwriter to the Company or the nondefaulting Underwriters arising out of such default. A substitute underwriter hereunder shall become an Underwriter for all purposes of this Agreement.

12. MISCELLANEOUS. The respective agreements, representations, warranties, indemnities and other statements of the Company and the Selling Securityholder and of the Underwriters set forth in or made pursuant to this Agreement shall remain in full force and effect, regardless of any investigation made by or on behalf of any Underwriter, the Selling Securityholder or the Company or any of the officers, directors or controlling persons referred to in Sections 8 and 9 hereof, and shall survive delivery of and payment for the Shares. The provisions of Sections 7(b), 8, 9 and 10 shall survive the termination or cancellation of this Agreement.

This Agreement has been and is made for the benefit of the Underwriters, the Company, the Selling Securityholder and their respective successors and assigns, and, to the extent expressed herein, for the benefit of persons controlling any of the Underwriters, or the Company, and directors and officers of the Company, and their respective successors and assigns, and no other person shall acquire or have any right under or by virtue of this Agreement. The term "successors and assigns" shall not include any purchaser of Shares from any Underwriter merely because of such purchase.

All notices and communications hereunder shall be in writing and mailed or delivered or by telephone or telegraph if subsequently confirmed in writing, (a) if to the Representatives, c/o Oppenheimer & Co., Inc., Oppenheimer Tower, World Financial Center, New York, New York 10281 Attention: Peter J. Crowley, with a copy to Gregory C. Smith, Cooley Godward LLP, One Maritime Plaza, 20th Floor, San Francisco, CA 9411-3580, (b) if to the Company, to its agent for service as such agent's address appears on the cover page of the Registration Statement, with a copy to Gregory M. Gallo, Gray Cary Ware & Freidenrich, 400 Hamilton Avenue, Palo Alto, CA 94301, and (c) if to the Selling Securityholder to Corange International Limited, 22 Church Street, Hamilton, HM HX, Bermuda, with a copy to Bryan Cave LLP, 700 13th Street, N.W., Suite 700, Washington, D.C. 20005, Attention: Eric F. Stone, Esq.

This Agreement shall be governed by and construed in accordance with the laws of the State of New York without regard to principles of conflict of laws.

This Agreement may be signed in any number of counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

Please confirm that the foregoing correctly sets forth the agreement among us.

Very truly yours,  
PROTEIN DESIGN LABS, INC.

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

The foregoing Underwriting Agreement is hereby confirmed and accepted as of the date first above written.

CORANGE INTERNATIONAL LIMITED

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

OPPENHEIMER & CO., INC.  
LEHMAN BROTHERS  
PAINWEBBER INCORPORATED

As Representatives of the several Underwriters named in Schedule I.

By: OPPENHEIMER & CO., INC.

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

SCHEDULE I

FIRM SHARES TO BE PURCHASED FROM COMPANY

[TO COME]

NAME OF UNDERWRITER

Number of Firm  
Shares to be Purchased

Total.....

\_\_\_\_\_

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SCHEDULE II

FIRM SHARES TO BE PURCHASED  
FROM SELLING SECURITYHOLDER

[TO COME]

NAME OF UNDERWRITER

NUMBER OF FIRM  
SHARES TO BE PURCHASED

FORM OF OPINION OF COUNSEL  
FOR SELLING SECURITYHOLDER

(i) the Underwriting Agreement has been duly executed and delivered by or on behalf of the Selling Securityholder and the Custody Agreement between the Selling Securityholder and Chase Mellon Shareholder Services, as Custodian, and the Power of Attorney referred to in such Custody Agreement have been duly executed and delivered by the Selling Securityholder;

(ii) the Underwriting Agreement, the Custody Agreement and the Power of Attorney are valid and binding agreements of the Selling Securityholder enforceable in accordance with their terms except as enforceability may be limited by general equitable principles, bankruptcy, insolvency, reorganization, moratorium or other laws affecting creditors' rights generally and except with respect to those provisions relating to indemnity or contribution for liabilities under the Securities Act, as to which no opinion need be expressed, and the Selling Securityholder has full legal right and authority to enter into the Underwriting Agreement, the Custody Agreement and the Power of Attorney and to sell, transfer and deliver in the manner provided in the Underwriting Agreement the Shares sold by the Selling Securityholder hereunder;

(iii) the transfer and sale by the Selling Securityholder of the Shares to be sold by the Selling Securityholder as contemplated by the Underwriting Agreement, the Power of Attorney and the Custody Agreement will not conflict with, result in a breach of, or constitute a default under any agreement or instrument known to such counsel to which the Selling Securityholder is a party or by which the Selling Securityholder or any of its properties may be bound, or any applicable law or regulation, or so far as is known to such counsel, order, writ, injunction or decree of any jurisdiction, court or governmental instrumentality body.

(iv) all of the Selling Securityholder's rights in the Shares to be sold by the Selling Securityholder under the Underwriting Agreement, has been transferred to the Underwriters who have severally purchased such Shares under the Underwriting Agreement, free and clear of adverse claims, assuming for the purpose of this opinion that the Underwriters purchased the same in good faith without notice of any adverse claims; and

(v) no consent, approval, authorization or order of any court or governmental agency or body is required for the consummation of the transactions contemplated in the Underwriting Agreement, except such as have been obtained under the Securities Act and such as may be required under state securities or blue sky laws in connection with the purchase and distribution of the Shares to be sold by the Selling Securityholder by the Underwriters and the clearance of the offering with the NASD.

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Counsel rendering the foregoing opinion may rely as to questions of law not involving the laws of the United States upon opinions of local counsel satisfactory in form and scope to counsel for the Underwriters. Copies of any opinions so relied upon shall be delivered to the Representatives and to counsel for the Underwriters and the foregoing opinion shall also state that counsel knows of no reason the Underwriters are not entitled to rely upon the opinions of such local counsel.

## CONSENT OF ERNST &amp; YOUNG LLP, INDEPENDENT AUDITORS

We consent to the reference to our firm under the caption "Experts" in the Registration Statement (Form S-3) and related Prospectus of Protein Design Labs, Inc. for the registration of 2,750,000 shares of its Common Stock and to the incorporation by reference therein of our report dated January 27, 1997 with respect to the financial statements of Protein Design Labs, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 1996 filed with the Securities and Exchange Commission.

ERNST &amp; YOUNG LLP

Palo Alto, California

February 13, 1997