AS FILED WITH THE SECURITIES AND EXCHANGE COMMISSION ON JANUARY 25, 2000

REGISTRATION NO. 333-93135

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON. D.C. 20549

AMENDMENT NO. 1
TO
FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

AVI BIOPHARMA, INC.
(Exact name of registrant as specified in its charter)

OREGON	93-0797222
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

ONE S.W. COLUMBIA, SUITE 1105, PORTLAND, OR 97258
(503) 227-0554
(Address, including zip code, and telephone number, including area code of registrant's principal executive offices)

DENIS R. BURGER, PH.D.
PRESIDENT & CHIEF EXECUTIVE OFFICER
AVI BIOPHARMA, INC.
ONE S.W. COLUMBIA, SUITE 1105, PORTLAND, OR 97258
(503) 227-0554
(Name, address, including zip code, and telephone number, including area code of agent for service)

COPY TO:
BYRON W. MILSTEAD, ESQ.
ATER WYNNE LLP
222 S.W. COLUMBIA, SUITE 1800, PORTLAND, OR 97201-6618

APPROXIMATE DATE OF COMMENCEMENT OF PROPOSED SALE TO PUBLIC:
AS SOON AS PRACTICABLE AFTER THE EFFECTIVE DATE OF THIS REGISTRATION STATEMENT.

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

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. /X/

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

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act

registration statement number of the earlier 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. / /

CALCULATION OF REGISTRATION FEE

TITLE OF SECURITIES TO BE REGISTERED	AMOUNT TO BE REGISTERED	PROPOSED MAXIMUM OFFERING PRICE PER SHARE(1)	PROPOSED MAXIMUM AGGREGATE OFFERING PRICE	AMOUNT OF REGISTRATION FEE
(a) Common Stock, $.0001 par value(2).....	2,857,147	$13.63	$38,942,914	$10,282
(b) Common Stock, $.0001 par value(3)(4)....	557,144	$13.63	$7,593,873	$2,005
TOTAL.....			$46,536,787	$12,286

(1) The offering price is estimated solely for the purpose of calculating the registration fee in accordance with Rule 457(c) using the average of the high and low price reported by the Nasdaq National Market for the Common Stock on January 20, 2000, which was approximately $13.63 per share.

(2) An indeterminate number of shares of Common Stock are registered under this Registration Statement that may be issued, as provided in the Purchase Agreement to prevent dilution resulting from stock splits, stock dividends or similar transactions. No additional registration fee is included for these shares.

(3) Issuable upon the exercise of Common Stock Purchase Warrants held by existing shareholders of AVI BioPharma, Inc. who are the selling shareholders under this Registration Statement.

(4) An indeterminate number of shares of Common Stock are registered under this Registration Statement that may be issued, as provided in the Common Stock Purchase Warrants to prevent dilution resulting from stock splits, stock dividends or similar transactions. No additional registration fee is included for these shares.

(5) Pursuant Rule 457(a) this amendment registers an additional number of securities and a registration fee in the amount of $10,976 is enclosed with respect to these additional securities.

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.

THE INFORMATION IN THIS PROSPECTUS IS NOT COMPLETE AND MAY BE CHANGED. THE SELLING SHAREHOLDERS MAY NOT SELL THEIR COMMON SHARES UNTIL THE REGISTRATION STATEMENT FILED WITH THE SECURITIES AND EXCHANGE COMMISSION IS EFFECTIVE. THIS PROSPECTUS IS NOT AN OFFER TO SELL COMMON SHARES AND IT IS NOT SOLICITING AN OFFER TO BUY COMMON SHARES IN ANY STATE WHERE THE OFFER OR SALE IS NOT PERMITTED.

SELLING SHAREHOLDERS' PROSPECTUS

AVI BIOPHARMA, INC.

3,414,291 COMMON SHARES

NASDAQ NATIONAL MARKET

THIS INVESTMENT INVOLVES A HIGH DEGREE OF RISK. YOU SHOULD PURCHASE SHARES ONLY IF YOU CAN AFFORD A COMPLETE LOSS OF YOUR INVESTMENT. SEE RISK FACTORS BEGINNING ON PAGE 10.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED THE COMMON SHARES, OR DETERMINED IF THIS PROSPECTUS IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

- This is an offering of Common Shares by existing shareholders of AVI BioPharma, Inc.

- The selling shareholders will receive all of the proceeds from the sale of the Common Shares, less any commissions or discounts paid to brokers or other agents. We will not receive any of the proceeds from the sale of the Common Shares.

- The selling shareholders may offer and sell the Common Shares on the Nasdaq National Market at prevailing market prices, or in privately negotiated transactions at prices other than the market price. On January 20, 2000, the closing sale price for our Common Shares on the Nasdaq National Market was $13.375.

- The Common Shares were obtained by the selling shareholders in transactions that were exempt from the registration requirements of the Securities Act of 1933, as amended, and represent approximately 21% of the Company's outstanding Common Stock.

January 24, 1999

TABLE OF CONTENTS

	PAGE
INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE.....	3
SUMMARY.....	4
SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS.....	7
RISK FACTORS.....	9
INFORMATION ABOUT THE COMPANY.....	15
PRIVATE PLACEMENT TO SELLING SHAREHOLDERS.....	19
OUR SELLING SHAREHOLDERS.....	20
PLAN OF DISTRIBUTION.....	21
DESCRIPTION OF CAPITAL SHARES.....	23
LEGAL MATTERS.....	25
EXPERTS.....	25
ADDITIONAL INFORMATION.....	

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents which we filed with the Securities and Exchange Commission are incorporated by reference in this Prospectus:

(1) our Annual Report on Form 10-KSB for the year ended December 31, 1998, which we refer to in the rest of this document as our Annual Report; and

(2) our Report on Form 10-QSB dated November 12, 1999, for the quarter ended September 30, 1999.

In addition, all documents which we file with the Securities and Exchange Commission ("Commission") pursuant to Section 13, 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), after the date of the Registration Statement and before termination of the offering of Common Shares, including all annual reports on Form 10-KSB, and all filings on Forms 10-QSB and 8-K, will be deemed to be incorporated by reference in this Prospectus and to be a part of this Prospectus from the date those documents are filed. Any statement contained in a document which is incorporated, or deemed to be incorporated, by reference into this Prospectus, shall be considered modified or superseded for purposes of this Prospectus to the extent that a statement contained in this Prospectus 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 so modified or superseded, to constitute a part of this Prospectus.

You may request a copy of any document incorporated by reference in this Prospectus at no cost. To receive a copy, write or call us at AVI BioPharma, Inc., One S.W. Columbia, Suite 1105, Portland, Oregon 97258, Attention: Mr. Alan P. Timmins, (503) 227-0554.

We are subject to the informational requirements of the Exchange Act and file reports and other information with the Commission. Reports and other information which we file with the Commission, including the Registration Statement on Form S-3 of which this Prospectus is a part, may be inspected and copied at the public reference facilities of the Commission at Judiciary Plaza, 450 Fifth Street, N.W., Room 1024, Washington, D.C. 20549, at prescribed rates. The Commission's telephone number is 1-800-SEC-0330. These materials may be obtained electronically by visiting the Commission's web site on the Internet at http://www.sec.gw. Our Common Stock is listed on the Nasdaq National Market. Reports, proxy statements and other Company materials also can be inspected at 1735 K Street, N.W., Washington, D.C. 20006-1506.

SUMMARY

MANY OF THE MATTERS SET FORTH IN THIS PROSPECTUS CONTAIN FORWARD-LOOKING STATEMENTS THAT ARE SUBJECT TO RISKS AND UNCERTAINTIES THAT COULD CAUSE ACTUAL RESULTS TO DIFFER MATERIALLY FROM THOSE SET FORTH HEREIN. WE REFER YOU TO CAUTIONARY INFORMATION CONTAINED ELSEWHERE HEREIN AND IN OTHER DOCUMENTS WE FILE WITH THE SECURITIES AND EXCHANGE COMMISSION FROM TIME TO TIME.

BUSINESS..... AVI BioPharma, Inc. (AVI) is an emerging biopharmaceutical company developing therapeutic products using two distinct platform technologies:

Cancer Immunotherapy.....	Avicine	clinical
	Xactin	pre-clinical
Gene-targeted drugs (NEUGENES).....	Resten-NG	IND filed
	Oncomyc-NG	pre-clinical

Our principal focus is the treatment of life-threatening diseases, most notably cancer and heart disease. Currently approved drugs or other therapies often prove

to be ineffective in treating advanced stages of these diseases or produce numerous unwanted side-effects. Our two leading platforms, Cancer Immunotherapy and NEUGENEs, are specifically aimed at solving the challenges faced by today's pharmaceutical products. Each of these products represents large market opportunities. It is estimated that the world-wide market for therapeutic cancer vaccines exceeds $2 billion.

CANCER IMMUNOTHERAPY (VACCINES)..... Avicine, a therapeutic vaccine, represents our most advanced product opportunity, having completed a Phase II human clinical trial for colorectal cancer. Therapeutic cancer vaccines operate under the rationale that active immunization can stimulate an immune response that can be effective in fighting an existing cancer. The therapeutic benefit of the vaccine hinges on the existence of specific target sites, called tumor antigens, on cancer cells.

The target for Avicine is human chorionic gonadotropin (hCG). Not only is hCG responsible for stimulating fetal development during pregnancy, but it is also a tumor antigen on cancer cells of all major types including cancer of the colon, pancreas, prostate, lung and breast. It is believed that the role of hCG in pregnancy and cancer is similar. In both cases, it (i) serves as a growth factor encouraging rapid cell division, (ii) fosters the formulation of blood vessels, (iii) stimulates invasion of other tissues, and (iv) dampens the immune system to allow the fetus, or the tumor, to avoid rejection. Avicine is based on an anti-hCG approach to treating cancer.

Avicine has completed five clinical studies in cancer, in which a total of 172 patients received treatment. From these studies, we believe that the vaccine is a safe and essentially non-toxic therapy and capable of producing a specific immune response in most patients. Further, the patients who mounted an immune

response to hCG lived longer than patients treated with other conventional therapies. We intend to investigate further the use of Avicine alone or in conjunction with other approved therapies in Phase II and Phase III licensing trials.

CANCER IMMUNOTHERAPY (XACTIN MONOCLONAL ANTIBODIES)..... We are also combating cancer by utilizing antibodies that have activity against cancer cells that display the hCG hormone marker. We licensed XenoMouse-TM- technology from Abgenix Inc. and have produced human monoclonal antibodies against critical hCG tumor antigen targets. These high affinity, stable clones recognize the key epitopes in our cancer vaccine. The Xactin antibodies are both companion products to Avicine and independent cancer therapeutics and are now in pre-clinical development.

GENE-TARGETED DRUGS (NEUGENES)..... We have developed third generation gene-inactivating compounds that we believe are more stable, specific, efficacious, and cost effective than other antisense or ribozyme agents. Our NEUGENE compounds are distinguished by a novel backbone which replaces the natural or modified backbones of competing antisense or ribozyme technologies.

NEUGENE use synthetic polymers to block the function of certain genetic sequences involved in the disease process. Targeting specific genetic sequences provides for greater selectivity than available through conventional drugs. NEUGENEs have the potential to provide safe and effective treatment for a wide range of human diseases.

	We have completed pre-clinical studies using our NEUGENE compounds in the treatment of bone cancer and restenosis, the blockage of arteries following balloon angioplasty. We recently filed an IND with the FDA for Resten-NG for restenosis and expect to begin a Phase I/II clinical trial by year-end.
STRATEGY.....	We have the experience and resources to initiate drug discovery and development, and move drug candidates through pre-clinical development and into early stage clinical trials (Phase I and Phase II). Our strategy for the near-term (2 to 5 years) is to license the marketing rights for our product candidates to pharmaceutical partners after Phase II clinical trials or co-develop product candidates with strategic partners. In this manner, expensive, late-stage clinical development and marketing will be the responsibility of the licensee. With adequate resources we may consider assuming greater responsibility for the late-stage clinical development and marketing opportunities of future product candidates.

CLINICAL DEVELOPMENT PROGRAM

PRODUCT CANDIDATE	PRE-CLINICAL	PHASE I	PHASE II	PHASE III
Avicine (Colorectal Cancer Vaccine).....	Completed	Completed	Completed	2000
Avicine (Pancreatic Cancer Vaccine).....	Completed	Completed	In progress	
Avicine (Prostate Cancer Vaccine).....	Completed	Completed	1999	
Resten-NG (Gene-Targeted Drug for Restenosis).....	Completed	1999	2000	
Oncomyc-NG (Gene-Targeted Drug for Cancer).....	Completed	2000		
Xactin (Human Monoclonal Antibody).....	In progress	2000		

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Prospectus contains forward-looking statements regarding our plans, expectations, estimates and beliefs. Our actual results could differ materially from those discussed in, or implied by, these forward-looking statements. Forward-looking statements are identified by words such as "believe," "anticipate," "expect," "intend," "plan," "will," "may," and other similar expressions. In addition, any statements that refer to expectations, projections or other characterizations of future events or circumstances are forward-looking statements. We have based these forward-looking statements largely on our expectations. Forward-looking statements in this Prospectus include, but are not necessarily limited to, those relating to:

- our intention to introduce new products
- FDA or other regulatrory approval for our products
- our expectations about the markets for our products
- acceptance of our products in the marketplace
- our future capital needs
- success of our patent applications
- the status of Year 2000 compliance efforts

Forward-looking statements are subject to risks and uncertainties, certain

of which are beyond our control. Actual results could differ materially from those anticipated as a result of the factors described in the "Risk Factors," including among others:

- delays in obtaining, or our inability to obtain, approval by the FDA or other regulatory authorities for our products
- delays in developing, or the failure to develop, our products
- the development of competing or more effective products by other parties
- uncertainty of market acceptance of our products
- problems that we may face in manufacturing, marketing, and distributing our products
- our inability to raise additional capital when needed
- delays in the issuance of, or the failure to obtain, patents for certain on our products and technologies
- problems with important suppliers and business partners

We do not undertake any obligation to update or revise any forward-looking statements contained in this Prospectus or incorporated by reference, whether as a result of new information, future events or otherwise. Because of these risks and uncertainties, the forward-looking events and circumstances discussed in this Prospectus might not transpire. Factors that cause actual results or conditions to differ from those anticipated by these and other froward-looking statements include those more fully described in the "Risk Factors" section and elsewhere in this Prospectus.

NOTES TO READERS OF THIS PROSPECTUS

We were incorporated in Oregon in 1980. When we refer to "us," "we," "our," "the Company" and "AVI" in this Prospectus, we mean AVI BioPharma, Inc., and its consolidated subsidiaries. Our executive offices are located at One S.W. Columbia, Suite 1105, Portland, Oregon 97258. Our telephone number at that location is (503) 227-0554. Information contained on our websites does not constitute part of this Prospectus.

We are subject to the informational requirements of the Exchange Act and file reports and other information with the Commission. Reports and other information which we file with the Commission, may be inspected and copied at the public reference facilities of the Commission at Judiciary Plaza, 450 Fifth Street, N.W., Room 1024, Washington, D.C. 20549, at prescribed rates. The Commission's telephone number is 1-800-SEC-0330. These materials may be obtained electronically by visiting the Commission's website on the Internet at http://www.sec.gov. Reports, proxy statements and other Company materials also can be inspected at 1735 K Street, N.W., Washington, D.C. 20006-1506 or obtained directly from the Company at the address and telephone listed above.

This Prospectus includes our trademarks and registered trademarks, including Avicine-TM-, NEUGENE-Registered Trademark-and Xactin-TM-. Each other trademark, trade name or service mark appearing in this Prospectus belongs to its holder.

RISK FACTORS

The Shares offered by this Prospectus are speculative and involve a high degree of risk. Before making an investment, you should carefully read this entire Prospectus and consider the following risk factors.

RISKS RELATING TO OUR BUSINESS

HISTORY OF OPERATING LOSSES AND ANTICIPATED FUTURE LOSSES

We incurred a net operating loss of $26.7 million in 1998, which included a one-time charge of $19.5 million relating to our acquisition of ImmunoTherapy Corporation. We incurred a $5.9 million loss for the first nine months of 1999. "Net operating loss" represents the amount by which our expenses (other than interest expense) exceed revenues. As of September 30, 1999, our accumulated

deficit was $48.7 million. Our losses have resulted principally from expenses incurred in research and development of our technology and products and from selling, general and administrative expenses that we have incurred while building our business infrastructure. We expect to continue to incur significant operating losses in the future as we continue our research and development efforts and seek to obtain regulatory approval of our products. Our ability to achieve profitability depends on our ability to complete development of our products, obtain regulatory approvals and market our products. It is uncertain when, if ever, we will become profitable.

EARLY STAGE OF PRODUCT DEVELOPMENT

Although we began operations in 1980, except for Avicine, we are only in the early stages of the development of our pharmaceutical products. We have devoted almost all of our time to research and development of our technology and products, protecting our proprietary rights and establishing strategic alliances. Our proposed products are in the pre-clinical or clinical stages of development and will require significant further research, development, clinical testing and regulatory clearances. We have no products available for sale, except for research reagents, and we do not expect to have any products available for sale for several years. Our proposed products are subject to development risks. These risks include the possibilities that any of the products could be found to be ineffective or toxic, or could fail to receive necessary regulatory clearances. Although we have obtained favorable results in Phase II using Avicine to treat colorectal cancer patients, we cannot assure that we will obtain similar results in the contemplated Phase III protocol. We have not received any significant revenues from the sale of products and we cannot assure investors that we will successfully develop marketable products, that our sales will increase or that we will become profitable. Third parties may develop superior or equivalent, but less expensive, products.

LACK OF OPERATING EXPERIENCE

We have engaged solely in the development of pharmaceutical technology. Although some of our management have experience in biotechnology company operations, we have limited experience in manufacturing or selling pharmaceutical products. We also have only limited experience in negotiating and maintaining strategic relationships, and in conducting clinical trials and other later-stage phases of the regulatory approval process. We cannot assure investors that we will successfully engage in any of these activities.

NEED FOR FUTURE CAPITAL AND UNCERTAINTY OF ADDITIONAL FUNDING

Since we began operations, we have obtained operating funds primarily by selling shares of our company. Based on our current plans, we believe that current cash balances including the anticipated proceeds from this Offering will be sufficient to meet our operating needs for approximately the next eighteen months. Furthermore, the actual amount of funds that we will need will be determined by many factors, some of which are beyond our control. These factors include the success of our research and development efforts, the status of our pre-clinical and clinical testing, costs relating to securing regulatory

approvals and the costs and timing of obtaining new patent rights, regulatory changes, competition and technological developments in the market. We may need funds sooner than currently anticipated.

We anticipate that we will need to obtain additional funds during or at the end of this eighteen-month period. If necessary, potential sources of additional funding include strategic relationships, public or private sales of shares of our common stock or debt or other arrangements. We do not have any committed sources of additional financing at this time. It is uncertain whether we can obtain additional funding when we need it on terms that will be acceptable to us or at all. If we raise funds by selling additional shares of our common stock or securities convertible into our common stock, the ownership interest of our existing shareholders will be diluted. If we are unable to obtain financing when needed, our business and future prospects would be materially adversely affected.

DEPENDENCE ON OTHERS FOR CLINICAL TESTING, MANUFACTURING AND MARKETING

We do not intend to conduct late-stage (Phase III) human clinical trials ourselves. We anticipate entering into relationships with larger pharmaceutical companies to conduct later pharmaceutical trials and to market our products and

we also plan to continue to use contract manufacturing for our products. We may be unable to enter into corporate partnerships that could impede our ability to bring our products to market. We cannot assure investors that any corporate partnerships, if entered, will be on favorable terms or will result in the successful development or marketing of our products. If we are unsuccessful in establishing advantageous clinical testing, manufacturing and marketing relationships, we are not likely to generate significant revenues and become profitable.

LIMITED MANUFACTURING CAPABILITY

While we believe that we can produce materials for clinical trials at our existing facilities, we will need to expand our commercial manufacturing capabilities for products in the future if we elect not to or cannot contract with others to manufacture our products. This expansion may occur in stages, each of which would require regulatory approval, and product demand could at times exceed supply capacity. We have not selected a site for any expanded facilities and cannot predict the amount we will expend for construction of such facilities. We cannot assure if or when the FDA will determine that such facilities comply with Good Manufacturing Practices. The projected location and construction of any facilities will depend on regulatory approvals, product development, pharmaceutical partners and capital resources, among other factors. We have not obtained regulatory approvals for any productions facilities for our products, nor can we assure investors that we will be able to do so.

GOVERNMENTAL REGULATION; LACK OF ASSURANCE OF REGULATORY APPROVALS

All of our products are subject to extensive regulation by the United States Food and Drug Administration and by comparable agencies in other countries. The FDA and comparable agencies require new pharmaceutical products to undergo lengthy and detailed clinical testing procedures and other costly and time-consuming compliance procedures. Except for Avicine, none of our products have been tested in humans. We cannot predict when we will initiate and complete our clinical trials or when we will be able to submit our products for regulatory review. Even if we submit a new drug application, there may be delays in obtaining regulatory approvals, if we obtain them at all. Sales of our products outside the United States will also be subject to regulatory requirements governing clinical trials and product approval. These requirements vary from country to country and could delay introduction of our products in those countries. We cannot assure you that any of our products will receive marketing approval from the FDA or comparable foreign agencies.

DEPENDENCE ON KEY PERSONNEL

Our success will depend to a large extent on the abilities and continued service of several key employees, including Drs. Denis Burger, Patrick Iversen, and Dwight Weller. The loss of any of these key employees could significantly delay the achievement of our goals. Competition for qualified personnel in our industry is intense, and our success will be dependent on our ability to attract and retain highly skilled personnel.

COMPETITION

The biotechnology industry is highly competitive. We compete with companies in the United States and abroad that are engaged in the development of pharmaceutical technologies and products. They include:

- biotechnology, pharmaceutical, chemical and other companies;

- academic and scientific institutions;

- governmental agencies; and

- public and private research organizations.

Many of these companies and many of our other competitors have much greater financial and technical resources and production and marketing capabilities than we do. Our industry is characterized by extensive research and development and rapid technological progress. Competitors may successfully develop and market superior or less expensive products which render our products less valuable or unmarketable.

PATENTS AND PROPRIETARY RIGHTS

Our success will depend on our existing patents and licenses, and our ability to obtain additional patents in the future. We have filed 46 patent applications in the United States, Canada, Europe, Australia and Japan and 43 patents have been issued. We license the composition, manufacturing and use of Avicine in all fields except fertility regulation from The Ohio State University.

We cannot assure investors that our pending patent applications will result in patents being issued in the United States or foreign countries. In addition, we cannot guarantee that patents which have been or will be issued will afford meaningful protection for our technology and products. Competitors may develop products similar to ours which do not conflict with our patents. Others may challenge our patents and, as a result, our patents could be narrowed or invalidated. The patent position of biotechnology firms generally is highly uncertain, involves complex legal and factual questions, and has recently been the subject of much litigation. No consistent policy has emerged from the United States Patent and Trademark Office or the courts regarding the breadth of claims allowed or the degree of protection afforded under biotechnology patents. In addition, there is a substantial backlog of biotechnology patent applications at the USPTOs and the approval or rejection of patents may take several years.

Our success will also depend partly on our ability to operate without infringing upon the proprietary rights of others, as well as our ability to prevent others from infringing on our proprietary rights. We may be required at times to take legal action in order to protect our proprietary rights and, despite our best efforts, we may be sued for infringing on the patent rights of others. Patent litigation is costly and, even if we prevail, the cost of such litigation could adversely affect our financial condition. If we do not prevail, in addition to any damages we might have to pay, we could be required to stop the infringing activity or obtain a license. We cannot be certain that any required license would be available to us on acceptable terms, or at all. If we fail to obtain a license, our business might be materially adversely affected.

To help protect our proprietary rights in unpatented trade secrets, we require our employees, consultants and advisors to execute confidentiality agreements. However, we cannot guarantee that these agreements will provide us with adequate protection if confidential information is used or disclosed improperly. In addition, in some situations, these agreements may conflict with, or be subject to, the rights of third parties with whom our employees, consultants or advisors have prior employment or consulting relationships. Further, others may independently develop substantially equivalent proprietary information and techniques, or otherwise gain access to our trade secrets.

POTENTIAL PRODUCT LIABILITY

The use of our products will expose us to the risk of product liability claims. Although we intend to obtain product liability insurance coverage, we cannot guaranty that product liability insurance will continue to be available to us on acceptable terms or that our coverage will be sufficient to cover all claims against us. A product liability claim, even one without merit or for which we have substantial coverage, could result in significant legal defense costs, thereby increasing our expenses, lowering our earnings and, depending on revenues, potentially result in additional losses.

UNCERTAINTY OF THIRD-PARTY REIMBURSEMENT

In addition to obtaining regulatory approval, the successful commercialization of our products will depend on our ability to obtain reimbursement for the cost of the product and treatment. Government authorities, private health insurers and other organizations, such as health maintenance organizations are increasingly challenging the prices charged for medical products and services. Also, the trend toward managed health care in the United States, the growth of healthcare organizations such as HMOs, and legislative proposals to reform healthcare and government insurance programs could significantly influence the purchase of healthcare services and products, resulting in lower prices and reducing demand for our products. The cost containment measures that healthcare providers are instituting and any healthcare reform could affect our ability to sell our products and may have a material adverse effect on our operations. We cannot assure investors that reimbursement in the United States or foreign countries will be available for any of our products, that any reimbursement granted will be maintained, or that limits on reimbursement available from third-party payors will not reduce the

demand for, or the price of, our products. The lack or inadequacy of third-party reimbursements for our products would have a material adverse affect on our operations. We cannot forecast what additional legislation or regulation relating to the healthcare industry or third-party coverage and reimbursement may be enacted in the future, or what effect the legislation or regulation would have on our business.

RISKS RELATED TO SHARE OWNERSHIP

OUR PREFERRED SHARES, CLASSIFIED BOARD OF DIRECTORS AND OREGON LAWS COULD PROHIBIT TAKEOVERS

Our authorized capital consists of 50,000,000 shares of common stock and 2,000,000 preferred shares. The Board of Directors, without any further vote by the shareholders, has the authority to issue preferred shares and to determine the price, preferences, rights and restrictions, including voting and dividend rights, of these shares. The rights of the holders of shares of common stock may be affected by the rights of holders of any preferred shares that the Board of Directors may issue in the future. For example, the Board of Directors may allow the issuance of preferred shares with more voting rights, higher dividend payments or more favorable rights upon dissolution, than the shares of common stock. If preferred shares are issued in the future, it may also be more difficult for others to acquire a majority of our outstanding voting shares. See "Description on Capital Shares."

In addition, we have a "classified" Board of Directors, which means that only one-half of our directors are eligible for election each year. Therefore, if shareholders wish to change the composition of the Board of Directors, it could take at least two years to remove a majority of the existing directors or to change all

directors. Having a classified Board of Directors may, in some circumstances, deter or delay mergers, tender offers or other possible transactions which may be favored by some or a majority of our shareholders.

The Oregon Control Share Act and Business Combination Act limit parties who acquire a significant amount of voting shares from exercising control over us. The Act may lengthen the period for a proxy contest or for a person to vote their shares to elect the majority of our Board.

VOLATILITY OF STOCK PRICE

Historically, the market price of our stock has been highly volatile. The following types of announcements could have a significant impact on the price of our common stock:

- positive or negative results of testing and clinical trials
- delays in entering into corporate partnerships
- technological innovations or commercial product introductions by ourselves or competitors
- changes in government regulations
- developments concerning proprietary rights, including patents and litigation matters
- public concern relating to the commercial value or safety of any of our products
- general stock market conditions

Further, the stock market has in recent months experienced and may continue to experience significant price and volume fluctuations. These fluctuations have particularly affected the market prices of equity securities of many biopharmaceutical companies that are not yet profitable. Often, the effect on the price of such securities is unrelated or disproportionate to the operating performance of such companies. These broad market fluctuations may adversely affect the ability of a shareholder to dispose of his shares at a price equal to or above the price at which the shares were purchased.

FUTURE SALE OF ELIGIBLE SHARES MAY LOWER THE PRICE OF OUR COMMON STOCK

We have outstanding 16,235,845 shares of common stock and 14,092,988 are eligible for sale under Rule 144 or are otherwise freely tradeable. We intend to promptly file a registration statement covering an additional 2,142,857 shares, which will make those shares freely tradeable. In addition:

- Our employees and others hold options to buy a total of 144,277 shares of common stock. The shares of common stock to be issued upon exercise of these options, have been registered, and therefore may be freely sold when issued;

- There are outstanding warrants to buy 5,826,554 shares of common stock. The shares issuable upon exercise of 4,631,101 warrants are registered. These shares may be freely sold when issued. We also intend to file a registration statement covering an additional 342,857 warrants. The holders of warrants covering 400,000 shares have incidental registration rights to have the shares issuable upon the exercise of their warrants registered. Once registered, those shares may be freely sold when issued, for so long as the registration statement is effective and current. The remaining warrants have no registration rights.

- We may issue options to purchase up to an additional 170,499 shares of common stock under our stock option plans, which also will be fully saleable when issued.

Sales of substantial amounts of shares into the public market could lower the market price of our common stock.

RIGHTS OF CERTAIN HOLDERS TO ADDITIONAL STOCK OR REDEMPTION OF SHARES

Holders of 1,857,147 shares of our common stock enjoy the right to receive additional shares of common stock from the Company without additional payment to the Company if the Company sells shares of common stock, or engages in similar financing transactions, at a price of less than $3.50 per share prior to December 16, 2002, or 33 months have passed since the effective date of the registration statement relating to this Prospectus. If additional shares of our common stock are issued under this obligation, the ownership interest of other existing shareholders will be diluted.

Under certain circumstances, the Company may be required to redeem shares to be issued to the holders who enjoy this right. Specifically, if the holdings of the Company's stock by any holder who enjoys this right will exceed their pro rata share of 20 percent of the Company's outstanding common stock due to the issuance of new shares, the Company must redeem the new shares to be issued at a price equal to 110 percent of the price originally paid for these shares. This redemption obligation could materially adversely affect the business and future prospects of the Company if it arises.

ABSENCE OF DIVIDENDS

We have never paid dividends on our shares of common stock and do not intend to pay dividends in the foreseeable future.

YEAR 2000 RISKS

Many currently installed operating systems and software products are coded only to accept two digit entries in the date code field. Consequently, they are unable to distinguish 21st century dates from 20th century dates. As a result, the computer systems and software used by many companies may need to be upgraded to prevent problems that would result from misreading the entries in the date code field. Failure to correct systems to become "Year 2000 compliant" may result in systems failures or miscalculations causing disruptions of operations, including, among other things, a temporary inability to process data, send invoices or engage in similar normal business activities.

We are currently reviewing the potential impact of Year 2000 issues on our business and attempting to mitigate or eliminate those issues. The primary risks to us are those of business continuity. We are determining which equipment we own needs to be replaced. We have also begun communicating with our significant suppliers, financial institutions, insurance companies and other parties that provide us significant services, including clinical trial sites, to determine

whether they anticipate Year 2000 problems in their operations. If we or our significant vendors or suppliers are unable to become Year 2000 compliant in time, this could have a material adverse affect on our ability to continue our operations.

INFORMATION ABOUT THE COMPANY

FOR A DETAILED DESCRIPTION OF OUR BUSINESS AND INFORMATION ABOUT OUR MANAGEMENT, SEE OUR ANNUAL REPORT WHICH IS INCORPORATED INTO THIS PROSPECTUS BY REFERENCE. THE FOLLOWING INFORMATION SUPPLEMENTS OR SUPERSEDES, AS MAY BE APPROPRIATE, THE INFORMATION CONTAINED IN OUR ANNUAL REPORT:

PRODUCT DEVELOPMENT OVERVIEW

I. CANCER IMMUNOTHERAPY

A. AVICINE THERAPEUTIC CANCER VACCINE

TECHNICAL OVERVIEW

The therapeutic vaccine approach is among the newer strategies being investigated for treating cancer. Historically, vaccines were developed and used to induce an immune response in order to prevent a disease. This is contrasted with a therapeutic vaccine where the disease entity is known or suspected to be present at the time of vaccination. The rationale employed with a therapeutic approach is that active immunization against a specific pathogenic agent can stimulate an immune response against the existing disease.

In order for a therapeutic vaccine to be effective in fighting a disease such as cancer, it is necessary to identify specific target sites on the tumor cells, called tumor-associated antigens. The more selective that the antigen is to the tumor, the greater likelihood of attacking only the cancer cells. The identification of an appropriate target has been one of the greatest challenges in the development of a useful cancer vaccine.

AVI BioPharma's therapeutic cancer vaccine, Avicine, is designed to produce an immune response against a well-characterized target, human chorionic gonadotropin (hCG). hCG is a hormone produced during pregnancy that plays a variety of roles in fostering the development of a fetus. Through extensive research, scientists found that hCG is also present in most cancers. In fact, cancer is believed to be the only significant exception to the normal hCG function during pregnancy. Given the selective production of hCG, we believe it represents a highly specific target for a therapeutic cancer vaccine.

The use of hCG as a cancer vaccine target may offer advantages over other potential tumor associated antigens.

- It is not usually found on normal cells with the exception of those present during a pregnancy. This means that it is highly selective.

- It is widely expressed by and found on many types of cancer, including colon, pancreas, prostate, lung and breast.

- hCG expression has been correlated with tumor aggressiveness. In other words, the higher the level of hCG, the more aggressive the rate of growth or spread of the cancer.

- Antibodies to hCG are believed to block the same hormonal functions that hCG plays in pregnancy and cancer, including rapid cell division, the formulation of blood vessels, invasion of other tissues, and dampening of the immune responses.

Since hCG is a natural human protein, people will not mount an immune response to it unless they are actively immunized. Once immunized, the mechanism of action of an anti-hCG vaccine can be viewed as a two-pronged attack. First, it directs an immune response against the tumor, and second, it neutralizes the hormonal benefits provided by hCG.

The hCG component in Avicine is a small peptide from this hormone. The peptide is joined to a carrier, diphtheria toxoid, to enhance the immune response. Diphtheria toxoid was selected since most of the world's population has been vaccinated against it and there is significant experience with it as a vaccine

component in man. The combination provides for an existing immune response to the carrier which is believed to be important in stimulating an immune response to the hCG peptide.

AVICINE DISTINGUISHING CHARACTERISTICS

- Fully-characterized synthetic vaccine
- Capable of being produced inexpensively in large quantities
- Targets a widely-expressed tumor antigen (hCG)
- Ready for Phase III clinical testing in colorectal patients
- Applicable to most cancer types in multiple clinical settings
- Twenty years of research and development and safety data

AVICINE CLINICAL TRIALS

We have completed three Phase I clinical trials using Avicine in 87 patients with cancer. Overall, these studies showed Avicine to be safe and essentially non-toxic. These early clinical trials showed the vaccine to be effective in stimulating an immune response to hCG in most patients. Moreover, apparent survival benefits and some tumor regressions were noted.

PANCREATIC AND PROSTATE CANCER TRIALS

We recently completed a pilot Phase II study using Avicine in 10 patients with advanced pancreatic cancer. For the 10 patients treated, the median survival was approximately 33 weeks. Patients with advanced pancreatic cancer are currently treated with chemotherapy and have a median survival of approximately 18 to 25 weeks. Although we believe these results to be encouraging, we hesitate to draw conclusions from such a small study other than to use these results to design additional trials.

Two additional Phase II trials were scheduled for the fourth quarter of 1999. The first Phase II study of 50 patients with pancreatic cancer was initiated in October 1999. In addition, we plan to initiate a Phase II clinical trial in 24 patients with prostate cancer before year-end.

COLORECTAL CANCER TRIALS

A multicenter Phase II study of Avicine was conducted on in 77 patients with advanced colorectal cancer. The objectives of this trial were to determine whether administration of Avicine would induce an immune response in patients with metastatic colorectal cancer and to measure safety and efficacy in these patients. Overall, 51 of the 77 patients responded to our vaccine by producing antibodies to hCG. The patients that were antibody responders had a median survival of 42 weeks. Patients that did not respond immunologically had a median survival of just 17 weeks.

Further analysis of the multicenter Phase II data showed that patients who produced antibodies to two targets on the hCG peptide had a median survival of 66 weeks. Camptosar-Registered Trademark-, the current standard of care for treating advanced colorectal cancer patients, produces a median survival of 37-40 weeks. Through additional research efforts, we believe we have learned how to stimulate production of antibodies to the two hCG targets in most patients.

Overall, these clinical data suggest that the patients that received Avicine and responded by making hCG antibodies had improved median survival compared to patients treated with chemotherapeutic drugs. Avicine was found to be safe and did not exhibit the toxicity associated with cytotoxic drug treatment. Based on these data, we plan to initiate a Phase III pivotal trial in 500 patients with metastatic colorectal cancer in 2000. This trial randomizes patients receiving first-line therapy for metastatic colorectal cancer to

one of two treatment arms: combination chemotherapy or combination chemotherapy plus Avicine. The end points in the trial are time to disease progression and median survival.

AVICINE CLINICAL TRIALS

TRIAL	DESCRIPTION & TYPE	PATIENTS	STATUS
1	Phase I safety study	43 treated	Completed
2	Phase I metastatic cancer	21 treated	Completed
3	Phase Ib metastatic cancer	23 treated	Completed
4	Phase II pancreatic and extension	10 treated	Completed
5	Phase II colorectal	77 treated	Completed
6	Phase II pancreatic	50	In progress
7	Phase II prostate	24	1999
8	Phase III colorectal licensing trial	500	2000

B. XACTIN--HUMAN MONOCLONAL ANTIBODY FOR CANCER

We are also combating cancer by administering antibodies that have activity against cancer cells that display the hCG hormone marker. We licensed XenoMouse technology from Abgenix Inc. and have produced human monoclonal antibodies against critical hCG tumor antigen targets. These high affinity, stable clones recognize the key epitopes in our cancer vaccine. The Xactin antibodies are both companion products to Avicine and independent cancer therapeutics and are now in pre-clinical development.

II. GENE-TARGETED DRUGS--NEUGENE TECHNOLOGY

TECHNICAL OVERVIEW

Most human diseases arise from the function or dysfunction of genes within the body, either those of pathogens, such as viruses, or of one's own genes. New techniques in molecular biology have led to the identification of the genes associated with most of the major human diseases and to the determination of the sequence of their genetic codes. Using modern methods of chemical synthesis, compounds can be prepared that recognize target gene sequences in a pathogen or pathogenic process. When these compounds bind tightly to the disease-causing sequence, the genetic process is inhibited, and thus the pathogen or pathogenic process is disabled. This is called ANTISENSE technology since the SENSE of the genetic code is blocked.

Limitations of then-existing antisense technology in the late 1980s led us to pursue a different approach than many of our competitors. This effort culminated in our development of a class of third-generation agents, known as NEUGENE compounds. In pre-clinical studies, our patented compounds display advantageous pharmaceutical properties over second-generation compounds now in clinical trials by others. Such improvements include stability, specificity, potency, low toxicity and effectiveness.

NEAR-TERM PRODUCT DEVELOPMENT--CANCER AND RESTENOSIS

The first application of our antisense technology is designed to treat diseases involving abnormal cell division, such as cancer, certain cardiovascular and inflammatory diseases, psoriasis, polycystic kidney disease and chronic graft rejection. The NEUGENE target for these diseases is the gene component named c-myc. We have finished the pre-clinical development of two NEUGENE compounds, Resten-NG and Oncomyc-NG, and hope to file an IND and initiate a Phase I clinical trial in 1999 for restenosis and cancer.

The table below page summarizes our broader development program for NEUGENE:

NEUGENE ANTISENSE DEVELOPMENT PROGRAM

ANTISENSE TARGET	CLINICAL INDICATION
C-myc	Cancer, restenosis, psoriasis, chronic graft rejection
Telomerase	Cancer

BCL2	Cancer
TNF alpha	Arthritis, septic shock, asthma
NF kappa B	Crohn's Disease, chronic inflammation
ICAM-1	Arthritis, chronic graft rejection
Hepatitis C virus	Hepatitis

PRIVATE PLACEMENT TO SELLING SHAREHOLDERS

On December 17, 1999, certain of the Selling Shareholders bought 1,857,147 Shares and warrants to purchase an additional 557,144 Shares.

The purchase agreements and warrants contain protective provisions for the Selling Shareholders if we sell any other Shares (with limited exceptions) at a lower price than what the Selling Shareholders paid. The period during which this provision is in effect runs until either 36 months from the closing date of the purchase transaction or 33 months from the effective date of this registration statement, whichever occurs later.

Under these protective provisions, the Selling Shareholders receive additional shares and warrants to acquire additional Shares and a reduced strike price for all Shares acquired with the warrants if we sell Shares for less than the $3.50 price paid by Selling Shareholders.

The number of additional Shares received by a Selling Shareholder is calculated by the following steps:

- aggregate purchase price by the Selling Shareholder for all Shares purchased under the purchase agreement is divided by the new lower per Share sales price causing the adjustment;

- from this new number of shares is subtracted the number of Shares already delivered to the Selling Shareholder; and

- the difference is the number of additional Shares we will issue to the Selling Shareholder.

The purchase agreements also contain the provision that if the Selling Shareholder owns at least 250,000 of the Shares bought pursuant to the purchase agreement, it receives the adjustment based on all the Shares it originally bought. However, if the Selling Shareholder owns less than 250,000 of the originally purchased Shares, it only receives an adjustment based on the number of Shares it still owns.

Similarly, the warrants provide for an adjustment, both of the exercise price and number of Shares subject to the warrants.

The Selling Shareholders received warrants to purchase three Shares for every seven Shares of stock they purchased. The exercise price of the warrants was set at 115% of the original per Share purchase price. That calculates to an exercise price of $4.025, based on a $3.50 Share price.

If Shares are sold for less than the exercise price (again with certain exceptions), then

- warrant price is reduced to 115% of the price of the newly sold Shares; and

- the number of warrants is increased proportionately so that the Selling Shareholders will still receive warrants for three Shares for every 10 Shares they either purchased or received because of the protective provision adjustment.

The following chart sets forth an example of how this might work for a hypothetical Selling Shareholder:

Original aggregate Share purchase price.....	$1,050,000
Original number of Shares purchased.....	300,000
Original per Share price.....	$ 3.50
Newly sold Share price.....	$ 3.00

Original aggregate Share purchase price divided by newly sold Share price ($1,050,000 DIVIDED BY $3.00) = 350,000 Shares

Original number of Shares minus adjusted number equals new Shares we will issue..... 50,000

For the options:

New Share price times 115% ($3.00 x 1.15) is new strike price = $3.45

Original number of Shares covered by warrant was three for ten shares (3 X 30,000) = 90,000

The after adjustment number of Shares is 350,000 -- three warrant Shares for ten Shares is 3 x 35,000 = 105,000

That is, the Shares subject to the warrant now total 105,000 with a strike price of $3.45

In addition to the Shares covered by this registration statement, we are obligated to register any Shares issued pursuant to the adjustment described above and any Shares issued following exercise of any new options granted following an adjustment.

However, the purchase agreements and warrants do contain the restriction that we may not issue any new Shares or warrants if that would cause a Selling Shareholder to beneficially own more than 9.90% of the total outstanding Shares of our common stock. The adjustment must be delayed until it can be done without exceeding the 9.90% limitation.

OUR SELLING SHAREHOLDERS

The following table provides certain information with respect to the Shares held by each Selling Shareholder as of December 31, 1999. Except as otherwise noted, all of the Common Shares owned by each Selling Shareholder are registered for sale pursuant to this Prospectus. The Selling Shareholders, however, are not under any obligation to sell all of any portion of their Shares, nor are the Selling Shareholders obligated to sell any of their Shares immediately under this Prospectus. We will not receive any proceeds from any sales of Shares by the Selling Shareholders.

SELLING SHAREHOLDER	NUMBER OF COMMON SHARES BENEFICIALLY OWNED BEFORE OFFERING(1)	SHARES OFFERED	SHARES OWNED AFTER OFFERING(1)	
			NUMBER	PERCENT
Castle Creek Healthcare Partners LLC.....	557,141(2)	557,141	--	--

Michael T. Jackson Trust, New Technologies Fund	185,718(3)	185,718	--	--
JALAA Equities LP	185,718(4)	185,718	--	--
The Tail Wind Fund, Ltd.	928,572(5)	928,572		
Resonance, Ltd.	557,142(6)	557,142		
SuperGen, Inc.	1,000,000	1,000,000		
	3,414,291	3,414,291	--	--

---

(1) Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission and generally includes voting or investment power with respect to securities. Shares of Common Stock subject to options and warrants currently exercisable or convertible, or exercisable or convertible within 60 days of December 31, 1999, are deemed beneficially owned and outstanding for computing the percentage of the person holding such securities, but are no considered outstanding for computing the percentage of any other person.

(2) Includes 128,571 shares subject to warrants exercisable within 60 days of December 31, 1999.

(3) Includes 42,858 shares subject to warrants exercisable within 60 days of December 31, 1999.

(4) Includes 42,858 shares subject to warrants exercisable within 60 days of December 31, 1999.

(5) Includes 214,286 shares subject to warrants exercisable within 60 days of December 31, 1999.

(6) Includes 128,571 shares subject to warrants exercisable within 60 days of December 31, 1999.

PLAN OF DISTRIBUTION

The selling stockholders may sell the common stock:

- through one or more underwriters or dealers for public offering and sale,
- directly to investors, or
- through agents.

The selling stockholders may distribute the common stock from time to time in one or more transactions at a fixed price or prices, which may be changed from time to time:

- at market prices prevailing at the times of sale,
- at prices related to those prevailing market prices, or
- at negotiated prices.

We will not receive any proceeds from the sale of the common stock.

The distribution of the common stock may be effected in one or more of the following methods:

- ordinary brokers' transactions, which may include long or short sales,

- transactions involving cross or block trades, or otherwise on the Nasdaq National Market,

- purchases by brokers, dealers or underwriters as principal and resale by those purchasers for their own accounts pursuant to this prospectus,

- "at the market" to or through market makers or into an existing market for the common stock,

- in other ways not involving market makers or established trading markets, including direct sales to purchasers or sales effected through agents,

- through transactions in options, swaps or other derivatives (whether exchange-listed or otherwise),

- pursuant to Rule 144 under the Securities Act, or

- any combination of the foregoing, or by any other legally available means.

In addition, the selling stockholders or their successors in interest may enter into hedging transactions with broker-dealers who may engage in short sales of common stock in the course of hedging the positions they assume with the selling stockholders. The selling stockholders or their successors in interest may also enter into option or other transactions with broker-dealers that require the delivery by those broker-dealers of the common stock, which common stock may be resold thereafter pursuant to this prospectus. In connection with any sales, the selling stockholders and any brokers or dealers participating in such sales may be deemed to be underwriters within the meaning of the Securities Act.

Any broker-dealer participating in such transactions as agent may receive commissions from the Selling stockholders and/or purchasers of the shares offered hereby (and, if it acts as agent for the purchaser of those shares, from that purchaser). Usual and customary brokerage fees will be paid by the selling stockholders. Broker-dealers may agree with the selling stockholders to sell a specified number of shares at a stipulated price per share, and, to the extent the broker-dealer is unable to do so acting as agent for a selling stockholders, to purchase as principal any unsold shares at the price required to fulfill the broker-dealer commitment to the selling stockholders. Broker-dealers who acquire shares as principal may thereafter resell the shares from time to time in transactions (which may involve cross and block transactions and which may involve sales to and through other broker-dealers, including transactions of the nature described above) in the over-the-counter market, in negotiated transactions or otherwise at market

prices prevailing at the time of sale or at negotiated prices, and in connection with the resales may pay to or receive from the purchasers of those shares commissions computed as described above.

We have advised the selling stockholders that Regulation M promulgated under the Securities Exchange Act, may apply to their sales in the market, have furnished the selling stockholders with a copy of this regulation and have informed the selling stockholders of the need for delivery of copies of this prospectus. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against liabilities, including liabilities arising under the Securities Act. Any commissions paid or any discounts or concessions allowed to any such broker-dealers, and any profits received on the resale of those shares, may be deemed to be underwriting discounts and commissions under the Securities Act if any such broker-dealers purchase shares as principal. We have agreed to indemnify the selling stockholders against certain liabilities, including liabilities under the Securities Act.

We are required by the Purchase Agreement and Registration Rights Agreement to register for resale by the selling stockholders and keep registered the number of shares of common stock they are purchasing or may receive because of a price adjustment described above under heading "Private Placement to Selling Shareholders" and 100% of the shares of common stock for which the warrants are exercisable, including original warrants and warrants received following an adjustment. We have agreed to and are paying the costs and fees of registering the common stock. The selling stockholders will pay any brokerage commissions, discounts or other expenses relating to the sale of the common stock.

Any securities covered by this prospectus which qualify for sale pursuant to Rule 144 under the Securities Act may be sold under that rule rather than pursuant to this prospectus.

There can be no assurance that the selling stockholders will sell any or all of the shares of common stock offered by them hereunder.

DESCRIPTION OF CAPITAL SHARES

Our authorized capital consists of 50,000,000 shares of common stock, par value $0.0001 per share, and 2,000,000 shares of preferred stock, par value $0.0001 per share.

TRANSFER AGENT

Our transfer agent and registrar is ChaseMellon Shareholder Services, LLC.

COMMON STOCK

We are authorized to issue 50,000,000 shares of common stock. As of December 31, 1999, 16,235,845 shares of common stock were outstanding and were held of record by approximately 950 shareholders. Holders of common stock are entitled to one vote for each share at all meetings of our shareholders. Subject to preferences of Preferred Stockholders, common stockholders are entitled to receive ratably dividends declared by our Board. Common Stockholders have no preemptive, subscription, redemption or conversion rights. If we are liquidated or dissolved, common stockholders would share equally in our assets remaining after the payment of all our liabilities and the liquidation preference of any preferred stockholders.

Holders of 1,857,147 shares of our common stock enjoy the right to receive additional shares of common stock from the Company without additional payment to the Company if the Company sells shares of common stock, or engages in similar financing transactions, at a price of less than $3.50 per share prior to December 16, 2002, or 33 months have passed since the effective date of the registration statement relating to this Prospectus. Under certain circumstances, the Company may be required to redeem shares to be issued to the holders who enjoy this right. Specifically, if the holdings of the Company's stock by any holder who enjoys this right will exceed their pro rata share of 20 percent of the Company's outstanding common stock due to the issuance of new shares, the Company must redeem the new shares to be issued at a price equal to 110 percent of the price originally paid for these shares.

PREFERRED STOCK

Our Board of Directors is authorized to issue up to 2,000,000 shares of undesignated preferred stock. No shares of preferred stock have been issued. Our Board has the authority to issue preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions of the preferred stock, as well as fix the number of shares, without any further vote or action by the shareholders. Our Board, without shareholder approval, may issue preferred stock with voting and conversion rights superior to the voting rights of shares of common stock. The preferred stock may also decrease the amount of earnings and assets distributed to Common Stockholders. Issuance of preferred stock may delay or prevent a change in control.

WARRANTS

IPO REPRESENTATIVES' WARRANTS. We issued Representatives' Warrants to the underwriters of our initial public offering to purchase 400,000 shares of our common stock. The Representatives' Warrants entitle the holder to acquire up to 200,000 units, each unit consisting of a share of common stock and a Warrant to purchase a share of common stock for $10.80 per unit and are exercisable until June 3, 2002. The warrant initially entitles the holder to purchase one share of common stock at a price of $13.50.

NASDAQ WARRANTS. We have outstanding warrants to purchase 2,300,000 shares of common stock that were issued in our initial public offering and are traded on the Nasdaq National Market under the symbol AVIIW. These warrants are

exercisable until June 3, 2002. We may redeem them at a price of $0.25 per warrant if the closing bid price of our common stock has been at least 200% of the warrant exercise price for twenty (20) consecutive trading days. The initial exercise price of these warrants is $13.50.

ITC MERGER WARRANTS. We have outstanding warrants to purchase 2,116,814 shares of the common stock that were issued in connection with our acquisition of ImmunoTherapy Corporation. These warrants are exercisable after September 15, 2000 and until May 15, 2003 at a price of $13.50. We may redeem them at a price of $0.25 per warrant if the closing bid price of our common stock has been at least 200% of the exercise price for twenty (20) consecutive trading days and the warrants have been exercisable. These warrants will be traded under the symbol AVIIZ.

OFFERING WARRANTS. We have issued certain investors 557,144 Warrants. Such Warrants are exercisable until December 19, 2004 at a price of $4.025 per share of Common Stock.

OTHER WARRANTS. We have also issued warrants to purchase 81,967 shares of common stock. These warrants are currently exercisable and do not have a termination date.

AGENT WARRANTS. We have issued to a Placement Agent 71,429 Warrants. Such Agent Warrants have a term of five years and are exercisable at a price of $4.20 per share.

STOCK OPTIONS

A total of 2,200,000 shares of our common stock are reserved for issuance under our 1992 Stock Incentive Plan. As of December 31, 1999, we had outstanding 26,941 options to purchase shares under the 1992 Stock Incentive Plan.

In 1998, we assumed the obligations under the 1997 Stock Option Plan of ImmunoTherapy Corporation. After the acquisition of ImmunoTherapy Corporation and as of December 31, 1999, 217,336 options to purchase shares of our common stock were outstanding under the 1997 plan.

OREGON CONTROL SHARES AND BUSINESS COMBINATION STATUTES

We are subject to the Oregon Control Share Act (the "Control Share Act"). The Control Share Act generally provides that a person (the "Acquiring Person") who acquires voting stock of an Oregon corporation in a transaction that results in the Acquiring Person holding more than 20.0%, 33.3% or 50.0% of the total voting power of the corporation (a "Control Share Acquisition") cannot vote the shares it acquires in the Control Share Acquisition ("control shares") unless voting rights are accorded to the control shares by (i) a majority of each voting group entitled to vote and (ii) the holders of a majority of the outstanding voting shares, excluding the control shares held by the Acquiring Person and shares held by our officers and inside directors. The term "Acquiring Person" is broadly defined to include persons acting as a group.

The Acquiring Person may, but is not required to, submit to us a statement setting forth certain information about the Acquiring Person and its plans with respect to us. The statement may also request that we call a special meeting of shareholders to determine whether voting rights will be accorded to the control shares. If the Acquiring Person does not request a special meeting of shareholders, the issue of voting rights of control shares will be considered at the next annual meeting or special meeting of shareholders. If the Acquiring Person's control shares are accorded voting rights and represent a majority or more of all voting power, shareholders who do not vote in favor of voting rights for the control shares will have the right to receive the appraised "fair value" of their shares which may not be less than the highest price per share by the Acquiring Person for the control shares.

We are subject to certain provisions of the Oregon Business Corporation Act that govern business combinations between corporations and interested shareholders (the "Business Combination Act"). The Business Combination Act generally provides that if a person or entity acquires 15% or more of the voting stock of an Oregon corporation (an "Interested Shareholder"), the corporation

and the Interest Shareholder, or any affiliated entity of the Interested Shareholder, may not engage in certain business combination transactions for three years following the date the person became an Interested Shareholder.

Business combination transactions for this purpose include (a) a merger or plan of share exchange, (b) any sale, lease, mortgage or other disposition of 10% or more of the assets of the corporation, and (c) certain transactions that result in the issuance of capital stock of the corporation to the Interested Shareholder. These restrictions do not apply if (i) the Interested Shareholder, as a result of the transaction in which such person became an Interested Shareholder, owns at least 85% of the outstanding voting stock of the corporation (disregarding shares owned by directors who are officers and certain employee benefit plans), (ii) the Board of Directors approves the share acquisition or business combination before the Interested Shareholder acquires 15% or more of the corporation's outstanding voting stock or (iii) the Board of Directors and the holders of at least two-thirds of the outstanding voting stock of the corporation (disregarding shares owned by the Interested Shareholder) approve the transaction after the Interested Shareholder acquires 15% or more of the corporation's voting stock. See "RISK FACTORS--Anti-Takeover Effects of Certain Charter Provisions and Oregon Law."

LEGAL MATTERS

Ater Wynne LLP, 222 S.W. Columbia, Suite 1800, Portland, Oregon 97201, our attorneys, have opined that the Common Shares are duly and validly issued, fully paid and nonassessable.

EXPERTS

The audited financial statements in this prospectus and elsewhere in the registration statement have been audited by Arthur Andersen LLP, independent public accountants, as indicated in their report with respect thereto, and are included herein in reliance upon the authority of said firm as experts in accounting and auditing in giving said report.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

ITEM 14. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION.*

SEC Registration Fee	$12,286
Nasdaq Listing Fee	17,500
Accountant's Fees and Expenses	5,000
Legal Fees and Expense	5,000
Miscellaneous	--
Total	39,786

---

* Represents expenses related to the distribution by the Selling Shareholders pursuant to the Prospectus prepared in accordance with the requirements of Form S-3. These expenses will be borne by the Company on behalf of the Selling Shareholders. All amounts are estimates except for the SEC Registration Fee and the Nasdaq listing fees.

ITEM 15. INDEMNIFICATION OF DIRECTORS AND OFFICERS.

The Company's Articles of Incorporation provide for indemnification of the officers and directors of the Company to the fullest extent permitted by law. The Oregon Business Corporation Act, permits a corporation to limit, under certain circumstances, a director's liability for monetary damages in actions brought by the corporation or its stockholders. As an Oregon corporation, the Company is subject to the OBCA and the exculpation from liability and indemnification provision contained therein. Pursuant to

Section 60.047(2)(d) of the OBCA, Article II of the Company's Fifth Restated Articles of Incorporation (the "Articles") eliminates the liability of the Company's directors to the Company or its stockholders for monetary damages, except for any liability related to breach of the duty of loyalty, actions not in good faith and certain other liabilities.

Section 60.387, ET SEQ., of the OBCA allows corporations to indemnify their directors and officers against liability where the director or officer has acted in good faith and with a reasonable belief that actions taken were in the best interests of the corporation or at least not adverse to the corporation's best interests and, if in a criminal proceeding, the individual had not reasonable cause to believe the conduct in question was unlawful. Under the OBCA, corporations may not indemnify against liability in connection with a claim by or in the right of the corporation but may indemnity against the reasonable expenses associated with such claims. Corporations may not indemnify against breached of the duty of loyalty. The OBCA mandates indemnification against all reasonable expenses incurred in the successful defense of any claim made or threatened whether or not such claims was by or in the right of the corporation. Finally, a court may order indemnification if it determines that the director or officer is fairly and reasonably entitled to indemnification in view of all the relevant circumstances whether or not the director or officer met the good faith and reasonable belief standards or conduct set out in the statute.

The OBCA also provides that the statutory indemnification provisions are not deemed exclusive of any other rights to which directors or officers may be entitled under a corporation's articles of incorporation or bylaws, any agreement, general or specific action of the board of directors, voce of stockholders or otherwise.

The Company's Articles also provide for the elimination of liability of directors for monetary damages to the full extent permitted by the Oregon Business Corporations Act.

The Company has entered into indemnification agreements with its directors and certain of its officers.

ITEM 16. EXHIBITS.

NUMBER	EXHIBITS
4.1	Purchase Agreement, dated December 15, 1999, by and between AVI BioPharma, Inc. and certain Investors+
4.2	Registration Rights Agreement, dated December 15, 1999, by and between AVI BioPharma, Inc. and certain Investors+
4.3	Form of Common Stock Purchase Warrant+
4.4	Purchase Agreement, dated December 16, 1999, by and between AVI BioPharma, Inc. and certain Investors
4.5	Registration Rights Agreement, dated December 16, 1999, by and between AVI BioPharma, Inc. and certain Investors
4.6	Subscription Agreement, dated December 1, 1999, by and between SuperGen, Inc. and AVI BioPharma, Inc.
5.1	Opinion of Ater Wynne LLP
23.1	Consent of Arthur Andersen LLP, independent public accountants
23.2	Consent of Ater Wynne LLP (included in Exhibit 5.1)
24.1	Power of Attorney (included on page II-3)

+ Previously filed.

ITEM 17. UNDERTAKINGS.

The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement to include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material changes to such information in this registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment 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.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remains unsold at the termination of the offering.

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

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification is 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 of 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.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this Registration Statement on Form S-3 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Beaverton, State of Oregon, on January 24, 2000.

AVI BIOPHARMA, INC.

By: /s/ DENIS R. BURGER

Denis R. Burger, Ph.D.
PRESIDENT AND CHIEF EXECUTIVE OFFICER

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Denis R. Burger and Alan P. Timmins, jointly and severally, his attorneys-in-fact, each with the power of substitution, for him in any and all capacities, to sign any amendment to this Registration Statement on Form S-3 and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities on the date indicated.

SIGNATURE	TITLE	DATE
/s/ DENIS R. BURGER, PH.D. Denis R. Burger, Ph.D.	President, Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	January 24, 2000
/s/ ALAN P. TIMMINS Alan P. Timmins	Chief Operating Officer, Chief Financial Officer and Director (Principal Financial and Accounting Officer)	January 24, 2000
/s/ DWIGHT D. WELLER, PH.D. Dwight D. Weller, Ph.D.	Senior Vice President of Chemistry and Manufacturing And Development and Director	January 24, 2000
/s/ PATRICK L. IVERSON, PH.D. Patrick L. Iverson, Ph.D.	Senior Vice President of Research and Development and Director	January 24, 2000

SIGNATURE	TITLE	DATE
/s/ JEFFREY L. LILLARD Jeffrey L. Lillard	Vice President and Director	January 24, 2000
/s/ BRUCE L. A. CARTER, PH.D. Bruce L. A. Carter, Ph.D.	Director	January 24, 2000
/s/ NICK BUNICK Nick Bunick	Director	January 24, 2000
/s/ JOSEPH RUBINFELD Joseph Rubinfeld	Director	January 24, 2000

INDEX TO EXHIBITS

NUMBER

4.1	Purchase Agreement, dated December 15, 1999, by and between AVI BioPharma, Inc. and certain Investors+
4.2	Registration Rights Agreement, dated December 15, 1999, by and between AVI BioPharma, Inc. and certain Investors+
4.3	Form of Common Stock Purchase Warrant+
4.4	Purchase Agreement, dated December 16, 1999, by and between AVI BioPharma, Inc. and certain Investors
4.5	Registration Rights Agreement, dated December 16, 1999, by and between AVI BioPharma, Inc. and certain Investors
4.6	Subscription Agreement, dated December 1, 1999, by and between SuperGen, Inc. and AVI BioPharma, Inc.
5.1	Opinion of Ater Wynne LLP
23.1	Consent of Arthur Andersen LLP, independent public accountants
23.2	Consent of Ater Wynne LLP (included in Exhibit 5.1)
24.1	Power of Attorney (included on page II-3)

+ Previously filed.

Exhibit 4.4

PURCHASE AGREEMENT

THIS PURCHASE AGREEMENT ("Agreement") is made as of the 16th day of December, 1999 by and between Avi BioPharma, Inc., a corporation organized under the laws of Oregon, with headquarters located at Portland, Oregon (the "Company"), and the persons identified on the signature pages hereto (each an "Investor" and collectively, the "Investors").

RECITALS

A. The Company and the Investors are executing and delivering this Agreement in reliance upon the exemption from securities registration afforded by the provisions of Regulation D ("Regulation D"), as promulgated by the U.S. Securities and Exchange Commission (the "SEC") under the Securities Act of 1933, as amended;

B. The Investors wish to purchase, and the Company wishes to sell and issue to the Investors, upon the terms and conditions stated in this Agreement, certain of the Company's shares of Common Stock, par value $.0001 per share (the "Common Stock") and warrants to acquire shares of Common Stock in the form attached hereto as EXHIBIT A (the "Warrants") for an aggregate purchase price of $4.0 million; and

C. Contemporaneous with the execution and delivery of this Agreement, the parties hereto are executing and delivering a Registration Rights Agreement, in the form attached hereto as EXHIBIT B (the "Registration Rights Agreement"), pursuant to which the Company has agreed to provide certain registration rights under the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder, and applicable state securities laws;

In consideration of the mutual promises made herein and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. DEFINITIONS. In addition to those terms defined above and elsewhere in this Agreement, for the purposes of this Agreement, the following terms shall have the meanings here set forth:

1.1 "AFFILIATE" means, with respect to any Person, any other Person which directly or indirectly controls, is controlled by, or is under common control with, such Person.

1.2 "AGREEMENTS" means this Agreement, the Registration Rights Agreement, and the Warrants

1.3 "CLOSING" means the consummation of the transactions contemplated by this Agreement, and "CLOSING DATE" means the date of such Closing.

1.4 "CONTROL" means the possession , direct or indirect, of the power to direct or cause the direction of the management and policies of a person, whether through the ownership of voting securities, by contract or otherwise.

1.5 "MARKET PRICE" means the average of the lowest ten (10) closing bid prices of the Common Stock over the immediately preceding thirty (30) trading days as reported by NASDAQ National Market ("the Nasdaq Stock Market").

1.6 "MATERIAL ADVERSE EFFECT" means a material adverse effect on the (i) condition (financial or otherwise), business, assets, or results of operations of the Company and its subsidiaries, taken as a whole; (ii) ability of the Company to perform any of its material obligations under the Agreements; or (iii) rights and remedies of the Investor under the Agreements.

1.7 "PERSON" means an individual, corporation, partnership, trust, business trust, association, joint stock company, joint venture, pool, syndicate, sole proprietorship, unincorporated organization, governmental authority or any other form of entity not specifically listed herein.

1.8 "SEC FILINGS" has the meaning set forth in Section 4.6.

1.9 "SECURITIES" means the Shares, the Warrants and the Warrant Shares (defined below).

1.10 "SHARES" means the shares of Common Stock being purchased by the Investor hereunder.

1.11 "WARRANT SHARES" means the shares of Common Stock issuable upon exercise of or otherwise pursuant to the Warrants.

1.12 "1933 ACT" means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

1.13 "1934 ACT" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

2. PURCHASE AND SALE OF THE SHARES AND WARRANTS. Subject to the terms and conditions of this Agreement, each Investor severally hereby agrees to purchase and the Company hereby agrees to sell and issue to such Investor, the number of Shares and Warrants to purchase the number of shares of Common Stock set forth on such Investor's signature page attached hereto. The number of Shares to be purchased by such Investor shall be determined by dividing such Investor's aggregate purchase price (as the aggregate purchase price is set forth on such Investor's signature page attached hereto), by an amount equal to 75% of the Market Price

of the Common Stock on the date hereof (the "Purchase Price"); provided that the Purchase Price shall not be less than $3.50 per share nor more than $4.00 per share (subject to appropriate adjustment for stock splits, reverse splits, dividends and distributions), and the aggregate Purchase Price shall not exceed $5.0 million. The number of shares of Common Stock purchasable by the Investor pursuant to the Warrants shall be equal to 30% of the number of Shares purchased by the Investor, with an initial exercise price equal to 115% of the Market Price on the date hereof.

3. CLOSING. On the date of this Agreement, the Purchase Price shall be determined. The Company shall promptly deliver to Kleinberg, Kaplan, Wolff & Cohen, P.C. ("KKWC"), on the date hereof, in trust, (i) the Warrants and a certificate registered in such name or names as the Investor may designate, representing all of the Shares, and (ii) payment in full of the fees and expenses referred to in Section 10.5(b) and (c) below, with instructions that such certificates, Warrants and dollar amounts are to be held for release to an Investor only upon payment of the applicable Purchase Price by such Investor to the Company. Upon receipt by KKWC of the certificates, the Warrants and dollar amounts, each Investor shall promptly cause a wire transfer in same day funds to be sent to the account of the Company as instructed in writing by the Company, in amounts representing such Investor's aggregate Purchase Price. On the date the Company receives funds from an Investor, the certificates evidencing the Shares and the Warrants shall be released to such Investor and the allocable dollar amounts shall be released to the payees as contemplated by Sections 10.5 (b) and (c)(and such date, as to such Investor, shall be deemed the "Closing Date").

4. REPRESENTATIONS AND WARRANTIES OF THE COMPANY. The Company hereby represents and warrants to the Investors that:

4.1 ORGANIZATION, GOOD STANDING AND QUALIFICATION. The Company is a corporation duly incorporated, validly existing and in good standing under the laws of Oregon and has all requisite power and authority to carry on its business and own its properties as now conducted and owned. The Company is duly qualified or licensed to do business as a foreign corporation and is in good standing in each jurisdiction in which the conduct of its business or its ownership or leasing of property makes such qualification or licensing necessary unless the failure to so qualify or be licensed would not have a Material

Adverse Effect. SCHEDULE 4.1 lists all subsidiaries of the Company. Except when the context otherwise requires, representations and warranties in this Section 4 by the Company shall be deemed to include representations and warranties as to its subsidiaries as well.

4.2 AUTHORIZATION. The Company has full power and authority and has taken all requisite action on the part of the Company, its officers, directors and stockholders necessary for (i) the authorization, execution and delivery of the Agreements, (ii) the performance of all obligations of the Company hereunder or thereunder, and (iii) the authorization, issuance (or reservation for issuance) and delivery of the Securities. The Agreements constitute the legal, valid and binding obligations of the Company, enforceable against the Company in accordance with their terms, subject to bankruptcy, insolvency, fraudulent transfer, reorganization,

moratorium and similar laws of general applicability, relating to or affecting creditors' rights generally.

4.3 CAPITALIZATION. Set forth on SCHEDULE 4.3 hereto is (a) the authorized capital stock of the Company on the date hereof; (b) the number of shares of capital stock issued and outstanding; (c) the number of shares of capital stock issuable pursuant to the Company's stock plans; and (d) the number of shares of capital stock issuable and reserved for issuance pursuant to securities (other than the Shares and the Warrants) exercisable for, or convertible into or exchangeable for any shares of capital stock. All of the issued and outstanding shares of the Company's capital stock have been duly authorized and validly issued and are fully paid, nonassessable and free of preemptive rights. Except as set forth on SCHEDULE 4.3, no Person is entitled to preemptive or similar statutory or contractual rights with respect to any securities of the Company, including the Shares, the Warrants and the Warrant Shares. Except as set forth on SCHEDULE 4.3, there are no outstanding warrants, options, convertible securities or other rights, agreements or arrangements of any character under which the Company is or may be obligated to issue any equity securities of any kind, or to transfer any equity securities of any kind, and except as contemplated by this Agreement, the Company does not have any present plan or intention to issue any equity securities of any kind, or to transfer any equity securities of any kind owned by it. Except as set forth on SCHEDULE 4.3, the Company does not know of any voting agreements, buy-sell agreements, option or right of first purchase agreements or other agreements of any kind among any of the securityholders of the Company relating to the securities held by them. Except as set forth on SCHEDULE 4.3, the Company has not granted any Person the right to require the Company to register any securities of the Company under the 1933 Act, whether on a demand basis or in connection with the registration of securities of the Company for its own account or for the account of any other Person.

4.4 VALID ISSUANCE. The Company has reserved a sufficient number of shares of Common Stock for issuance pursuant to this Agreement and upon exercise of the Warrants. The Company will take such steps as may be necessary to reserve sufficient shares for issuance pursuant to Section 7 below when such issuance is determinable. The Shares and Warrants are duly authorized, and such Securities, along with the Warrant Shares when issued in accordance herewith and with the terms of the Warrants, will be duly authorized, validly issued, fully paid, non-assessable and free and clear of all encumbrances and restrictions, except for restrictions on transfer imposed by applicable securities laws.

4.5 CONSENTS. The execution, delivery and performance by the Company of the Agreements and the offer, issuance and sale of the Securities require no consent of, action by or in respect of, or filing with, any Person, governmental body, agency, or official other than (i) filings that have been made pursuant to applicable state securities laws and the requirements of the Nasdaq Stock Market and (ii) post-sale filings pursuant to applicable state and federal securities laws and the requirements of the Nasdaq Stock Market which the Company undertakes to file within the applicable time periods.

4.6 DELIVERY OF SEC FILINGS; BUSINESS. The Company has provided each Investor with copies of the Company's most recent Annual Report on Form 10K for the fiscal

year ended December 31, 1998, and all other reports filed by the Company pursuant to the 1934 Act since the filing of the Annual Report on Form 10K (collectively, the "SEC Filings"). The Company is engaged only in the business described in the SEC Filings and the SEC Filings contain a complete and accurate description of the business of the Company. The Company has not provided to any Investor (i) any information required to be filed under the 1934 Act that has not been so filed or (ii) any non-public information.

4.7 USE OF PROCEEDS. The proceeds of the sale of the Securities hereunder shall be used by the Company for working capital and general corporate purposes.

4.8 NO MATERIAL ADVERSE CHANGE. Since the filing of the Company's most recent Annual Report on Form 10K or as otherwise identified and described in subsequent reports filed by the Company pursuant to the 1934 Act, there has not been:

(i) any change in the consolidated assets, liabilities, financial condition or operating results of the Company from that reflected in the financial statements included in the Company's most recent Report on Form 10Q, except changes in the ordinary course of business which have not had, in the aggregate, a Material Adverse Effect;

(ii) any declaration or payment of any dividend, or any authorization or payment of any distribution, on any of the capital stock of the Company, or any redemption or repurchase of any securities of the Company;

(iii) any material damage, destruction or loss, whether or not covered by insurance to any assets or properties of the Company or any of its subsidiaries;

(iv) any waiver by the Company of a valuable right or of a material debt owed to it;

(v) any satisfaction or discharge of any lien, claim or encumbrance or payment of any obligation by the Company, except in the ordinary course of business and which is not material to the assets, properties, financial condition, operating results or business of the Company taken as a whole (as such business is presently conducted and as it is proposed to be conducted);

(vi) any material change or amendment to a material contract or arrangement by which the Company or any of its assets or properties is bound or subject;

(vii) any labor difficulties or labor union organizing activities with respect to employees of the Company;

(viii) any transaction entered into by the Company other than in the ordinary course of business; or

(ix) any other event or condition of any character that might have a Material Adverse Effect.

4.9 SEC FILINGS; MATERIAL CONTRACTS.

(a) As of its filing date, each report filed by the Company with the SEC pursuant to the 1934 Act, complied as to form in all material respects with the requirements of the 1934 Act and did not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading.

(b) Each registration statement and any amendment thereto filed by the Company pursuant to the 1933 Act and the rules and regulations thereunder, as of the date such statement or amendment became effective, complied as to form in all material respects with the 1933 Act 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 to make the statements therein, in light of the circumstances under which they were made, not

misleading; and each prospectus filed pursuant to Rule 424(b) under the 1933 Act, as of its issue date and as of the closing of any sale of securities pursuant thereto did not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading.

(c) Except as set forth on SCHEDULE 4.3 hereto, there are no agreements or instruments currently in force and effect that constitute a warrant, option, convertible security or other right, agreement or arrangement of any character under which the Company is or may be obligated to issue any material amounts of any equity security of any kind, or to transfer any material amounts of any equity security of any kind.

4.10 FORM S-3 ELIGIBILITY.

The Company is currently eligible to register the resale of its Common Stock on a registration statement on Form S-3 under the 1933 Act.

4.11 NO CONFLICT, BREACH, VIOLATION OR DEFAULT. (a) The execution, delivery and performance of the Agreements by the Company and the issuance and sale of the Securities will not conflict with or result in a breach or violation of any of the terms and provisions of, or constitute a default under (i) the Company's Certificate of Incorporation ("Articles") or Bylaws, each as in effect on the date hereof, or (ii) except where it would not have a Material Adverse Effect, (a) any statute, rule, regulation or order of any governmental agency or body or any court, domestic or foreign, having jurisdiction over the Company or any of its properties, or (b) any agreement or instrument to which the Company is a party or by which the Company is bound or to which any of the properties of the Company are subject.

(b) Except as set forth on SCHEDULE 4.11 hereto, or where it would not have a Material Adverse Effect, the Company (i) is not in violation of any statute, rule or regulation applicable to the Company or its assets, (ii) is not in violation of any judgment, order or decree applicable to the Company or its assets; and (iii) is not in breach or violation of any agreement, note or instrument to which it or its assets are a party or are bound. The Company

has not received notice from any Person of any claim or investigation that, if adversely determined, would render the preceding sentence untrue or incomplete.

4.12 TAX MATTERS. The Company has correctly and timely prepared and filed or timely obtained extensions for, all tax returns required to have been filed by it with all appropriate governmental agencies and timely paid all taxes owed by it. The charges, accruals and reserves on the books of the Company in respect of taxes for all fiscal periods are adequate in all material respects, and there are no material unpaid assessments of the Company nor, to the knowledge of the Company, any basis for the assessment of any additional taxes, penalties or interest for any fiscal period or audits by any federal, state or local taxing authority except such as which are not material. All material taxes and other assessments and levies that the Company is required to withhold or to collect for payment have been duly withheld and collected and paid to the proper governmental entity or third party. There are no tax liens or claims pending or threatened against the Company or any of its assets or property. There are no outstanding tax sharing agreements or other such arrangements between the Company and any other corporation or entity.

4.13 TITLE TO PROPERTIES. Except as disclosed in the SEC Filings, the Company has good and marketable title to all real properties and all other properties and assets owned by it, in each case free from liens, encumbrances and defects that would materially affect the value thereof or materially interfere with the use made or currently planned to be made thereof by them; and except as disclosed in the SEC Filings, the Company holds any leased real or personal property under valid and enforceable leases with no exceptions that would materially interfere with the use made or currently planned to be made thereof by them.

4.14 CERTIFICATES, AUTHORITIES AND PERMITS. The Company possesses adequate certificates, authorizations or permits issued by appropriate governmental agencies or bodies necessary to conduct its business as presently

operated and has not received any written notice of proceedings relating to the revocation or modification of any such certificate, authority or permit that, if determined adversely to the Company, would individually or in the aggregate have a Material Adverse Effect.

4.15 NO LABOR DISPUTES. No labor dispute with the employees of the Company or any subsidiary exists or, to the knowledge of the Company, is imminent.

4.16 INTELLECTUAL PROPERTY. The Company owns or possesses adequate trademarks and trade names and have all other rights to inventions, know-how, patents, copyrights, trademarks, trade names, confidential information and other intellectual property (collectively, "Intellectual Property Rights"), free and clear of all liens, security interests, charges, encumbrances, equities and other adverse claims, necessary to conduct the business now operated by it, or presently employed by it, and presently contemplated to be operated by it, and has not received any notice of infringement of or conflict with asserted rights of others with respect to any Intellectual Property Rights. SCHEDULE 4.16 sets forth a list by serial number and title of the patents and/or patent applications owned or possessed by the Company. No proprietary technology of any Person was used in the design or development by the Company of

(or otherwise with respect to) any of the Intellectual Property Rights, which technology was not properly acquired by the Company from such Person.

4.17 ENVIRONMENTAL MATTERS. The Company is not in violation of any statute, rule, regulation, decision or order of any governmental agency or body or any court, U.S. or foreign, relating to the use, disposal or release of hazardous or toxic substances or relating to the protection or restoration of the environment or human exposure to hazardous or toxic substances (collectively, "Environmental Laws"), does not own or operate any real property contaminated with any substance that is subject to any Environmental Laws, is not liable for any off-site disposal or contamination pursuant to any Environmental Laws, and is not subject to any claim relating to any Environmental Laws, which violation, contamination, liability or claim would individually or in the aggregate have a Material Adverse Effect; and the Company is not aware of any pending investigation that might lead to such a claim.

4.18 LITIGATION. Except as disclosed in the SEC Filings, there are no pending actions, suits or proceedings against or affecting the Company, or any of its properties that, if determined adversely to the Company, would individually or in the aggregate have a Material Adverse Effect or would materially and adversely affect the ability of the Company to perform its obligations under the Agreements, or which are otherwise material in the context of the sale of the Securities; and to the Company's knowledge, no such actions, suits or proceedings are threatened or contemplated.

4.19 FINANCIAL STATEMENTS. The financial statements included in each SEC Filing present fairly and accurately the consolidated financial position of the Company as of the dates shown and its results of operations and cash flows for the periods shown, and such financial statements have been prepared in conformity with generally accepted accounting principles applied on a consistent basis. Except as set forth on SCHEDULE 4.19 or in the financial statements of the Company included in the SEC Filings filed prior to the date hereof, the Company has no liabilities, contingent or otherwise, except those which individually or in the aggregate are not material to the financial condition or operating results of the Company.

4.20 INSURANCE COVERAGE. The Company maintains in full force and effect insurance coverage that is customary for comparably situated companies for the business being conducted, and properties owned or leased, by the Company, and the Company reasonably believes such insurance coverage to be adequate against all liabilities, claims and risks against which it is customary for comparably situated companies to insure.

4.21 COMPLIANCE WITH NASDAQ CONTINUED LISTING REQUIREMENTS. The Company is in compliance with all applicable Nasdaq continued listing requirements for the Nasdaq Stock Market and is listed in good standing on the Nasdaq Stock Market. There are no proceedings pending or, to the Company's knowledge, threatened against the Company relating to the continued listing of the Company's Common Stock on the Nasdaq Stock Market and the Company has not

received any notice of, nor to the knowledge of the Company is there any basis for, the delisting of the Common Stock from the Nasdaq Stock Market.

4.22 ACKNOWLEDGEMENT OF DILUTION. The number of shares of Common Stock issuable pursuant to this Agreement may increase significantly. The Company's executive officers and directors have studied and fully understand the nature of the transactions being contemplated hereunder and recognize that they have a potential dilutive effect.

4.23 BROKERS AND FINDERS. The Investors shall have no liability or responsibility for the payment of any commission or finder's fee to any third party in connection with or resulting from this agreement or the transactions contemplated by this Agreement by virtue of any agreement made by the Company to a third party, and except as set forth in Section 10.5 below, the Company shall have no such liability or responsibility for any such commission or finder's fee.

4.24 NO DIRECTED SELLING EFFORTS OR GENERAL SOLICITATION. Neither the Company nor, to its knowledge, any Person acting on its behalf has conducted any general solicitation or general advertising (as those terms are used in Regulation D) in connection with the offer or sale of any of the Securities.

4.25 NO INTEGRATED OFFERING. Neither the Company nor any of its Affiliates, nor any Person acting on its or their behalf has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under circumstances that would adversely affect reliance by the Company on Section 4(2) for the exemption from registration for the transactions contemplated hereby or would require registration of the Securities under the 1933 Act; or would require the integration of this offering with any other offering of securities for purposes of determining the need to obtain shareholder approval of the transactions contemplated hereby under the rules of the Nasdaq Stock Market.

4.26 DISCLOSURES. No representation or warranty made under any Section hereof and no information furnished by the Company pursuant hereto, or in any other document, certificate or statement furnished by the Company to the Investors or any authorized representative of any of the Investors, pursuant to the Agreements or in connection therewith, contains any untrue statement of a material fact or omits to state a material fact necessary to make the respective statements contained herein or therein, in light of the circumstances under which the statements were made, not misleading.

4.27 CORPORATE PARTNER FINANCING. In the fourth quarter of calendar year 1999 the Company closed a transaction with a strategic investor which included the purchase by such investor of 1.0 million shares of Common Stock at $5.00 per share. The Company has received the full $5 million investment, and the 1.0 million shares have been issued and are outstanding.

5. REPRESENTATIONS AND WARRANTIES OF THE INVESTOR. Each Investor hereby severally represents and warrants to the Company as to itself that:

5.1 ORGANIZATION AND EXISTENCE. The Investor is a validly existing company and has all requisite corporate or limited liability company power and authority to invest in the Securities pursuant to this Agreement.

5.2 AUTHORIZATION. The execution, delivery and performance by the Investor of the Agreements have been duly authorized and the Agreements will each constitute the valid and legally binding obligation of the Investor, enforceable against the Investor in accordance with their terms.

5.3 PURCHASE ENTIRELY FOR OWN ACCOUNT. The Securities to be received by the Investor hereunder will be acquired for the Investor's own account, not as nominee or agent, and not with a view to the resale or distribution of any part thereof in violation of securities laws, and the Investor has no present intention of selling, granting any participation in, or otherwise distributing the same in violation of securities laws. The Investor is

not a registered broker dealer or an entity engaged in the business of being a broker dealer.

5.4 INVESTMENT EXPERIENCE. The Investor acknowledges that it can bear the economic risk and complete loss of its investment in the Securities and has such knowledge and experience in financial and business matters that it is capable of evaluating the merits and risks of the investment contemplated hereby.

5.5 DISCLOSURE OF INFORMATION. The Investor has had an opportunity to receive documents related to the Company and to ask questions of and receive answers from the Company regarding the Company, its business and the terms and conditions of the offering of the Securities. Neither such inquiries nor any other due diligence investigation conducted by the Investor shall modify, amend or affect the Investor's right to rely on the Company's representations and warranties contained in this Agreement or made pursuant to this Agreement.

5.6 RESTRICTED SECURITIES. The Investor understands that the Securities are characterized as "restricted securities" under the U.S. federal securities laws inasmuch as they are being acquired from the Company in a transaction not involving a public offering and that under such laws and applicable regulations such securities may be resold without registration under the 1933 Act only in certain limited circumstances.

5.7 LEGENDS. It is understood that, until registration for resale pursuant to the Registration Rights Agreement or until sales under Rule 144 are permitted, certificates evidencing the Securities will bear one or all of the following legends or legends substantially similar thereto:

"These securities have not been registered under the Securities Act of 1933, as amended (the "Act"), and may not be offered, sold, pledged, hypothecated, assigned or transferred except (i) pursuant to a registration statement under the Act which has become effective and is current with respect to these securities, or (ii) pursuant to a specific exemption from registration under the Act but only upon a holder hereof first having obtained the written opinion of counsel to the Corporation, or other counsel reasonably acceptable to the Corporation, that the proposed disposition is consistent with all applicable provisions of the Act."

Upon registration for resale pursuant to the Registration Rights Agreement, or when sales under Rule 144 are permitted, the Company shall promptly cause certificates

evidencing the Shares previously issued hereunder to be replaced with certificates which do not bear such restrictive legends.

5.8 ACCREDITED INVESTOR. The Investor is an accredited investor as defined in Rule 501(a) of Regulation D, as amended, under the 1933 Act.

5.9 NO GENERAL SOLICITATION. The Investor did not learn of the investment in the Securities as a result of any public advertising or general solicitation.

6. REGISTRATION RIGHTS AGREEMENT. The parties acknowledge and agree that part of the inducement for the Investors to enter into this Agreement is the Company's execution and delivery of the Registration Rights Agreement. The parties acknowledge and agree that simultaneously with the execution hereof, the Registration Rights Agreement is being duly executed and delivered by the parties thereto.

7. COVENANTS AND AGREEMENTS OF THE COMPANY.

7.1 SUBSEQUENT SALE AT LOWER PRICE.

(a) REQUIRED ADJUSTMENTS. Subject to the exclusions contained in Section 7.1(f) below, if during the period ending on the later of (i) thirty-six (36) months following the Closing Date or (ii) thirty-three (33) months following the effective date of the Registration Statement contemplated by the Registration Rights Agreement (the "MFN Period"), the Company sells any

shares of its Common Stock at a per share selling price ("Per Share Selling Price") lower than the Purchase Price per share set forth in Section 2 hereof, the Purchase Price per share of the Shares originally sold to an Investor hereunder shall be adjusted downward to equal such lower Per Share Selling Price and such Investor shall be entitled to receive the additional shares as provided by Section 7.1(c); provided, however, that in the event the Investor then owns less than 51% of the Shares originally acquired by it hereunder, such Investor shall be entitled to additional shares only with respect to the number of Shares originally acquired and then owned by the Investor as provided in Section 7.1(c). For so long as such Investor owns 51% or more of the Shares originally acquired by such Investor hereunder, the Investor shall be entitled to the full benefit of the Purchase Price adjustment required by this Section 7.1. The Company shall give to each Investor written notice of any such sale within 24 hours of the closing of any such sale and shall within such 24 hour period issue a press release announcing such sale.

(b) DEFINITIONS.

(i) For the purposes of this Section 7.1, the term "Per Share Selling Price" as used in this Section 7.1 shall mean the amount actually paid by third parties for each share of Common Stock. A sale of shares of Common Stock shall include the sale or issuance of rights, options, warrants or convertible securities ("derivative securities") under which the Company is or may become obligated to issue shares of Common Stock, and in such circumstances the sale of Common Stock shall be deemed to have occurred at the time of the issuance of the derivative securities and the Per Share Selling Price of the Common Stock

covered thereby shall also include the exercise or conversion price thereof (in addition to the consideration per underlying share of Common Stock received by the Company upon such sale or issuance of the derivative security, less the fee amount as provided above). In case of any such security issued within the MFN Period in a "Variable Rate Transaction" or an "MFN Transaction" (each as defined below), the Per Share Selling Price shall be deemed to be the lowest conversion or exercise price at which such securities are converted or exercised or might have been converted or exercised in the case of a Variable Rate Transaction, or the lowest adjustment price in the case of an MFN Transaction. If shares are issued for a consideration other than cash, the per share selling price shall be the fair value of such consideration as determined in good faith by the Board of Directors of the Company.

(ii) The term "Variable Rate Transaction" shall mean a transaction in which the Company issues or sells (a) any debt or equity securities that are convertible into, exchangeable or exercisable for, or include the right to receive additional shares of Common Stock either (x) at a conversion, exercise or exchange rate or other price that is based upon and/or varies with the trading prices of or quotations for the Common Stock at any time after the initial issuance of such debt or equity securities, or (y) with a fixed conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such debt or equity security or upon the occurrence of specified or contingent events directly or indirectly related to the business of the Company or the market for the Common Stock (but excluding standard stock split anti-dilution provisions), or (b) any securities of the Company pursuant to an "equity line" structure which provides for the sale, from time to time, of securities of the Company which are registered for resale pursuant to the 1933 Act.

(iii) The term "MFN Transaction" shall mean a transaction in which the Company issues or sells any securities in a capital raising transaction or series of related transactions (the "New Offering") which grants to an investor (the "New Investor") the right to receive additional shares based upon future transactions of the Company on terms more favorable than those granted to the New Investor in the New Offering.

(iv) The term "MFN Period" shall have the meaning set forth in Section 7.1(a), above.

(c) ADJUSTMENT MECHANISM. If an adjustment of the Purchase Price is required pursuant to Section 7.1(a), the Company shall deliver to the Investor within eight calendar days of the closing of the transaction giving rise to the adjustment or by such other date as may be required by

Section 7.1(d) ("Delivery Date") the Investor's share of such number of additional shares of Common Stock equal to (i) the aggregate Purchase Price paid by the Investor divided by the adjusted Per Share Purchase Price as required under Section 7.1(a), minus (ii) the total number of shares of Common Stock previously delivered to the Investor hereunder; PROVIDED HOWEVER, that the Company shall delay effecting such adjustment, in whole or in part, to the extent required by Section 7.1(d). In the event the Company fails to deliver the additional shares by the applicable Delivery Date, the Company shall be liable to the Investor for a delay payment equal to 2% of the Purchase Price per month payable in Common Stock or cash, at the Investor's election. If at the time of any adjustment the proviso of the first sentence of Section 7.1(a) is applicable, then the number of additional shares otherwise determined as deliverable under this Section

7.1(c) shall be adjusted so that it is equal to such number, multiplied by a fraction, the numerator of which is the number of Shares acquired on the Closing Date and still owned at the time of the adjustment and the denominator is the total number of Shares acquired on the Closing Date.

(d) LIMITATION ON NUMBER OF SHARES.

(i) If by way of any adjustment required by this Section 7.1, the Investor would receive a number of shares of Common Stock such that the total number of such shares beneficially owned (within the meaning of Section 13(d) of the 1934 Act) by the Investor as of the date of such adjustment would be greater than 9.90% but less than 13.0% of the total outstanding Common Stock of the Company, then the Company shall not effect the adjustment required by this Section to the extent necessary to avoid causing the aforesaid limitation to be exceeded until 120 days following the date such adjustment would have otherwise been made.

(ii) If by way of any adjustment required by this Section 7.1, the Investor would receive a number of shares of Common Stock such that the total number of such shares held by the Investor as of the date of such adjustment would equal or exceed 13.0% of the total outstanding Common Stock of the Company, then the Company shall not effect the adjustment required by this Section to the extent necessary to avoid causing the aforesaid limitation to be exceeded until 180 days following the date such adjustment would have otherwise been made.

(iii) In no event shall the Company issue to an Investor additional shares pursuant to an adjustment required by this Section 7.1 such that the total number of shares issued to such Investor (when added to the Warrant Shares actually received upon exercise of Warrants by such Investor) would exceed such Investor's "pro rata" share of 2,861,361 shares of Common Stock (the "allocation") (subject to appropriate adjustment for stock splits or stock dividends). Instead, the Company shall redeem excess shares at 110% of the Per Share Purchase Price, as adjusted. At such time as an Investor owns neither any Shares that were originally acquired pursuant to this Agreement nor any Warrants, it shall notify the Company, who then shall notify the other Investors. At such time, to the extent such Investor's allocation has not been exhausted, it shall be divided, pro rata, among the remaining Investors. An Investor's pro rata share shall be the portion determined by dividing its aggregate Purchase Price by the total Purchase Price of all Investors holding shares at the time the pro rata share is being determined. Each Investor's initial allocation is listed on the signature page for such Investor. Only shares acquired pursuant to this Agreement or upon exercise of Warrants will be included in determining whether the limitations would be exceeded for purposes of this Section 7.1(d)(iii).

(iv) The time periods in paragraphs (i) (120 days) and (ii) (180 days) above shall be extended one (1) day for each day, prior to the time that sales under Rule

144(k) would be permitted, that sales under the Registration Statement contemplated by the Registration Rights Agreement may not be made.

(e) CAPITAL ADJUSTMENTS. In case of any stock split or reverse stock split, stock dividend, reclassification of the common stock, recapitalization, merger or consolidation, or like capital adjustment affecting the Common Stock of the Company, the provisions of Section 7.1 shall be applied in a fair, equitable and reasonable manner so as to give effect, as nearly as may be, to the purposes hereof.

(f) EXCLUSIONS. Section 7.1(a) shall not apply to (i) sales of shares of Common Stock by the Company upon conversion or exercise of any convertible securities, options or warrants outstanding prior to the date hereof; or (ii) sales of shares of Common Stock by the Company pursuant to the provisions of any shareholder-approved option or similar plan heretofore adopted by the Company.

(g) RULE 144. The Company agrees to take the position that, for purposes of determining the holding period under Rule 144 for shares of Common Stock issued pursuant to Section 7.1(a), the holding period of such shares shall be tacked to the holding period of the Shares.

7.2 LIMITATION ON TRANSACTIONS.

(a) Until the expiration of the MFN Period, without the prior written consent of the Investors (which consent may be withheld in the Investor's discretion), the Company shall not (i) issue or sell or agree to issue or sell any securities for cash in a non-public MFN Transaction; or (ii) issue or sell, or agree to issue or sell, any securities for cash in a non-public Variable Rate Transaction.

(b) During the period after effectiveness of the registration statement contemplated by the Registration Rights Agreement and until the expiration of the MFN Period, without the prior written consent of the Investor (which consent may be withheld in the Investor's discretion), the Company shall not (i) issue or sell or agree to issue or sell any securities for cash in a non-public MFN Transaction; or (ii) issue or sell, or agree to issue or sell, any securities for cash in a non-public Variable Rate Transactions.

(c) Except as contemplated by paragraph (e) below, the Company shall not issue any securities in any transaction that would be integrated with the Securities issued pursuant to this Agreement.

(d) The Company may issue securities pursuant to "equity line" financing (as described in Section 7.1(b)(ii) above) provided the number of common shares issued does not exceed 8% of the number of common shares outstanding on the initiation of the equity line.

(e) The Company may issue additional equity securities, for an aggregate purchase price equal to $3.0 million. There can be no more than four institutional

investors ("other investors") in such transaction, who shall be identified to Tail Wind Inc. If the Company issues such equity with six (6) months of the date hereof, the allocation provided for in Section 7.1(d)(iii) above shall be proportionally reduced in a manner acceptable to all the Investors, and each Investor shall be notified of its new allocation. No more than six institutional investors will be approached in connection with such transaction. The transaction with the "other investors" will be on the terms, conditions and provisions as set forth in the documents supplied to KKWC and Tail Wind Inc. on December 15, 1999. The Company will supply each Investor with complete copies of all of the transaction documents applicable to the investment by the other investors at the time such documents are agreed to by the Company.

7.3 RIGHT OF INVESTOR TO PARTICIPATE IN FUTURE TRANSACTIONS. The Company agrees that during the MFN Period the Investor will have a right to participate in future non-public capital raising transactions as set forth in this Section 7.3. The Company shall give advance written notice to each Investor prior to any offer or sale of any of its equity securities or any securities convertible into or exchangeable or exercisable for such securities in a non-public capital raising transaction. Prior to the closing of any such transaction, each Investor shall have the right to participate in its pro rata share of up to 50% of such new offering (or in the case of a Variable Rate Transaction, up to 75% of such new offering) and purchase such securities for

the same consideration and on the same terms and conditions as contemplated for such third-party sale. In order to exercise this right, an Investor must give written notice to the Company of the Investor's election to participate and such notice must be given within ten (10) days following receipt of the notice from the Company. In the event the Company gives notice to the Investor of an expected transaction pursuant to this Section 7.3 but cannot consummate such transaction, the Company will give the Investor prompt written notice of the cancellation of such transaction. If, subsequent to the Company giving notice to the Investor hereunder, the terms and conditions of the proposed third-party sale are changed in any way, the Company shall be required to provide a new notice to the Investor hereunder and the Investor shall have the right to participate in the offering on such changed terms and conditions as provided hereunder.

7.4 OPINION OF COUNSEL. On or prior to the Closing Date, the Company will deliver to the Investor the opinions of independent legal counsel to the Company, in form and substance reasonably acceptable to the Investor, addressing those legal matters set forth in SCHEDULE 7.4 hereto.

7.5 RESERVATION OF COMMON STOCK PURSUANT TO SECTION 7.1 AND EXERCISE OF WARRANTS. The Company hereby agrees, at all times with respect to shares issuable upon exercise of the Warrants, and at all appropriate times with respect to shares issuable pursuant to Section 7.1, to reserve and keep available out of its authorized but unissued shares of Common Stock, solely for the purpose of providing for the additional issuance(s) of Common Stock pursuant to Section 7.1 and exercise of the Warrants, such number of shares of Common Stock as shall from time to time equal the number of shares sufficient to permit the issuance, if any, required pursuant to Section 7.1 plus the number of shares of Common Stock as shall be necessary to permit the exercise of the Warrants in accordance with the terms of the Warrants.

7.6 REPORTS. Within one week of filing the following reports with the SEC, or in the absence of such filing within the time periods specified below, the Company shall send a copy of the following reports to each Investor by regular mail:

(a) QUARTERLY REPORTS. As soon as available the Company's quarter-annual report on Form 10-Q or, in the absence of such report, consolidated balance sheets of the Company and its subsidiaries as at the end of such period and the related consolidated statements of operations, stockholders' equity and cash flows for such period and for the portion of the Company's fiscal year ended on the last day of such quarter, all in reasonable detail and certified by a principal financial officer of the Company to have been prepared in accordance with generally accepted accounting principles, subject to year-end and audit adjustments.

(b) ANNUAL REPORTS. As soon as available after the end of each fiscal year of the Company, the Company's Form 10K or, in the absence of a Form 10K, consolidated balance sheets of the Company and its subsidiaries as at the end of such year and the related consolidated statements of earnings, stockholders' equity and cash flows for such year, all in reasonable detail and accompanied by the report on such consolidated financial statements of an independent certified public accountant selected by the Company and reasonably satisfactory to the Investor.

(c) SECURITIES FILINGS. As promptly as practicable and in any event within one week after the same are issued or filed, copies of (i) all notices, proxy statements, financial statements, reports and documents as the Company or any subsidiary shall send or make available generally to its stockholders or to financial analysts, and (ii) all periodic and special reports, documents and registration statements which the Company or any subsidiary furnishes or files, or any officer or director of the Company or any of its subsidiaries (in such person's capacity as such) furnishes or files with the SEC.

(d) OTHER INFORMATION. Such other information relating to the Company or its subsidiaries as from time to time may reasonably be requested by the Investor provided the Company produces such information in its ordinary course of business, and further provided that the Company, solely in its own discretion, determines that such information is not confidential in nature and disclosure to the Investor would not be harmful to the Company.

(e) RULE 144. The Company agrees to make publicly available on a timely basis the information necessary to enable Rule 144 to be available for resale.

7.7 PRESS RELEASES. Any press release or other publicity concerning this Agreement or the transactions contemplated by this Agreement shall be submitted to the Investor for comment at least two (2) business days prior to issuance, unless the release is required to be issued within a shorter period of time by law or pursuant to the rules of a national securities exchange. The Company shall issue a press release concerning the fact and material terms of this Agreement within one business day of the Closing.

7.8 NO CONFLICTING AGREEMENTS. The Company will not, and will not permit its subsidiaries to, take any action, enter into any agreement or make any commitment that would

conflict or interfere in any material respect with the obligations to the Investor under the Agreements.

7.9 INSURANCE. For so long as any Investor beneficially owns any of the Securities, the Company shall, and shall cause each subsidiary to, have in full force and effect (a) insurance reasonably believed to be adequate on all assets and activities of a type customarily insured, covering property damage and loss of income by fire or other casualty, and (b) insurance reasonably believed to be adequate protection against all liabilities, claims and risks against which it is customary for companies similarly situated as the Company and the subsidiaries to insure.

7.10 COMPLIANCE WITH LAWS. For so long as any Investor beneficially owns any of the Securities, the Company will use reasonable efforts, and will cause each of its subsidiaries to use reasonable efforts, to comply with all applicable laws, rules, regulations, orders and decrees of all governmental authorities, except to the extent non-compliance (in one instance or in the aggregate) would not have a Material Adverse Effect.

7.11 LISTING OF UNDERLYING SHARES AND RELATED MATTERS. The Company hereby agrees, promptly following the Closing of the transactions contemplated by this Agreement, to take such action to cause the Shares, the Warrant Shares and the shares of Common Stock issuable under Section 7.1(a) hereof to be listed on the Nasdaq Stock Market as promptly as possible but no later than the effective date of the registration contemplated by the Registration Rights Agreement. The Company further agrees that if the Company applies to have its Common Stock or other securities traded on any other principal stock exchange or market, it will include in such application the Common Stock underlying the Warrants, and will take such other action as is necessary to cause such Common Stock to be so listed. The Company will take all action necessary to continue the listing and trading of its Common Stock on the Nasdaq Stock Market and will comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of such exchange, as applicable, to ensure the continued eligibility for trading of the Shares and the Warrant Shares thereon.

7.12 CORPORATE EXISTENCE. So long as any Investor beneficially owns any of the Shares or Warrants, the Company shall maintain its corporate existence, except in the event of a merger, consolidation or sale of all or substantially all of the Company's assets, as long as the surviving or successor entity in such transaction (a) assumes the Company's obligations hereunder and under the agreements and instruments entered into in connection herewith, regardless of whether or not the Company would have had a sufficient number of shares of Common Stock authorized and available for issuance in order to fulfill its obligations hereunder and effect the exercise in full of all Warrants outstanding as of the date of such transaction; (b) has no legal, contractual or other restrictions on its ability to perform the obligations of the Company hereunder and under the agreements and instruments entered into in connection herewith; and (c) (i) is a publicly traded corporation whose common stock and the shares of capital stock issuable upon exercise of the Warrants are (or would be upon issuance thereof) listed for trading on the Nasdaq Stock Market, New York Stock Exchange or American Stock Exchange, or (ii) if not such a publicly traded corporation, then the buyer agrees that it will, at

the election of the Investor, purchase such Investor's Shares (and Warrant Shares) at a price equal to 120% of the Per Share Purchase Price of such Shares.

8. SURVIVAL. All representations, warranties, covenants and agreements contained in this Agreement shall be deemed to be representations, warranties, covenants and agreements as of the date hereof and shall survive the execution and delivery of this Agreement.

9. ARBITRATION.

9.1 SCOPE. Resolution of any and all disputes arising from or in connection with the Agreements, whether based on contract, tort, common law, equity, statute, regulation, order or otherwise ("Disputes"), shall be exclusively governed by and settled in accordance with the provisions of this Section 9; provided, that the foregoing shall not preclude equitable or other judicial relief to enforce the provisions hereof or to preserve the status quo pending resolution of Disputes hereunder.

9.2 BINDING ARBITRATION. The parties hereby agree to submit all Disputes to arbitration for final and binding resolution. Either party may initiate such arbitration by delivery of a demand therefor (the "Arbitration Demand") to the other party. The arbitration shall be conducted in New York, New York by a sole arbitrator selected by agreement of the parties not later than 10 days after delivery of the Arbitration Demand, or, failing such agreement, appointed pursuant to the Commercial Arbitration Rules of the America Arbitration Association, as amended from time to time (the "AAA Rules"). If the arbitrator becomes unable to serve, his successor(s) shall be similarly selected or appointed.

9.3 PROCEDURE. The arbitration shall be conducted pursuant to the Federal Arbitration Act and such procedures as the parties may agree or, in the absence of or failing such agreement, pursuant to the AAA Rules. Notwithstanding the foregoing, (a) each party shall have the right to conduct limited discovery of information relevant to the Dispute; (b) each party shall provide to the other, reasonably in advance of any hearing, copies of all documents that a party intends to present in such hearing; (c) all hearings shall be conducted on an expedited schedule; and (d) all proceedings shall be confidential, except that either party may at its expense make a stenographic record thereof.

9.4 TIMING. The arbitrator shall use best efforts to complete all hearings not later than 90 days after his or her selection or appointment, and shall use best efforts to make a final award not later than 30 days thereafter. The arbitrator shall apportion all costs and expenses of the arbitration, including the arbitrator's fees and expenses, and fees and expenses of experts ("Arbitration Costs") between the prevailing and non-prevailing party as the arbitrator shall deem fair and reasonable. In circumstances where a Dispute has been asserted or defended against on grounds that the arbitrator deems manifestly unreasonable, the arbitrator may assess all Arbitration Costs against the non-prevailing party and may include in the award the prevailing party's attorney's fees and expenses in connection with any and all proceedings under this Section 9. Notwithstanding the foregoing, in no event may the arbitrator award multiple or punitive damages

10. MISCELLANEOUS.

10.1 SUCCESSORS AND ASSIGNS. This Agreement may not be assigned by a party hereto without the prior written consent of the other party hereto, except that without the prior written consent of the Company, but after notice duly given, an Investor may assign its rights hereunder in whole or in part to any purchaser of Securities from the Investor. The terms and conditions of this Agreement shall inure to the benefit of and be binding upon the respective permitted successors and assigns of the parties. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and assigns any rights, remedies, obligations, or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

10.2 COUNTERPARTS. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

10.3 TITLES AND SUBTITLES. The titles and subtitles used in this Agreement are used for convenience only and are not to be considered in construing or interpreting this Agreement.

10.4 NOTICES. Unless otherwise provided, any notice required or permitted under this Agreement shall be given in writing and shall be deemed effectively given only upon delivery to each party to be notified by (i) personal delivery, (ii) telex or telecopier, upon receipt of the electronically generated confirmation of delivery, or (iii) a recognized overnight air courier, addressed to the party to be notified at the address as follows, or at such other address as such party may designate by ten days' advance written notice to the other party:

If to the Company:

Avi BioPharma, Inc.
One SW Columbia Street, Suite 1105
Portland, Oregon 97258
Telephone: (503) 227-0554
Telefax: (503) 227-0751
Attention: Alan P. Timmins
Chief Financial Officer

with a copy to:

Ater Wynne
222 SW Columbia, Suite 1800
Portland, Oregon 97201
Attention: Byron Milstead
Telephone: (503) 226-1191
Facsimile: (503) 226-0079

If to the Investor:

To the address specified therefor on the applicable signature pages.

and with a copy to:

Kleinberg, Kaplan, Wolff & Cohen, P.C.
551 Fifth Avenue
New York, New York 10176
Attn: Stephen M. Schultz
Telephone: (212) 986-6000
Facsimile: (212) 986-8866

10.5 FEES AND EXPENSES.

(a) Except as set forth below, the parties hereto shall pay their own costs and expenses in connection herewith.

(b) European American Securities, Inc. (EASI), a member firm of the NASD, and a regulated entity of the Securities and Futures Authority of Great Britain, will act as agent for the Investor in the transaction. EASI shall be entitled to a fee equal to $0.28 per share, which shall be paid by the Company at the Closing.

(c) Tail Wind Inc. shall receive an expense allowance to cover due diligence expenses and legal expenses, in an amount equal to 1% of the aggregate Purchase Price (not to exceed $40,000) less the portion of the expense allowance previously paid ($13,000). Such expense allowance shall be paid by the Company at the Closing.

10.6 AMENDMENTS AND WAIVERS. Any term of this Agreement may be amended and the observance of any term of this Agreement may be waived (either generally or in a particular instance and either retroactively or

prospectively), only with the written consent of the Company and 75% in interest (based upon pro rata share) of the Investors. Any amendment or waiver effected in accordance with this paragraph shall be binding upon each holder of any Securities purchased under this Agreement at the time outstanding, each future holder of all such securities, and the Company.

10.7 SEVERABILITY. If one or more provisions of this Agreement are held to be unenforceable under applicable law, such provision shall be excluded from this Agreement and the balance of this Agreement shall be interpreted as if such provision were so excluded and shall be enforceable in accordance with its terms.

10.8 ENTIRE AGREEMENT. This Agreement, including the Exhibits and Schedules hereto, and the Registration Rights Agreement constitute the entire agreement among the parties hereof with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, both oral and written, between the parties with respect to the subject matter hereof and thereof.

10.9 FURTHER ASSURANCES. The parties shall execute and deliver all such further instruments and documents and take all such other actions as may reasonably be required to carry out the transactions contemplated hereby and to evidence the fulfillment of the agreements herein contained.

10.10 APPLICABLE LAW. This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York without regard to principles of conflicts of laws.

10.11 REMEDIES.

(a) The Investors shall be entitled to specific performance of the Company's obligations under the Agreements.

(b) The Company shall indemnify each Investor and each such Investor's officers, directors, partners, agents and employees (collectively, "Indemnitees") and hold the Indemnitees harmless from any loss, cost, expense or fees (including attorneys' fees and expenses) arising out of (i) any breach of any representation, warranty, covenant or agreement in any of the Agreements, (ii) any cause of action, suit or claim brought or made against such Indemnitee (other than directly by the Company solely for breach of this Purchase Agreement, the Warrant, or the Registration Rights Agreement by the Indemnitee or by governmental or regulatory authorities), and arising out of or resulting from (whether in whole or in part) the execution, delivery, performance or enforcement of the Agreements or any other instrument, document or agreement executed pursuant hereto or thereto or contemplated hereby or thereby (including without limitation the acquisition of the Warrants and/or the Warrant Shares), any transaction financed or to be financed in whole or in part, directly or indirectly, with the proceeds of the issuance of the Securities or the status of the purchaser as an investor in the Company, except to the extent that such actual loss or damage directly results from a breach by such Indemnitee of the Agreements or from a violation of law, or (iii) arising out of the enforcement of this Section 10.11. The right to indemnification shall include the right to advancement of expenses as they are incurred.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

The Company:

AVI BIOPHARMA, INC.

By:_____
Name:
Title:

The Investor: THE TAIL WIND FUND, LTD.

By:_____
Name:
Title:

By:_____
Name:
Title:

Aggregate Purchase Price: $2,500,000
Number of Shares of Common Stock: 714,286
Number of Warrants: 214,286
Effective per share Purchase Price of Shares: $3.50
Exercise price of Warrants: $4.03
Share Allocation 1,788,351 (per Section 7.1(d)(iii))
Address for Notice:

The Tail Wind Fund, Ltd.
Windermere House
404 East Bay Street
P.O. Box SS-5539
Nassau, Bahamas
Attn: J. McCarroll
Telephone: 242/393-8777
Facsimile: 242/393-9021

With copies to:

Tail Wind, Inc
C/o European American Securities, Inc.
One Regent Street, 4th Floor
London SW1Y 4NS
England
Attn: David Crook
Telephone: 44-171-468-7660
Facsimile: 44-171-468-7657

Kleinberg, Kaplan, Wolff & Cohen, P.C.
551 Fifth Avenue
New York, New York 10176
Attn: Stephen M. Schultz
Telephone: (212) 986-6000
Facsimile: (212) 986-8866

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

The Company:

AVI BIOPHARMA, INC.

By:_____
Name:
Title:

The Investor:

RESONANCE LTD.

By:_____

Name: Mo Bodner

Title:

Aggregate Purchase Price: $1,500,000
Number of Shares of Common Stock: 428,571
Number of Warrants: 128,571
Effective per share Purchase Price of Shares: $3.50
Exercise price of Warrants: $4.03
Share Allocation 1,073,010 (per Section 7.1(d)(iii))
Address for Notice:

Resonance Ltd.
c/o International Securities Corporation
551 Fifth Avenue
Suite 1425
New York, New York 10176

Attn: Mo Bodner
Telephone: (212) 986-7811
Facsimile:

[PURCHASE AGREEMENT]

EXHIBIT 7.2(e)

TERMS FOR PRIVATE PLACEMENT OF COMMON STOCK
OF AVI BIOPHARMA, INC.

ISSUE SIZE:	$3.0 million.
PRICING:	A 25% discount off the market price prior to the close of the transaction, with the "Market Price" defined as the average of the lowest 10 closing bid prices out of a 30 trading day period; however, in no event will the purchase price be below $3.50 or above $4.00.
WARRANTS:	30% coverage in 5 year warrants with a strike price at a 15% premium to the Market Price prior to the close of the transaction.
ANTI DILUTION PROTECTION:	MFN provision no more favorable to the investors than those included in the agreement with The Tail Wind Fund Ltd.
REGISTRATION:	The company will file a registration statement for resale for the shares issued, and if this is not declared effective within 3 months, penalties will accrue at the rate of 2% per month.
FEE:	To be agreed between the parties.

SCHEDULE 4.1

AntiVirals Acquisition Corp., a California corporation, a wholly-owned subsidiary if AVI BioPharma, Inc.

SCHEDULE 4.11

No items to report

SCHEDULE 4.19

No items to report.

SCHEDULE 4.3

(a) 50,000,000 shares of Common Stock authorized 2,000,000 shares of Preferred Stock authorized

(b) 14,378,698 shares of Common Stock issued and outstanding no shares of Preferred Stock issued and outstanding

(c) 2,144,277 shares of Common Stock issuable pursuant to stock option plans

(d) 4,898,681 shares of Common Stock issuable pursuant to warrant agreements

Exhibit 4.5

REGISTRATION RIGHTS AGREEMENT

This Registration Rights Agreement (the "Agreement") is made and entered as of this 16th day of December, 1999 by and between Avi BioPharma, Inc., a corporation organized under the laws of Oregon (the "Company"), and the persons identified as Investors pursuant to the Purchase Agreement of even date herewith by and between the Company and such persons (the "Purchase Agreement").

The parties hereby agree as follows:

1. CERTAIN DEFINITIONS

As used in this Agreement, the following terms shall have the following meanings:

"ADDITIONAL REGISTRABLE SECURITIES" shall mean the shares of Common Stock, if any, issued to the Investors pursuant to Section 7.1 of the Purchase Agreement.

"COMMON STOCK" shall mean the Company's shares of Common Stock, par value $.0001 per

share.

"INVESTOR" shall mean each person so identified in the Purchase Agreement, and andsubsequent holder of any Common Stock, Warrant or Registrable Securities.

"PROSPECTUS" shall mean the prospectus included in any Registration Statement, as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Securities and Additional Registrable Securities covered by such Registration Statement and by all other amendments and supplements to the prospectus, including post-effective amendments and all material incorporated by reference in such prospectus.

"REGISTER," "REGISTERED" and "REGISTRATION" refer to a registration made by preparing and filing a registration statement or similar document in compliance with the 1933 Act (as defined below), and the declaration or ordering of effectiveness of such registration statement or document.

"REGISTRABLE SECURITIES" shall mean the shares of Common Stock issued and issuable to the Investors pursuant to the Purchase Agreement (other than additional shares of Common Stock issuable pursuant to Section 7.1 of the Purchase Agreement) and issuable upon the exercise of the Warrants, and any securities issued with respect to, or in exchange for, such securities

"REGISTRATION STATEMENT" shall mean any registration statement filed under the 1933 Act of the Company that covers the resale of any of the Registrable Securities or Additional Registrable Securities pursuant to the provisions of this Agreement, amendments and supplements to such Registration Statement, including post-effective amendments, all exhibits and all material incorporated by reference in such Registration Statement.

"SEC" means the U.S. Securities and Exchange Commission.

"1933 ACT" means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

"1934 ACT" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

"WARRANTS" mean the warrants to purchase shares of Common Stock issued to the Investor pursuant to the Purchase Agreement.

Other capitalized terms used herein but not defined herein shall have the meaning provided therefor in the Purchase Agreement.

2. REGISTRATION.

(a) REGISTRATION STATEMENT. Promptly following the closing of the transactions contemplated by the Purchase Agreement (the "Closing Date") (but no later than 45 days after the Closing Date), the Company shall prepare and file with the SEC one Registration Statement on Form S-3 (or, if Form S-3 is not then available to the Company, on such form of registration statement as is then available to effect a registration for resale of the Registrable Securities, subject to the Investor's consent) covering the resale of the Registrable Securities. Such Registration Statement shall cover, to the extent allowable under the 1933 Act and the Rules promulgated thereunder (including Rule 416), such indeterminate number of additional shares of Common Stock resulting from stock splits, stock dividends or similar transactions with respect to the Registrable Securities. No securities shall be included in the Registration Statement without the consent of the Investors other than the Registrable Securities. The Registration Statement (and each amendment or supplement thereto, and each request for acceleration of effectiveness thereof) shall be provided in accordance with Section 3(c) to (and subject to the approval of) the Investors and their counsel prior to its filing or other submission, which approval shall not be unreasonably withheld or delayed.

(b) EXPENSES. The Company will pay all expenses associated with the registration and in addition shall pay the reasonable fees of single counsel to the Investors relating thereto in an amount of $5,000, excluding discounts, commissions, fees of underwriters, selling brokers, dealer managers or similar securities industry professionals.

(c) EFFECTIVENESS.

(i) The Company shall use its best efforts to have the Registration Statement declared effective as soon as practicable. If (A) the Registration Statement is not declared effective by the SEC within 90 days following the Closing Date (the "Registration Date"), or (B) after the Registration Statement has been declared effective by the SEC, sales cannot be made pursuant to the Registration Statement for any reason but except as excused pursuant to subparagraph (ii) below, then the Company will make payments to each Investor, as damages and not as a penalty, for any 30 day period or portion thereof following the Registration Date during which any of the events described in (A) or (B) above occurs and is continuing (the "Blackout Period") in an amount equal to 2% of the aggregate Purchase Price paid by such Investor to the Company on the Closing Date. The amounts payable as damages pursuant to this paragraph shall be payable in lawful money of the United States and shall be paid on demand from time to time following the commencement of the Blackout Period until the termination of the Blackout Period. The same remedy shall be available in the case of any failure to timely issue Warrant Shares upon exercise of the Warrant, or in the case of any suspension from trading or delisting from the Nasdaq Stock Market. If at any time a payment due hereunder remains unpaid for more than sixty (60) days after demand, the rate of damage payments shall thereafter be increased for all purposes to a rate equal to 3% per 30 day period. The remedies set forth in this section are not intended to be exclusive, and shall be in addition to any other remedies available at law or in equity. Amounts payable as damages hereunder to an Investor shall cease when the Investor no longer holds Warrants or Registrable Securities, or Additional Registrable Securities, as applicable.

(ii) The Company may suspend the use of a prospectus under the Registration Statement contemplated by this Section for up to two (2) periods of not more than twenty (20) days in the aggregate in any consecutive 12 months, if the Company shall deliver to the Investor a certificate signed by the President of the Company stating that, in the good faith judgment of the Board of Directors of the Company, it would (A) be seriously detrimental to the business of the Company for such registration to be effected or remain effective at such time, (B) interfere with any proposed or pending material corporate transaction involving the Company or any of its subsidiaries, or (C) result in

any premature disclosure thereof. In such a case, the Company shall not disclose to the Investor any facts or circumstances constituting material non-public information, without the prior written consent of Investor. The duration of the MFN Period provided for in the Purchase Agreement will be extended by the number of days of any termination or suspension of the effectiveness of any registration or suspension of the use of any prospectus contemplated by this Section 2.

(d) UNDERWRITTEN OFFERING. If any offering pursuant to a Registration Statement pursuant to Section 2(a) hereof involves an underwritten offering, the Investor shall have the right to select an investment banker and manager to administer the offering, which investment banker or manager shall be reasonably satisfactory to the Company. An underwritten offering will not be conducted without the consent of all Investors.

(e) Promptly following the issuance of any Additional Registrable Securities, the Company shall file a Registration Statement and use its best efforts to have such Registration Statement covering the Additional Registrable Securities declared effective as soon as possible. All time periods, provisions and remedies covering the registration of Registrable Securities shall apply, MUTATIS MUTANDIS, to the registration of the Additional Registrable Securities.

3. COMPANY OBLIGATIONS. The Company will use its best efforts to effect the registration of the Registrable Securities and Additional Registrable Securities in accordance with the terms hereof, and pursuant thereto the Company will, as expeditiously as possible:

(a) use its best efforts to cause such Registration Statement to become effective and to remain continuously effective for a period that will terminate upon the earlier of the date on which all Registrable Securities or Additional Registrable Securities, as the case may be, covered by such Registration Statement, as amended from time to time, have been sold or until such time as they become eligible for distribution pursuant to Rule 144(k), or any successor provision thereof, under the 1933 Act (the "Registration Period") (however, the Registration Statement shall be continued effective for so long on the as the Warrants remain outstanding);

(b) prepare and file with the SEC such amendments and post-effective amendments to the Registration Statement and the Prospectus as may be necessary to keep the Registration Statement effective for the period specified in Section 3(a) and to comply with the provisions of the 1933 Act and the 1934 Act with respect to the distribution of all Registrable Securities and Additional Registrable Securities; provided that, at a time reasonably prior to the filing of a Registration Statement or Prospectus, or any amendments or supplements thereto, the Company will furnish to the Investor copies of all documents proposed to be filed, which documents will be subject to the comments of the Investor;

(c) permit a single firm of counsel designated by the Investors to review the Registration Statement and all amendments and supplements thereto no fewer than ten (10) days prior to their filing with the SEC, and not file any document in a form to which such counsel reasonably objects;

(d) furnish to all of the Investors and their legal counsel (i) promptly after the same is prepared and publicly distributed, filed with the SEC, or received by the Company, one copy of the Registration Statement and any amendment thereto, each preliminary prospectus and Prospectus and each amendment or supplement thereto, and each letter written by or on behalf of the Company to the SEC or the staff of the SEC, and each item of correspondence from the SEC or the staff of the SEC, in each case relating to such Registration Statement (other than any portion of any thereof which contains information for which the Company has sought confidential treatment), and (ii) such number of copies of a Prospectus, including a preliminary prospectus, and all amendments and supplements thereto and such other documents as such Investor may reasonably

request in order to facilitate the disposition of the Registrable Securities and Additional Registrable Securities owned by such Investor;

(e) in the event the Investors select underwriters for the offering, the Company shall enter into and perform its reasonable obligations under an underwriting agreement, in usual and customary form, including, without limitation, customary indemnification and contribution obligations, with the underwriters of such offering;

(f) at the request of the Investor, the Company shall furnish, on the date that Registrable Securities or Additional Registrable Securities, as applicable, are delivered to an underwriter, if any, for sale in connection with the Registration Statement (i) an opinion, dated as of such date, from counsel representing the Company for purposes of such Registration Statement, in form, scope and substance as is customarily given in an underwritten public offering, addressed to the underwriter and the Investor and (ii) a letter, dated such date, from the Company's independent certified public accountants in form and substance as is customarily given by independent certified public accountants to underwriters in an underwritten public offering, addressed to the underwriters and the Investors;

(g) make reasonable effort to prevent the issuance of any stop order or other suspension of effectiveness and, if such order is issued, obtain the withdrawal of any such order at the earliest possible moment;

(h) furnish to the Investors at least five copies of the Registration Statement and any post-effective amendment thereto, including financial statements and schedules by courier pursuant to the notice requirements of Section 10.4 of the Purchase Agreement;

(i) prior to any public offering of Registrable Securities or Additional Registrable Securities, use its best efforts to register or qualify or cooperate with the Investors and its counsel in connection with the registration or qualification of such Registrable Securities or Additional Registrable Securities, as applicable, for offer and sale under the securities or blue sky laws of all U.S. jurisdictions and do any and all other reasonable acts or things necessary or advisable to enable the distribution in such jurisdictions of the Registrable Securities or Additional Registrable Securities covered by the Registration Statement;

(j) cause all Registrable Securities or Additional Registrable Securities covered by the Registration Statement to be listed on each securities exchange, interdealer quotation system or other market on which similar securities issued by the Company are then listed;

(k) immediately notify the Investors, at any time when a Prospectus relating to the Registrable Securities or Additional Registrable Securities is required to be delivered under the Securities Act, upon discovery that, or upon the happening of any event as a result of which, the Prospectus included in such Registration Statement, as then in effect, includes an untrue statement of a material fact or omits to state any material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances then existing, and at the request of any such holder, promptly prepare and furnish to such holder a reasonable number of copies of a supplement to or an amendment of such Prospectus as may be necessary so that, as thereafter delivered to the purchasers of such

Registrable Securities or Additional Registrable Securities, as applicable, such Prospectus shall not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances then existing; and

(l) otherwise use its best efforts to comply with all applicable rules and regulations of the SEC under the 1933 Act and the 1934 Act, take such other actions as may be reasonably necessary to facilitate the registration of the Registrable Securities and Additional Registrable Securities hereunder.

4. OBLIGATIONS OF THE INVESTORS.

(a) It shall be a condition precedent to the obligations of the Company to complete the registration pursuant to this Agreement with respect to the Registrable Securities or Additional Registrable Securities of an Investor, if applicable, that such Investor shall furnish in writing to the Company such information regarding itself, the Registrable Securities or Additional Registrable Securities, as applicable, held by it and the intended method of disposition of the Registrable Securities or Additional Registrable Securities, as applicable, held by it as shall be reasonably required to effect the registration of such Registrable Securities or Additional Registrable Securities, as applicable, and shall execute such documents in connection with such registration as the Company may reasonably request. At least ten (10) business days prior to the first anticipated filing date of the Registration Statement, the Company shall notify the Investors of the information the Company requires from the Investors if the Investors elect to have any of the Registrable Securities or Additional Registrable Securities included in the Registration Statement.

(b) Each Investor, by its acceptance of the Registrable Securities and Additional Registrable Securities, if any, agrees to cooperate with the Company as reasonably requested by the Company in connection with the preparation and filing of the Registration Statement hereunder, unless such Investor has notified the Company in writing of its election to exclude all of its Registrable Securities or Additional Registrable Securities, as applicable, from the Registration Statement.

(c) In the event the Investors determine to engage the services of an underwriter, the Investors agree to enter into and perform their obligations under an underwriting agreement, in usual and customary form, including, without limitation, customary indemnification and contribution obligations, with the managing underwriter of such offering and take such other actions as are reasonably required in order to expedite or facilitate the dispositions of the Registrable Securities or Additional Registrable Securities, as applicable.

(d) Each Investor agrees that, upon receipt of any notice from the Company of the happening of any event rendering the Registration Statement no longer effective, the Investor will immediately discontinue disposition of Registrable Securities or Additional Registrable Securities pursuant to the Registration Statement covering such Registrable Securities or Additional Registrable Securities until the Investor's receipt of the copies of the supplemented or amended prospectus filed with the SEC and declared effective and, if so

directed by the Company, the Investor shall deliver to the Company (at the expense of the Company) or destroy (and deliver to the Company a certificate of destruction) all copies in the Investor's possession of the prospectus covering the Registrable Securities or Additional Registrable Securities, as applicable, current at the time of receipt of such notice.

(e) No Investors may participate in any underwritten registration hereunder unless it (i) agrees to sell the Registrable Securities or Additional Registrable Securities, as applicable, on the basis provided in

any underwriting arrangements in usual and customary form entered into by the Company, (ii) completes and executes all questionnaires, powers of attorney, indemnities, underwriting agreements and other documents reasonably required under the terms of such underwriting arrangements, and (iii) agrees to pay its pro rata share of all underwriting discounts and commissions and any expenses in excess of those payable by the Company pursuant to the terms of this Agreement.

5. INDEMNIFICATION.

(a) INDEMNIFICATION BY COMPANY. The Company agrees to indemnify and hold harmless, to the fullest extent permitted by law each Investor, its officers, directors, partners and employees and each person who controls the Investor (within the meaning of the 1933 Act) against all losses, claims, damages, liabilities, costs (including, without limitation, reasonable attorney's fees) and expenses caused by (i) any untrue or alleged untrue statement of a material fact contained in any Registration Statement, Prospectus or any preliminary prospectus or any amendment or supplement thereto or 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, except insofar as the same are based upon any information furnished in writing to the Company by such Investor, expressly for use therein, or (ii) any violation by the Company of any federal, state or common law, rule or regulation applicable to the Company in connection with any Registration Statement, Prospectus or any preliminary prospectus, or any amendment or supplement thereto, and shall reimburse in accordance with subparagraph (c) below, each of the foregoing persons for any legal and any other expenses reasonably incurred in connection with investigating or defending any such claims. The foregoing is subject to the condition that, insofar as the foregoing indemnities relate to any untrue statement, alleged untrue statement, omission or alleged omission made in any preliminary prospectus or Prospectus that is eliminated or remedied in any Prospectus or amendment or supplement thereto, the above indemnity obligations of the Company shall not inure to the benefit of any indemnified party if a copy of such corrected Prospectus or amendment or supplement thereto had been made available to such indemnified party and was not sent or given by such indemnified party at or prior to the time such action was required of such indemnified party by the 1933 Act and if delivery of such Prospectus or amendment or supplement thereto would have eliminated (or been a sufficient defense to) any liability of such indemnified party with respect to such statement or omission. Indemnity under this Section 5(a) shall remain in full force and effect regardless of any investigation made by or on behalf of any indemnified party and shall survive the permitted transfer of the Registrable Securities and Additional Registrable Securities.

(b) INDEMNIFICATION BY HOLDER OF REGISTRABLE SECURITIES. In connection with any registration pursuant to the terms of this Agreement, each Investor severally will furnish to the Company in writing such information as the Company reasonably requests concerning the holders of Registrable Securities and Additional Registrable Securities or the proposed manner of distribution for use in connection with any Registration Statement or Prospectus and severally agrees to indemnify and hold harmless, to the fullest extent permitted by law, the Company, its directors, officers, employees, stockholders and each person who controls the Company (within the meaning of the 1933 Act) against any losses, claims, damages, liabilities and expense (including reasonable attorney's fees) resulting from any untrue statement of a material fact or any omission of a material fact required to be stated in the Registration Statement or Prospectus or preliminary prospectus or amendment or supplement thereto or necessary to make the statements therein not misleading, to the extent, but only to the extent that such untrue statement or omission is contained in any information furnished in writing by such holder of Registrable Securities or Additional Registrable Securities to the Company specifically for inclusion in such Registration Statement or Prospectus or amendment or supplement thereto and that such information was substantially relied upon by the Company in preparation of the Registration Statement or Prospectus or any amendment or supplement thereto. In no event shall the liability of a holder of Registrable Securities or Additional Registrable Securities be greater in amount than the dollar amount of the proceeds (net of all expense paid by such holder and the

amount of any damages such holder has otherwise been required to pay by reason of such untrue statement or omission) received by such holder upon the sale of the Registrable Securities or Additional Registrable Securities included in the Registration Statement giving rise to such indemnification obligation.

(c) CONDUCT OF INDEMNIFICATION PROCEEDINGS. Any person entitled to indemnification hereunder shall (i) give prompt notice to the indemnifying party of any claim with respect to which it seeks indemnification and (ii) permit such indemnifying party to assume the defense of such claim with counsel reasonably satisfactory to the indemnified party; PROVIDED that any person entitled to indemnification hereunder shall have the right to employ separate counsel and to participate in the defense of such claim, but the fees and expenses of such counsel shall be at the expense of such person unless (a) the indemnifying party has agreed to pay such fees or expenses, or (b) the indemnifying party shall have failed to assume the defense of such claim and employ counsel reasonably satisfactory to such person or (c) in the reasonable judgment of any such person, based upon written advice of its counsel, a conflict of interest exists between such person and the indemnifying party with respect to such claims (in which case, if the person notifies the indemnifying party in writing that such person elects to employ separate counsel at the expense of the indemnifying party, the indemnifying party shall not have the right to assume the defense of such claim on behalf of such person); and PROVIDED, FURTHER, that the failure of any indemnified party to give notice as provided herein shall not relieve the indemnifying party of its obligations hereunder, except to the extent that such failure to give notice shall materially adversely affect the indemnifying party in the defense of any such claim or litigation. It is understood that the indemnifying party shall not, in connection with any proceeding in the same jurisdiction, be liable for fees or expenses of more than one separate firm of attorneys at any time for all such indemnified parties. No indemnifying party will, except with the consent of the indemnified party, consent to entry of any judgment or enter into any

settlement that does not include as an unconditional term thereof the giving by the claimant or plaintiff to such indemnified party of a release from all liability in respect to such claim or litigation.

(d) CONTRIBUTION. If for any reason the indemnification provided for in the preceding paragraphs (a) and (b) is unavailable to an indemnified party or insufficient to hold it harmless, other than as expressly specified therein, then the indemnifying party shall contribute to the amount paid or payable by the indemnified party as a result of such loss, claim, damage or liability in such proportion as is appropriate to reflect the relative fault of the indemnified party and the indemnifying party, as well as any other relevant equitable considerations. No person guilty of fraudulent misrepresentation within the meaning of Section 11(f) of the 1933 Act shall be entitled to contribution from any person not guilty of such fraudulent misrepresentation. In no event shall the contribution obligation of a holder of Registrable Securities or Additional Registrable Securities be greater in amount than the dollar amount of the proceeds (net of all expenses paid by such holder and the amount of any damages such holder has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission) received by it upon the sale of the Registrable Securities or Additional Registrable Securities giving rise to such contribution obligation.

6. MISCELLANEOUS.

(a) AMENDMENTS AND WAIVERS. This Agreement may be amended only by a writing signed by the parties hereto. The Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company shall have obtained the written consent to such amendment, action or omission to act, of the Investor.

(b) NOTICES. All notices and other communications provided for or permitted hereunder shall be made as set forth in Section 10.4 of the Purchase Agreement.

(c) ASSIGNMENTS AND TRANSFERS BY INVESTOR. This Agreement and all the rights and obligations of the Investors hereunder may not be assigned or transferred to any transferee or assignee except as set forth herein. An Investor may make such assignment or transfer to any transferee or assignee of any Common Stock, Warrant or Registrable Securities, or Additional Registrable Securities, PROVIDED, that (i) such transfer is made expressly subject to this Agreement and the transferee agrees in writing to be bound by the terms and conditions hereof, and (ii) the Company is provided with written notice of such assignment.

(d) ASSIGNMENTS AND TRANSFERS BY THE COMPANY. This Agreement may not be assigned by the Company without the prior written consent of Investor, except that without the prior written consent of the Investor, but after notice duly given, the Company shall assign its rights and delegate its duties hereunder to any successor-in-interest corporation, and such successor-in-interest shall assume such rights and duties, in the event of a merger or consolidation of the Company with or into another corporation or the sale of all or substantially all of the Company's assets.

(e) BENEFITS OF THE AGREEMENT. The terms and conditions of this Agreement shall inure to the benefit of and be binding upon the respective permitted successors and assigns of the parties. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and assigns any rights, remedies, obligations, or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

(f) COUNTERPARTS. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

(g) TITLES AND SUBTITLES. The titles and subtitles used in this Agreement are used for convenience only and are not to be considered in construing or interpreting this Agreement.

(h) SEVERABILITY. If one or more provisions of this Agreement are held to be unenforceable under applicable law, such provision shall be excluded from this Agreement and the balance of this Agreement shall be interpreted as if such provision were so excluded and shall be enforceable in accordance with its terms to the fullest extent permitted by law.

(i) FURTHER ASSURANCES. The parties shall execute and deliver all such further instruments and documents and take all such other actions as may reasonably be required to carry out the transactions contemplated hereby and to evidence the fulfillment of the agreements herein contained.

(j) ENTIRE AGREEMENT. This Agreement is intended by the parties as a final expression of their agreement and intended to be a complete and exclusive statement of the agreement and understanding of the parties hereto in respect of the subject matter contained herein. This Agreement supersedes all prior agreements and understandings between the parties with respect to such subject matter.

(k) APPLICABLE LAW. This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York without regard to principles of conflicts of law.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

The Company: AVI BIOPHARMA, INC.

By:_____
Name:
Title:

The Investor: THE TAIL WIND FUND, LTD.

By:_____
Name:
Title:

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

The Company: AVI BIOPHARMA, INC.

By:_____
Name:
Title:

The Investor: RESONANCE LTD.

By:_____
Name: Mo Bodner
Title:

Exhibit 4.6

SUBSCRIPTION AGREEMENT

This Subscription Agreement is made this 1st day of December, 1999, by and between SUPERGEN, INC., a Delaware corporation ("SuperGen"), and AVI BIOPHARMA, INC., an Oregon corporation ("AVI"), in connection with the subscription by SuperGen for 1,000,000 shares of the common stock of AVI (the "AVI Securities"), par value .0001, for a price of Five Dollars ($5.00) per share.

1. SUBSCRIPTION. SuperGen subscribes for the AVI Securities.

1.1 CASH CONSIDERATION. At closing, SuperGen shall pay to AVI the amount of Two Million Five Hundred Dollars ($2,500,000) in immediately available funds.

1.2 STOCK CONSIDERATION. At closing, SuperGen shall deliver to AVI 100,000 shares of the common stock of SuperGen, .001 par value, registered in the name of AVI (the "SuperGen Securities"), which shares shall be deemed to have a value of Two Million Five Hundred Thousand Dollars ($2,500,000).

2. REPRESENTATIONS OF SUPERGEN.

2.1 INVESTMENT INTENT. SuperGen represents and warrants to AVI that SuperGen is purchasing the AVI Securities for SuperGen's own account and investment and not with a view to, or for sale in connection with, any distribution, and that SuperGen can withstand the loss of SuperGen's entire investment and has no need for liquidity in the investment the Securities represent.

2.2 QUALIFIED INVESTOR. SuperGen warrants and represents to AVI that SuperGen is an accredited investor within the meaning of Regulation 501, as promulgated under the Securities Act of 1933, as amended, and warrants that all information there presented is materially accurate.

2.3 INVESTMENT EXPERIENCE. SuperGen is experienced in evaluating and investing in companies in the development stage, and has such knowledge and experience in financial or business matters that it is capable of evaluating the merits and risks of the investment in the AVI Securities.

2.4 AUTHORIZATION. The execution, delivery and performance of this Agreement by SuperGen does not (i) require the consent, approval or authorization of any governmental or regulatory authority having jurisdiction and (ii) will not violate any applicable law, judgment, order, injunction, decree, rule, regulation or ruling of any governmental authority applicable to SuperGen.

2.5 AUTHORITY TO EXECUTE AGREEMENT. SuperGen has full power and authority and legal right to make this Agreement and to incur and perform its obligations hereunder and the performance by SuperGen of this Agreement has been duly authorized by all necessary action of SuperGen.

2.6 ACCESS TO INFORMATION. SuperGen represents and warrants that SuperGen and its Board of Directors has received copies of AVI's filings under the Securities and Exchange Act of 1934, as amended, including, without limitation, the risk factors they contain; SuperGen further understands that forward-looking statements in such filings are not warranted and must be regarded as highly speculative and uncertain. SuperGen has had such opportunity to ask questions and to examine the operations of AVI as SuperGen wishes, and has availed themselves of such opportunity as SuperGen deems appropriate.

2.7 RESTRICTED SECURITIES, LEGEND. SuperGen understands that the AVI Securities have not been registered under the Securities Act of 1933, as

amended, in reliance upon an exemption from registration. Such exemption depends upon, among other things, the bona fide nature of SuperGen's investment intent stated in this Subscription Agreement. SuperGen understands that the AVI Securities must be held indefinitely, unless the Securities subsequently are registered under the Securities Act of 1933 or unless an exemption from registration is otherwise available. SuperGen understands that AVI is not obligated to register the Securities, except as hereafter provided. SuperGen agrees that the AVI Securities may not be offered, sold, transferred, pledged, or otherwise disposed of in the absence of an effective registration statement under the Securities Act of 1933 and applicable state securities laws or an opinion of counsel acceptable to AVI that such registration is not required. SuperGen understands that the documentation representing the Securities will be imprinted with substantially the following legend:

> THE SHARES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"), OR APPLICABLE STATE SECURITIES LAWS. THE SHARES HAVE BEEN ACQUIRED WITHOUT A VIEW TO DISTRIBUTION AND MAY NOT BE OFFERED, SOLD, TRANSFERRED, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR THE SHARES UNDER THE ACT AND UNDER ANY APPLICABLE SECURITIES LAWS, OR AN OPINION OF COUNSEL FOR THE HOLDER (CONCURRED IN BY LEGAL COUNSEL FOR THE CORPORATION) THAT SUCH REGISTRATION IS NOT REQUIRED AS TO SUCH OFFER OR SALE. THE STOCK TRANSFER AGENT HAS BEEN ORDERED TO EFFECTUATE TRANSFERS OF THIS CERTIFICATE ONLY IN ACCORDANCE WITH THE ABOVE INSTRUCTION.

3. REPRESENTATIONS OF AVI.

3.1 INVESTMENT INTENT. AVI represents and warrants to SuperGen that AVI is purchasing the SuperGen Securities for AVI's own account and investment and not with a view

---

to, or for sale in connection with, any distribution, and that AVI can withstand the loss of AVI's entire investment and has no need for liquidity in the investment the Securities represent.

3.2 QUALIFIED INVESTOR. AVI warrants and represents to SuperGen that AVI is an accredited investor within the meaning of Regulation 501, as promulgated under the Securities Act of 1933, as amended, and warrants that all information there presented is materially accurate.

3.3 INVESTMENT EXPERIENCE. AVI is experienced in evaluating and investing in companies in the development stage, and has such knowledge and experience in financial or business matters that it is capable of evaluating the merits and risks of the investment in the SuperGen Securities.

3.4 AUTHORIZATION. The execution, delivery and performance of this Agreement by AVI does not (i) require the consent, approval or authorization of any governmental or regulatory authority having jurisdiction and (ii) will not violate any applicable law, judgment, order, injunction, decree, rule, regulation or ruling of any governmental authority applicable to AVI.

3.5 AUTHORITY TO EXECUTE AGREEMENT. AVI has full power and authority and legal right to make this Agreement and to incur and perform its obligations hereunder and the performance by AVI of this Agreement has been duly authorized by all necessary action of AVI.

3.6 ACCESS TO INFORMATION. AVI represents and warrants that AVI and its Board of Directors has received copies of SuperGen's filings under the Securities and Exchange Act of 1934, as amended, including, without limitation, the risk factors they contain; AVI further understands that forward-looking statements in such filings are not warranted and must be regarded as highly speculative and uncertain. AVI has had such opportunity to ask questions and to examine the operations of SuperGen as AVI wishes, and has availed themselves of such opportunity as AVI deems appropriate.

3.7 RESTRICTED SECURITIES, LEGEND. AVI understands that the SuperGen Securities have not been registered under the Securities Act of 1933,

as amended, in reliance upon an exemption from registration. Such exemption depends upon, among other things, the bona fide nature of AVI's investment intent stated in this Subscription Agreement. AVI understands that the SuperGen Securities must be held indefinitely, unless the Securities subsequently are registered under the Securities Act of 1933 or unless an exemption from registration is otherwise available. AVI understands that SuperGen is not obligated to register the Securities, except as hereafter provided. AVI agrees that the SuperGen Securities may not be offered, sold, transferred, pledged, or otherwise disposed of in the absence of an effective registration statement under the Securities Act of 1933 and applicable state securities laws or an opinion of counsel acceptable to SuperGen that such registration is not required. SuperGen understands that the documentation representing the Securities will be imprinted with substantially the following legend:

THE SHARES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"), OR APPLICABLE STATE SECURITIES LAWS. THE SHARES HAVE BEEN ACQUIRED WITHOUT A VIEW TO DISTRIBUTION AND MAY NOT BE OFFERED, SOLD, TRANSFERRED, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR THE SHARES UNDER THE ACT AND UNDER ANY APPLICABLE SECURITIES LAWS, OR AN OPINION OF COUNSEL FOR THE HOLDER (CONCURRED IN BY LEGAL COUNSEL FOR THE CORPORATION) THAT SUCH REGISTRATION IS NOT REQUIRED AS TO SUCH OFFER OR SALE. THE STOCK TRANSFER AGENT HAS BEEN ORDERED TO EFFECTUATE TRANSFERS OF THIS CERTIFICATE ONLY IN ACCORDANCE WITH THE ABOVE INSTRUCTION.

4. CLOSING. The closing of the transaction contemplated hereunder shall take place at a place and time mutually agreed by SuperGen and AVI not more than fifteen (15) days after the date hereof.

5. EXCLUSIVE RIGHT TO NEGOTIATE. SuperGen and AVI presently are negotiating the terms and conditions of a definitive agreement wherein SuperGen shall enjoy the rights to market and sell AVICINE, AVI's anti-cancer therapeutic vaccine. For and in consideration of this Subscription, SuperGen and AVI agree that between the date of this Subscription Agreement and the earlier of (a) termination of negotiations with respect to the Definitive Agreement by mutual agreement of SuperGen and AVI, or (b) February 28, 2000, AVI shall not, and shall use its best efforts to insure that its directors, officers and advisors do not, directly or indirectly, institute, pursue or enter into any discussions, negotiations, or agreements (whether preliminary or definitive) with any person or entity other than SuperGen contemplating or providing for the marketing and sale of AVICINE by any party other than SuperGen. In addition, AVI shall suspend and not resume during such time period any discussions or negotiations described above which were initiated prior to the execution of this Subscription Agreement. AVI further agrees that any definitive agreement entered into between SuperGen and AVI to market and sell AVICINE, contemplated by this section, shall include provisions, mutually agreed by the parties, whereby SuperGen shall enjoy a first option on AVI's portfolio of anti-cancer therapeutic products.

6. REGISTRATION RIGHTS.

6.1 REGISTRATION OF AVI SECURITIES. At the closing, AVI shall enter into a Registration Rights Agreement with SuperGen providing Super Gen "piggyback" registration rights with respect to the AVI Securities but providing further for the registration of the AVI Securities not later than ninety (90) days after the closing date hereof.

6.2 REGISTRATION OF SUPERGEN. At the closing, SuperGen shall enter into a Registration Rights agreement with AVI providing AVI "piggyback" registration rights with

---

respect to the SuperGen Securities but providing further for the registration of the SuperGen Securities not later than ninety (90) days after the closing date

hereof.

7. OTHER MATTERS.

7.1 SEVERABILITY. Each clause of this agreement is severable. If any clause is ruled void or unenforceable, the balance of the agreement shall nonetheless remain in effect.

7.2 NON-WAIVER. A waiver of one or more breaches of any clause of this agreement shall not act to waive any other breach, whether of the same or different clauses.

7.3 GOVERNING LAW, JURISDICTION. This agreement is governed by the laws of the state of Oregon, and is enforceable only in the state or federal courts located in Oregon, in which both parties consent to jurisdiction.

7.4 ATTORNEYS' FEES. The prevailing party in any suit, action, arbitration, or appeal filed or held concerning this agreement shall be entitled to reasonable attorneys' fees.

7.5 AMENDMENTS. This agreement may be modified only in writing signed by the original parties hereto, their successors, or by their authorized representatives.

IN WITNESS WHEREOF, the parties have heretofore signed this Subscription Agreement.

SUPERGEN, INC., a Delaware corporation	AVI BIOPHARMA, INC. an Oregon corporation
By: /s/ Joseph Rubinfeld	By: /s/ Alan Timmins
Title: Chief Executive Officer & President	Title: Chief Operating Officer & Chief Financial Officer

AMENDMENT 1 TO SUBSCRIPTION AGREEMENT

This amendment to Section 1 of the Subscription agreement is an addition to the terms previously agreed to.

1.3 RE-EXCHANGE OF CASH CONSIDERATION. SuperGen and AVI each have the right, but not the obligation, to demand a re-exchange of AVI's 500,000 shares and SuperGen's $2.5 million in cash if an arrangement, under the general terms of the Letter of Intent between the two companies, is not agreed to by the date contemplated therein. This right shall last for 30 days from the termination date of the Letter of Intent and will be completed within 180 days of such date.

IN WITNESS WHEREOF, the parties have heretofore signed this Amendment.

AVI BIOPHARMA, INC., an Oregon corporation

By: /s/ Alan Timmins

Title: Chief Operating Officer & Chief Financial Officer

SUPERGEN, INC., a Delaware corporation

By: /s/ Joseph Rubinfeld

Title: Chief Executive Officer & President

AMENDMENT TO SUBSCRIPTION AGREEMENT

This Amendment (the "AMENDMENT") is made as of December 15, 1999 by and between SuperGen, Inc., a Delaware corporation ("SUPERGEN") and AVI BioPharma, Inc., an Oregon corporation ("AVI").

BACKGROUND

A. SuperGen and AVI entered into a Subscription Agreement dated as of December 1, 1999 (the "SUBSCRIPTION AGREEMENT") providing for SuperGen to pay AVI $2.5 million in cash (the "CASH CONSIDERATION") and issue to AVI 100,000 shares of SuperGen common stock in exchange for 1,000,000 shares of AVI common stock and the exclusive right from the date of the Subscription Agreement until February 28, 2000 to negotiate an agreement for SuperGen to market and sell Avicine and have a right of first option with respect to AVI's portfolio of anti-cancer therapeutic compounds.

B. Pursuant to Section 7.5 of the Subscription Agreement, SuperGen and AVI previously amended the Subscription Agreement and desire to further amend the Subscription Agreement to clarify the conditions under which there may be a redemption of 500,000 shares of AVI common stock. Unless defined in this Amendment, all capitalized terms shall have the meanings set forth in the Subscription Agreement.

NOW, THEREFORE, SuperGen and AVI agree as follows:

Section 1.3 of the Agreement shall be deleted and replaced in its entirety by the following:

1.3 REDEMPTION. In the event that by February 28, 2000 (the "EXPIRATION DATE") SuperGen and AVI have not entered into a definitive agreement for SuperGen to market and sell Avicine and for SuperGen to have a right of first option with respect to AVI's portfolio of anti-cancer therapeutic compounds, all on substantially the terms as set forth in the letter of intent attached to this Amendment, SuperGen and AVI shall each have the right, but not the obligation, to request in writing a redemption of 500,000 shares of AVI common stock in exchange for return to SuperGen of the Cash Consideration (the "REDEMPTION").

(a) NOTICE PERIOD. For a period of 30 calendar days following the Expiration Date (the "NOTICE PERIOD"), SuperGen and AVI may each deliver written notice to the other of their desire to cause the Redemption.

(b) EXCHANGE DATE. The Redemption shall occur on a date (the "REDEMPTION DATE") no later than 180 calendar days after the Expiration Date.

(c) DELIVERY. AVI shall deliver to SuperGen the full amount of the Cash Consideration, along with any interest earned thereon, and SuperGen shall deliver 500,000 shares of AVI common stock on the Redemption Date.

(d) SECURITY. To ensure AVI's obligations under this Section 1.3, AVI shall establish an account for the receipt of the Cash Consideration. The account will be owned by AVI and will require the signature of an officer of AVI and an officer of SuperGen before any funds can be disbursed from this account. Once established, there will be no changes of any nature whatsoever to the account without the written consent of an officer from both SuperGen and AVI. SuperGen agrees to terminate this security arrangement promptly after the earlier of (i) the expiration of the Notice Period (if a Redemption was not requested) or (ii) AVI's full performance of its obligations under the Redemption provisions of Section 1.3.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed as of the day and year first above written.

SUPERGEN, INC.

By: /s/ Joseph Rubinfeld

Joseph Rubinfeld
Chief Executive Officer and President

AVI BIOPHARMA, INC.

By: /s/ Alan P. Timmins

Alan P. Timmins

Chief Operating Officer and
Chief Financial Officer

EXHIBIT 5.1

ATER WYNNE LLP

LETTERHEAD

January 24, 2000

Board of Directors AVI BioPharma, Inc.
One S.W. Columbia Street, Suite 1105
Portland, OR 97258

Gentlemen:

In connection with the registration of 2,857,147 shares of common stock, $.0001 par value (the "Common Stock"), and 557,144 shares of common stock, .0001 par value, underlying certain Warrants (the "Warrant Shares"), of AVI BioPharma, Inc., an Oregon corporation (the "Company"), under the Registration Statement on Form S-3 to be filed with the Securities and Exchange Commission on January 24, 2000, and the proposed offer and sale of the Common Stock and Warrant Shares pursuant to the Registration Statement, we have examined such corporate records, certificates of public officials and officers of the Company and other documents as we have considered necessary or proper for the purpose of this opinion.

Based on the foregoing and having regard to legal issues which we deem relevant, it is our opinion that the shares of Common Stock are validly issued, fully paid and nonassessable. It is our further opinion that the Warrant Shares, when such shares have been delivered against payment therefor as contemplated by the Warrants, will be validly issued, fully paid and nonassessable.

We hereby consent to the filing of this opinion as an exhibit to the above-mentioned registration statement.

Very truly yours,

/s/ Ater Wynne LLP

ATER WYNNE LLP

EXHIBIT 23.1

CONSENT OF INDEPENDENT PUBLIC ACCOUNTANTS

As independent public accountants, we hereby consent to the incorporation by reference in this Form S-3/A Registration Statement of our report dated January 27, 1999, included in the Company's Form 10-KSB for the year ended December 31, 1998 and to all references to our firm included in this registration statement.

/s/ Arthur Andersen LLP

Portland, Oregon
January 25, 2000