As filed with the Securities and Exchange Commission on September 15, 2000
Registration No.

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

REGISTRATION STATEMENT
ON
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.
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 THE 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 investment 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 this form is a post-effective amendment filed pursuant to Rule 462(d) 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	1,725,120	$8.50	$14,663,520	$3,872
TOTAL			$14,663,520	$3,872

(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 September 8, 2000, which was approximately $8.50

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.

SELLING SHAREHOLDERS'
PROSPECTUS

AVI BIOPHARMA, INC.
1,725,120 COMMON SHARES
NASDAQ NATIONAL MARKET
AVII

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 8.

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 September 8, 2000, the closing sale price for our Common Shares on the Nasdaq National Market was $8.25.

- 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 8% of the Company's outstanding Common Stock.

September ___, 2000

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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-K for the year ended December 31, 1999, which we refer to in the rest of this document as our Annual Report;

(2) our Report on Form 10-Q dated August 9, 2000, for the quarter ended June 30, 2000; and

(3) our Amended Repot on Form 10-Q/A dated August 14, 2000, for the quarter ended June 30, 2000.

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-K, and all filings on Forms 10-Q 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.gov. 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.

OUR COMPANY

BUSINESS

We are a biopharmaceutical company developing therapeutic products based on our two core technologies, cancer immunotherapy and NeuGene antisense. Our principal products target life-threatening diseases, with initial applications in pancreatic and colorectal cancers, cardiovascular restenosis, and infectious disease as summarized in the following table.

TECHNOLOGY	PRODUCT	INDICATION	STAGE
Cancer immunotherapy	Avicine therapeutic vaccine	Cancer	Clinical
	Xactin monoclonal antibodies	Cancer	Pre-clinical
NeuGene antisense	Resten-NG	Restenosis	Clinical
	Oncomyc-NG	Cancer	Pre-clinical
	NeuBiotics	Infectious disease	Pre-clinical

Currently approved drugs or other therapies for these diseases often prove to be ineffective in treating advanced stages of these diseases or produce numerous undesirable side effects. Our pre-clinical and clinical studies indicate that our two core technologies may produce significantly fewer side effects and offer more effective treatment options than currently approved products for these diseases. Our technologies are protected by a strong patent position including 44 issued patents and 49 applications pending. Each of our lead products, Avicine and Resten-NG, addresses a large market estimated to exceed $1 billion worldwide.

CANCER IMMUNOTHERAPY

We have completed three Phase I and two Phase II clinical trials with Avicine, our therapeutic cancer vaccine, which is our most advanced product. Avicine is administered to patients who already have cancer to stimulate an immune response that may be effective in fighting the existing cancer. The therapeutic benefit of a cancer vaccine depends on the existence of specific target sites, called tumor antigens, on cancer cells. The target for Avicine is a hormone called human chorionic gonadotropin, or hCG, which is responsible for stimulating fetal development during pregnancy. It is also a tumor antigen on all major types of cancer, including cancers of the colon, pancreas, prostate, lung and breast. We believe that hCG plays an important role in the spread of cancer. The effectiveness of Avicine is based on stimulating an immune response against hCG.

From our clinical studies involving more than 200 patients, we believe that Avicine is a safe and essentially non-toxic therapy capable of producing a specific immune response in most patients. Further, the patients who mounted an immune response to hCG lived longer on average than patients treated with chemotherapy. We intend to investigate further the use of Avicine alone and in conjunction with chemotherapy in Phase II and Phase III clinical trials.

In April 2000, we entered into an alliance with SuperGen, Inc. for shared development and marketing rights for Avicine. Under the terms of the agreement, AVI and SuperGen, Inc. will equally share in future clinical development and FDA registration costs as well as in profits from product sales in the United States. Closing of the transaction occurred in July 2000.

We have an exclusive product license agreement with Abgenix, Inc. for the use of its technology to produce fully human monoclonal antibodies against hCG cancer targets, which we call Xactin antibodies. These Xactin antibodies are directed at targets identified by our Avicine clinical trials. Two Xactin antibodies

are in pre-clinical development and are designed to treat cancer patients as a standalone therapy or in combination with Avicine.

NEUGENE ANTISENSE

We have developed gene-inactivating compounds called NeuGene antisense drugs that we believe are more stable, specific, efficacious, and safe than other antisense or gene-inactivating technologies. Our NeuGene drugs are distinguished by a novel chemical structure which differs from the earlier generation structures of competing technologies.

NeuGenes are synthetic drugs that are designed to block the function of specific genetic sequences involved in the disease process. Targeting specific genetic sequences provides for greater selectivity than is 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 restenosis, which is the blockage of arteries following balloon angioplasty, and cancer. We finished a Phase I clinical trial of Resten-NG for restenosis in April 2000 and a Phase II clinical study commenced in June 2000. We began Phase I testing of the oral formulation of Resten-NG in July 2000. We plan to commence Phase I/II clinical studies in cancer with Oncomyc-NG late in 2000. Finally, we intend to complete pre-clinical development of our first NeuGene-based antibiotic, called NeuBiotics, later this year.

DEVELOPMENT AND COMMERCIALIZATION STRATEGY

Our experience and resources enable us to initiate drug discovery and development and to move drug candidates through pre-clinical development and into Phase I and II human clinical trials. Our near-term strategy is to co-develop products with strategic partners or to license the marketing rights for our products to pharmaceutical partners after we complete one or more Phase II clinical trials. In this manner, costs associated with late-stage clinical development and marketing will be shared with, or the responsibility of, our strategic partners. With additional resources we may consider assuming greater responsibility for the late-stage clinical development and marketing opportunities of future product candidates.

Our executive offices are located at One SW Columbia, Suite 1105, Portland, Oregon 97258, and we can be reached at (503) 227-0554. Our World Wide Web address is "http://www.avibio.com." Information on our web site does not constitute a part of this prospectus.

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 regulatory 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(R) and Xactin(TM). Each other trademark, trade name or service mark appearing in this Prospectus belongs to its holder.

RISK FACTORS

AN INVESTMENT IN OUR COMMON STOCK INVOLVES A HIGH DEGREE OF RISK. YOU SHOULD CAREFULLY CONSIDER THE SPECIFIC FACTORS LISTED BELOW, TOGETHER WITH THE CAUTIONARY STATEMENT THAT FOLLOWS THIS SECTION AND THE OTHER INFORMATION INCLUDED IN THIS PROSPECTUS, BEFORE PURCHASING SHARES IN THIS OFFERING. IF THE POSSIBILITIES DESCRIBED AS RISKS BELOW ACTUALLY OCCUR, OUR OPERATING RESULTS AND FINANCIAL CONDITION WOULD LIKELY SUFFER, AND THE TRADING PRICE OF OUR COMMON STOCK MAY FALL, CAUSING YOU TO LOSE SOME OR ALL OF YOUR INVESTMENT IN THE SHARES WE ARE OFFERING.

RISKS RELATING TO OUR BUSINESS

OUR PRODUCTS ARE IN AN EARLY STAGE OF DEVELOPMENT AND MAY NOT BE DETERMINED TO BE SAFE OR EFFECTIVE.

Although we began operations in 1980, we are only in the early stages of clinical development with our NeuGene antisense 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 NeuGene 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 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 trials using Avicine to treat colorectal cancer patients, we cannot assure that we will obtain similar results in the contemplated Phase III trial 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.

WE HAVE INCURRED NET LOSSES SINCE OUR INCEPTION, AND WE MAY NOT ACHIEVE OR SUSTAIN PROFITABILITY.

We incurred a net operating loss of $8.3 million in 1999 and of $4 million during the six months ended June 30, 2000. "Net operating loss" represents the amount by which our expenses, other than interest expense, exceed revenues. As of June 30, 2000, our accumulated deficit was $55 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.

IF WE FAIL TO ATTRACT SIGNIFICANT ADDITIONAL CAPITAL, WE MAY BE UNABLE TO CONTINUE TO SUCCESSFULLY DEVELOP OUR PRODUCTS.

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 will be sufficient to meet our operating needs for at least the next 24 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 may need to obtain additional funds at the end of this 24-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.

IF WE FAIL TO RECEIVE NECESSARY REGULATORY APPROVALS, WE WILL BE UNABLE TO COMMERCIALIZE OUR PRODUCTS.

All of our products are subject to extensive regulation by the United States Food and Drug Administration, or FDA, 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. Avicine has completed three Phase I and two Phase II studies but has not started Phase III trials. Our first NeuGene Antisense drug, Resten-NG, completed Phase I trials but has not yet entered Phase II efficacy studies. 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.

WE MAY FAIL TO COMPETE EFFECTIVELY, PARTICULARLY AGAINST LARGER, MORE ESTABLISHED PHARMACEUTICAL COMPANIES, CAUSING OUR BUSINESS TO SUFFER.

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.

IF WE LOSE KEY PERSONNEL OR ARE UNABLE TO ATTRACT AND RETAIN ADDITIONAL, HIGHLY-SKILLED PERSONNEL REQUIRED FOR OUR ACTIVITIES, OUR BUSINESS WILL SUFFER.

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 depend on our ability to attract and retain highly skilled personnel.

ASSERTING, DEFENDING AND MAINTAINING OUR INTELLECTUAL PROPERTY RIGHTS COULD BE DIFFICULT AND COSTLY, AND OUR FAILURE TO DO SO WILL HARM OUR ABILITY TO COMPETE AND THE RESULTS OF OUR OPERATIONS.

Our success will depend on our existing patents and licenses, and our ability to obtain additional patents in the future. We have been issued 44 patents and have filed an additional 49 patent applications in the United States, Canada, Europe, Australia and Japan. 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 USPTO, or the courts regarding the breadth of claims allowed or the degree of protection afforded under biotechnology patents.

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 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.

IF OUR RELATIONSHIP WITH SUPERGEN, INC. IS UNSUCCESSFUL, OUR BUSINESS COULD BE HARMED.

Our strategic relationship with SuperGen, Inc. is important to our success. We cannot assure you that we will receive any additional payments from SuperGen or that the relationship will be commercially successful. The transactions contemplated by our agreements with SuperGen, Inc., including the equity purchases and cash payments, are subject to numerous risks and conditions. For example, we may fail to achieve clinical and sales milestones; Avicine may fail to achieve regulatory approval; Avicine may not be commercially successful; SuperGen, Inc. may fail to perform its obligations under our agreements, such as failing to devote sufficient resources to marketing Avicine; and our agreements with SuperGen, Inc. may be terminated against our will. The occurrence of any of these events could severely harm our business.

WE HAVE LIMITED SALES CAPABILITY AND MAY NOT BE ABLE TO SUCCESSFULLY COMMERCIALIZE OUR PRODUCTS.

We have been 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.

WE MAY BE SUBJECT TO PRODUCT LIABILITY LAWSUITS AND OUR INSURANCE MAY NOT BE ADEQUATE TO COVER DAMAGES.

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 resulting in additional losses.

CONTINUING EFFORTS OF GOVERNMENT AND THIRD-PARTY PAYERS TO CONTAIN OR REDUCE THE COSTS OF HEALTH CARE MAY ADVERSELY AFFECT OUR REVENUES AND FUTURE PROFITABILITY.

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 effect 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.

IF WE FAIL TO ESTABLISH STRATEGIC RELATIONSHIPS WITH LARGER PHARMACEUTICAL PARTNERS, OUR BUSINESS MAY SUFFER.

We do not intend to conduct late-stage or 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. Lack of corporate partnerships 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.

RISKS RELATED TO SHARE OWNERSHIP

OUR RIGHT TO ISSUE PREFERRED STOCK, OUR CLASSIFIED BOARD OF DIRECTORS AND OREGON ANTI-TAKEOVER LAWS MAY PREVENT YOU FROM REALIZING A PREMIUM.

Our authorized capital consists of 50,000,000 shares of common stock and 2,000,000 shares of preferred stock. Our 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 our board of directors may issue in the future. For example, our 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.

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 our 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. These acts may lengthen the period for a proxy contest or for a person to vote their shares to elect the majority of our Board.

OUR STOCK PRICE IS VOLATILE AND MAY FLUCTUATE DUE TO FACTORS BEYOND OUR CONTROL.

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 or her shares at a price equal to or above the price at which the shares were purchased.

THE SIGNIFICANT NUMBER OF OUR SHARES OF COMMON STOCK ELIGIBLE FOR FUTURE SALE MAY CAUSE THE PRICE OF COMMON STOCK TO FALL.

As of August 31, 2000, we have outstanding 21,438,780 shares of common stock and all are eligible for sale under Rule 144 or are otherwise freely tradeable. The timing of the effectiveness of this registration statement is uncertain. In addition:

- Our employees and others hold options to buy a total of 2,492,031 shares of common stock as of August 31, 2000. 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 7,375,432 shares of common stock as of August 31, 2000. The shares issuable upon exercise of 4,399,499 warrants are registered. These shares may be freely sold when issued. The holders of warrants covering 2,665,478 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 456,036 shares of common stock under our stock option plans as of August 31, 2000, 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.

FORWARD-LOOKING STATEMENTS

The statements which are not historical facts contained in this discussion are forward-looking statements that involve risks and uncertainties, including, but not limited to, the results of research and development efforts, the results of pre-clinical and clinical testing, the effect of regulation by the FDA and other agencies, the impact of competitive products, product development, commercialization and technological difficulties, and other risks detailed in our Securities and Exchange Commission filings.

CLINICAL DEVELOPMENT OVERVIEW

We are a biopharmaceutical company developing therapeutic products based on cancer immunotherapy and NeuGene antisense technology for the treatment of life-threatening diseases, with initial applications in cancer and cardiovascular restenosis. Currently approved drugs or other therapies often prove to be ineffective in treating advanced stages of these diseases or produce numerous undesirable side effects. Our core technologies are specifically aimed at overcoming these challenges. We currently have products at various stages of clinical development as summarized below.

PRODUCT	PRE-CLINICAL	PHASE I	PHASE II	PHASE III
CANCER IMMUNOTHERAPY				
Avicine Vaccine for colorectal cancer	Completed 1993	Completed 1995	Completed 1998	Planned 2000
Avicine Vaccine for pancreatic cancer	Completed 1994	Completed 1995	Completed 1998; another in progress 2000	
Avicine Vaccine for prostate cancer	Completed 1995	Completed 1995	Planned 2000	
Xactin Human monoclonal antibodies	In progress 2000			
NEUGENE ANTISENSE				
Resten-NG Antisense drug for restenosis	Completed 1999	Completed 2000	In progress 2000	
Oncomyc-NG Antisense drug for cancer	Completed 1999	Completed 2000	Planned 2000	
NeuBiotics Antisense antibiotics	In progress 2000	Planned 2001		
Oral NeuGene Delivery Antisense to c-myc	Completed 1999	In progress 2000		

BUSINESS STRATEGY

Our strategy is to:

- reduce risk associated with product development by exploiting two core technology platforms;
- select disease targets with broad or multiple disease applications;
- manage drug discovery, pre-clinical and early stage clinical development in-house; and
- co-develop or license products to strategic partners after completion of Phase II clinical trials to enhance value and share the costs of Phase III trials and commercialization.

CANCER IMMUNOTHERAPY

Cancer is the second leading cause of death in the United States with an incidence of 1,500 deaths per day. There are approximately eight million Americans living with a history of cancer, and 500,000 new cases are diagnosed annually. Lung, prostate, breast and colorectal cancers are the four most common types of cancer,

accounting for over 50% of all new diagnoses. In 1999, the market opportunities for drugs to treat each of these cancer types were estimated to be in excess of $1 billion annually.

About half of newly diagnosed cancer patients have localized disease and can be cured with surgery alone. The other half of the patients either have metastatic disease at diagnosis or will eventually develop metastatic disease. The principal therapy available for the second group of patients traditionally has been chemotherapy. Chemotherapeutic approaches produce considerable toxic and undesirable side effects and historically have done little to influence patient survival.

Immunotherapy with vaccines or antibodies 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. In contrast, therapeutic vaccines are administered when the patient already has the disease. Treatment of rabies with the rabies vaccine is an example of this approach.

For a therapeutic vaccine to be effective in fighting a disease such as cancer, it is necessary to first identify specific target sites on the tumor cells, called tumor antigens. The more selective the target is to the tumor, the greater the likelihood that the stimulated immune response will be directed at attacking only the cancer cells. The identification of highly specific targets has been one of the greatest challenges in the development of a useful cancer vaccine.

AVICINE THERAPEUTIC CANCER VACCINE

TECHNICAL OVERVIEW

Avicine, our therapeutic cancer vaccine, is designed to produce an immune response against a well-characterized target, human chorionic gonadotropin, or hCG. hCG is a hormone produced during pregnancy that fosters the development of a fetus in several ways. 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 normal hCG expression during pregnancy. Given the selective production of hCG in cancer, we believe it represents a highly specific target for a therapeutic cancer vaccine.

The use of hCG as a cancer vaccine target may offer the following advantages over other potential tumor antigens:

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

- hCG 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 hormonal functions that hCG plays in pregnancy and cancer, including rapid cell division, formation of blood vessels, invasion of other tissues, and dampening of immune responses.

Because hCG is a natural human protein, people will not mount an immune response to it unless they are actively immunized. We believe that the mechanism of action of our anti-hCG vaccine is to stimulate an immune response against the tumor and to neutralize the hormonal affects 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.

Avicine's distinguishing characteristics include:

- 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 cancer patients;

- Applicable to most cancer types in multiple clinical settings; and

- Twenty years of research and development and safety data.

AVICINE CLINICAL TRIAL PROGRAM

PHASE I 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, and to be effective in stimulating an immune response to hCG in most patients. Moreover, apparent survival benefits and some tumor regressions were noted.

COLORECTAL CANCER TRIALS: We conducted a multicenter Phase II study of Avicine was conducted 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 had a median survival of just 17 weeks.

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

Overall, these clinical data suggest that the patients who 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 treatments: combination chemotherapy or combination chemotherapy plus Avicine. The trial will be evaluated by comparing time-to-disease progression and median survival in the two treatments.

PANCREATIC AND PROSTATE CANCER TRIALS: We have 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. We believe these results are encouraging enough to warrant the design of additional trials in pancreatic cancer. A Phase II study of 50 patients with pancreatic cancer was initiated in October 1999, and patient enrollment should be completed in 2000. In addition, we plan to initiate a Phase II clinical trial involving 24 patients with prostate cancer in 2000 to broaden our clinical applications to other types of cancer.

AVICINE CLINICAL TRIAL SUMMARY

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	2000
8	Phase III colorectal licensing trial	500	2000

XACTIN - HUMAN MONOCLONAL ANTIBODIES FOR CANCER

Antibodies are important proteins produced by the immune system and serve as the first line of defense against foreign pathogens. Antibodies bind to these pathogens and help neutralize or eliminate these foreign substances.

Historically, most antibody product candidates were generated in mice and, as a result, contained mouse protein. The presence of mouse protein in these antibodies causes undesirable side effects in patients receiving the products. Various approaches have evolved to engineer mouse antibodies so that they contain mostly human proteins and thus produce fewer side effects in patients. The XenoMouse technology that we licensed from Abgenix, Inc. enables the rapid generation of antibodies with fully human proteins. The XenoMouse has been genetically engineered to replace the genes that a mouse uses to make antibodies with the genes that humans use to make antibodies. XenoMouse-generated antibodies have several potential advantages over traditional therapies, including:

- Faster product development;

- Fewer undesirable side effects; and

- An extended therapeutic effect.

There are now eight therapeutic antibody products marketed in the United States, six of which were approved in the past three years. Moreover, industry analysts estimate that antibodies account for over 20% of all biotechnology products in clinical development today.

From our cancer vaccine clinical trials, we learned which anti-hCG antibodies are important in prolonging patient survival. We have produced human monoclonal antibodies to these hCG targets using the Abgenix technology. These monoclonal antibodies, called Xactin antibodies, are both potential companion products to Avicine and independent cancer therapeutics and are now in pre-clinical development.

NEUGENE ANTISENSE 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. The Human Genome Project has 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 because the sense of the genetic code is blocked.

Antisense compounds are composed of repeating structures, or subunits, that are linked together forming a polymer, referred to as the antisense backbone. Each subunit carries a genetic letter that pairs with its corresponding letter in the gene target. Although the genetic letters are a feature common to all antisense compounds, the structure of the subunits and the linkage groups that string them together may differ greatly. These differences in the subunits and the linkages define the different types of antisense backbones and their corresponding physical and biological properties. Our NeuGene technology is distinguished from all other antisense technologies by the characteristics of our patented antisense backbone. The subunits which carry the genetic letters on our backbone are synthetic products rather than modified natural materials. In addition, the linkages used to string the subunits together carry no charge in our backbone. We believe these differences provide pharmaceutical advantages that are critical for antisense drug development to meet the challenges of broad clinical utility.

The first antisense compounds had backbones composed of natural genetic materials and linkages. These natural compounds were degraded or broken down by enzymes in the blood and within cells and had difficulty

crossing cellular membranes to enter the cells that contained their genetic target. Researchers developed modified backbones which were designed to resist degradation by enzymes and to enter tissues and cells more efficiently. The most common of these types, the phosphorothioate backbones used by ISIS Pharmaceuticals, Inc., Genta Incorporated, and others, use natural DNA subunits linked together by a charged linkage. After extensive investigation, we concluded that these early product candidates lacked the pharmaceutical properties desirable for broad clinical utility. We abandoned development of similar structures in 1988 and started development of a novel backbone chemistry designed to address these drawbacks.

NEUGENE TECHNOLOGY

We have developed and patented a new class of antisense compounds, known as NeuGenes, which have a backbone of synthetic subunits carrying each genetic letter, with each subunit linked together by a patented uncharged linkage group. We believe our principal competitive advantage in the antisense area is the chemical structure of the NeuGene backbone that we developed specifically to have the following pharmaceutical properties:

- STABILITY: Biological stability is principally determined by the degree of resistance to enzymatic degradation. Because the NeuGene backbone is a unique synthetic structure, there are no enzymes found in man to degrade it. Our NeuGene drugs have been shown to be completely stable in our human clinical trials.

- EFFICACY AND SPECIFICITY: Efficacy refers to the efficiency with which antisense compounds block selected gene targets. In direct comparisons with other technologies, our NeuGene compounds exhibited significantly better efficacy in inhibition of targeted genetic sequences and substantially greater specificity.

- DELIVERY: To reach their targets, antisense compounds must cross tissue and cellular barriers, including cellular and nuclear membranes. Our extensive research in the last three years has shown that NeuGene antisense compounds achieve functional delivery in a variety of animal models and in human clinical trials.

- SAFETY: Our Phase I human clinical trial results indicate that NeuGene antisense agents have an excellent safety profile, even at doses in vast excess of those anticipated for our initial human therapeutic applications.

NEAR-TERM PRODUCT DEVELOPMENT - RESTENOSIS AND CANCER

The first application of our antisense technology is designed to treat diseases involving abnormal cell division, such as cancer and certain cardiovascular and inflammatory diseases, including restenosis, psoriasis, polycystic kidney disease and chronic graft rejection. The NeuGene target for these diseases is the genetic component named c-myc. We have finished pre-clinical development of two NeuGene drugs, Resten-NG and Oncomyc-NG, based on this target. In late 1999, we filed an Investigational New Drug Application, or IND, and initiated a Phase I clinical trial for restenosis and cancer. These Phase I safety studies in 32 patients completed in April 2000 showed these compounds to be safe and essentially non-toxic.

In our upcoming Phase II clinical trial, Resten-NG will be used to block c-myc expression in restenosis, a frequent complication that follows balloon angioplasty for coronary artery disease. Restenosis, the blockage of the arteries following balloon angioplasty, affects 100,000 to 200,000 people per year in the United States and its occurrence is unpredictable. We believe Resten-NG, with its combination of potency and lack of toxicity, may be useful as a preventative measure in the more than one million balloon angioplasty procedures performed worldwide each year.

Pre-clinical studies with Resten-NG indicated that it was both more potent and less toxic than other antisense agents currently in clinical development for other indications. Our trials also indicated significant preservation of vessel passageways and prevention of arterial wall thickening following catheter delivery of Resten-NG. We commenced Phase II human clinical trials, which will involve 150 patients, in cardiovascular restenosis in June 2000.

We are finishing pre-clinical development of our second NeuGene drug, Oncomyc-NG, for cancer indications. We plan to initiate Phase I/II trials for our first cancer indication later this year.

The broad applicability of our antisense platform has allowed us to initiate pre-clinical development of NeuGene drugs for viral, bacterial, and inflammatory diseases, as outlined in the following table.

NEUGENE ANTISENSE DEVELOPMENT PROGRAM

ANTISENSE TARGET	CLINICAL INDICATION
c-myc	Restenosis, cancer, psoriasis, chronic graft rejection
Cytochrome P450	Metabolic redirection of cancer drugs
NF kappa B	Crohn's Disease, chronic inflammation, autoimmune disorders, arthritis, septic shock, asthma
Bacterial ribosomes	NeuBiotics for infectious diseases
Hepatitis B, C viruses	Hepatitis

COLLABORATIVE AGREEMENTS

We believe that our vaccine and antisense technologies are broadly applicable for the potential development of pharmaceutical products in many therapeutic areas. To exploit our core technologies as fully as possible, our strategy is to enter into collaborative development agreements with strategic partners, including major pharmaceutical companies, for cancer applications for Avicine, and agreements directed at specific molecular targets for our NeuGene antisense technology.

SUPERGEN ALLIANCE

In April 2000, we entered into an alliance with SuperGen, Inc. for shared development and marketing rights for Avicine. Under the terms of the agreement, SuperGen and we will share equally clinical development and Food and Drug Administration, or FDA, registration costs going forward and share profit equally from product sales in the United States with SuperGen. We will be responsible for the manufacturing of Avicine and SuperGen will be responsible for marketing and sales. Closing of the transaction will occur prior to the effectiveness of this offering. Upon closing, we will receive a $20 million equity investment from SuperGen and could receive additional payments of up to $80 million based upon achievement of commercialization milestones.

ABGENIX ALLIANCE

We currently have an alliance with Abgenix, Inc. for the development of human monoclonal antibodies for cancer. We have licensed the use of Abgenix XenoMouse technology for the production of human monoclonal antibodies against hCG. Our Avicine clinical trials have defined the hCG targets that are important in prolonging patient survival. We have developed human monoclonal antibodies to these targets and two of them are now in pre-clinical trials. Abgenix is to receive payments based on achievement of clinical development milestones and a royalty on sales if our antibodies are commercialized.

NEUGENE ALLIANCES

We anticipate that NeuGene antisense collaborative research agreements may provide us with funding for internal programs aimed at discovering and developing antisense compounds to inhibit the production of additional molecular targets. Partners in antisense may be granted options to obtain licenses to co-develop and to market drug candidates resulting from their collaborative research programs. We currently have a research alliance with XTL Biopharmaceuticals Ltd. for pre-clinical development of Hepatitis B and C antisense drugs. If this program moves into clinical development stages, XTL and we will negotiate a joint venture development and marketing agreement with XTL under basic terms previously set forth.

We plan to market the initial products for which we obtain regulatory approval, through co-development and marketing arrangements with strategic partners or other licensing arrangements with larger pharmaceutical companies. Implementation of this strategy will depend on many factors, including the market potential of any

products we develop and our financial resources. We do not expect to establish a direct sales capability for therapeutic compounds for at least the next several years. The timing of our entry into marketing arrangements or other licensing arrangements will depend on successful product development and regulatory approval within the regulatory framework established by the Federal Food, Drug and Cosmetics Act. Although the implementation of initial aspects of our marketing strategy may be undertaken before this process is completed, the development and approval process typically is not completed in less than three to five years after the filing of an IND application and our marketing strategy therefore may not be implemented for several years.

MANUFACTURING

For our vaccine, we have identified potential Good Manufacturing Practices, or GMP, manufacturers who could meet large scale, low-cost manufacturing requirements for future Phase III trials and commercial introduction. We have developed proprietary manufacturing techniques that will allow large-scale, low-cost synthesis and purification of NeuGenes. Because our NeuGene compounds are based upon a flexible backbone chemistry, we believe that NeuGene synthesis will be more cost-effective than competing technologies. We have established sufficient manufacturing capacity to meet research and development and pre-clinical requirements.

We currently intend to retain manufacturing rights for all products incorporating our patented antisense technology, whether sold directly by us or through collaborative agreements with industry partners. We have contracted with a GMP facility to produce our near term NeuGene products for pre-clinical and clinical trial studies. We are currently upgrading our in-house manufacturing capability to meet GMP standards for Phase I and II human clinical trials.

Our laboratory facility and procedures have not been formally inspected by the FDA and will have to be approved as products move from the research phase through the clinical testing phase and into commercialization. We will be required to comply with GMP in connection with human clinical trials and commercial production.

PATENTS AND PROPRIETARY RIGHTS

We own 44 patents covering various aspects of our technologies. We have 49 pending applications relating to Avicine, NeuGene, and other technologies. Our patents cover composition of matter, genetic targets, and use of our technologies in broad medical applications. We intend to protect our proprietary technology with additional filings as appropriate.

We have also acquired certain product/technology licenses from The Ohio State University and Dr. Vernon Stevens. These properties include exclusive royalty-bearing licenses covering the composition, manufacturing and use of Avicine in all fields of use, including treating and preventing cancer, with the exception of fertility regulation. We have the right to commercialize any new intellectual property relating to our licensed subject matter including access and use of all new experimental data resulting from Dr. Stevens' research. Our licenses have been granted for a period of 30 years or 10 years from the expiration of the last issued patent, whichever comes later. Under these licensing agreements, we have the right to sublicense our products and technology throughout the world.

The proprietary nature of, and protection for, our product candidates, processes and know-how are important to our business. We plan to prosecute and aggressively defend our patents and proprietary technology. Our policy is to patent the technology, inventions and improvements that are considered important to the development of our business. We also depend upon trade secrets, know-how, and continuing technological innovation to develop and maintain our competitive position.

DRUG APPROVAL PROCESS AND OTHER GOVERNMENT REGULATION

The United States system of new drug approvals is the most rigorous in the world. According to the Pharmaceutical Research and Manufacturers of America, it costs an average of $500 million and takes an average of almost 15 years from the discovery of a compound to bring a single new pharmaceutical to market. For every 5,000 to 10,000 chemically synthesized molecules screened, only 250 are ever issued an Investigational New Drug Application, or IND, and tested in humans. Of those, the FDA will approve only one for commercialization. Yet, in recent years, societal and governmental pressures have created the expectation that biotech and pharmaceutical companies will reduce the costs for drug discovery and development without sacrificing safety, efficacy and

innovation. The need to significantly improve or provide alternative strategies for successful pharmaceutical discovery, research and development remains a major health care industry challenge.

DRUG DISCOVERY: In the initial stages of drug discovery before a compound reaches the laboratory, tens of thousands of potential compounds are randomly screened for activity against an assay assumed to be predictive for particular disease targets. This drug discovery process can take several years. Once a company locates a screening lead, or starting point for drug development, isolation and structural determination may begin. The development process results in numerous chemical modifications to the screening lead in an attempt to improve its drug properties. After a compound emerges from the above process, the next steps are to conduct further preliminary studies on the mechanism of action, further in vitro test tube screening against particular disease targets and, finally, some in vivo or animal screening. If the compound passes these barriers, the toxic effects of the compound are analyzed by performing preliminary exploratory animal toxicology. If the results are positive, the compound emerges from the basic research mode and moves into the pre-clinical phase.

PRE-CLINICAL TESTING: During the pre-clinical testing stage, laboratory and animal studies are conducted to show biological activity of the compound against the targeted disease, and the compound is evaluated for safety. These tests typically take approximately three and one-half years to complete.

INVESTIGATIONAL NEW DRUG APPLICATION: During the pre-clinical testing, an IND is filed with the FDA to begin human testing of the drug. The IND becomes effective if not rejected by the FDA within 30 days. The IND must indicate the results of previous experiments, how, where and by whom the new studies will be conducted, the chemical structure of the compound, the method by which it is believed to work in the human body, any toxic effects of the compound found in the animal studies and how the compound is manufactured. In addition, an Institutional Review Board, comprised of physicians at the hospital or clinic where the proposed studies will be conducted, must review and approve the IND. Progress reports detailing the results of the clinical trials must be submitted at least annually to the FDA.

PHASE I CLINICAL TRIALS: After an IND becomes effective, Phase I human clinical trials can begin. These tests, involving usually between 20 and 80 patients or healthy volunteers, typically take approximately one year to complete. The Phase I clinical studies also determine how a drug is absorbed, distributed, metabolized and excreted by the body, and the duration of its action.

PHASE II CLINICAL TRIALS: In Phase II clinical trials, controlled studies are conducted on approximately 100 to 300 volunteer patients with the targeted disease. The purpose of these tests is to evaluate the effectiveness of the drug on the volunteer patients as well as to determine if there are any side effects. These studies generally take approximately two years, and may be conducted concurrently with Phase I clinical trials. In addition, Phase I/II clinical trials may be conducted to evaluate not only the efficacy of the drug on the patient population, but also its safety.

PHASE III CLINICAL TRIALS: This phase typically lasts about three years and usually involves 1,000 to 3,000 patients. During the Phase III clinical trials, physicians monitor the patients to determine efficacy and to observe and report any reactions that may result from long-term use of the drug.

NEW DRUG APPLICATION: After the completion of all three clinical trial phases, if the data indicate that the drug is safe and effective, a New Drug Application, or NDA, is filed with the FDA. The NDA must contain all of the information on the drug gathered to that date, including data from the clinical trials. NDAs are often over 100,000 pages in length. The average NDA review time for new pharmaceuticals is now between 6 and 12 months.

MARKETING APPROVAL: If the FDA approves the NDA, the drug becomes available for physicians to prescribe. Periodic reports must be submitted to the FDA, including descriptions of any adverse reactions reported. The FDA may request additional Phase IV studies to evaluate long-term effects.

PHASE IV CLINICAL TRIALS AND POST-MARKETING STUDIES: In addition to studies requested by the FDA after approval, these trials and studies are conducted to explore new indications. The purpose of these trials and studies and related publications is to broaden the application and use of the drug and its acceptance in the medical community.

COMPETITION

Companies developing cancer vaccines include Progenics Pharmaceutical, Inc., Corixa Corporation, Biomira Inc., and Bristol Meyers-Squibb. Their products are in late stage clinical development, in patients with cancers of different types than Avicine is being used to treat. We believe that Avicine will have broader patient applications than other cancer vaccines in development due to the characteristics of its target. Moreover, we do not expect any company to introduce a cancer vaccine into the broad commercial market in the immediate future.

Several companies are pursuing the development of antisense technology, including Genta, Incorporated, Hybridon, Inc., ISIS Pharmaceuticals, Inc., and Lorus Therapeutics Inc. All of these companies have products in development stages, and, in some cases, are in human trials with antisense compounds generally similar to our NeuGene compounds. ISIS Pharmaceuticals has received marketing approval from the FDA for an antisense drug to treat a viral infection of the eye in patients with AIDS. While we believe that none of these companies is likely to introduce an additional antisense compound into the broad commercial market in the immediate future, many pharmaceutical and biotechnology companies have financial and technical resources greater than those currently available to us. Moreover, some potential competitors have more established collaborative relationships with industry partners than we do. We believe that the combination of pharmaceutical properties of our NeuGene compounds for restenosis and cancer affords us competitive advantages when compared with the antisense compounds of competitors.

We can also expect to compete with other companies exploiting alternative technologies that address the same therapeutic needs as do our technologies. The biopharmaceutical market is subject to rapid technological change, and it can be expected that competing technologies will emerge and will present a competitive challenge to us.

EMPLOYEES

As of August 31, 2000, we had 56 employees, 23 of whom hold advanced degrees. Fifty employees are engaged directly in research and development activities, and six are in administration. None of our employees is covered by collective bargaining agreements, and we consider relations with our employees to be good.

PROPERTIES

We occupy 27,000 square feet of leased laboratory and office space at 4575 S.W. Research Way, Suite 200, Corvallis, Oregon 97333. The lease on our space expires in December 2007. Our executive office is located in 2,400 square feet of leased space at One S.W. Columbia, Suite 1105, Portland, Oregon 97258. This lease expires July 2001. We believe that our facilities are suitable and adequate for our present operational requirements for the foreseeable future.

LEGAL PROCEEDINGS

We are not aware of any legal proceedings against us that, individually or in the aggregate, would have a material adverse effect on our business, results of operations or financial condition.

OUR SELLING SHAREHOLDERS

The following table provides certain information with respect to the Shares held by each Selling Shareholder as of August 31, 2000. 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
SuperGen, Inc.	2,684,211(2)	1,684,211	1,000,000(2)	5.0%(2)
Boston Healthcare Associates, Inc.	40,909	40,909	----	----
	2,725,120(2)	1,725,120	1,000,000(2)	5.0%(2)

(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 August 31, 2000, are deemed beneficially owned and outstanding for computing the percentage of the person holding such securities, but are not considered outstanding for computing the percentage of any other person.

(2) Includes 1,000,000 shares of our common stock held by SuperGen, Inc. which are registered for sale on a Registration Statement on Form S-3, as amended and filed with the Securities and Exchange Commission on December 21, 1999 (Commission Registration No. 333-93135). These shares may be sold by SuperGen, Inc. prior to the completion of this offering.

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 SECURITIES

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.

COMMON STOCK

We are authorized to issue 50,000,000 shares of common stock. As of August 31, 2000, 21,438,780 shares of common stock were outstanding and were held of record by approximately 600 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.

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 the common shares. 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

UNDERWRITERS' WARRANTS. We issued stock purchase warrants that will entitle the underwriters of this offering to purchase 300,000 shares of our common stock at a price of $8.70 per share. These warrants are exercisable from July 26, 2001 until July 26, 2005. We have granted the underwriters certain registration rights which, if exercised, will enable them to sell the shares received upon exercise of their warrants without restriction.

REPRESENTATIVES' WARRANTS. We issued 200,000 warrants to the representatives of the underwriters of our initial public offering to purchase 400,000 shares of our common stock. The representatives' warrants entitle the holders 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. Each warrant initially entitles the holder to purchase one share of common stock at a price of $13.50. As of August 31, 2000, there were 142,500 representatives' warrants outstanding.

NASDAQ WARRANTS. We have outstanding warrants to purchase 2,300,000 shares of our 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 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 our common stock that were issued in connection with our acquisition of ImmunoTherapy Corporation. These warrants are exercisable after September 15, 2000 and until July 15, 2003. 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 20 consecutive trading days and the warrants have been exercisable. These warrants are traded on the Nasdaq National Market under the symbol "AVIIZ." The initial exercise price of these warrants is $13.50.

OTHER WARRANTS. In December 1999, we issued 628,573 warrants to purchase common stock at $4.025 per share in a private placement to five institutional investors and the placement agent. A total of 557,144 are exercisable until December 20, 2004 and 71,429 are exercisable after December 20, 2000 and until December 20, 2004. We have also issued additional warrants to purchase 21,667 shares of our common stock. These warrants are currently exercisable and do not have a termination date. We have issued a warrant to SuperGen, Inc. to purchase

up to 1,665,478 shares of our common stock at $35.625 per share. This warrant becomes exercisable on the earlier of the date the U.S. Food and Drug Administration accepts a new drug application for which products of our products or the date on which the closing price for our common stock exceeds the exercise price. The warrant will expire on April 13, 2000 unless the warrant becomes exercisable.

STOCK OPTIONS

A total of 3,200,000 shares of our common stock are reserved for issuance under our 1992 Stock Incentive Plan. As of August 31, 2000, we had outstanding 2,319,023 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. As of August 31, 2000, 173,008 options to purchase shares of our common stock were outstanding under the 1997 plan.

EMPLOYEE STOCK PURCHASE PLAN

A total of 250,000 shares of our common stock have been reserved for issuance under our 2000 Employee Stock Purchase Plan. As of August 30, 2000, no shares had been issued under the plan.

RIGHTS OF CERTAIN SHAREHOLDERS TO ADDITIONAL STOCK OR REDEMPTION OF SHARES

Holders of 1,857,147 shares of our common stock have the right to receive additional shares of our common stock without additional payment to us if we sell shares of our common stock, or engage in similar financing transactions, at a price of less than $3.50 per share prior to December 16, 2002. If the holdings of our stock by the group that has this right will exceed 20 percent of our outstanding common stock due to the issuance of new shares, we must redeem a sufficient number of the new shares to be issued at a price equal to $3.85 per share so that the holdings of this group do not exceed 20 percent.

REGISTRATION RIGHTS

We are required to file a registration statement under the Securities Act covering the 2,116,814 shares of our common stock underlying the warrants that were issued in connection with our acquisition of ImmunoTherapy Corporation prior to the date those warrants become exercisable, or September 15, 2000. Upon the filing of that registration statement and after September 14, 2000, a person will be able to sell any shares received upon the exercise of the warrants without restriction.

OREGON CONTROL SHARES AND BUSINESS COMBINATION STATUTES

We are subject to the Oregon Control Share Act. The Control Share Act generally provides that a 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 cannot vote the shares it acquires in the control share acquisition unless voting rights are accorded to the control shares by (1) a majority of each voting group entitled to vote and (2) 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 terms acquiring person are 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 generally provides

that if a person or entity acquires 15% or more of the voting stock of an Oregon corporation, the corporation and the interested 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 (1) a merger or plan of share exchange, (2) any sale, lease, mortgage or other disposition of 10% or more of the assets of the corporation, and (3) certain transactions that result in the issuance of capital stock of the corporation to the interested shareholder. These restrictions do not apply if (1) 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, (2) 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 (3) 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 shareholders, approve the transaction after the interested shareholder acquires 15% or more of the corporation's voting stock.

TRANSFER AGENT

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

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 finanical statements incorporated by reference 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	$ 3,872
Nasdaq Listing Fee	17,500
Accountant's Fees and Expenses	5,000
Legal Fees and Expenses	5,000
Miscellaneous	--
Total	31,372

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* 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 indemnify 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, vote 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	Common Stock and Warrant Purchase Agreement, dated April 4, 2000, between SuperGen, Inc. and AVI BioPharma, Inc.
4.2	Registration Rights Agreement, dated April 4, 2000, 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)

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 September 15, 2000.

AVI BIOPHARMA, INC.

By: /s/ Denis R. Burger, Ph.D.

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.	Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	September 15, 2000
/s/ Alan P. Timmins Alan P. Timmins	President, Chief Operating Officer and Director	September 15, 2000
/s/ Mark Webber Mark Webber	Chief Financial Officer (Principal Financial and Accounting Officer)	September 15, 2000
/s/ Dwight D. Weller, Ph.D. Dwight D. Weller, Ph.D.	Senior Vice President of Chemistry and Manufacturing and Development and Director	September 15, 2000
/s/ Patrick L. Iversen, Ph.D. Patrick L. Iversen, Ph.D.	Senior Vice President of Research and Development and Director	September 15, 2000
/s/ Bruce L.A. Carter, Ph.D. Bruce L.A. Carter, Ph.D.	Director	September 15, 2000
/s/ Nick Bunick Nick Bunick	Director	September 15, 2000
/s/ Joseph Rubinfeld, Ph.D. Joseph Rubinfeld, Ph.D.	Director	September 15, 2000
/s/ John Fara, Ph.D. John Fara, Ph.D.	Director	September 15, 2000

INDEX TO EXHIBITS

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23.2	Consent of Ater Wynne LLP (included in Exhibit 5.1)
24.1	Power of Attorney (included on page II-3)

SUPERGEN, INC.
TWO ANNABEL LANE, SUITE 220
SAN RAMON, CA 94583

AVI BIOPHARMA, INC.
ONE SW COLUMBIA, SUITE 1105
PORTLAND, OR 97258

COMMON STOCK AND WARRANT PURCHASE AGREEMENT

APRIL 4, 2000

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EXHIBITS

AVI BIOPHARMA, INC.
SUPERGEN, INC.

COMMON STOCK AND WARRANT PURCHASE AGREEMENT

THIS COMMON STOCK AND WARRANT PURCHASE AGREEMENT (the "AGREEMENT") is made as of April 4, 2000 by and between AVI BioPharma, Inc., an Oregon corporation ("AVI"), and SuperGen, Inc., a Delaware corporation ("SUPERGEN").

RECITALS

WHEREAS, AVI is developing a pharmaceutical compound known as Avicine for the treatment of colorectal cancer and other indications;

WHEREAS, AVI desires to collaborate with SuperGen with respect to the clinical development, obtaining of regulatory approvals, distribution and marketing of Avicine product(s) in the United States;

WHEREAS, SuperGen desires to collaborate with AVI with respect to such product(s); and

WHEREAS, in support of their collaboration, SuperGen and AVI shall enter into that certain United States of America Sales, Distribution, and Development Agreement (the "U.S. AGREEMENT"), which provides, among other things, that SuperGen will make equity investments in AVI in consideration of cash or its own common stock;

NOW, THEREFORE, in consideration of the foregoing and the mutual covenant undertakings contained herein, the parties hereto hereby agree as follows:

SECTION 1

AUTHORIZATION AND SALE OF SECURITIES

1.1 AUTHORIZATION. AVI will, prior to the Closing Date or the Warrant Closing Date (as defined below), authorize the sale and issuance of the number of shares (the "AVI Shares") and Warrant Shares (as defined below) of its Common Stock (the "AVI Common Stock") pursuant to the terms of this Agreement. SuperGen will, prior to the Closing Date and the applicable Subsequent Closing Date (as defined below), authorize the sale and issuance of the number of shares (the "SuperGen Shares") of its Common Stock (the "SuperGen Common Stock") pursuant to the terms of this Agreement.

1.2 SALE OF SHARES BY AVI. Subject to the terms and conditions of this Agreement and the terms and conditions of the U.S. Agreement, SuperGen agrees to purchase and AVI agrees to sell and issue to SuperGen 1,684,211 shares of AVI's common stock ("AVI COMMON STOCK") for consideration consisting of $5,000,000 in cash and 347,826 in SuperGen's common stock ("SUPERGEN COMMON STOCK").

1.3 SUBSEQUENT ISSUANCE OF SHARES BY SUPERGEN. Subject to the terms and conditions of this Agreement and the terms and conditions of the U.S. Agreement, SuperGen may make milestone payments to AVI in SuperGen Common Stock pursuant to Sections 5(b), (c) and (d) of the U.S. Agreement in an aggregate amount of up to $10,000,000, to be completed in up to three (3) subsequent closings (each a "SUBSEQUENT CLOSING," the closing date for each Subsequent Closing referred to as a "SUBSEQUENT CLOSING DATE"). The valuation of SuperGen Common Stock for purposes of such milestone payments shall be the average of the closing prices of SuperGen Common Stock over the twenty (20) trading days commencing ten (10) trading days immediately preceding the Relevant Date (as defined below). For purposes of this Agreement, Relevant Date means, (i) in the case of a Subsequent Closing pursuant to Section 5.1(b) of the U.S. Agreement, the business day upon which the condition set forth in Section 5.1(b) of the U.S. Agreement is satisfied, (ii) in the case of a Subsequent Closing pursuant to Section 5.1(c) of the U.S. Agreement, the business day upon which the condition set forth in Section 5.1(c) of the U.S. Agreement is satisfied; and (iii) in the case of a Subsequent Closing pursuant to Section 5.1(d) of the U.S. Agreement, the business day upon which the condition set forth in Section 5.1(d) of the U.S. Agreement is satisfied. The number of SuperGen Shares to be issued to AVI in each Subsequent Closing shall be that number of SuperGen Shares which, at the valuation specified above, are valued as near as possible to the dollar value set forth in the corresponding section of the U.S. Agreement. No fractions of any shares shall be allotted pursuant to this Agreement and the shares issued hereunder shall be rounded up to the nearest whole number of shares.

1.4 WARRANT. Subject to the terms and conditions of this agreement and the U.S. Agreement, AVI shall issue a Warrant to SuperGen upon SuperGen's request, in substantially the form attached hereto as EXHIBIT A to this Agreement, to purchase up to 1,665,478 shares of AVI Common Stock, subject to anti-dilution provisions. The exercise price for the Warrant shall be $35.625, 300% of the purchase price per AVI Share specified under Section 1.2 of this Agreement (the "WARRANT PRICE") (such price to be adjusted pursuant to the terms of the Warrant), and the Warrant shall be exercisable at any time, or from time to time, in whole or in part, for a three year period commencing on the earlier of (i) the date the U.S. Food and Drug Administration (the "FDA") accepts the new drug application submitted for the product (as defined in the U.S. Agreement) or (ii) the date on which the closing price of AVI Common Stock exceeds the Warrant Price (shares to be purchased upon exercise of the Warrant are hereinafter referred to as the "WARRANT SHARES").

For purposes of this Agreement, the number of Warrant Shares of AVI Common Stock, including the anti-dilution provisions, shall be calculated at the time SuperGen first exercises the Warrant based on the following formula:

OP = (0.10 X (OS + (10/90 X OS)))

- OP means the number of Warrant Shares.
- OS means the total number of shares of AVI Common Stock then outstanding.

SECTION 2

CLOSING DATE; DELIVERY

2.1 CLOSING. Purchase and sale of the AVI Shares and the issuance of the SuperGen Shares as set forth in Section 1.2 hereunder shall take place in accordance with Section 5.1(a) of the U.S. Agreement at a closing ("CLOSING") to occur upon the satisfaction of all of the conditions set forth in Sections 6.1 and 6.2 hereof and Section 16.11 of the U.S. Agreement (the "CLOSING DATE"). The Closing shall be held at the offices of Wilson Sonsini Goodrich & Rosati, 650 Page Mill Road, Palo Alto, California, at 10:00 a.m. local time, on the Closing Date, or at such other time and place upon which AVI and SuperGen shall agree.

2.2 SUBSEQUENT CLOSINGS. The Subsequent Closings for issuance of SuperGen Shares to AVI under Section 1.3 hereunder shall take place at closings to occur on the applicable Subsequent Closing Date, which shall be the fifth business day following any Relevant Date. The Subsequent Closings shall be held at the offices of Wilson Sonsini Goodrich & Rosati, 650 Page Mill Road, Palo Alto, California, at 10:00 a.m. local time, on any Subsequent Closing Date, or at such other time and place upon which AVI and SuperGen shall agree.

2.3 WARRANT EXERCISE CLOSING. The closing for SuperGen's initial exercise of the Warrant ("INITIAL WARRANT CLOSING") shall be held at the offices of Wilson Sonsini Goodrich & Rosati, 650 Page Mill Road, Palo Alto, California, at 10:00 a.m. local time, three business days following the receipt by AVI of SuperGen's Notice of Exercise ("WARRANT CLOSING DATE"), or at such other time and place upon which AVI and SuperGen shall agree.

2.4 DELIVERY.

2.4.1 CLOSING. At the Closing, AVI shall cause the delivery to SuperGen of certificates registered in SuperGen's name or as designated by SuperGen evidencing the AVI Shares, upon the receipt of the portion of cash payment for the AVI Shares as set forth in Section 1.2 above, by check payable to AVI or wire transfer per AVI's instructions; and SuperGen shall cause the delivery to AVI of certificates registered in AVI's name or as designated by AVI evidencing the number of the SuperGen Shares specified in Section 1.2 hereunder.

2.4.2 SUBSEQUENT CLOSINGS. At each Subsequent Closing, AVI shall cause the delivery to SuperGen of certificates registered in SuperGen's name or as designated by SuperGen evidencing such number of AVI Shares calculated according to Section 1.3.

2.4.3 WARRANT CLOSINGS. At the Initial Warrant Closing and thereafter upon the receipt of Notice of Exercise, AVI shall cause the delivery to SuperGen of certificates registered in SuperGen's name or as designated by SuperGen in the Notice of Exercise representing the number of Warrant Shares as specified in the Notice of Exercise.

SECTION 3

REPRESENTATIONS AND WARRANTIES OF AVI

Except as disclosed in AVI's SEC Filings (as defined in Section 3.10) or as set forth in the disclosure schedule previously delivered to SuperGen (the "AVI DISCLOSURE SCHEDULE"), AVI represents and warrants to SuperGen as follows:

3.1 ORGANIZATION; STANDING AND POWER; QUALIFICATION. AVI and each of its subsidiaries is a corporation duly organized and existing under, and by virtue of, the laws of the State of Oregon and is in good standing under such laws. AVI and each of its subsidiaries have all requisite corporate power to own, lease and operate its property and to carry on its businesses, and is duly qualified to do business and is in good standing as a foreign corporation in any jurisdiction except where the failure to be so qualified and in good standing would not have a material adverse effect on the business, assets (including intangible assets), properties, liabilities (contingent or otherwise), financial condition, operations, or results of operation of AVI or its subsidiaries, taken as a whole (a "MATERIAL ADVERSE EFFECT").

3.2 CAPITALIZATION. The authorized capital stock of AVI consists of 50,000,000 shares of AVI Common Stock, $0.0001 par value, and 2,000,000 shares of preferred stock, $0.0001 par value. As of March 31, 2000, there were 16,658,784 shares of Common Stock issued and outstanding, 2,364,302 shares of AVI Common Stock issuable under AVI's stock option plans and 5,438,963 shares issuable pursuant to warrants and there were no issued and outstanding shares of preferred stock. All such issued and outstanding shares have been duly authorized and validly issued, are fully paid and nonassessable. Except as set forth in the AVI Disclosure Schedule, no shares of AVI Common Stock are entitled to preemptive rights or registration rights and there are no outstanding options, warrants, scrip, rights to subscribe to, call or commitments of any character whatsoever relating to, or securities or rights convertible into, any shares of capital stock of AVI. Furthermore, except as set forth in this Agreement and the AVI Disclosure Schedule, there are no contracts or commitments by which AVI is or may become bound to issue additional shares of the capital stock of AVI or options, securities or rights convertible into shares of capital stock of AVI. AVI is not a party to, and it has no knowledge of, any agreement restricting the voting or transfer of any shares of the capital stock of AVI other than transfer restrictions imposed to satisfy state and federal securities

laws. Except as set forth in the AVI Disclosure Schedule, the offer and sale of all capital stock, convertible securities, rights, warrants, or options of AVI issued prior to the Closing complied with all applicable federal and state securities laws. Each of AVI's subsidiaries is wholly-owned by AVI.

3.3 AUTHORIZATION; NO CONFLICTS; APPROVALS.

3.3.1 All corporate action on the part of AVI, its shareholders and its directors necessary for the authorization, execution, delivery and performance of the Agreement by AVI, the authorization, sale, issuance and delivery of the AVI Shares, the authorization and issuance of the Warrant, and the authorization, sale, issuance and delivery of the Warrant Shares (including any required shareholder authorization of the Warrant Shares), and the performance of all of AVI's obligations under the Agreement has been taken or will be taken prior to the Closing Date, the issuance of the Warrant or the Warrant Closing Date. The Agreement, the Registration Rights Agreement and any other documents (including the Warrant) required to be executed and delivered by AVI hereunder (collectively, the "TRANSACTION DOCUMENTS"), when executed and delivered by AVI, shall constitute valid and binding obligations of AVI, enforceable in accordance with their terms, subject to laws of general application relating to bankruptcy, insolvency and the relief of debtors and rules of law governing specific performance, injunctive relief or other equitable remedies. The AVI Shares and Warrant Shares, when issued in compliance with the provisions of this Agreement, will be validly issued, fully paid and nonassessable, and free of any liens or encumbrances, other than any permissible liens or encumbrances created by or imposed upon the AVI Shares and Warrant Shares by SuperGen; provided, however, that the AVI Shares and Warrant Shares are subject to restrictions on transfer under state and/or federal securities laws and as set forth in this Agreement.

3.3.2 The execution and delivery by AVI of this Agreement and the other Transaction Documents do not, and the consummation of the transactions contemplated hereby and thereby will not, (i) conflict with, or result in any violation of or breach of any provision of the Articles of Incorporation or Bylaws of AVI, (ii) result in any violation or breach of, or constitute (with or without notice or lapse of time, or both) a default under, or give rise to a right of termination, cancellation or acceleration of any obligation or loss of any benefit under any license, assignment, note, mortgage, indenture, lease, contract or other agreement or obligation to which AVI is a party or by which AVI or any of its properties or assets may be bound, (iii) conflict with or violate any judgment, order, decree, statute, law, ordinance, rule or regulation or any material permit, concession, franchise or license applicable to AVI or any of its properties or assets, except in the case of (ii) for such violations, breaches, defaults, rights of termination, cancellation or acceleration, or losses of benefits which would not be reasonably likely to have a Material Adverse Effect.

3.3.3 No consent, approval, order or authorization of, or registration, declaration or filing with, any governmental entity is required by or with respect to AVI in connection with the execution and delivery of this Agreement and the other Transaction Documents or the consummation of the transactions contemplated hereby or thereby, except that the filing of one or more notification

and report forms under the Hart Scott Rodino Antitrust Improvement Act of 1976 (the "HSR ACT") may be required with respect to the acquisition by SuperGen of the AVI Shares and Warrant Shares, and except (i) such other consents, approvals, orders, authorizations, registrations, declarations and filings as may be required under applicable federal and state securities laws and the laws of any foreign country, and (ii) such other consents, authorizations, filings, approvals and registrations which, if not obtained or made, would not be reasonably likely to have a Material Adverse Effect.

3.4 FINANCIAL STATEMENTS. AVI has delivered to SuperGen copies of AVI's audited consolidated financial statements (balance sheet, statement of operations, statement of shareholders' equity, and statement of cash flows) for the year ended December 31, 1999 (the "AVI FINANCIAL STATEMENTS"). AVI Financial Statements were prepared in accordance with generally accepted accounting principles ("GAAP") applied on a consistent basis throughout the periods involved (except as may be otherwise indicated in such financial statements or the notes thereto). AVI Financial Statements present fairly in all material respects the financial position of AVI and its subsidiaries as of the respective dates and the consolidated results of its operations and cash flows for the periods indicated.

3.5 ABSENCE OF UNDISCLOSED LIABILITIES. Neither AVI nor any of its subsidiaries has any liabilities, either accrued or contingent (whether or not required to be reflected in financial statements in accordance with GAAP), and whether due or to become due, other than (i) liabilities reflected or provided for on the balance sheet as of December 31, 1999 (the "AVI BALANCE SHEET") contained in AVI Financial Statements, (ii) liabilities specifically described in this Agreement or the AVI Disclosure Schedule, and (iii) normal or recurring liabilities incurred since December 31, 1999 in the ordinary course of business consistent with past practices that would not reasonably be expected to result in a Material Adverse Effect.

3.6 ABSENCE OF CERTAIN CHANGES OR EVENTS. Except as set forth in the AVI Disclosure Schedule, and except as reflected in AVI Financial Statements, since December 31, 1999, AVI and its subsidiaries have conducted their businesses in the ordinary course and in a manner consistent with past practices, and have not:

3.6.1 suffered any event or occurrence that has had or would reasonably be expected to have a Material Adverse Effect;

3.6.2 declared, set aside or paid any dividend or made any other distribution on or in respect of the shares of its capital stock or declared any direct or indirect redemption, retirement, purchase or other acquisition of such shares, except for purchases of stock from terminated non-officer employees in the ordinary course of business and in a manner consistent with past practices;

3.6.3 issued any shares of their capital stock or any warrants, rights, or options for, or entered into any commitment relating to such capital stock, except for issuances made in the ordinary course of business in arm's length transactions for value and in a manner consistent with

past practices (including issuances made upon exercises and conversions of employee and director stock options);

3.6.4 made any material change in the accounting methods or practices they follow, whether for general financial or tax purposes, or any change in depreciation or amortization policies or rates;

3.6.5 bought, rented, sold, leased, abandoned or otherwise disposed of any real property or machinery, equipment or other operating property except in the ordinary course of business and in a manner consistent with past practices and in an amount that is not material to AVI and its subsidiaries taken as a whole;

3.6.6 sold, assigned, transferred, licensed, pledged, or otherwise disposed of or encumbered any patent, trademark, trade name, brand name, FDA license or approval application, copyright (or pending application for any patent, trademark or copyright), invention, work of authorship, process, know-how, formula or trade secret or interest thereunder or other material intangible asset, except for non-exclusive licenses which were granted in the ordinary course of business and in a manner consistent with past practices and in an amount that is not material to AVI and its subsidiaries taken as a whole;

3.6.7 entered into any material commitment or transaction (including without limitation any borrowing or capital expenditure) other than the transactions contemplated by this Agreement and the other Transaction Documents; or

3.6.8 paid, loaned or advanced any amount to, or sold, transferred or leased any properties or assets or rights under license to, or entered into any agreement or arrangement with any of its officers, directors or shareholders or any affiliate of any of the foregoing, other than employee compensation and benefits and reimbursement of employment related business expenses incurred in the ordinary course of business.

3.7 TAXES. AVI (including its subsidiaries) has timely made or filed all federal and state income and all other tax returns, reports and declarations required by any jurisdiction to which it is subject and has paid all taxes and other governmental assessments and charges, shown or determined to be due on such returns, reports and declarations, except those being contested in good faith and has set aside on its books provision reasonably adequate for the payment of all taxes for periods subsequent to the periods to which such returns, reports or declarations apply. There are no material unpaid taxes claimed to be due by the taxing authority of any jurisdiction, and the officers of AVI know of no basis for any such claim. To the best knowledge of AVI, there are no pending or proposed audits or claims from any tax authority for deficiencies, penalties or interest against AVI or its subsidiaries and the officers of AVI know of no basis for any such audit or claim

3.8 INTELLECTUAL PROPERTY. To AVI's knowledge after reasonable inquiry, (i) each of AVI and its subsidiaries has the right to use, free and clear of all liens, charges, claims and restrictions, all intellectual property, patents, trademarks, service marks, trade names, copyrights, licenses and rights which are material to its business as presently conducted and (ii) neither AVI nor any of its subsidiaries is infringing upon or otherwise acting adversely to the right or claimed right of any other person under or with respect to the foregoing.

3.9 ENVIRONMENTAL MATTERS. To AVI's knowledge after reasonable inquiry, neither AVI nor any of its subsidiaries is in violation of any statute, rule, regulation, decision or order of any governmental agency or body or any court, domestic 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") which, individually or in aggregate, would have a Material Adverse Effect. Except as set forth in the AVI Disclosure Schedule, to AVI's knowledge after reasonable inquiry, neither AVI nor any of its subsidiaries owns or operates any real property contaminated with any substance that is subject to any Environmental Laws, is liable for any off-site disposal or contamination pursuant to any Environmental Laws, or is subject to any claim relating to any Environmental Laws, which violation, contamination, liability or claim would individually or in aggregate have a Material Adverse Effect; and AVI is not aware of any pending investigation that might lead to such a claim.

3.10 SEC FILINGS. AVI has timely filed all reports, registration statements, proxy statements and other materials, together with any amendments thereto (the "SEC FILING"), required to be filed by AVI with the Securities and Exchange Commission (the "SEC") under the Securities Exchange Act of 1934, as amended (the "EXCHANGE ACT"). AVI has furnished to SuperGen copies of its Annual Report on Form 10-K for the year ended December 31, 1999, and all Current Reports on Form 8-K and proxy statements, as filed with the SEC. As of the date filed, the SEC Filings do not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in light of the circumstances in which they were made, not misleading. The financial statements contained in the SEC Filings fairly present the financial position of AVI and its subsidiaries as at the dates thereof and for the periods covered thereby and have been prepared in accordance with GAAP and with the published rules and regulations of the SEC with respect thereto.

3.11 LISTING. AVI Common Stock is duly listed on the Nasdaq National Market ("NMS"). AVI is not in violation of the listing requirements of the NMS and does not reasonably anticipate that the AVI Common Stock will be delisted by the NMS for the foreseeable future.

3.12 EMPLOYEE BENEFIT PLANS. Except as set forth in the AVI Disclosure Schedule, all AVI's employee benefit plans comply with and are and have been operated in accordance with applicable laws and regulations. There are no funded benefit obligations for which contributions have not been made or properly accrued and there are no unfunded benefit obligations which have not been accounted for by reserves on AVI's Financial Statements, and no event has occurred, and there exists no condition or set of circumstances, with respect to the employee benefit plans of AVI,

which would reasonably be expected to subject AVI to any liability, other than liabilities which would not be reasonably likely, either individually or in the aggregate, to have a Material Adverse Effect.

3.13 EMPLOYEES. To AVI's knowledge, no employee or consultant of AVI is in material violation of any material term of any such employment or consulting agreement, confidentiality agreement, or any other contract or agreement relating to the relationship of such employee or consultant with AVI or any other party because of the nature of the business conducted or to be conducted by AVI.

3.14 BROKERS OR FINDERS. No agent, broker, investment banker, financial advisor or other firm or person is or will be entitled to any broker's or finder's fee or any other commission or similar fee in connection with any of the transactions contemplated by this Agreement or any of the other Transaction Documents except for a fee of $150,000 and 40,909 shares of AVI Common Stock paid by AVI to Boston Healthcare for assistance rendered to AVI in partnering the Avicine vaccine product , and AVI agrees to indemnify and hold SuperGen harmless from and against any and all claims, liabilities or obligations with respect to any other fees, commissions or expenses asserted by any person on the basis of any act or statement alleged to have been made by AVI.

3.15 COMPLIANCE WITH LAWS. Each of AVI and its subsidiaries has complied in all material respects with all applicable federal, state, local and foreign statutes, laws and regulations, and is not in violation of, and has not received any notices of violation with respect to, any such statute, law or regulation, with respect to the conduct, ownership or operation of its businesses which, individually or in aggregate, would have a Material Adverse Effect. Each of AVI and its subsidiaries has obtained each governmental consent, license, permit, grant or other authorization of a governmental entity that is required for the operation of its business as currently conducted (collectively, the "AVI AUTHORIZATIONS"), and all such AVI Authorizations are in full force and effect, except for such AVI Authorizations which, if not obtained by AVI or any of its subsidiaries, would not be reasonably likely, either individually or in the aggregate, to have a Material Adverse Effect.

3.16 LITIGATION. Except as set forth in the AVI Disclosure Schedule, there is no action, suit, proceeding, claim, arbitration or investigation, pending before any agency, court or tribunal, or to the knowledge of AVI, threatened against AVI, its subsidiaries or any of their respective properties or officers or directors (in their capacities as such), and, to the knowledge of AVI, there is no valid basis for any action, suit, proceeding, claim, arbitration or investigation against AVI or any of its subsidiaries which, if determined adversely to AVI or any such subsidiary, would reasonably be expected to have a Material Adverse Effect. There is no judgment, decree or order against AVI or any of its subsidiaries or, to the knowledge of AVI after reasonable inquiry, any of its respective directors or officers (in their capacities as such) that would prevent, enjoin, or materially alter or delay any of the transactions contemplated by this Agreement or that would reasonably be expected to have a Material Adverse Effect.

3.17 NO MISREPRESENTATION. No representation or warranty by AVI in this Agreement or any of the other Transaction Documents, and no statement, certificate or schedule furnished or to be furnished by or on behalf of AVI pursuant to this Agreement or any of the other Transaction Documents, when taken together, contains any untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary in order to make such statements, in light of the circumstances under which they were made, not misleading.

3.18 INVESTMENT AVI. AVI is not, and after giving effect to the issuance of the AVI Shares and the Warrant Shares will not be, an investment company under the Investment Company Act of 1940.

3.19 VALID PRIVATE PLACEMENT. Subject to the accuracy of SuperGen's representations in Section 4.21, AVI is entitled to rely on an AVI exemption from the provisions of Section 5 of the Securities Act in its sale and issuance of AVI Shares and Warrant Shares to SuperGen pursuant to the terms of this Agreement.

3.20 OREGON BUSINESS CORPORATION ACT. The purchase of the AVI Shares and Warrant Shares pursuant to this Agreement has been approved by the Board of Directors of AVI prior to the date of this Agreement for the purposes of the Oregon Business Corporation Act such that after the date of this Agreement, neither SuperGen nor any of its affiliates will be subject to the restrictions on business combination transactions set forth therein with respect to SuperGen on account of such purchase.

3.21 EXEMPT OFFERING; ACQUISITION FOR INVESTMENT.

3.21.1 AVI is acquiring the SuperGen Shares under this Agreement solely for AVI's or its designated affiliate's own account for passive investment purposes and not with a view to, or for resale in connection with, any distribution thereof within the meaning of the Securities Act of 1933, as amended (the "SECURITIES ACT"). AVI further represents that AVI does not have any present intention of selling, offering to sell or otherwise disposing of or distributing the SuperGen Shares or any portion thereof. AVI acknowledges and understands that the entire legal and beneficial interest of the SuperGen Shares AVI is acquiring is being purchased for, and will be held for the account of, AVI or its designated affiliate only and neither in whole nor in part for any other person. AVI understands that the SuperGen Shares have not been registered under the Securities Act or other securities laws in reliance on specific exemptions therefrom, which exemptions depend upon, among other things, the bona fide nature of AVI investment intent as expressed herein.

3.21.2 The SuperGen Shares were not offered to AVI through, and AVI is not aware of, any form of general solicitation or general advertising, including, without limitation, (i) any advertisement, article, notice or other communication published in any newspaper, magazine or similar media or broadcast over television or radio, and (ii) any seminar or meeting whose attendees have been invited by any general solicitation or general advertising.

3.21.3 AVI is an "accredited" investor as defined in Regulation D under the Securities Act, and a "qualified institutional buyer" within the meaning of Rule 144A under the Securities Act.

3.21.4 AVI further acknowledges and understands that the SuperGen Shares must be held indefinitely unless they are subsequently registered under the Securities Act or an exemption from such registration is available, and the transfer complies with the restrictions set forth in Section 5.5 of this Agreement. AVI understands that the certificate(s) evidencing the SuperGen Shares will be imprinted with a legend that sets forth the restrictions on transfer.

3.21.5 AVI understands that Rule 144 promulgated under the Securities Act permits limited resale of shares purchased in a private placement subject to the satisfaction of certain conditions, including, among other things, the existence of a public market for the SuperGen Shares, the availability of certain current public information about SuperGen, more than one year having elapsed between the resale and the date the security to be sold was last held by SuperGen or an affiliate of SuperGen, the sale being made through a "broker's transaction" or in transactions directly with a "market maker," and the number of shares being sold during any three-month period not exceeding specified limitations. AVI is further aware that Rule 144(k) permits persons who have not been affiliates of SuperGen for at least three months and whose shares have been beneficially owned by a person other than SuperGen or its affiliates for at least two years after full payment for such shares to sell such shares without regard to the current public information, manner of sale and volume limitations described above.

3.21.6 AVI has reviewed with its own tax advisers the federal, state, and local tax consequences of this investment and the transactions contemplated by this Agreement and has relied solely on such advisers and not on any statements or representations of SuperGen or any of its agents other than the representations and warranties set forth herein. AVI understands that it (and not SuperGen) shall be responsible for its own tax liability that may arise as a result of its investment or the transactions contemplated by this Agreement.

3.22 ACCESS TO INFORMATION; INVESTMENT EXPERIENCE; NO RELIANCE.

3.22.1 ACCESS TO INFORMATION. AVI has, prior to the date of this Agreement, been furnished with SuperGen's most recent SEC Filings and given an opportunity to review material contracts and documents of SuperGen which have been filed as exhibits to such SEC Filings. AVI has had opportunity to discuss SuperGen's business, management and financial affairs with its management. AVI has also had an opportunity to ask questions of officers of SuperGen, which questions were answered to its satisfaction. AVI, in making the investment decision, has read, reviewed, and relied solely on SuperGen's SEC Filings and other documents furnished by SuperGen, including SuperGen's Financial Statements, pursuant to this Agreement and SuperGen's representations and warranties contained herein, and has made an independent investigation, or obtained any additional information which AVI deems necessary to verify the accuracy and

completeness of the information received. AVI is not relying on any oral representation of SuperGen or any other person, nor any written representation or assurance from SuperGen other than those contained in the SEC Filings or incorporated herein or therein. The foregoing, however, does not limit or modify AVI's right to rely upon covenants, representations and warranties of SuperGen in Section 4 of this Agreement. AVI acknowledges and agrees that SuperGen has no responsibility for, does not ratify, and is under no responsibility whatsoever to comment upon or correct any reports, analyses or other comments made about SuperGen by any third parties, including, but not limited to, analysts' research reports or comments, and AVI has not relied upon any such third party reports in making the decision to invest.

3.22.2 RISK OF INVESTMENT; INVESTMENT EXPERIENCE; CAPABILITY TO EVALUATE. AVI recognizes that an investment in SuperGen involves substantial risks, including the potential loss of AVI's entire investment herein. AVI has substantial knowledge and experience in investing in securities and in financial and business matters that it is capable of evaluating the merits and risks of the investment. AVI acknowledges that it is able to fend for itself in the transactions contemplated by this Agreement, and that AVI has the ability to bear the economic risk of investment pursuant to this Agreement.

3.22.3 RELIANCE ON OWN JUDGEMENT OR ADVISORS. AVI has relied completely on its own judgement or the advice of its own tax, investment, legal or other advisors and has not relied on SuperGen or any of its affiliates, officers, directors, attorneys, accountants or any affiliates of any thereof and each other person, if any, who controls any of the foregoing, within the meaning of Section 15 of the Securities Act for any tax, investment or legal advice (other than reliance on information furnished by SuperGen, the representations, warranties and covenants contained herein).

SECTION 4
REPRESENTATIONS AND WARRANTIES OF SUPERGEN

Except as disclosed in SuperGen's SEC Filings or as set forth in the disclosure schedule previously provided to AVI (the "SUPERGEN DISCLOSURE SCHEDULE"), SuperGen hereby represents and warrants to and agrees with AVI as follows:

4.1 ORGANIZATION; STANDING AND POWER; QUALIFICATION. SuperGen and each of its subsidiaries is a corporation duly organized and existing under, and by virtue of, the laws of the State of Delaware and is in good standing under such laws. SuperGen and each of its subsidiaries have all requisite corporate power to own, lease and operate its property and to carry on its businesses, and is duly qualified to do business and is in good standing as a foreign corporation in any jurisdiction except where the failure to be so qualified and in good standing would not have a material adverse effect on the business, assets (including intangible assets), properties, liabilities (contingent or otherwise), financial condition, operations, or results of operation of SuperGen or its subsidiaries, taken as a whole (a "MATERIAL ADVERSE EFFECT").

4.2 CAPITALIZATION. The authorized capital stock of SuperGen consists of 40,000,000 shares of SuperGen Common Stock, $0.001 par value, and 2,000,000 shares of preferred stock, $0.001 par value. As of March 31, 2000, there were 30,555,785 shares of SuperGen Common Stock issued and outstanding, 3,192,316 of SuperGen Common Stock issuable under SuperGen's stock option plans and 5,106,067 shares issuable pursuant to warrants and there were no issued and outstanding shares of preferred stock. All such issued and outstanding shares have been duly authorized and validly issued, are fully paid and nonassessable. Except as set forth in the SuperGen Disclosure Schedule, no shares of SuperGen Common Stock are entitled to preemptive rights or registration rights and there are no outstanding options, warrants, scrip, rights to subscribe to, call or commitments of any character whatsoever relating to, or securities or rights convertible into, any shares of capital stock of SuperGen. Furthermore, except as set forth in this Agreement and the SuperGen Disclosure Schedule, there are no contracts or commitments by which SuperGen is or may become bound to issue additional shares of the capital stock of SuperGen or options, securities or rights convertible into shares of capital stock of SuperGen. SuperGen is not a party to, and it has no knowledge of, any agreement restricting the voting or transfer of any shares of the capital stock of SuperGen other than transfer restrictions imposed to satisfy state and federal securities laws. Except as set forth in the SuperGen Disclosure Schedule, the offer and sale of all capital stock, convertible securities, rights, warrants, or options of SuperGen issued prior to the Closing and any Subsequent Closing complied with all applicable federal and state securities laws. Each of SuperGen's subsidiaries is wholly-owned by SuperGen.

4.3 AUTHORIZATION; NO CONFLICTS; APPROVALS.

4.3.1 All corporate action on the part of SuperGen, its stockholders and its directors necessary for the authorization, execution, delivery and performance of the Agreement by SuperGen, the authorization, sale, issuance and delivery of the SuperGen Shares, and the performance of all of SuperGen's obligations under the Agreement has been taken or will be taken prior to the Closing Date or Subsequent Closing Date. The Agreement, the Registration Rights Agreement and any other documents required to be executed and delivered by SuperGen hereunder (collectively, the "TRANSACTION DOCUMENTS"), when executed and delivered by SuperGen, shall constitute valid and binding obligations of SuperGen, enforceable in accordance with their terms, subject to laws of general application relating to bankruptcy, insolvency and the relief of debtors and rules of law governing specific performance, injunctive relief or other equitable remedies. The SuperGen Shares, when issued in compliance with the provisions of this Agreement, will be validly issued, fully paid and nonassessable, and free of any liens or encumbrances, other than any permissible liens or encumbrances created by or imposed upon the SuperGen Shares by AVI; provided, however, that the SuperGen Shares are subject to restrictions on transfer under state and/or federal securities laws and as set forth in this Agreement.

4.3.2 The execution and delivery by SuperGen of this Agreement and the other Transaction Documents do not, and the consummation of the transactions contemplated hereby and thereby will not, (i) conflict with, or result in any violation of or breach of any provision of the

Certificate of Incorporation or Bylaws of SuperGen, (ii) result in any violation or breach of, or constitute (with or without notice or lapse of time, or both) a default under, or give rise to a right of termination, cancellation or acceleration of any obligation or loss of any benefit under any license, assignment, note, mortgage, indenture, lease, contract or other agreement or obligation to which SuperGen is a party or by which SuperGen or any of its properties or assets may be bound, (iii) conflict with or violate any judgment, order, decree, statute, law, ordinance, rule or regulation or any material permit, concession, franchise or license applicable to SuperGen or any of its properties or assets, except in the case of (ii) for such violations, breaches, defaults, rights of termination, cancellation or acceleration, or losses of benefits which would not be reasonably likely to have a Material Adverse Effect.

4.3.3 No consent, approval, order or authorization of, or registration, declaration or filing with, any governmental entity is required by or with respect to SuperGen in connection with the execution and delivery of this Agreement and the other Transaction Documents or the consummation of the transactions contemplated hereby or thereby, except that the filing of one or more notification and report forms under the HSR Act may be required with respect to the acquisition by AVI of the SuperGen Shares, and except (i) such other consents, approvals, orders, authorizations, registrations, declarations and filings as may be required under applicable federal and state securities laws and the laws of any foreign country, and (ii) such other consents, authorizations, filings, approvals and registrations which, if not obtained or made, would not be reasonably likely to have a Material Adverse Effect.

4.4 FINANCIAL STATEMENTS. SuperGen has delivered to AVI copies of SuperGen's audited consolidated financial statements (balance sheet, statement of operations, statement of stockholders' equity, and statement of cash flows) for the year ended December 31, 1999 (the "SUPERGEN FINANCIAL STATEMENTS"). SuperGen Financial Statements were prepared in accordance with GAAP applied on a consistent basis throughout the periods involved (except as may be otherwise indicated in such financial statements or the notes thereto). SuperGen Financial Statements present fairly in all material respects the financial position of SuperGen and its subsidiaries as of the respective dates and the consolidated results of its operations and cash flows for the periods indicated.

4.5 ABSENCE OF UNDISCLOSED LIABILITIES. Neither SuperGen nor any of its subsidiaries has any liabilities, either accrued or contingent (whether or not required to be reflected in financial statements in accordance with GAAP), and whether due or to become due, other than (i) liabilities reflected or provided for on the balance sheet as of December 31, 1999 (the "SUPERGEN BALANCE SHEET") contained in SuperGen Financial Statements, (ii) liabilities specifically described in this Agreement or the SuperGen Disclosure Schedule, and (iii) normal or recurring liabilities incurred since December 31, 1999 in the ordinary course of business consistent with past practices that would not reasonably be expected to result in a Material Adverse Effect.

4.6 ABSENCE OF CERTAIN CHANGES OR EVENTS. Except as set forth in the SuperGen Disclosure Schedule, and except as reflected in SuperGen Financial Statements, since December 31,

1999, SuperGen and its subsidiaries have conducted their businesses in the ordinary course and in a manner consistent with past practices, and have not:

4.6.1 suffered any event or occurrence that has had or would reasonably be expected to have a Material Adverse Effect;

4.6.2 declared, set aside or paid any dividend or made any other distribution on or in respect of the shares of its capital stock or declared any direct or indirect redemption, retirement, purchase or other acquisition of such shares, except for purchases of stock from terminated non-officer employees in the ordinary course of business and in a manner consistent with past practices;

4.6.3 issued any shares of their capital stock or any warrants, rights, or options for, or entered into any commitment relating to such capital stock, except for issuances made in the ordinary course of business in arm's length transactions for value and in a manner consistent with past practices (including issuances made upon exercises and conversions of employee and director stock options);

4.6.4 made any material change in the accounting methods or practices they follow, whether for general financial or tax purposes, or any change in depreciation or amortization policies or rates;

4.6.5 bought, rented, sold, leased, abandoned or otherwise disposed of any real property or machinery, equipment or other operating property except in the ordinary course of business and in a manner consistent with past practices and in an amount that is not material to SuperGen and its subsidiaries taken as a whole;

4.6.6 sold, assigned, transferred, licensed, pledged, or otherwise disposed of or encumbered any patent, trademark, trade name, brand name, the FDA license or approval application, copyright (or pending application for any patent, trademark or copyright), invention, work of authorship, process, know-how, formula or trade secret or interest thereunder or other material intangible asset, except for non-exclusive licenses which were granted in the ordinary course of business and in a manner consistent with past practices and in an amount that is not material to SuperGen and its subsidiaries taken as a whole;

4.6.7 entered into any material commitment or transaction (including without limitation any borrowing or capital expenditure) other than the transactions contemplated by this Agreement and the other Transaction Documents; or

4.6.8 paid, loaned or advanced any amount to, or sold, transferred or leased any properties or assets or rights under license to, or entered into any agreement or arrangement with any of its officers, directors or stockholders or any affiliate of any of the foregoing, other than employee

compensation and benefits and reimbursement of employment related business expenses incurred in the ordinary course of business.

4.7 TAXES. SuperGen (including its subsidiaries) has timely made or filed all federal and state income and all other tax returns, reports and declarations required by any jurisdiction to which it is subject and has paid all taxes and other governmental assessments and charges, shown or determined to be due on such returns, reports and declarations, except those being contested in good faith and has set aside on its books provision reasonably adequate for the payment of all taxes for periods subsequent to the periods to which such returns, reports or declarations apply. There are no material unpaid taxes claimed to be due by the taxing authority of any jurisdiction, and the officers of SuperGen know of no basis for any such claim. To the best knowledge of SuperGen, there are no pending or proposed audits or claims from any tax authority for deficiencies, penalties or interest against SuperGen or its subsidiaries and the officers of SuperGen know of no basis for any such audit or claim

4.8 INTELLECTUAL PROPERTY. To SuperGen's knowledge after reasonable inquiry, (i) each of SuperGen and its subsidiaries has the right to use, free and clear of all liens, charges, claims and restrictions, all intellectual property, patents, trademarks, service marks, trade names, copyrights, licenses and rights which are material to its business as presently conducted and (ii) neither SuperGen nor any of its subsidiaries is infringing upon or otherwise acting adversely to the right or claimed right of any other person under or with respect to the foregoing.

4.9 ENVIRONMENTAL MATTERS. To SuperGen's knowledge after reasonable inquiry, neither SuperGen nor any of its subsidiaries is in violation of any Environmental Laws which, individually or in aggregate, would have a Material Adverse Effect. Except as set forth in the SuperGen Disclosure Schedule, to SuperGen's knowledge after reasonable inquiry, neither SuperGen nor any of its subsidiaries owns or operates any real property contaminated with any substance that is subject to any Environmental Laws, is liable for any off-site disposal or contamination pursuant to any Environmental Laws, or is subject to any claim relating to any Environmental Laws, which violation, contamination, liability or claim would individually or in aggregate have a Material Adverse Effect; and SuperGen is not aware of any pending investigation that might lead to such a claim.

4.10 SEC FILINGS. SuperGen has timely filed all SEC Filings required to be filed by SuperGen with the SEC under the Exchange Act. SuperGen has furnished to AVI copies of its Annual Report on Form 10-K for the year ended December 31, 1999 and all Current Reports on Form 8-K and proxy statements, as filed with the SEC. As of the date filed, the SEC Filings do not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in light of the circumstances in which they were made, not misleading. The financial statements contained in the SEC Filings fairly present the financial position of SuperGen and its subsidiaries as at the dates thereof and for the periods covered thereby and have been

prepared in accordance with GAAP and with the published rules and regulations of the SEC with respect thereto.

4.11 LISTING. SuperGen's Common Stock is duly listed on the NMS. SuperGen is not in violation of the listing requirements of the NMS and does not reasonably anticipate that the SuperGen Common Stock will be delisted by the NMS for the foreseeable future.

4.12 EMPLOYEE BENEFIT PLANS. Except as set forth in the SuperGen Disclosure Schedule, all SuperGen's employee benefit plans comply with and are and have been operated in accordance with applicable laws and regulations. There are no funded benefit obligations for which contributions have not been made or properly accrued and there are no unfunded benefit obligations which have not been accounted for by reserves on SuperGen's Financial Statements, and no event has occurred, and there exists no condition or set of circumstances, with respect to the employee benefit plans of SuperGen, which would reasonably be expected to subject SuperGen to any liability, other than liabilities which would not be reasonably likely, either individually or in the aggregate, to have a Material Adverse Effect.

4.13 EMPLOYEES. To SuperGen's knowledge, no employee or consultant of SuperGen is in material violation of any material term of any such employment or consulting agreement, confidentiality agreement, or any other contract or agreement relating to the relationship of such employee or consultant with SuperGen or any other party because of the nature of the business conducted or to be conducted by SuperGen.

4.14 BROKERS OR FINDERS. No agent, broker, investment banker, financial advisor or other firm or person is or will be entitled to any broker's or finder's fee or any other commission or similar fee in connection with any of the transactions contemplated by this Agreement or any of the other Transaction Documents, and SuperGen agrees to indemnify and hold AVI harmless from and against any and all claims, liabilities or obligations with respect to any other fees, commissions or expenses asserted by any person on the basis of any act or statement alleged to have been made by SuperGen.

4.15 COMPLIANCE WITH LAWS. Each of SuperGen and its subsidiaries has complied in all material respects with all applicable federal, state, local and foreign statutes, laws and regulations, and is not in violation of, and has not received any notices of violation with respect to, any such statute, law or regulation, with respect to the conduct, ownership or operation of its businesses which, individually or in aggregate, would have a Material Adverse Effect. Each of SuperGen and its subsidiaries has obtained each governmental consent, license, permit, grant or other authorization of a governmental entity that is required for the operation of its business as currently conducted (collectively, the "SUPERGEN AUTHORIZATIONS"), and all SuperGen Authorizations are in full force and effect, except for such Company Authorizations which, if not obtained by SuperGen or any of its subsidiaries, would not be reasonably likely, either individually or in the aggregate, to have a Material Adverse Effect.

4.16 LITIGATION. Except as set forth in the SuperGen Disclosure Schedule, there is no action, suit, proceeding, claim, arbitration or investigation, pending before any agency, court or tribunal, or to the knowledge of SuperGen, threatened against SuperGen, its subsidiaries or any of their respective properties or officers or directors (in their capacities as such), and, to the knowledge of SuperGen, there is no valid basis for any action, suit, proceeding, claim, arbitration or investigation against SuperGen or any of its subsidiaries which, if determined adversely to SuperGen or any such subsidiary, would reasonably be expected to have a Material Adverse Effect. There is no judgment, decree or order against SuperGen or any of its subsidiaries or, to the knowledge of SuperGen after reasonable inquiry, any of its respective directors or officers (in their capacities as such) that would prevent, enjoin, or materially alter or delay any of the transactions contemplated by this Agreement or that would reasonably be expected to have a Material Adverse Effect.

4.17 NO MISREPRESENTATION. No representation or warranty by SuperGen in this Agreement or any of the other Transaction Documents, and no statement, certificate or schedule furnished or to be furnished by or on behalf of SuperGen pursuant to this Agreement or any of the other Transaction Documents, when taken together, contains any untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary in order to make such statements, in light of the circumstances under which they were made, not misleading.

4.18 INVESTMENT COMPANY. SuperGen is not, and after giving effect to the issuance of the SuperGen Shares will not be, an investment company under the Investment Company Act of 1940.

4.19 VALID PRIVATE PLACEMENT. Subject to the accuracy of AVI's representations in Section 3.21, SuperGen is entitled to rely on an exemption from the provisions of Section 5 of the Securities Act in its sale and issuance of the SuperGen Shares to AVI pursuant to the terms of this Agreement.

4.20 SECTION 203. The purchase of the SuperGen Shares pursuant to this Agreement has been approved by the Board of Directors of SuperGen prior to the date of this Agreement for the purposes of Section 203 of the Delaware General Corporation Law such that after the date of this Agreement, neither AVI nor any of its affiliates will be subject to the restrictions on business combination transactions set forth in said Section 203 with respect to SuperGen on account of such purchase.

4.21 EXEMPT OFFERING; ACQUISITION FOR INVESTMENT.

4.21.1 SuperGen is acquiring the AVI Shares and Warrant Shares solely for SuperGen's or its designated affiliate's own account for passive investment purposes and not with a view to, or for resale in connection with, any distribution thereof within the meaning of the Securities Act. SuperGen further represents that SuperGen does not have any present intention of selling, offering to sell or otherwise disposing of or distributing the AVI Shares or Warrant Shares or any portion thereof. SuperGen acknowledges and understands that the entire legal and beneficial

interest of the AVI Shares and Warrant Shares SuperGen is acquiring is being purchased for, and will be held for the account of, SuperGen or its designated affiliate only and neither in whole nor in part for any other person. SuperGen understands that the AVI Shares and Warrant Shares have not been registered under the Securities Act or other securities laws in reliance on specific exemptions therefrom, which exemptions depend upon, among other things, the bona fide nature of SuperGen's investment intent as expressed herein.

4.21.2 The AVI Shares and Warrant Shares were not offered to SuperGen through, and SuperGen is not aware of, any form of general solicitation or general advertising, including, without limitation, (i) any advertisement, article, notice or other communication published in any newspaper, magazine or similar media or broadcast over television or radio, and (ii) any seminar or meeting whose attendees have been invited by any general solicitation or general advertising.

4.21.3 SuperGen is an "accredited" investor as defined in Regulation D under the Securities Act, and a "qualified institutional buyer" within the meaning of Rule 144A under the Securities Act.

4.21.4 SuperGen further acknowledges and understands that the AVI Shares and Warrant Shares must be held indefinitely unless they are subsequently registered under the Securities Act or an exemption from such registration is available, and the transfer complies with the restrictions set forth in Section 5.5 of this Agreement. SuperGen understands that the certificate(s) evidencing the AVI Shares and Warrant Shares will be imprinted with a legend that sets forth the restrictions on transfer.

4.21.5 SuperGen understands that Rule 144 promulgated under the Securities Act permits limited resale of shares purchased in a private placement subject to the satisfaction of certain conditions, including, among other things, the existence of a public market for the AVI Shares and Warrant Shares, the availability of certain current public information about AVI, more than one year having elapsed between the resale and the date the security to be sold was last held by AVI or an affiliate of AVI, the sale being made through a "broker's transaction" or in transactions directly with a "market maker," and the number of shares being sold during any three-month period not exceeding specified limitations. SuperGen is further aware that Rule 144(k) permits persons who have not been affiliates of AVI for at least three months and whose shares have been beneficially owned by a person other than AVI or its affiliates for at least two years after full payment for such shares to sell such shares without regard to the current public information, manner of sale and volume limitations described above.

4.21.6 SuperGen has reviewed with its own tax advisers the federal, state, and local tax consequences of this investment and the transactions contemplated by this Agreement and has relied solely on such advisers and not on any statements or representations of AVI or any of its agents other than the representations and warranties set forth herein. SuperGen understands that it

(and not AVI) shall be responsible for its own tax liability that may arise as a result of this investment or the transactions contemplated by this Agreement.

4.22 ACCESS TO INFORMATION; INVESTMENT EXPERIENCE; NO RELIANCE.

4.22.1 ACCESS TO INFORMATION. SuperGen has, prior to the date of this Agreement, been furnished with AVI's most recent SEC Filings and given an opportunity to review material contracts and documents of AVI which have been filed as exhibits to such SEC Filings. SuperGen has had opportunity to discuss AVI's business, management and financial affairs with its management. SuperGen has also had an opportunity to ask questions of officers of AVI, which questions were answered to its satisfaction. SuperGen, in making the investment decision, has read, reviewed, and relied solely on AVI's SEC Filings and other documents furnished by AVI, including AVI's Financial Statements, pursuant to this Agreement and AVI's representations and warranties contained herein, and has made an independent investigation, or obtained any additional information which SuperGen deems necessary to verify the accuracy and completeness of the information received. SuperGen is not relying on any oral representation of AVI or any other person, nor any written representation or assurance from AVI other than those contained in the SEC Filings or incorporated herein or therein. The foregoing, however, does not limit or modify SuperGen's right to rely upon covenants, representations and warranties of AVI in Section 3 of this Agreement. SuperGen acknowledges and agrees that AVI has no responsibility for, does not ratify, and is under no responsibility whatsoever to comment upon or correct any reports, analyses or other comments made about AVI by any third parties, including, but not limited to, analysts' research reports or comments, and SuperGen has not relied upon any such third party reports in making the decision to invest.

4.22.2 RISK OF INVESTMENT; INVESTMENT EXPERIENCE; CAPABILITY TO EVALUATE. SuperGen recognizes that an investment in AVI involves substantial risks, including the potential loss of SuperGen's entire investment herein. SuperGen has substantial knowledge and experience in investing in securities and in financial and business matters that it is capable of evaluating the merits and risks of the investment. SuperGen acknowledges that it is able to fend for itself in the transactions contemplated by this Agreement, and that SuperGen has the ability to bear the economic risk of investment pursuant to this Agreement.

4.22.3 RELIANCE ON OWN JUDGEMENT OR ADVISORS. SuperGen has relied completely on its own judgement or the advice of its own tax, investment, legal or other advisors and has not relied on AVI or any of its affiliates, officers, directors, attorneys, accountants or any affiliates of any thereof and each other person, if any, who controls any of the foregoing, within the meaning of Section 15 of the Securities Act for any tax, investment or legal advice (other than reliance on information furnished by AVI, the representations, warranties and covenants contained herein).

4.23 BROKERS OR FINDERS. No agent, broker, investment banker, financial adviser or other firm or person is or will be entitled to any broker's or finder's fee, or any other commission or

similar fee, in connection with any of the transactions contemplated by this Agreement or any of the other Transaction Documents, and SuperGen agrees to indemnify and hold AVI and its subsidiaries harmless from and against any and all claims, liabilities or obligations with respect to any such fees or commissions asserted by any person on the basis of any act or statement determined to have been made to such person by SuperGen.

SECTION 5

ADDITIONAL AGREEMENTS

AVI and SuperGen further agree with each other as follows:

5.1 FINANCIAL STATEMENTS AND OTHER REPORTS.

5.1.1 As long as SuperGen beneficially owns, either outright or pursuant to rights to acquire, at least five percent (5%) of AVI Common Stock on either a primary or fully diluted basis, AVI shall deliver to SuperGen, promptly after transmission thereof, copies of all such financial statements, proxy statements, notices and reports as AVI shall send to its public shareholders and copies of all registration statements (without exhibits), other than registration statements on Form S-8 or any similar successor form, and all reports which it files with the SEC (or any governmental body or agency succeeding to the functions of the SEC). SuperGen shall have the right to discuss such financial statements, proxy statements, notices, reports, registration statements and filings with such officers of AVI as SuperGen may reasonably designate upon reasonable notice and at reasonable times, and to share such information with SuperGen's professional advisers, subject to the confidentiality provisions set forth in Section 5.2.

5.1.2 As long as AVI beneficially owns, either outright or pursuant to rights to acquire, at least five percent (5%) of SuperGen Common Stock on either a primary or fully diluted basis, SuperGen shall deliver to AVI, promptly after transmission thereof, copies of all such financial statements, proxy statements, notices and reports as SuperGen shall send to its public stockholders and copies of all registration statements (without exhibits), other than registration statements on Form S-8 or any similar successor form, and all reports which it files with the SEC (or any governmental body or agency succeeding to the functions of the SEC). SuperGen shall have the right to discuss such financial statements, proxy statements, notices, reports, registration statements and filings with such officers of SuperGen as AVI may reasonably designate upon reasonable notice and at reasonable times, and to share such information with AVI's professional advisers, subject to the confidentiality provisions set forth in Section 5.2.

5.2 CONFIDENTIALITY. Except as permitted by Section 5.3, each party agrees (and shall cause its professional advisers to agree) not to disclose to any person any information or data obtained by them pursuant to Section 5.1 until such information or data otherwise becomes publicly available or except pursuant to a valid subpoena, judicial process or its equivalent or as otherwise

required by law. At the disclosing party's request, the receiving party shall, and shall cause its professional advisers to, sign a confidentiality agreement, in form and substance reasonably satisfactory to the disclosing party, as a condition to the receipt of confidential nonpublic information of the disclosing party by such advisers pursuant to Section 5.1.

5.3 PUBLIC ANNOUNCEMENTS. Each of the parties hereto will cooperate with each other in the development and distribution of all news releases and other public information disclosures with respect to this Agreement and the other Transaction Documents and any of the transactions contemplated hereby and thereby, and neither party hereto directly or indirectly through its officers and/or directors shall make any further announcement, news release or disclosure without first consulting with the other party hereto except (a) with the prior written consent of the other party or (b) to the extent such party believes in good faith, after consultation with legal counsel, that such announcement, release or disclosure is required by law. Each party shall not, and shall cause its officers and directors not to, make or contribute to any public statement, news release or other public communication or filing disclosing personal information concerning the other party or any member of the other party without the prior written consent of the other party and such member unless such party believes in good faith, after consultation with legal counsel, that such statement, release, communication or filing is required by law.

5.4 HSR ACT. AVI shall be responsible for all applicable filing fees under the HSR Act ") relating to the acquisition of AVI Shares and Warrant Shares, and SuperGen shall be responsible for all applicable filing fees under the HSR Act relating to the acquisition of SuperGen Shares. Each party shall use its best efforts to cooperate with the other party in making the applicable filings under the HSR Act, and with respect to the exercise of the Warrant, SuperGen agrees not to exercise the Warrant on any date prior to the expiration or early termination of the applicable waiting periods under the HSR Act.

5.5 RESTRICTIONS ON TRANSFER.

5.5.1 SuperGen shall not, directly or indirectly, sell, transfer, assign, pledge, distribute or otherwise dispose of, or grant any option with respect to, establish any "short" or put-equivalent position with respect to, or otherwise enter into any agreement, arrangement, transaction or series of transactions (through derivatives or otherwise) which has or is intended to have the effect, directly or indirectly, of reducing SuperGen's risk of ownership in the AVI Shares or Warrant Shares it purchases pursuant to this Agreement (each of the foregoing, a "Transfer") unless the Transfer is effected pursuant to (a) a registration statement under the Securities Act and any applicable state securities laws or (b) an exemption from the registration requirements under federal and state securities laws, and AVI receives an opinion of counsel, reasonably satisfactory to AVI stating that such Transfer will not require registration of the AVI Shares or the Warrant Shares, as the case may be, under the Securities Act or state securities laws, except that such an opinion will not be required for transactions made pursuant to Rule 144 provided that SuperGen and SuperGen's

broker, if necessary, provide AVI with the necessary representations for counsel to AVI to issue an opinion with respect to such transaction.

5.5.2 AVI shall not, directly or indirectly, make a Transfer of the SuperGen Shares it purchases pursuant to this Agreement unless the Transfer is effected pursuant to (a) a registration statement under the Securities Act and any applicable state securities laws or (b) an exemption from the registration requirements under federal and state securities laws, and SuperGen receives an opinion of counsel, reasonably satisfactory to SuperGen stating that such Transfer will not require registration of the SuperGen Shares, under the Securities Act or state securities laws, except that such an opinion will not be required for transactions made pursuant to Rule 144 provided that AVI and AVI's broker, if necessary, provide SuperGen with the necessary representations for counsel to SuperGen to issue an opinion with respect to such transaction.

5.6 LEGENDS.

5.6.1 Each certificate representing the AVI Shares and Warrant Shares shall be endorsed with the following legends, and any other legends required by law:

THE SECURITIES EVIDENCED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD, TRANSFERRED, ASSIGNED OR HYPOTHECATED UNLESS THERE IS AN EFFECTIVE REGISTRATION STATEMENT UNDER SUCH ACT COVERING SUCH SECURITIES, THE SALE IS MADE IN ACCORDANCE WITH RULE 144 UNDER THE ACT, OR AVI RECEIVES AN OPINION OF COUNSEL FOR THE HOLDER OF THESE SECURITIES REASONABLY SATISFACTORY TO AVI, STATING THAT SUCH SALE, TRANSFER, ASSIGNMENT OR HYPOTHECATION IS EXEMPT FROM THE REGISTRATION AND PROSPECTUS DELIVERY REQUIREMENTS OF SUCH ACT.

THE SECURITIES EVIDENCED BY THIS CERTIFICATE ARE SUBJECT TO RESTRICTIONS ON TRANSFER SET FORTH IN AN AGREEMENT DATED AS OF APRIL 4, 2000, BY AND BETWEEN SUPERGEN, INC. AND AVI BIOPHARMA, INC., A COPY OF WHICH AGREEMENT MAY BE OBTAINED AT NO COST BY WRITTEN REQUEST MADE BY THE HOLDER OF RECORD OF THIS CERTIFICATE TO THE SECRETARY OF AVI BIOPHARMA, INC. AT AVI BIOPHARMA, INC.'S PRINCIPAL EXECUTIVE OFFICES.

AVI need not register a transfer of the legended AVI Shares or Warrant Shares, and may also instruct its transfer agent not to register the transfer of such AVI Shares or Warrant Shares, as the case may be, unless the conditions specified in each of the foregoing legends are satisfied. The first of the foregoing legends shall be removed from any security legended

pursuant to this Section 5.6.1, and AVI shall issue a certificate without such legend to the holder of such AVI Shares or Warrant Shares, as the case may be, if such AVI Shares or Warrant Shares are registered under the Securities Act and a prospectus meeting the requirements of Section 10 of the Securities Act is available or if such holder satisfies the requirements of Rule 144(k), or the holder provides AVI with an opinion of counsel, reasonably satisfactory to AVI, to the effect that a public sale, transfer or assignment of such AVI Shares or Warrant Shares may be made without registration. The second of the foregoing legends shall be removed from any AVI Shares or Warrant Shares legended in accordance with this Section 5.6.1, and AVI shall issue a certificate without such legend to the holder of such AVI Share or Warrant Share at such time as such share is transferred in accordance with Section 5.5. The stop transfer instructions with respect to any legended share shall be removed if both of the foregoing legends are removed in accordance with this Section 5.6.1.

5.6.2 Each certificate representing the SuperGen Shares shall be endorsed with the following legends, and any other legends required by law:

> THE SECURITIES EVIDENCED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD, TRANSFERRED, ASSIGNED OR HYPOTHECATED UNLESS THERE IS AN EFFECTIVE REGISTRATION STATEMENT UNDER SUCH ACT COVERING SUCH SECURITIES, THE SALE IS MADE IN ACCORDANCE WITH RULE 144 UNDER THE ACT, OR SUPERGEN RECEIVES AN OPINION OF COUNSEL FOR THE HOLDER OF THESE SECURITIES REASONABLY SATISFACTORY TO SUPERGEN, STATING THAT SUCH SALE, TRANSFER, ASSIGNMENT OR HYPOTHECATION IS EXEMPT FROM THE REGISTRATION AND PROSPECTUS DELIVERY REQUIREMENTS OF SUCH ACT.
>
> THE SECURITIES EVIDENCED BY THIS CERTIFICATE ARE SUBJECT TO RESTRICTIONS ON TRANSFER SET FORTH IN AN AGREEMENT DATED AS OF APRIL 4, 2000, BY AND BETWEEN SUPERGEN, INC. AND AVI BIOPHARMA, INC., A COPY OF WHICH AGREEMENT MAY BE OBTAINED AT NO COST BY WRITTEN REQUEST MADE BY THE HOLDER OF RECORD OF THIS CERTIFICATE TO THE SECRETARY OF SUPERGEN, INC. AT SUPERGEN, INC.'S PRINCIPAL EXECUTIVE OFFICES.

SuperGen need not register a transfer of the legended SuperGen Shares, and may also instruct its transfer agent not to register the transfer of such SuperGen Shares, unless the conditions specified in each of the foregoing legends are satisfied. The first of the foregoing legends shall be removed from any security legended pursuant to this Section 5.6.2, and SuperGen shall issue a certificate without such legend to the holder of such SuperGen Shares, if such SuperGen Shares are registered

under the Securities Act and a prospectus meeting the requirements of Section 10 of the Securities Act is available or if such holder satisfies the requirements of Rule 144(k), or the holder provides SuperGen with an opinion of counsel, reasonably satisfactory to SuperGen, to the effect that a public sale, transfer or assignment of such SuperGen Shares may be made without registration. The second of the foregoing legends shall be removed from any SuperGen Shares legended in accordance with this Section 5.6.2, and SuperGen shall issue a certificate without such legend to the holder of such SuperGen Share at such time as such share is transferred in accordance with Section 5.5. The stop transfer instructions with respect to any legended share shall be removed if both of the foregoing legends are removed in accordance with this Section 5.6.2.

5.7 FURTHER ASSURANCES. At any time or from time to time after the Closing, each Subsequent Closing and the Initial Warrant Closing, each party shall execute and deliver to the other party or parties such other documents and instruments, provide such materials and information and take such other actions as either party may reasonably request more effectively to carry out the provisions of this Agreement and the other Transaction Documents.

5.8 USE OF FUNDS. AVI shall use the proceeds from the sale of the AVI Shares to SuperGen and the milestone payments contemplated by Section 5.1 of the U.S. Agreement for proper corporate purposes, including allocating in a responsible manner a sufficient portion of such proceeds and milestone payments calculated to cause AVI to use its reasonable efforts to fulfill its obligations under the U.S. Agreement.

5.9 REGISTRATION RIGHTS AGREEMENT. The parties shall enter into a registration rights agreement dated the date hereof in substantially the form attached hereto as EXHIBIT B with respect to the AVI Shares, Warrant Shares and SuperGen Shares.

SECTION 6

CONDITIONS TO CLOSINGS

6.1 CONDITIONS TO SUPERGEN'S OBLIGATION TO ACQUIRE THE AVI SHARES AND ISSUE SUPERGEN SHARES. The obligation of SuperGen to purchase the AVI Shares from AVI and issue SuperGen Shares to AVI hereunder is subject to the satisfaction, on or prior to the Closing Date or the Subsequent Closing Date, as the case may be, of the following conditions, any of which may be waived by SuperGen, in SuperGen's sole discretion, to the extent permitted by law:

6.1.1 REPRESENTATIONS AND WARRANTIES CORRECT. The representations and warranties made by AVI in this Agreement and the other Transaction Documents shall be true and correct when made and as of the Closing Date.

6.1.2 PERFORMANCE OF OBLIGATIONS. AVI shall have performed in all material respects all covenants, agreements and other obligations required to be performed or observed by

AVI pursuant to this Agreement on or prior to the Closing Date, and AVI shall have delivered to SuperGen a certificate to such effect, executed by the chief executive officer and chief financial officer of AVI and dated the Closing Date.

6.1.3 COMPLIANCE WITH LAW. At the time of the Closing and each Subsequent Closing, the issuance by AVI and the acquisition by SuperGen of the AVI Shares, and the issuance by SuperGen and the acquisition by AVI of the SuperGen Shares, hereunder shall be legally permitted by all laws and regulations to which SuperGen and AVI are subject; all waiting periods, if any, under the HSR Act applicable to the issuance and sale of the AVI Shares and SuperGen Shares hereunder shall have expired or been terminated and no preliminary or permanent injunction or other order by any court of competent jurisdiction prohibiting or otherwise restraining such acquisition shall be in effect.

6.1.4 U.S. AGREEMENT. The U.S. Agreement shall be in full force and effect and shall not have been terminated by either party thereto nor shall either party have given notice of such termination.

6.1.5 PURPOSELY LEFT BLANK.

6.1.6 REGISTRATION RIGHTS AGREEMENT. The parties shall have executed the Registration Rights Agreement as set forth in Section 5.9.

6.2 CONDITIONS TO AVI'S OBLIGATION TO ISSUE AVI SHARES AND ACQUIRE SUPERGEN SHARES. AVI's obligation to purchase SuperGen Shares from SuperGen and sell the AVI Shares to SuperGen hereunder is subject to the satisfaction, on or prior to the Closing Date, of the following conditions, any of which may be waived by AVI, in its sole discretion, to the extent permitted by law:

6.2.1 REPRESENTATIONS AND WARRANTIES CORRECT. The representations and warranties made by SuperGen in this Agreement shall be true and correct when made, and shall be true and correct on the Closing Date with the same force and effect as if they had been made on and as of the Closing Date, and SuperGen shall have delivered to AVI a certificate to such effect, executed by a duly authorized officer of SuperGen and dated the Closing Date.

6.2.2 PERFORMANCE OF OBLIGATIONS. SuperGen shall have performed in all material respects all covenants, agreements and other obligations required to be performed or observed by SuperGen pursuant to this Agreement on or prior to the Closing Date, and SuperGen shall have delivered to AVI a certificate to such effect, executed by a duly authorized officer of SuperGen and dated the Closing Date.

6.2.3 COMPLIANCE WITH LAW. At the time of Closing, the issuance by AVI and the acquisition by SuperGen of the AVI Shares, and the issuance by SuperGen and the acquisition by

AVI of the SuperGen Shares, hereunder shall be legally permitted by all laws and regulations to which either SuperGen or AVI is subject; all waiting periods, if any, under the HSR Act applicable to the issuance and acquisition of the AVI Shares and SuperGen Shares hereunder shall have expired or been terminated and no preliminary or permanent injunction or other order by any court of competent jurisdiction prohibiting or otherwise restraining such acquisition shall be in effect.

6.2.4 REGISTRATION RIGHTS AGREEMENT. The parties shall have executed the Registration Rights Agreement as set forth in Section 5.9.

6.3 CONDITIONS TO THE INITIAL WARRANT CLOSING. The Initial Warrant Closing shall be subject to the conditions that, on or prior to the Warrant Closing Date, (i) the representations and warranties made by AVI and SuperGen in this Agreement shall be true and correct on the Warrant Exercise Date, (ii) the issuance by AVI and the acquisition by SuperGen of the Warrant Shares hereunder shall be legally permitted by all laws and regulations to which either SuperGen or AVI is subject, (iii) all waiting periods, if any, under the HSR Act if applicable to the acquisition of such Warrant Shares hereunder shall have expired or been terminated, (iv) no preliminary or permanent injunction or other order by any court of competent jurisdiction prohibiting or otherwise restraining such issuance or acquisition shall be in effect, and (v) this Agreement shall have not been terminated as a result of the termination of the U.S. Agreement.

SECTION 7

MISCELLANEOUS

7.1 ACCESS TO INFORMATION. No information or knowledge obtained in any investigation by SuperGen or AVI shall affect or be deemed to modify any representation or warranty contained in this Agreement or the Transaction Documents.

7.2 WAIVERS AND AMENDMENTS. This Agreement or any provision hereof may be amended, waived, discharged or terminated only by a statement in writing signed by the party against which enforcement of the amendment, waiver, discharge or termination is sought.

7.3 GOVERNING LAW. This Agreement shall be governed in all respects by the internal laws of the State of Delaware, without respect to the conflicts or the laws or rules thereof.

7.4 SURVIVAL. The representations, warranties, covenants and agreements made in this Agreement shall survive the closings of the transactions contemplated hereby, notwithstanding any investigation made by any party. All statements as to factual matters contained in any certificate delivered by or on behalf of each party pursuant hereto or in connection with the transactions contemplated hereby shall be deemed to be representations and warranties by such party hereunder as of the date of such certificate or instrument.

7.5 SUCCESSORS AND ASSIGNS. Except as expressly provided or contemplated by this Agreement and the other Transaction Documents, neither this Agreement nor any right, obligation or interest hereunder shall be assigned, either in whole or in part, by any party hereto (other than by operation of law) without the prior written consent of the other parties; provided, that nothing herein shall prevent or limit the ability of SuperGen or AVI to assign any or all of its rights under this Agreement or any of the other Transaction Documents to an affiliate. Subject to the foregoing limitations, the provisions hereof shall inure to the benefit of, and be binding upon and enforceable by, the parties hereto and their respective successors and assigns.

7.6 ENTIRE AGREEMENT. This Agreement, the U.S. Agreement and the Transaction Documents, and the other certificates and documents delivered pursuant hereto constitute the full and entire understanding and agreement between the parties with regard to the subjects hereof and supersede any prior and contemporaneous agreements, understandings, negotiations and discussions, whether oral or written, of the parties with respect thereto.

7.7 NOTICES. All notices and other communications required or permitted hereunder shall be in writing and shall be delivered personally or by overnight courier or mailed by first class mail, or Express Mail, postage prepaid, or via facsimile, addressed (a) if to AVI, at AVI BioPharma, Inc., One SW Columbia, Portland, OR 97258, Attn: President, Alan P. Timmins, with a copy to Alter Wynne LLC, 222 SW Columbia, #1700, Portland, Oregon 97201, Attn: Byron Milstead, or to such other address (including electronic mail address) as AVI shall have furnished to SuperGen in writing or by electronic mail, or (b) if to SuperGen, at SuperGen, Inc., Two Annabel Lane, Suite 220, San Ramon, CA 94583, Attn: President and CEO, Dr. Joseph Rubinfeld, with a copy of any said notice to be sent to Wilson Sonsini Goodrich & Rosati, 650 Page Mill Road, Palo Alto, CA 94304-1050, Attn: Page Mailliard, Esq., or to such other address (including electronic mail address) as SuperGen shall have furnished to AVI in writing or by electronic mail. Notices that are mailed by (i) first class mail shall be deemed received three (3) business days after deposit in the mail and (ii) Express Mail or overnight courier shall be deemed received one (1) business day after deposit in the mail or delivery to such courier. In the event that the notice is sent by facsimile, notice shall be deemed to have been received when sent and confirmed as to receipt.

7.8 SEVERABILITY. In case any provision of this Agreement shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions of this Agreement shall not in any way be affected or impaired thereby.

7.9 EXPENSES. AVI and SuperGen shall each bear their own fees, costs and expenses incurred on their behalf with respect to the Agreement and the transactions contemplated hereby and any amendments or waiver thereto.

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

7.11 CALIFORNIA CORPORATE SECURITIES LAW. THE SALE OF THE SECURITIES WHICH ARE THE SUBJECT OF THIS AGREEMENT HAS NOT BEEN QUALIFIED WITH THE COMMISSIONER OF CORPORATIONS OF THE STATE OF CALIFORNIA AND THE ISSUANCE OF SUCH SECURITIES OR THE PAYMENT OR RECEIPT OF ANY PART OF THE CONSIDERATION THEREFOR PRIOR TO SUCH QUALIFICATION IS UNLAWFUL UNLESS THE SALE OF SECURITIES IS EXEMPT FROM THE QUALIFICATION BY SECTION 25100, 25102, OR 25105 OF THE CALIFORNIA CORPORATIONS CODE. THE RIGHTS OF ALL PARTIES TO THIS AGREEMENT ARE EXPRESSLY CONDITIONED UPON SUCH QUALIFICATION BEING OBTAINED, UNLESS THE SALE IS SO EXEMPT.

7.12 COUNTERPARTS. This Agreement may be executed in any number of counterparts, each of which shall be an original, but all of which together shall constitute one instrument.

7.13 DELAYS OR OMISSIONS. No delay or omission to exercise any right, power or remedy accruing to AVI or to SuperGen shall impair any such right, power or remedy of AVI or SuperGen, nor shall it be construed to be a waiver of any breach or default under this Agreement and the other Transaction Documents, or an acquiescence therein or in any similar breach or default thereafter occurring; nor shall any delay or omission to exercise any right, power or remedy or any waiver of any single breach or default be deemed a waiver of any other right, power or remedy or breach or default theretofore or thereafter occurring. All remedies, either under this Agreement and the Transaction Documents, or by law otherwise afforded to AVI or SuperGen, shall be cumulative and not alternative.

7.14 DISPUTE RESOLUTION.The parties hereto agree that any disputes which may arise during the term of this Agreement which relate to either party's rights and/or obligations hereunder shall be resolved in accordance with the ADR provisions contained in Exhibit 20.3 of the U.S. Agreement, except that either party may seek judicial relief or enforcement to pursue equitable or other remedies not addressed by the ADR provisions, including without limitation specific performance or injunctive relief, to pursue a claim of fraudulent or otherwise inequitable treatment under the ADR proceedings or to otherwise enforce a judgment under the ADR proceedings.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, SuperGen and AVI have caused this Agreement to be duly executed as of the date and year first above written.

AVI BIOPHARMA, INC.
an Oregon corporation

By: /s/ Alan P. Timmins

Name: Alan P. Timmins
Title: President

SUPERGEN, INC.
a Delaware corporation

By: /s/ Joseph Rubinfeld

Name: Joseph Rubinfeld
Title: President & CEO

[Signature Page to Purchase Agreement]

FORM OF

COMPLIANCE CERTIFICATE

Pursuant to Section 6.1 of that certain Common Stock and Warrant Purchase Agreement dated as of April 4, 2000 between AVI BioPharma Inc., an Oregon corporation ("AVI"), and SuperGen, Inc. ("SuperGen") set forth therein (the "Agreement"), the undersigned, Alan P. Timmins, does hereby certify on behalf of AVI as follows:

1. He is the duly elected President of AVI;

2. AVI has fulfilled all of the conditions specified in Sections 5 and 6 of the Agreement; and

3. Except as set forth in the Agreement and the disclosure schedules provided to SuperGen, the representations and warranties of AVI set forth in Section 3 of the Agreement are true and correct as of the date hereof.

IN WITNESS WHEREOF, the undersigned has executed this certificate on _____ __, 2000.

_____
Name: Alan P. Timmins
Title: President

FORM OF

COMPLIANCE CERTIFICATE

Pursuant to Section 6.1 of that certain Common Stock and Warrant Purchase Agreement dated as of April 4, 2000 between AVI BioPharma Inc., an Oregon corporation ("AVI"), and SuperGen, Inc. ("SuperGen") set forth therein (the "Agreement"), the undersigned, Joseph Rubinfeld, does hereby certify on behalf of SuperGen as follows:

2. He is the duly elected Chief Executive Officer of SuperGen;

2. SuperGen has fulfilled all of the conditions specified in Sections 5 and 6 of the Agreement; and

3. Except as set forth in the Agreement and the disclosure schedules provided to AVI, the representations and warranties of SuperGen set forth in Section 4 of the Agreement are true and correct as of the date hereof.

IN WITNESS WHEREOF, the undersigned has executed this certificate on _____ __, 2000.

_____
Name: Joseph Rubinfeld
Title: Chief Executive Officer

EXHIBIT A

REGISTRATION RIGHTS AGREEMENT

This Registration Rights Agreement (the "Agreement") is made as of April 4, 2000 between SuperGen, Inc., a Delaware corporation ("SuperGen") and AVI BioPharma, Inc., an Oregon corporation ("AVI") pursuant to the terms of a Common Stock and Warrant Purchase Agreement between the parties dated as of April 4, 2000 (the "Purchase Agreement").

SECTION 1

DEFINITIONS

1.1 DEFINITIONS. As used in this Agreement, the following terms shall have the following respective meanings:

"ADDITIONAL SUPERGEN SHARES" shall mean the shares of SuperGen Common Stock AVI receives from SuperGen pursuant to Section 1.3 of the Purchase Agreement.

"AVI COMMON STOCK" shall mean AVI's common stock, par value $0.0001 per share.

"AVI SHARES" shall mean the shares of AVI Common Stock that SuperGen purchases from AVI pursuant to Section 1.2 of the Purchase Agreement.

"CLOSING DATE" shall mean the Closing Date as defined in Section 2 of the Purchase Agreement.

"COMMISSION" shall mean the Securities and Exchange Commission or any other federal agency at the time administering the Securities Act.

"MATERIAL EVENT" shall mean the happening of any event during the period that the registration statement described in Sections 2.1 and 3.1 hereof is required to be effective as a result of which, in the reasonable judgment of AVI or SuperGen, as the case may be, such registration statement or the related prospectus contains or may contain any untrue statement of a material fact or omits or may omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading.

"FORM S-3" means such form under the Securities Act as in effect on the date hereof or any registration form under the Securities Act subsequently adopted by the SEC which similarly permits inclusion or incorporation of substantial information by reference to other documents filed by either AVI or SuperGen with the Commission.

"HOLDER" shall mean, for purposes of Section 2, SuperGen or any person holding Registrable Securities to whom SuperGen's rights under Section 2 of this Agreement have been transferred in accordance with Section 2.9, and for purposes of Section 3, AVI or any person holding Registrable

Securities to whom AVI's rights under Section 3 of this Agreement have been transferred in accordance with Section 3.8.

"INITIAL HOLDERS" shall mean SuperGen or any Holders who in aggregate hold greater than 20% of the Registrable Securities for purposes of Section 2.

"REGISTRABLE SECURITIES" shall mean, for purposes of Section 2, AVI Shares and Warrant Shares, and for purposes of Section 3, SuperGen Shares or Additional SuperGen Shares, as the case may be, until such time that such securities have been (i) sold to or through a broker or dealer or underwriter in a public distribution or a public securities transaction, or (ii) sold or are, in the opinion of counsel for AVI in the case of AVI Shares and Warrant Shares, and SuperGen in the case of SuperGen Shares and Additional SuperGen Shares, available for sale in a single transaction exempt from the registration and prospectus delivery requirements of the Securities Act so that all transfer restrictions and restrictive legends with respect thereto are removed upon the consummation of such sale.

The terms "REGISTER," "REGISTERED" and "REGISTRATION" refer to a registration effected by preparing and filing a registration statement in compliance with the Securities Act, and the declaration or ordering of the effectiveness of such registration statement.

"REGISTRATION EXPENSES" shall mean all expenses, except as otherwise stated below, incurred by AVI or SuperGen, as the registering company, in complying with Sections 2.1, 2.2 and 2.3 (applicable to AVI) or Sections 3.1 and 3.2 (applicable to SuperGen) hereof, including, without limitation, all registration, qualification and filing fees, printing expenses, escrow fees, fees and disbursements of counsel for such registering company, blue sky fees and expenses, the expense of any special audits incident to or required by any such registration (but excluding the compensation of regular employees of AVI or SuperGen as the registering company which shall be paid in any event by the registering company).

"RESTRICTED SECURITIES" shall mean any AVI Shares, Warrant Shares, SuperGen Shares or Additional SuperGen Shares required to bear the legend set forth in Section 5.6 of the Purchase Agreement.

"SECURITIES ACT" shall mean the Securities Act of 1933, as amended, or any similar federal statute and the rules and regulations of the Commission thereunder, all as the same shall be in effect at the time.

"SELLING EXPENSES" shall mean all underwriting discounts, selling commissions and stock transfer taxes applicable to the securities registered by AVI (related to Sections 2.1, 2.2 and 2.3) or SuperGen (related to Sections 3.1 and 3.2, except as set forth above, all reasonable fees and disbursements of counsel for SuperGen or AVI.

"SUPERGEN COMMON STOCK" shall mean the common stock of SuperGen, par value $0.001.

"SUPERGEN SHARES" shall mean the shares of SuperGen Common Stock issued to AVI pursuant to Section 1.2 of the Purchase Agreement.

"WARRANT" shall mean the warrant AVI shall issue to SuperGen pursuant to Section 1.4 of the Purchase Agreement.

"WARRANT SHARES" shall mean the shares of AVI Common Stock issued or issuable upon exercise of the Warrant.

SECTION 2

REGISTRATION OF AVI SHARES AND WARRANT SHARES

2.1 REGISTRATION OF AVI SHARES.

(a) REGISTRATION. AVI shall use commercially reasonable efforts to cause the AVI Shares which are Registrable Securities to be registered under the Securities Act no later than 90 days after the Closing Date, so as to permit the resale thereof, and in connection therewith shall prepare and file with the SEC and shall use commercially reasonable efforts to cause to become effective, a Form S-3 covering the AVI Shares; PROVIDED, HOWEVER, that the Holders, if any, shall provide all such information and materials relating to the Holders, as applicable, and take all such action as may be required in order to permit AVI to comply with all the applicable requirements of the Commisson and to obtain any desired acceleration of the effective date of such Form S-3, such provision of information and materials to be a condition precedent to the obligations of AVI pursuant to this Agreement and the Purchase Agreement. The offerings made pursuant to such registrations shall not be underwritten.

(b) POSTPONEMENT OF REGISTRATION.

(i) REGISTRATION. Notwithstanding Section 2.1(a) above, AVI shall be entitled to postpone the declaration of effectiveness of any Form S-3 prepared and filed pursuant to this Section 2.1 for a reasonable period of time, but not in excess of 60 calendar days after the applicable deadline, if the Board of Directors of AVI, acting in good faith, determines that there exists material non-public information about AVI.

(ii) MATERIAL EVENT. The Holders agree that, upon receipt of any notice from AVI of the happening of a Material Event, they will forthwith discontinue disposition of the AVI Shares which are Registrable Securities pursuant to any Form S-3 until the receipt of copies of supplemented or amended prospectuses prepared by AVI (which AVI will use its commercially reasonable efforts to prepare and file promptly), and, if so directed by AVI, the Holders will deliver to AVI all copies in their possession, other than permanent file copies then in the Holders' possession, of the prospectus covering such AVI Shares current at the time of receipt of such notice. In no event shall AVI delay causing to be effective a supplement or post-effective amendment to any Form S-3 pursuant to Section 2.1 or the related prospectus, for more than 90 consecutive days or 120 days during any 365 consecutive calendar day period.

2.2 REGISTRATION OF WARRANT SHARES; REQUESTED REGISTRATION.

(a) REQUEST FOR REGISTRATION. If, at any time after the date SuperGen exercises its Warrant, in whole or in part, AVI shall receive from the Initial Holders a written request that AVI effect any registration, qualification or compliance with respect to the Warrant Shares which are Registrable Securities, AVI will,

(i) promptly give written notice of the proposed registration, qualification or compliance to any other Holders; and

(ii) as soon as practicable, use its diligent efforts to effect such registration, qualification or compliance (including, without limitation, appropriate qualification under applicable blue sky or other state securities laws and appropriate compliance with applicable regulations issued under the Securities Act and any other governmental requirements or regulations) as may be so requested and as would permit or facilitate the sale and distribution of all or such portion of such Registrable Securities as are specified in such request, together with all or such portion of Registrable Securities of other Holders, if any, joining in such request as are specified in a written request received by AVI within 20 days after receipt of such written notice from AVI; PROVIDED, HOWEVER, that AVI shall not be obligated to take any action to effect any such registration, qualification or compliance pursuant to this Section 2.2:

(A) During the period starting with the date 60 days prior to AVI's estimated date of filing of, and ending on the date 3 months immediately following the effective date of, any registration statement pertaining to securities of AVI (other than a registration of securities in a Rule 145 transaction or with respect to an employee benefit plan), provided that AVI is actively employing in good faith all reasonable efforts to cause such registration statement to become effective;

(B) Unless the Registrable Securities sought to be registered by the Initial Holders and other Holders pursuant to this Section 2.2 comprise at least 100,000 Warrant Shares;

(C) After the Company has effected two such registration pursuant to this Section 2.2(a), and such registration has been declared or ordered effective and the securities offered pursuant to such registrations have been sold; or

(D) If AVI shall furnish to the Holders a certificate signed by the President of AVI stating that in the good faith judgment of the Board of Directors it would be seriously detrimental to AVI or its shareholders for a registration statement to be filed in the near future, then AVI's obligation to use its best efforts to register, qualify or comply under this Section 2.2 shall be deferred for a period not to exceed 60 days from the date of receipt of written request from the Initiating Holders, PROVIDED, HOWEVER, that AVI shall not exercise the right to defer registration granted pursuant to this paragraph (D) more than one time in any twelve month period.

Subject to the foregoing clauses (A) through (D), AVI shall file a registration statement covering the Registrable Securities so requested to be registered as soon as practicable after receipt of the request or requests of the Holders, but in any event within 120 days of such request or requests.

(b) UNDERWRITING. In the event that a registration pursuant to Section 2.2(a) is for a registered public offering involving an underwriting, AVI shall so advise the Holders (as part of the notice given pursuant to Section 2.2 (a)(i). In such event, the right of the Holders to registration pursuant to Section 2.2(a) shall be conditioned upon such Holders' participation in the underwriting arrangements required by this Section 2.2(b), and the inclusion of such Holders' Warrant Shares which are Registrable Securities in the underwriting to the extent requested shall be limited to the extent provided herein.

AVI shall (together with all Holders proposing to distribute their securities through such underwriting) enter into an underwriting agreement in customary form with the managing underwriter selected for such underwriting by a majority in interest of the Holders, but subject to AVI's reasonable approval. Notwithstanding any other provision of this Section 2.2, if the managing underwriter advises the Holders in writing that marketing factors require a limitation of the number of shares to be underwritten, then AVI shall so advise all Holders of Warrant Shares which are Registrable Securities and the number of Registrable Securities that may be included in the registration and underwriting shall be allocated among all Holders thereof in proportion, as nearly as practicable, to the respective amounts of Registrable Securities held by such Holders at the time of filing the registration statement. No Registrable Securities excluded from the underwriting by reason of the underwriter's marketing limitation shall be included in such registration. To facilitate the allocation of shares in accordance with the above provisions, AVI or the underwriters may round the number of shares allocated to any Holder to the nearest 100 shares.

(c) If any Holder of Registrable Securities disapproves of the terms of the underwriting, such person may elect to withdraw therefrom by written notice to AVI, the managing underwriter and the Initial Holders. The Registrable Securities and/or other securities so withdrawn shall also be withdrawn from registration, and shall not be transferred in a public distribution prior to 180 days after the effective date of the registration statement relating thereto, or such other shorter period of time as the underwriters may require.

2.3 AVI REGISTRATION

(a) NOTICE OF REGISTRATION. If at any time or from time to time, but in no event earlier than SuperGen's exercise of the Warrant, AVI shall determine to register any of its securities, either for its own account or the account of a security holder or holders, other than (i) a registration relating solely to employee benefit plans, or (ii) a registration relating solely to a Commission Rule 145 transaction, AVI will:

(i) promptly give to all Holders of Warrant Shares which are Registrable Securities written notice thereof; and

(ii) include in such registration (and any related qualification under blue sky laws or other compliance), and in any underwriting involved therein, all the Registrable Securities specified in a written request or requests, made within twenty (20) days after receipt of such written notice from AVI, by all Holders.

(b) UNDERWRITING. If the registration of which AVI gives notice is for a registered public offering involving an underwriting, AVI shall so advise the Holders as a part of the

written notice given pursuant to Section 2.3(a)(i). In such event the right of and the Holders to registration pursuant to this Section 2.3 shall be conditioned upon the Holders' participation in such underwriting and the inclusion of the Registrable Securities in the underwriting shall be limited to the extent provided herein. All Holders proposing to distribute their securities through such underwriting shall, together with AVI, enter into an underwriting agreement in customary form with the managing underwriter selected for such underwriting by AVI. Notwithstanding any other provision of this Section 2.3, if the managing underwriter determines that marketing factors require a limitation of the number of shares to be underwritten, the managing underwriter and AVI may reduce the securities to be included in such registration to the extent the underwriters deem necessary (to zero if necessary). AVI shall so advise the Holders and all holders of securities distributing their securities through such underwriting and the number of shares of Registrable Securities that may be included in the registration and underwriting shall be allocated among all such holders in proportion, as nearly as practicable, to the respective amounts of Registrable Securities held by the Holders at the time of filing the registration statement. To facilitate the allocation of shares in accordance with the above provisions, AVI may round the number of shares allocated to any Holder or holder to the nearest 100 shares. If any Holder or holder disapproves of the terms of any such underwriting, it may elect to withdraw therefrom by written notice to AVI and the managing underwriter. Any securities excluded or withdrawn from such underwriting shall be withdrawn from such registration, and shall not be transferred in a public distribution prior to 180 days after the effective date of the registration statement relating thereto, or such other shorter period of time as the underwriters may require.

(c) RIGHT TO TERMINATE REGISTRATION. AVI shall have the right to terminate or withdraw any registration initiated by it under this Section 2.4 prior to the effectiveness of such registration whether or not any holder has elected to include securities in such registration.

2.4 REGISTRATION PROCEDURES. In the case of each registration, qualification or compliance effected by AVI pursuant to this Section 2 (including the registration on Form S-3), AVI will keep the Holders advised in writing as to the initiation of each registration, qualification and compliance and as to the completion thereof. At its expense AVI will:

(a) Prepare and file with the Commission a registration statement with respect to such securities and use its best efforts to cause such registration statement to become and remain continuously effective for at least one year or until the sale of all Registrable Securities described in the Registration Statement has been completed;

(b) Furnish to the Holders such reasonable number of copies of the registration statement, preliminary prospectus, final prospectus and such other documents as the Holders or such underwriters may reasonably request in order to effect the offering and sale of the shares to be offered and sold, but only while AVI shall be required under the provisions hereof to cause such registration statement to remain current;

(c) Use its commercially reasonable efforts to register or qualify the shares of the Registrable Securities covered by such registration under the securities or blue sky laws of such jurisdictions as the Holders shall reasonably request (provided that AVI shall not be required in connection therewith or as a condition thereto to qualify to do business or to file a general consent to service of process in any such jurisdiction where it has not been qualified), and do any and all other

acts or things which may be reasonably necessary or advisable to enable the Holders to consummate the public sale or other disposition of the Registrable Securities in such jurisdictions;

(d) Cause all such Registrable Securities to be listed on the Nasdaq National Market ("NNM") on which similar securities issued by AVI are then listed;

(e) Notify the Holders 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 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;

(f) So long as the registration statement remains effective, promptly prepare, file and furnish to the Holders 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 the Registrable Securities, 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;

(g) Notify the Holders promptly after it shall receive notice thereof, of the date and time any registration statement and each post-effective amendment thereto has become effective or a supplement to any prospectus forming a part of such registration statement has been filed;

(h) Notify the Holders promptly of any request by the Commission for the amending or supplementing of such registration statement or prospectus or for additional information; and

(i) Advise the Holders promptly after it shall receive notice or obtain knowledge thereof, of the issuance of any stop order by the Commission suspending the effectiveness of any registration statement or the initiation or threatening of any proceeding for that purpose and promptly use commercially reasonable efforts to prevent the issuance of any stop order or to obtain its withdrawal if such stop order should be issued.

2.5 EXPENSES OF REGISTRATION. All Registration Expenses incurred in connection with all registrations pursuant to this Section 2 shall be borne by AVI. Unless otherwise stated, all Selling Expenses relating to securities registered on behalf of any holders of securities participating in the distribution and all other Registration Expenses shall be borne by such holders pro rata on the basis of the number of shares so registered.

2.6 INDEMNIFICATION.

(a) AVI will indemnify each Holder, each of its officers and directors, and each person controlling such Holder within the meaning of Section 15 of the Securities Act, with respect to which registration, qualification or compliance has been effected pursuant to this Section 2, and each underwriter, if any, and each person who controls any underwriter within the meaning of Section 15 of the Securities Act, against all expenses, claims, losses, damages or liabilities (or actions in respect thereof), including any of the foregoing incurred in settlement of any litigation, commenced or threatened, arising out of or based on any untrue statement (or alleged untrue statement) of a material fact contained in any registration statement, prospectus, offering circular or other document, or any amendment or supplement thereto, incident to any such registration, qualification or compliance, or based on any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, or any violation by AVI of the Securities Act, the Exchange Act, state securities law or any rule or regulation promulgated under such laws applicable to AVI in connection with any such registration, qualification or compliance, and within a reasonable period AVI will reimburse each Holder, each of its officers and directors, and each person controlling such Holder, each such underwriter and each person who controls any such underwriter, for any legal and any other expenses reasonably incurred in connection with investigating, preparing or defending any such claim, loss, damage, liability or action; provided that AVI will not be liable in any such case to the extent that any such claim, loss, damage, liability or expense arises out of or is based on any untrue statement or omission or alleged untrue statement or omission, made in reliance upon and in conformity with written information furnished to AVI by an instrument duly executed by any Holder, such controlling person or underwriter and stated to be specifically for use therein.

(b) Each Holder will indemnify AVI, each of its directors and officers, each underwriter, if any, of AVI's securities covered by such a registration statement, each person who controls AVI or such underwriter within the meaning of Section 15 of the Securities Act, and each other Holder participating in the distribution, each of its officers and directors and each person controlling such other Holder within the meaning of Section 15 of the Securities Act, against all claims, losses, damages and liabilities (or actions in respect thereof) arising out of or based on any untrue statement (or alleged untrue statement) of a material fact contained in any such registration statement, prospectus, offering circular or other document, 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, and within a reasonable period will reimburse AVI, such other Holders, such directors, officers, persons, underwriters or control persons for any legal or any other expenses reasonably incurred in connection with investigating or defending any such claim, loss, damage, liability or action, in each case to the extent, but only to the extent, that such untrue statement (or alleged untrue statement) or omission (or alleged omission) is made in such registration statement, prospectus, offering circular or other document in reliance upon and in conformity with written information furnished to AVI by an instrument duly executed by the Holder and stated to be specifically for use therein. Notwithstanding the foregoing, the liability of each Holder under this subsection (b) shall be limited in an amount equal to the gross proceeds before expenses and commissions to each Holder received for the shares sold by such Holder, unless such liability arises out of or is based on willful misconduct by such Holder.

(c) Each party entitled to indemnification under this Section 2.6 (the "Indemnified Party") shall give notice to the party required to provide indemnification (the "Indemnifying Party") promptly after such Indemnified Party has actual knowledge of any claim as to which indemnity may be sought, and shall permit the Indemnifying Party to assume the defense of any such claim or any litigation resulting therefrom, provided that counsel for the Indemnifying Party, who shall conduct the defense of such claim or litigation, shall be approved by the Indemnified Party (whose approval shall not unreasonably be withheld), and the Indemnified Party may participate in such defense at such party's expense, 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 under this Section 2.7 unless the failure to give such notice is materially prejudicial to an Indemnifying Party's ability to defend such action and provided further, that the Indemnifying Party shall not assume the defense for matters as to which there is a conflict of interest or separate and different defenses. No Indemnifying Party, in the defense of any such claim or litigation, shall, except with the consent of each Indemnified Party, consent to entry of any judgment or enter into any settlement which 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.

2.7 INFORMATION BY HOLDER. Each Holder shall furnish to AVI such information regarding such Holder, the Registrable Securities held by it and the distribution proposed by such Holder as AVI may request in writing and as shall be required in connection with any registration, qualification or compliance referred to in this Section 2.

2.8 RULE 144 REPORTING. With a view to making available the benefits of certain rules and regulations of the Commission which may at any time permit the sale of Restricted Securities to the public without registration, AVI agrees to use its best efforts to:

(a) Make and keep public information available, as those terms are understood and defined in Rule 144 under the Securities Act, at all times;

(b) Use its best efforts to file with the Commission in a timely manner all reports and other documents required of AVI under the Securities Act and the Exchange Act; and

(c) So long as a Holder owns any Restricted Securities, furnish to the Holder forthwith upon request a written statement by AVI as to its compliance with the reporting requirements of said Rule 144 and of the Securities Act and the Exchange Act, a copy of the most recent annual or quarterly report of AVI, and such other reports and documents of AVI and other information in the possession of or reasonably obtainable by AVI as the Holder may reasonably request in availing itself of any rule or regulation of the Commission allowing the Holder to sell any such securities without registration.

2.9 TRANSFER OF REGISTRATION RIGHTS. The rights to cause AVI to register securities granted a Holder under Sections 2.1, 2.2 and 2.3 may be assigned to a transferee or assignee reasonably acceptable to AVI which acquires at least 250,000 AVI Shares or Warrant Shares in connection with any transfer or assignment of AVI Shares or Warrant Shares by the Holder.

2.10 STANDOFF AGREEMENT. In connection with any public offering of AVI's securities, each Holder agrees, upon request of AVI or the underwriters managing any underwritten offering of

AVI's securities, not to sell, make any short sale of, loan, grant any option for the purchase of, or otherwise dispose of any AVI Shares or Warrant Shares (other than those included in the registration) without the prior written consent of AVI or such underwriters, as the case may be, for such period of time (not to exceed ninety (90) days) from the effective date of such registration as may be requested by the underwriters, provided that the officers and directors of AVI who own stock of AVI and each holder representing at least 1% ownership of AVI's outstanding Common Stock also agrees to such restrictions.

2.11 TERMINATION OF REGISTRATION RIGHTS. The registration rights granted pursuant to this Section 2 shall terminate as to each Holder at such time as all AVI Shares or Warrant Shares held by such Holder may, in the opinion of counsel to AVI (which opinion shall be addressed and rendered to the Holder), be sold in a single three month period pursuant to Rule 144.

SECTION 3

REGISTRATION OF SUPERGEN SHARES AND ADDITIONAL SUPERGEN SHARES

3.1 REGISTRATION OF SUPERGEN SHARES.

(a) REGISTRATION STATEMENT. SuperGen shall use commercially reasonable efforts to cause the SuperGen Shares which are Registrable Securities to be registered under the Securities Act no later than 90 days after the Closing Date, so as to permit the resale thereof, and in connection therewith shall prepare and file with the SEC and shall use commercially reasonable efforts to cause to become effective, a Form S-3 covering the SuperGen Shares; PROVIDED, HOWEVER, that the Holders, if any, shall provide all such information and materials relating to the Holders, as applicable, and take all such action as may be required in order to permit SuperGen to comply with all the applicable requirements of the SEC and to obtain any desired acceleration of the effective date of such Form S-3, such provision of information and materials to be a condition precedent to the obligations of SuperGen pursuant to this Agreement and the Purchase Agreement. The offerings made pursuant to such registrations shall not be underwritten.

(b) POSTPONEMENT OF REGISTRATION

(i) REGISTRATION. Notwithstanding Section 3.1(a) above, SuperGen shall be entitled to postpone the declaration of effectiveness of any Form S-3 prepared and filed pursuant to this Section 3.1 for a reasonable period of time, but not in excess of 60 calendar days after the applicable deadline, if the Board of Directors of SuperGen, acting in good faith, determines that there exists material non-public information about SuperGen.

(ii) MATERIAL EVENT. The Holders agree that, upon receipt of any notice from SuperGen of the happening of a Material Event, they will forthwith discontinue disposition of the SuperGen Shares which are Registrable Securities pursuant to any Form S-3 until the receipt of copies of supplemented or amended prospectuses prepared by SuperGen (which SuperGen will use its commercially reasonable efforts to prepare and file promptly), and, if so directed by SuperGen, the Holders will deliver to SuperGen all copies in their possession, other than permanent file copies then in the Holders' possession, of the prospectus covering such SuperGen Shares current at the time of receipt of such notice. In no event shall SuperGen delay causing to be effective a supplement or

post-effective amendment to any Form S-3 pursuant to this Section 3.1 or the related prospectus, for more than 90 consecutive days or 120 days during any 365 consecutive calendar day period.

3.2 SUPERGEN REGISTRATION

(a) NOTICE OF REGISTRATION. If at any time or from time to time, but in no event earlier than the issuance of any SuperGen Additional Shares, SuperGen shall determine to register any of its securities, either for its own account or the account of a security holder or holders, other than (i) a registration relating solely to employee benefit plans, or (ii) a registration relating solely to a Commission Rule 145 transaction, SuperGen will:

(i) promptly give to all Holders of SuperGen Additional Shares which are Registrable Securities, if any, written notice thereof; and

(ii) include in such registration (and any related qualification under blue sky laws or other compliance), and in any underwriting involved therein, all the Registrable Securities specified in a written request or requests, made within twenty (20) days after receipt of such written notice from SuperGen, by all Holders.

(b) UNDERWRITING. If the registration of which SuperGen gives notice is for a registered public offering involving an underwriting, SuperGen shall so advise the Holders as a part of the written notice given pursuant to Section 3.2(a)(i). In such event the right of the Holders to registration pursuant to this Section 3.2 shall be conditioned upon the Holders' participation in such underwriting and the inclusion of the Registrable Securities in the underwriting shall be limited to the extent provided herein. All Holders proposing to distribute their securities through such underwriting shall, together with SuperGen, enter into an underwriting agreement in customary form with the managing underwriter selected for such underwriting by SuperGen. Notwithstanding any other provision of this Section 3.2, if the managing underwriter determines that marketing factors require a limitation of the number of shares to be underwritten, the managing underwriter and SuperGen may reduce the securities to be included in such registration to the extent the underwriters deem necessary (to zero if necessary). SuperGen shall so advise all Holders and other holders distributing their securities through such underwriting and the number of shares of Registrable Securities that may be included in the registration and underwriting shall be allocated among all such Holders and holders in proportion, as nearly as practicable, to the respective amounts of Registrable Securities held by such Holders at the time of filing the Registration Statement. To facilitate the allocation of shares in accordance with the above provisions, SuperGen may round the number of shares allocated to any Holder or holder to the nearest 100 shares. If any Holder or holder disapproves of the terms of any such underwriting, it may elect to withdraw therefrom by written notice to SuperGen and the managing underwriter. Any securities excluded or withdrawn from such underwriting shall be withdrawn from such registration, and shall not be transferred in a public distribution prior to 180 days after the effective date of the registration statement relating thereto, or such other shorter period of time as the underwriters may require.

(c) RIGHT TO TERMINATE REGISTRATION. SuperGen shall have the right to terminate or withdraw any registration initiated by it under this Section 3.2 prior to the effectiveness of such registration whether or not any holder has elected to include securities in such registration.

3.3 REGISTRATION PROCEDURES. In the case of each registration, qualification or compliance effected by SuperGen pursuant to this Section 3 (including the registration Form S-3), SuperGen will keep advised in writing as to the initiation of each registration, qualification and compliance and as to the completion thereof. At its expense SuperGen will:

(a) Prepare and file with the Commission a registration statement with respect to such securities and use its best efforts to cause such registration statement to become and remain continuously effective for at least one year or until the sale of all Registrable Securities described in the Registration Statement has been completed;

(b) Furnish to the Holders such reasonable number of copies of the registration statement, preliminary prospectus, final prospectus and such other documents as the Holders or such underwriters may reasonably request in order to effect the offering and sale of the shares to be offered and sold, but only while SuperGen shall be required under the provisions hereof to cause such registration statement to remain current;

(c) Use its commercially reasonable efforts to register or qualify the shares of the Registrable Securities covered by such registration under the securities or blue sky laws of such jurisdictions as the Holders shall reasonably request (provided that SuperGen shall not be required in connection therewith or as a condition thereto to qualify to do business or to file a general consent to service of process in any such jurisdiction where it has not been qualified), and do any and all other acts or things which may be reasonably necessary or advisable to enable the Holders to consummate the public sale or other disposition of the Registrable Securities in such jurisdictions;

(d) Cause all such Registrable Securities to be listed on the NNM on which similar securities issued by AVI are then listed;

(e) Notify the Holders 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 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;

(f) So long as the registration statement remains effective, promptly prepare, file and furnish to the Holders 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 the Registrable Securities, 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;

(g) Notify the Holders promptly after it shall receive notice thereof, of the date and time any registration statement and each post-effective amendment thereto has become effective or a supplement to any prospectus forming a part of such registration statement has been filed;

(h) Notify the Holders promptly of any request by the Commission for the amending or supplementing of such registration statement or prospectus or for additional information; and

(i) Advise the Holders promptly after it shall receive notice or obtain knowledge thereof, of the issuance of any stop order by the Commisson suspending the effectiveness of any registration statement or the initiation or threatening of any proceeding for that purpose and promptly use commercially reasonable efforts to prevent the issuance of any stop order or to obtain its withdrawal if such stop order should be issued.

3.4 EXPENSES OF REGISTRATION. All Registration Expenses incurred in connection with all registrations pursuant to this Section 3 shall be borne by SuperGen. Unless otherwise stated, all Selling Expenses relating to securities registered on behalf of any holders of securities participating in the distribution and all other Registration Expenses shall be borne by such holders pro rata on the basis of the number of shares so registered.

3.5 INDEMNIFICATION.

(a) SuperGen will indemnify each Holder, each of its officers and directors, and each person controlling such Holder within the meaning of Section 15 of the Securities Act, with respect to which registration, qualification or compliance has been effected pursuant to this Section 3, and each underwriter, if any, and each person who controls any underwriter within the meaning of Section 15 of the Securities Act, against all expenses, claims, losses, damages or liabilities (or actions in respect thereof), including any of the foregoing incurred in settlement of any litigation, commenced or threatened, arising out of or based on any untrue statement (or alleged untrue statement) of a material fact contained in any registration statement, prospectus, offering circular or other document, or any amendment or supplement thereto, incident to any such registration, qualification or compliance, or based on any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, or any violation by SuperGen of the Securities Act, the Exchange Act, state securities law or any rule or regulation promulgated under such laws applicable to SuperGen in connection with any such registration, qualification or compliance, and within a reasonable period SuperGen will reimburse each Holder, each of its officers and directors, and each person controlling such Holder, each such underwriter and each person who controls any such underwriter, for any legal and any other expenses reasonably incurred in connection with investigating, preparing or defending any such claim, loss, damage, liability or action; provided that SuperGen will not be liable in any such case to the extent that any such claim, loss, damage, liability or expense arises out of or is based on any untrue statement or omission or alleged untrue statement or omission, made in reliance upon and in conformity with written information furnished to SuperGen by an instrument duly executed by such Holder, such controlling person or underwriter and stated to be specifically for use therein.

(b) Each Holder will indemnify SuperGen, each of its directors and officers, each underwriter, if any, of SuperGen's securities covered by such a registration statement, each person who controls SuperGen or such underwriter within the meaning of Section 15 of the Securities Act, and each other Holder of securities participating in the distribution, each of its officers and directors and each person controlling such other Holder within the meaning of Section 15 of the Securities Act, against all claims, losses, damages and liabilities (or actions in respect thereof) arising out of or based on any untrue statement (or alleged untrue statement) of a material fact contained in any such registration statement, prospectus, offering circular or other document, 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, and within a reasonable period will reimburse SuperGen, such other Holders, such directors, officers, persons, underwriters or control persons for any legal or any other expenses reasonably incurred in connection with investigating or defending any such claim, loss, damage, liability or action, in each case to the extent, but only to the extent, that such untrue statement (or alleged untrue statement) or omission (or alleged omission) is made in such registration statement, prospectus, offering circular or other document in reliance upon and in conformity with written information furnished to SuperGen by an instrument duly executed by such Holder and stated to be specifically for use therein. Notwithstanding the foregoing, the liability of each Holder under this subsection (b) shall be limited in an amount equal to the gross proceeds before expenses and commissions to each Holder received for the shares sold by such Holder, unless such liability arises out of or is based on willful misconduct by such Holder.

(c) Each party entitled to indemnification under this Section 3.5 (the "Indemnified Party") shall give notice to the party required to provide indemnification (the "Indemnifying Party") promptly after such Indemnified Party has actual knowledge of any claim as to which indemnity may be sought, and shall permit the Indemnifying Party to assume the defense of any such claim or any litigation resulting therefrom, provided that counsel for the Indemnifying Party, who shall conduct the defense of such claim or litigation, shall be approved by the Indemnified Party (whose approval shall not unreasonably be withheld), and the Indemnified Party may participate in such defense at such party's expense, 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 under this Section 3.5 unless the failure to give such notice is materially prejudicial to an Indemnifying Party's ability to defend such action and provided further, that the Indemnifying Party shall not assume the defense for matters as to which there is a conflict of interest or separate and different defenses. No Indemnifying Party, in the defense of any such claim or litigation, shall, except with the consent of each Indemnified Party, consent to entry of any judgment or enter into any settlement which 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.

3.6 INFORMATION BY THE HOLDER. Each Holder shall furnish to SuperGen such information regarding such Holder, the Registrable Securities held by it and the distribution proposed by such Holder as SuperGen may request in writing and as shall be required in connection with any registration, qualification or compliance referred to in this Section 3.

3.7 RULE 144 REPORTING. With a view to making available the benefits of certain rules and regulations of the Commission which may at any time permit the sale of the Restricted Securities to the public without registration, SuperGen agrees to use its best efforts to:

(a) Make and keep public information available, as those terms are understood and defined in Rule 144 under the Securities Act, at all times;

(b) Use its best efforts to file with the Commission in a timely manner all reports and other documents required of SuperGen under the Securities Act and the Exchange Act; and

(c) So long as a Holder owns any SuperGen Shares or Additional SuperGen Shares which are Restricted Securities furnish to such Holder forthwith upon request a written

statement by SuperGen as to its compliance with the reporting requirements of said Rule 144 and of the Securities Act and the Exchange Act, a copy of the most recent annual or quarterly report of SuperGen, and such other reports and documents of SuperGen and other information in the possession of or reasonably obtainable by SuperGen as the Holder may reasonably request in availing itself of any rule or regulation of the Commission allowing such Holder to sell any such securities without registration.

3.8 TRANSFER OF REGISTRATION RIGHTS. The rights to cause SuperGen to register securities granted to a Holder under Sections 3.1 and 3.2 may be assigned to a transferee or assignee reasonably acceptable to SuperGen which acquires at least 100,000 shares of SuperGen Shares or Additional SuperGen Shares in connection with any transfer or assignment of SuperGen Shares or Additional SuperGen Shares by the Holder.

3.9 STANDOFF AGREEMENT. In connection with any public offering of SuperGen's securities, each Holder agrees, upon request of SuperGen or the underwriters managing any underwritten offering of SuperGen's securities, not to sell, make any short sale of, loan, grant any option for the purchase of, or otherwise dispose of any SuperGen Shares or Additional SuperGen Shares (other than those included in the registration) without the prior written consent of SuperGen or such underwriters, as the case may be, for such period of time (not to exceed ninety (90) days) from the effective date of such registration as may be requested by the underwriters, provided that the officers and directors of SuperGen who own stock of SuperGen and each holder representing at least 1% ownership of SuperGen's outstanding Common Stock also agrees to such restrictions.

3.10 TERMINATION OF REGISTRATION RIGHTS. The registration rights granted pursuant to Section 3 shall terminate as to each Holder at such time as all SuperGen Shares or Additional SuperGen Shares held by such Holder may, in the opinion of counsel to SuperGen (which opinion shall be addressed and rendered to the Holder), be sold in a single three month period pursuant to Rule 144.

SECTION 4

MISCELLANEOUS

4.1 GOVERNING LAW. This Agreement shall be governed in all respects by the internal laws of the State of Delaware.

4.2 SURVIVAL. The covenants and agreements made herein shall survive the closing of the transactions contemplated hereby.

4.3 SUCCESSORS AND ASSIGNS. Except as otherwise provided herein, the provisions hereof shall inure to the benefit of, and be binding upon, the successors, assigns, heirs, executors and administrators of the parties hereto.

4.4 ENTIRE AGREEMENT; AMENDMENT. This Agreement, the Purchase Agreement, the United States of America Sales, Distribution and Development Agreement and all exhibits hereto and thereto constitute the full and entire understanding and agreement between the parties with regard to the subjects hereof and thereof, and no party shall be liable or bound to any other party in any manner by any warranties, representations or covenants except as specifically set forth herein or therein. Except as expressly provided herein, neither this Agreement nor any term hereof may be amended, waived, discharged or terminated other than by a written instrument signed by the party against whom enforcement of any such amendment, waiver, discharge or termination is sought.

4.5 NOTICES, ETC. All notices and other communications required or permitted hereunder shall be in writing and shall be mailed by registered or certified mail, postage prepaid, or otherwise delivered by hand or by messenger, addressed (a) if to AVI, at AVI BioPharma, Inc., One SW Columbia, Portland, OR 97258, Attn: President, Alan P. Timmins, with a copy to Alter Wynne LLC, 222 SW Columbia, #1700, Portland, Oregon 97201, Attn: Byron Milstead, or to such other address (including electronic mail address) as AVI shall have furnished to SuperGen in writing or by electronic mail, or (b) if to SuperGen, at SuperGen, Inc., Two Annabel Lane, Suite 220, San Ramon, CA 94583, Attn: President and CEO, Dr. Joseph Rubinfeld, with a copy of any said notice to Wilson Sonsini Goodrich & Rosati, 650 Page Mill Road, Palo Alto, CA 94304-1050, Attn: Page Mailliard, Esq., or to such other address (including electronic mail address) as SuperGen shall have furnished to AVI in writing or by electronic mail.

Each such notice or other communication shall for all purposes of this Agreement be treated as effective or having been given when delivered if delivered personally, or, if sent by mail, at the earlier of its receipt or 72 hours after the same has been deposited in a regularly maintained receptacle for the deposit of the United States mail, addressed and mailed as aforesaid.

4.6 DELAYS OR OMISSIONS. Except as expressly provided herein, no delay or omission to exercise any right, power or remedy accruing to any party to this Agreement upon any breach or default of any other party under this Agreement, shall impair any such right, power or remedy of such nondefaulting party nor shall it be construed to be a waiver of any such breach or default, or an acquiescence therein, or of or in any similar breach or default thereafter occurring; nor shall any waiver of any single breach or default be deemed a waiver of any other breach or default theretofore or thereafter occurring. Any waiver, permit, consent or approval of any kind or character on the part

of any party of any breach or default under this Agreement, or any waiver on the part of any holder of any provisions or conditions of this Agreement, must be in writing and shall be effective only to the extent specifically set forth in such writing. All remedies, either under this Agreement or by law or otherwise afforded to any party to this Agreement, shall be cumulative and not alternative.

4.7 COUNTERPARTS. This Agreement may be executed in any number of counterparts, each of which shall be enforceable against the parties actually executing such counterparts, and all of which together shall constitute one instrument.

4.8 SEVERABILITY. In the event that any provision of this Agreement becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Agreement shall continue in full force and effect without said provision; provided that no such severability shall be effective if it materially changes the economic benefit of this Agreement to any party.

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

[SIGNATURE PAGE(S) FOLLOW(S)]

The foregoing Agreement is hereby executed as of the date first above written.

SUPERGEN, INC.
a Delaware Corporation

By: /s/ Joseph Rubinfeld

Joseph Rubinfeld
Chief Executive Officer and President

AVI BIOPHARMA, INC.
an Oregon Corporation

By: /s/ Alan P. Timmins

Alan P. Timmins
President & Chief Operating Officer

[SIGNATURE PAGE TO REGISTRATION RIGHTS AGREEMENT]

EXHIBIT 5.1

ATER WYNNE LLP
LETTERHEAD

September 14, 2000

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

Gentlemen:

In connection with the registration of 1,725,120 shares of common stock, $.0001 par value (the "Common Stock"), 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 September 14, 2000, and the proposed offer and sale of the Common Stock 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.

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 the Registration Statement on Form S-3 of our report dated January 28, 2000, included in the Company's Form 10-K for the year ended December 31, 1999 and to all references to our firm included in this registration statement.

/s/ ARTHUR ANDERSEN LLP

Portland, Oregon
September 14, 2000