

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**FORM 10-K**

Annual Report Pursuant to Section 13 or 15(d) of the  
Securities Exchange Act of 1934.

For the fiscal year ended December 31, 1998

OR

Transition Report Pursuant to Section 13 or 15(d) of the  
Securities Exchange Act of 1934.

For the transition period from \_\_\_\_ to \_\_\_\_.

*Commission File Number 000-23186*

**BIOCRIST PHARMACEUTICALS, INC.**

(Exact name of registrant as specified in its charter)

DELAWARE  
(State of other jurisdiction of  
no.)  
incorporation or organization)

62-1413174  
(I.R.S. employer identification  
no.)

2190 Parkway Lake Drive; Birmingham, Alabama 35244  
(Address and zip code of principal executive offices)

(205) 444-4600  
(Registrant's telephone number, including area code)

**Securities registered pursuant to Section 12(b) of the Act:**

Title of each class Name of each exchange on which registered  
None None

**Securities registered pursuant to Section 12(g) of the Act:**

Title of each class  
Common Stock, \$.01 Par Value

Indicate by a check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes X No .

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K .

While it is difficult to determine the number of shares owned by non-affiliates, the Registrant estimates that the aggregate market value of the Common Stock on March 15, 1999 (based upon the closing price shown on the Nasdaq National Market on March 15, 1999) held by non-affiliates was approximately \$90,258,291. For this computation, the Registrant has excluded the market value of all shares of its Common Stock reported as beneficially owned by officers, directors and certain significant stockholders of the Registrant. Such exclusion shall not be deemed to constitute an admission that any such stockholder is an affiliate of the Registrant.

The number of shares of Common Stock, par value \$.01, of the Registrant outstanding as of March 15, 1999 was 14,987,032 shares.

**DOCUMENTS INCORPORATED BY REFERENCE**

None.

## PART I

### ITEM 1. BUSINESS

#### General

BioCryst Pharmaceuticals, Inc. ("BioCryst" or the "Company") is an emerging pharmaceutical company using structure-based drug design to discover and design novel, small-molecule pharmaceutical products for the treatment of major immunological, viral and cardiovascular diseases and disorders. The Company believes that structure-based drug design, by precisely designing compounds to fit the active site of target proteins, offers the potential for developing drugs for many indications that have improved efficacy and fewer side effects than currently marketed drugs for the same indications. The Company is conducting a clinical trial with its lead immunological compound, BCX-34, with an oral formulation for HIV, and will be conducting another clinical trial in 1999 with an oral formulation of BCX-34 for cutaneous T-cell lymphoma ("CTCL"). BioCryst has also discovered drug candidates using its structure-based drug design technologies to inhibit influenza neuraminidase and serine proteases involved in the complement cascade, which is implicated in several major inflammatory conditions. The Company has selected a lead compound, BCX-1470, for its serine protease inhibitor in its complement cascade project.

BioCryst's lead viral drug program, which has been licensed for clinical development, targets the inhibition of the influenza neuraminidase enzyme. Inhibiting the influenza neuraminidase enzyme appears to be a promising method to treat and prevent influenza infections. Four neuraminidase inhibitors were tested to assess the compounds' oral activity against influenza A and influenza B. One of the elements of the Company's strategic plan is to leverage its clinical progress by entering into pharmaceutical collaborations with drug companies in major world markets. BioCryst entered into an exclusive worldwide license agreement in September 1998 with the R.W. Johnson Research Institute ("PRI") and Ortho-McNeil Pharmaceutical, Inc. ("Ortho-McNeil"), both Johnson & Johnson companies, to develop and market products to treat and prevent viral influenza. BioCryst entered into an exclusive license agreement in May 1996 with Torii Pharmaceutical Co., Ltd. ("Torii"), a Japanese pharmaceutical company majority owned by Japan Tobacco Inc., for the development and commercialization in Japan of BCX-34 and certain other purine nucleoside phosphorylase ("PNP") inhibitor compounds. PNP is an enzyme believed to be involved in T-cell proliferation.

BioCryst's lead immunological drug program targets T-cell proliferative disorders, which arise when T-cells, immune system cells that normally fight infection, attack normal body cells or multiply uncontrollably. These disorders are varied and include CTCL (a severe form of cancer), transplant rejection and certain autoimmune diseases. BioCryst has designed and synthesized several chemically distinct classes of compounds which inhibit PNP.

The Company has completed seven Phase I clinical trials, four Phase I/II clinical trials, six Phase II clinical trials and two Phase III clinical trials with topical BCX-34 and has completed six Phase I trials with oral and intravenous formulations of BCX-34 and two Phase I/II clinical trials with an oral formulation of BCX-34 and is conducting a Phase I/II clinical trials with an oral formulation of BCX-34. BCX-34 has been tested in approximately 680 subjects, and no significant drug-related side effects have been observed. The Phase III clinical trials with topical BCX-34 for the treatment of CTCL and psoriasis did not demonstrate statistical efficacy and resulted in cessation of further development of topical cream and ointment formulations. The Company is continuing its PNP inhibitor program for the oral and intravenous formulations of BCX-34.

The Company has completed two Phase I clinical trials with an intravenous formulation of BCX-1470 in 40 healthy subjects with no significant systemic drug-related side effects and minor local irritation at the infusion site. The Company is currently conducting an additional series of preclinical studies to determine if BCX-1470 will be advanced into a Phase I/II clinical trial in the treatment of cardiopulmonary bypass surgery.

BioCryst's scientists include recognized world leaders in the fields of X-ray crystallography and medicinal chemistry, two core disciplines associated with structure-based drug design. The Company has certain collaborative arrangements with The University of Alabama at Birmingham ("UAB"), which has one of the leading X-ray crystallography centers in the world and has been successful in characterizing a significant number of medically relevant protein targets. The Company believes, based upon its scientific staff and management, the number of compounds it has designed and its

clinical development program, that it is a leader in the practical application of structure-based drug design.

In September 1998, the Company entered into a worldwide license agreement with PRI and Ortho-McNeil to develop and market products to treat and prevent viral influenza. Under the terms of the agreement, the Company received an initial \$6.0 million. The agreement provides for additional potential milestone payments and royalties based on future sales of licensed products. PRI and Ortho-McNeil are responsible for all development, regulatory and commercialization expenses. The agreement is subject to termination by PRI and Ortho-McNeil at any time upon notice and by the Company in certain circumstances. In addition, Johnson & Johnson Development Corporation ("JJDC"), another Johnson & Johnson company, made a \$6.0 million equity investment in the Company in connection with signing the license agreement.

In May 1996, the Company entered into an agreement pursuant to which it granted Torii an exclusive license, with the right to sublicense, to develop, manufacture and commercialize BCX-34 and certain other PNP inhibitor compounds in Japan for the treatment of rheumatoid arthritis, T-cell cancers (including CTCL) and atopic dermatitis. Upon entering into the agreement, Torii paid the Company \$1.5 million in license fees and made a \$1.5 million equity investment in the Company, purchasing 76,608 shares of Common Stock at a purchase price of \$19.58 per share. A milestone payment of \$1 million was paid the Company by Torii in 1997. In order for Torii to maintain its licensing rights, it is obligated to make payments to the Company of up to \$18 million upon the achievement of specified development milestones. Torii is responsible for all development, regulatory and commercialization expenses in Japan and is obligated to pay royalties to the Company on sales of licensed products in Japan. The agreement will remain in effect, unless earlier terminated, until the last to expire of any patent rights licensed under the agreement, or in the event no patents issue, for twenty years from May 31, 1996. The agreement is subject to termination by Torii at any time and by the Company in certain circumstances, including any material breaches of the agreement by Torii. Pursuant to the agreement, Torii may negotiate a license with the Company to develop BCX-34 and certain other PNP inhibitor compounds for additional indications.

## Products in Development

The following table summarizes BioCryst's development projects as of February 28, 1999:

PROGRAM/ COMPOUND -----	INDICATION/ APPLICATION -----	DELIVERY FORM ----	STAGE OF DEVELOPMENT -----
PNP Inhibitors (BCX-34)	CTCL	Oral/Intravenous	Phase I/II
	Psoriasis	Oral	Phase I/II
	HIV	Oral	Phase I
	Rheumatoid arthritis	Oral	Preclinical
	Crohn's disease	Oral	Preclinical
Influenza Neuraminidase Inhibitors	Multiple sclerosis	Oral	Preclinical
	Influenza	Oral	Licensed to Johnson & Johnson companies for clinical development
Complement Inhibitors	Cardiopulmonary bypass surgery	Intravenous	Phase I
	Angioplasty	Intravenous/Oral	Research
	Post myocardial Infarction	Intravenous/Oral	Research
Tissue Factor/VIIa	Anticoagulation of blood	Intravenous/Oral	Research
Parainfluenza	Parainfluenza virus	Oral	Research

See "-Government Regulation" for a description of drug development phases and "Management's Discussion and Analysis of Financial Condition and Results of Operations - Certain Factors That May Affect Future Results, Financial Condition and the Market Price of Securities" for a discussion of certain factors that can adversely affect the Company's drug development programs.

## PNP Inhibitors (BCX-34)

The human immune system employs specialized cells and proteins, including cells known as T-cells and B-cells, to control infection and recognize and attack foreign disease-causing viruses, bacteria and parasites. The immune system can also cause diseases or disorders when it inappropriately identifies the body's own tissue as foreign and, among other things, produces T-cells that attack normal body cells. Such diseases are referred to as autoimmune diseases and include psoriasis, in which the immune system attacks skin tissue, and rheumatoid arthritis, in which the immune system attacks joint tissue. This immune system response also causes transplant rejection in which the T-cells of the immune system attack the transplanted organ or tissue. The immune system may also produce T-cells that multiply uncontrollably. T-cell proliferation in such cases is associated with cancers such as cutaneous T-cell lymphoma. Within the past decade, drugs have been developed that treat autoimmune and related diseases by selectively suppressing the immune system. However, most current immunosuppressive drugs have dose-limiting side effects, including severe toxicity.

The link between T-cell proliferative disorders and the PNP enzyme was first discovered approximately 20 years ago when a patient, who was genetically deficient in PNP, exhibited limited T-cell activity, but reasonably normal activity of other immune functions. Since then, additional patients with inherited PNP deficiency have been reported. In most patients, the T-cell population was less than 20% of normal levels, often as low as 1-3% of normal levels. However, B-cell function was normal in approximately two-thirds of these patients. These findings suggested that inhibition of PNP might produce selective suppression of T-cell function without significantly impairing B-cell function.

BioCryst has designed and synthesized several chemically distinct classes of small molecule compounds (seven of which have been patented in the United States) which inhibit the PNP enzyme. In *in vitro* preclinical studies, the Company's PNP inhibitor compounds selectively and potently suppressed human T-cells associated with certain T-cell proliferative disorders. One member of a patented class of PNP inhibitor compounds, BCX-34, which was designed and developed by BioCryst, to date has undergone clinical trials as a potential treatment for a number of T-cell proliferative diseases and related disorders. The Company is in the clinical stage of development of oral and intravenous formulations of BCX-34. An orally deliverable product may allow systemic application of the drug in diseases that either cannot be treated topically or can be treated more successfully with an oral formulation. An intravenous formulation may allow more precise dosage control and direct systemic application into the bloodstream and may permit usage of BCX-34 where other methods of delivery may not be suitable.

Cutaneous T-Cell Lymphoma. CTCL is a severe form of cancer which is characterized by the development of scaly patches on the skin, progressing to ulcers and tumors of the skin, lymph nodes and internal organs. CTCL is a chronic disease involving the proliferation of certain types of T-cells. According to a medical journal, approximately 1,000 new cases of CTCL are diagnosed annually in the United States. There is no known cure and the median survival time is approximately four years after systemic progression of the disease. Existing therapies for CTCL are generally considered inadequate. In October 1993, the Company obtained from the United States Food and Drug Administration (the "FDA") orphan drug designation for BCX-34 to treat CTCL and may qualify for accelerated review as a new drug to treat serious and life-threatening illnesses.

In 1998, the Company completed a Phase I/II dose escalation oral trial in CTCL and other T-cell cancer patients. This was an open label trial designed to provide safety and pharmacokinetic data on BCX-34 as well as provide potential efficacy data. A total of 45 patients were enrolled and dosed in this study. Dose-limiting toxicity was not encountered and some objective responses were observed. A second Phase I/II oral trial in CTCL is planned in the second quarter of 1999 for up to 55 patients at up to 23 sites. The frequency and completeness of response to 12 weeks of treatment will be assessed.

Psoriasis. Psoriasis is a common chronic and recurrent disease involving T-cells characterized by red, thick scaling of the skin, which can develop at any time in life. According to the National Psoriasis Foundation, it is estimated that approximately five million people suffer from some form of psoriasis in the United States and 150,000 to 260,000 new cases are diagnosed annually. About 10% of these cases are classified as "severe" and are most likely to require physician's care and drug intervention. In some cases, the condition may be accompanied by a form of arthritis which can be debilitating. Current therapies for psoriasis either are of limited benefit or have severe side effects.

The Company has completed a Phase I/II clinical trial with an oral formulation of BCX-34 for the treatment of psoriasis. Further development will be dependent upon the results of the Phase I/II clinical trial with an oral formulation

of BCX-34 for CTCL and the Phase I clinical trial with an oral formulation of BCX-34 for HIV.

HIV. Due to the increasing number of HIV-infected people, HIV infection is a major health concern. Despite extensive research and development, the treatment of HIV infection remains unsatisfactory due to the toxicity or limited therapeutic benefit of currently approved therapies. The Centers for Disease Control and Prevention ("CDC") estimates that there are approximately one million people in the United States infected with HIV. HIV drug research has focused primarily on developing inhibitors of the enzymes reverse transcriptase ("RT") and HIV protease. Initially, scientists thought blocking the HIV essential RT enzyme would shut down replication of HIV and curb the progression of HIV infection to AIDS. Several RT inhibitors are now approved, but the clinical usefulness of these drugs has been limited by their toxicity and by the ability of HIV to mutate into forms that are resistant to them. A second approach of HIV drug research and treatment has targeted the HIV protease enzyme. HIV protease is an enzyme that performs an essential role in the infectious cycle of HIV. It is believed that blocking HIV protease renders HIV unable to form a new infectious virus. Although numerous companies are developing protease inhibitors, the long-term therapeutic potential of these drugs is uncertain.

A new approach to HIV drug research focuses on the T-cell host rather than the virus. It is believed that while resting, nondividing CD4 T-cells can be infected by the virus, the virus does not multiply. Since T-cell activation and growth appear to be essential for virus replication, a treatment which inhibits T-cell growth might decrease the overall viral burden. The Company believes, based in part upon preliminary preclinical in vitro tests, that BCX-34 could potentially be useful in treating HIV-infected patients by reversibly inhibiting the growth of infected T-cells. The Company, in collaboration with researchers at the UAB Center for AIDS Research on the design, has initiated a Phase I clinical trial with an oral formulation of BCX-34 for the treatment of HIV.

Rheumatoid Arthritis. Rheumatoid arthritis is an autoimmune disease that involves inflammation of the membranes lining joints, causing joint pain, swelling, and deformities. According to a scientific journal, it is estimated that approximately 1% to 2% of the U.S. adult population is afflicted with rheumatoid arthritis. There are many drugs used to treat the disease, but such drug treatments only alleviate the symptoms of rheumatoid arthritis. The Company believes T-cell controlling agents, such as PNP inhibitors and specifically an oral formulation of BCX-34, offer promise as a potential drug treatment for rheumatoid arthritis. Among other potential competitors, Novartis Pharmaceuticals Corporation, formerly Ciba-Geigy Corporation, ("Novartis") has rights to develop a group of PNP inhibitors, excluding BCX-34, licensed from BioCryst, with potential application in the treatment of rheumatoid arthritis.

Crohn's Disease. Crohn's disease is an inflammatory disease that affects the intestines and other parts of the digestive tract. A patient with Crohn's disease suffers chronic, sometimes severe, episodes of diarrhea, abdominal pain, rectal bleeding and fever. Approximately 500,000 people worldwide suffer from Crohn's disease. The Company believes that T-cell controlling agents such as PNP inhibitors may offer promise as a potential drug treatment for Crohn's disease. The Company is at the preclinical stage of development of an oral formulation of BCX-34 for treatment of Crohn's disease.

Multiple Sclerosis. Multiple sclerosis ("MS") is an autoimmune disease in which T-cells attack and progressively destroy the myelin sheath that envelops certain nerve cells in the brain and spinal cord. The disease is characterized by unpredictable attacks of neurological dysfunction that may include partial paralysis or tremors, lack of motor coordination, vision problems and memory loss. MS afflicts between 250,000 and 300,000 people in the United States, approximately two-thirds of which are women. The Company believes that T-cell controlling agents such as PNP inhibitors offer promise as a potential drug treatment for MS. BioCryst believes that an oral formulation of BCX-34 may be useful for the treatment of MS. The first FDA approved treatment for any form of MS, a beta interferon, became available in 1993. Beta interferon is a large molecule protein which requires delivery by injection. The Company is at the preclinical stage of development of an oral formulation of BCX-34 for treatment of MS.

### **Influenza Neuraminidase Inhibitors**

Influenza is a viral disease which is particularly dangerous to the very young, the elderly and debilitated patients and those who have suppressed immune systems. The CDC estimates that approximately 10% to 20% of the U.S. population is infected with influenza during most influenza seasons. The current standard for preventing flu is by vaccination, which is of limited benefit as vaccines are designed to resist a specific flu strain. No satisfactory treatment currently exists although Glaxo Wellcome and Hoffmann-La Roche have similar flu drug candidates in advanced stages

of clinical trials. Influenza neuraminidase is an enzyme on the surface of the influenza virus which is associated with the spread of influenza and is believed to permit the influenza virus to invade human cells. The Company believes that a neuraminidase inhibitor may be useful as a treatment for influenza and has developed certain inhibitors of influenza neuraminidase. As described above in General, these inhibitors have been licensed to two Johnson & Johnson companies for clinical development. The Company also believes that several other pharmaceutical companies are engaged in research to design or discover inhibitors of influenza neuraminidase.

### **Complement Inhibitors**

The human body is equipped with immunological defense mechanisms to respond aggressively to infection or injury. One of these mechanisms, called complement, is a system of functionally linked proteins that interact with one another in a highly regulated manner. The complement system functions as a "cascade." Once an activator of the system converts an inactive enzyme to an active enzyme, the activated enzyme activates more proteins at the next stage, which in turn activates other proteins. This mechanism, if inappropriately activated, can cause acute medical reactions, including inflammatory reactions that accompany hemodialysis, myocardial infarction, bypass surgery and post heart attack reperfusion injury. There are two pathways of complement activation, the classical pathway and the alternative pathway. The classical pathway is usually initiated by antigen-antibody complexes, while the alternative pathway is activated by bacterial, viral and parasite cell surfaces.

Due to the biochemical mechanism of the complement cascade, BioCryst believes complement inhibitors may have therapeutic applications in several acute and chronic immunological disorders. BioCryst is focusing its research efforts on designing enzyme inhibitors to limit the rapid and aggressive damage caused by the complement cascade. The Company is initially focusing on designing inhibitors for Factor D and Factor B, enzymes playing a role in the alternative pathway, and the enzyme C1s, which plays a role in the classical pathway. Working with UAB scientists and funded in part by Small Business Innovation Research ("SBIR") grants from the National Institutes of Health ("NIH"), BioCryst has characterized the three-dimensional structure of Factor D and has developed various assay systems for screening complement inhibitors. The Company is performing preclinical studies with certain inhibitors it has designed and synthesized. Preclinical results have shown that BCX-1470 and related compounds can block key blood enzymes, known as serine proteases, responsible for excessive bleeding and inflammatory damage related to cardiopulmonary bypass surgery. The Company completed two Phase I clinical trials, one of which is still under evaluation, for an intravenous formulation of BCX-1470 in 1998. The Company continues to design additional complement inhibitors. The Company has a collaboration agreement to use combinatorial chemistry to help identify certain inhibitors. See "Research and Development - 3-Dimensional Pharmaceuticals."

### **Tissue Factor/VIIa**

Blood coagulation proceeds by a cascade of reactions leading to the formation of a blood clot. The cascade is initiated by exposure, due to injury, of cell surface tissue factor to blood and the subsequent formation of the Tissue Factor/VIIa complex ("TF/VIIa"). TF/VIIa then activates other factors leading to a blood clot. It has been extensively shown in animal models that blood clot formation can be treated by inhibiting either TF/VIIa or TF. TF/VIIa inhibitors may potentially be useful in coronary thrombosis, disseminated intravascular coagulation, stroke, ischemia-reperfusion injury, sepsis, ARDS and cancer. The Company is at the research stage of development of intravenous and oral formulations for inhibition of Tissue Factor/VIIa.

### **Parainfluenza**

Human parainfluenza virus ("PIV") is an important lower respiratory tract pathogen in infants and young children. Acute infection with PIV accounts for a significant portion of croup, bronchialitis and pneumonia in children. In the United States, about five million infants and children per year are infected with PIV. While the molecular structure of PIV neuraminidase has not been determined, observations have led to predictions that the active site of PIV neuraminidase may share common features with the active site of influenza neuraminidase. The Company is reviewing the preliminary research it has done on influenza neuraminidase as a basis for starting research for a PIV neuraminidase inhibitor. The Company is at the research stage of development of an oral formulation for treatment of parainfluenza.

## Drug Discovery Methods

Drugs are chemical compounds that interact with target molecules, typically proteins, within the human body to affect a molecule's normal function. Ideally, drugs accomplish their intended therapeutic functions while creating as few side effects as possible. The interaction can be illustrated as follows: the drug molecule inserts itself in the target protein like a key inserted in a lock, and either stimulates, or more commonly suppresses, a protein's normal function. The results vary depending upon the role of the target protein. A drug that is selective or specific, i.e., that binds to or blocks the target protein without affecting other proteins or receptors, is generally more effective, less likely to cause side effects and can be administered in smaller doses.

### Traditional Drug Discovery

Historically, most pharmaceutical companies have relied on costly and time-consuming screening to discover new chemical entities for development. While screening has been the basis for the discovery of virtually all drugs currently in use, the cost has been substantial. On average, it has generally been necessary to assess hundreds or thousands of chemical compounds to find a lead compound which successfully completes the development process. If screening produces a lead compound, it is likely that the compound's mode of action will be unknown and the risk of side effects caused by a lack of target specificity will be high. Newer techniques, such as combinatorial chemistry and high throughput screening, have enhanced the range of compounds that can be examined quickly. However, screening-based research has, to date, failed to yield acceptably safe and effective drugs for many important therapeutic needs.

Most pharmaceutical companies presently use some form of pharmacology-based rational drug design which primarily utilizes certain receptors or purified enzyme preparations in assays to identify lead compounds and to design molecules to perform specific therapeutic tasks. Development of lead compounds is conducted by systematic empirical methods and computer modeling. While this approach is more refined than random screening, it is still a costly and time-consuming effort which is limited by the amount and quality of information available about the target protein.

### Structure-Based Drug Design

Structure-based drug design is a drug discovery approach by which synthetic compounds are designed from detailed structural knowledge of the active sites of protein targets associated with particular diseases. The Company's structure-based drug design involves the integrated application of traditional biology and medicinal chemistry along with an array of advanced technologies, including X-ray crystallography, combinatorial chemistry, computer modeling of molecular structures and protein biophysical chemistry, to focus on the three-dimensional molecular structure and active site characterization of the proteins that control cellular biology. BioCryst believes that structure-based drug design is an improvement over traditional drug screening techniques. By identifying the target protein in advance and by discovering the chemical and molecular structure of the protein, scientists believe it is possible to design a more optimal drug to interact with the protein.

The initial targets for structure-based drug design are selected based on their involvement in the biological pathways integral to the course of a disease. Once a target is selected, its structure is determined by X-ray crystallography, a method used in determining the precise three-dimensional molecular structure of the proteins. This structure is then used as a blueprint for the drug design of a lead compound. The compounds are modeled for their fit in the active site of the target, considering both steric aspects (i.e., geometric shape) and functional group interactions, such as hydrogen bonding and hydrophobic interactions.

The initial design phase is followed by the synthesis of the lead compound, quantitative measurements of its ability to interact with the target protein, and X-ray crystallographic analysis of the compound-target complex. This analysis reveals important, empirical information on how the compound actually binds to the target and the nature and extent of changes induced in the target by the binding. These data, in turn, suggest ways to refine the lead compound to improve its binding to the target protein. The refined lead compound is then synthesized and complexed with the target, and further refined in a reiterative process. If lead compounds are available from other studies, such as screening of combinatorial libraries, these compounds may serve as starting points for this optimization cycle using structure-based drug design.

Once a sufficiently potent compound has been designed and optimized, its activity is evaluated in a biological system to



establish the compound's ability to function in a physiological environment. If the compound fails at any stage of the biological evaluation, the design team reviews the structural model and uses crystallography to adjust structural features of the compound to overcome the difficulty. This process continues until a designed compound exhibits the desired properties.

The compound is then evaluated in an experimental disease model. If the compound fails, the reasons for failure (e.g., adverse metabolism, plasma binding, distribution, etc.) are determined and, again, new modified compounds are designed to overcome the deficiencies without interfering with their ability to interact with the active site of the target protein. The experimental drug is then ready for conventional drug development (e.g., studies in safety assessment, formulation, clinical trials, etc.).

This reiterative analysis and compound modification are possible because of the structural data obtained by X-ray crystallographic analysis at each stage. This capability renders structure-based drug design a powerful tool for rapid and efficient development of drugs that are highly specific for particular protein target sites.

## **Research and Development**

### **General**

BioCryst initiated its research and development program in 1986, with drug synthesis beginning in 1987. The Company has assembled a scientific research staff with expertise in a broad base of advanced research technologies including protein biochemistry, X-ray crystallography, chemistry and pharmacology. Of the Company's 56 employees at March 15, 1999, 42 were employed in its research and development, preclinical studies and clinical trials programs. The Company's staff includes 18 persons with Ph.D. or M.D. degrees.

The Company's research facilities include protein biochemistry and organic synthesis laboratories, in vitro and in vivo testing facilities, X-ray crystallography, computer and graphics equipment and formulation facilities.

In addition to its research programs pursued in-house, BioCryst collaborates with academic institutions to support research in areas of the Company's product development interests and to conduct its clinical trials. Usually, research assistance provided by outside academic institutions is performed in conjunction with additional in-house research. The faculty member supervising the outside research effort may also participate as a consultant to the Company's in-house effort. The Company's primary academic collaboration is with UAB and is described under "Business - Research and Development - UAB Collaborative Arrangements."

During the years ended December 31, 1996, 1997 and 1998, the Company spent an aggregate of \$27,454,674 on research and development. Of that amount, \$7,586,159 was spent in 1996, \$10,577,369 was spent in 1997 and \$9,291,146 was spent in 1998. Approximately \$15,189,828 of that amount was spent on in-house research and development and \$12,264,846 was spent on contract research and development.

### **PRI and Ortho-McNeil**

In September 1998, the Company entered into a worldwide license agreement PRI and Ortho-McNeil, both Johnson & Johnson companies, to develop and market products to treat and prevent viral influenza. Under the terms of the agreement, the Company received an initial \$6.0 million. The agreement provides for additional potential milestone payments and royalties based on future sales of licensed products. PRI and Ortho-McNeil are responsible for all development, regulatory and commercialization expenses. The agreement is subject to termination by PRI and Ortho-McNeil at any time upon notice and by the Company in certain circumstances, including any material breaches of the agreement by PRI or Ortho-McNeil. In addition, JJDC, another Johnson & Johnson company, made a \$6.0 million equity investment in the Company in connection with signing the license agreement.

### **Torii**

In May 1996, the Company entered into an exclusive license agreement with Torii to develop, manufacture and commercialize BCX-34 and certain other PNP inhibitor compounds in Japan for the treatment of rheumatoid arthritis,

T-cell cancers (including CTCL) and atopic dermatitis. Upon entering into the agreement, Torii paid the Company \$1.5 million in license fees and made a \$1.5 million equity investment in the Company, purchasing 76,608 shares of Common Stock at a purchase price of \$19.58 per share. A milestone payment of \$1.0 million was made in 1997. The agreement further provides for additional potential milestone payments of up to \$18.0 million and royalties on future sales of licensed products in Japan. Torii is responsible for all development, regulatory and commercialization expenses in Japan. The agreement will remain in effect, unless earlier terminated, until the last to expire of any patent rights licensed under the agreement, or in the event no patents issue, for twenty years from May 31, 1996. The agreement is subject to termination by Torii at any time and by the Company in certain circumstances, including any material breaches of the agreement by Torii. Pursuant to the agreement, Torii may negotiate a license with the Company to develop BCX-34 and certain other PNP inhibitor compounds for additional indications.

### **3-Dimensional Pharmaceuticals**

In October 1996, the Company signed an agreement with 3-Dimensional Pharmaceuticals, Inc. ("3DP") of Exton, Pennsylvania, under which the companies will share resources and technology to expedite the identification of inhibitors of key serine protease enzymes which represent promising targets for inhibition of complement activation. The agreement combines BioCryst's capabilities in structure-based drug design with the selection power of 3DP's DirectedDiversity?, a proprietary method of directing combinatorial chemistry and high throughput screening toward specific molecular targets, used to rapidly discover and optimize new drugs. Under the terms of this agreement, the companies will be responsible for their own research costs. If compounds are discovered as a result of the collaboration, the companies will then negotiate clinical development and commercialization rights to those compounds.

### **UAB Collaborative Arrangements**

UAB has one of the largest X-ray crystallography centers in the world with approximately 112 full-time staff members and approximately \$19.5 million in research grants and contract funding in 1998. In 1986, the Company entered into an agreement with UAB which granted the Company exclusive rights to any discoveries resulting from research relating to PNP.

Since 1990, the Company has entered into several other research agreements with UAB to perform research for the Company. The agreements provide that UAB perform specific research for the Company in return for research payments and license fees. In November 1994, the Company entered into an agreement with UAB for the joint research and development relating to development of an influenza neuraminidase inhibitor. UAB has granted the Company certain rights to any discoveries in this area resulting from research previously developed by UAB or jointly developed with BioCryst. The Company has agreed to pay certain royalties on sales of any resulting product and to share in future payments received from other third-party collaborators. In July 1995, the Company entered into an agreement with UAB for the joint research and development relating to Factor D inhibitors. This agreement was expanded in October 1996 to include other enzyme targets of the complement system. UAB has also granted the Company certain rights to any discoveries in this area resulting from research previously developed by UAB or jointly developed with BioCryst. The Company has agreed to pay certain royalties on sales of any resulting product and to share in future payments received from other third-party collaborators. These two agreements have initial 25-year terms (automatically renewable for five-year terms throughout the life of the last patent or extension thereof incorporating the license rights) and are terminable by the Company upon three months' notice and by UAB under certain circumstances.

BioCryst believes that due to the expertise of the faculty at UAB in the various disciplines employed by BioCryst in its structure-based drug design programs, including X-ray crystallography, and UAB's past performance in identifying and characterizing medically relevant protein targets, BioCryst's relationship with UAB is important to the success of BioCryst. No assurance can be given, however, that UAB's research will be beneficial to BioCryst or that BioCryst will be able to maintain its relationship with UAB. See Note 9 to Notes to Financial Statements.

### **Patents and Proprietary Information**

The Company owns or has rights to certain proprietary information, issued and allowed patents and patent applications which relate to compounds it is developing. The Company actively seeks, when appropriate, protection for its products and proprietary information by means of United States and foreign patents, trademarks and contractual arrangements. In addition, the Company plans to rely upon trade secrets and contractual arrangements to protect certain of its proprietary

information and products. The Company has been issued seven United States patents which expire between 2009 to 2013 and relate to its PNP inhibitor compounds. The Company's current lead immunological compound, BCX-34, is covered by one of the patents. This group also includes BCX-5, which may require a license from Warner-Lambert Company ("Warner-Lambert") to market a product containing this compound. The Company has the right of first refusal to negotiate a license from Warner-Lambert for that compound; however, there can be no assurance that such a license would be available or obtainable on terms acceptable to the Company. The Company has also been issued a patent by the U.S. Patent and Trademark Office ("PTO") covering the manufacturing process of its PNP inhibitors which expires in 2015 and an additional patent application has been filed for another new process to prepare BCX-34 and other PNP inhibitors. In addition, one patent has issued by the PTO which expires in 2015 and two patent applications have been filed with the PTO relating to inhibitors of influenza neuraminidase. Also, two provisional United States patent applications have been filed with the PTO on complement inhibitors. There can be no assurance that any patents will provide the Company with sufficient protection against competitive products or otherwise be commercially valuable.

The Company's success will depend in part on its ability to obtain and enforce patent protection for its products, preserve its trade secrets, and operate without infringing on the proprietary rights of third parties, both in the United States and in other countries. In the absence of patent protection, the Company's business may be adversely affected by competitors who develop substantially equivalent technology. Because of the substantial length of time and expense associated with bringing new products through development and regulatory approval to the marketplace, the pharmaceutical and biotechnology industries place considerable importance on obtaining and maintaining patent and trade secret protection for new technologies, products and processes. There can be no assurance that patents will be issued from such applications, that the Company will develop additional products that are patentable, or that present or future patents will provide sufficient protection to the Company's present or future technologies, products and processes. In addition, there can be no assurance that others will not independently develop substantially equivalent proprietary information, design around the Company's patents or obtain access to the Company's know-how, or that others will not successfully challenge the validity of the Company's patents or be issued patents which may prevent the sale of one or more of the Company's product candidates, or require licensing and the payment of significant fees or royalties by the Company to third parties in order to enable the Company to conduct its business. Legal standards relating to the scope of claims and the validity of patents in the fields in which the Company is pursuing research and development are still evolving, are highly uncertain and involve complex legal and factual issues. No assurance can be given as to the degree of protection or competitive advantage any patents issued to the Company will afford, the validity of any such patents or the Company's ability to avoid violating or infringing any patents issued to others. Further, there can be no guarantee that any patents issued to or licensed by the Company will not be infringed by the products of others. Litigation and other proceedings involving the defense and prosecution of patent claims can be expensive and time consuming, even in those instances in which the outcome is favorable to the Company, and can result in the diversion of resources from the Company's other activities. An adverse outcome could subject the Company to significant liabilities to third parties, require the Company to obtain licenses from third parties or require the Company to cease any related research and development activities or sales.

The Company's success is also dependent upon the skills, knowledge and experience (none of which is patentable) of its scientific and technical personnel. To help protect its rights, the Company requires all employees, consultants, advisors and collaborators to enter into confidentiality agreements which prohibit the disclosure of confidential information to anyone outside the Company and requires disclosure and assignment to the Company of their ideas, developments, discoveries and inventions. There can be no assurance, however, that these agreements will provide adequate protection for the Company's trade secrets, know-how or other proprietary information in the event of any unauthorized use or disclosure or the lawful development by others of such information.

The Company's research has been funded in part by SBIR or NIH grants. As a result of such funding, the United States Government has certain rights in the inventions developed with the funding. These rights include a non-exclusive, paid-up, worldwide license under such inventions for any governmental purpose. In addition, the government has the right to require the Company to grant an exclusive license under any of such inventions to a third party if the government determines that (i) adequate steps have not been taken to commercialize such inventions, (ii) such action is necessary to meet public health or safety needs or (iii) such action is necessary to meet requirements for public use under federal regulation. Federal law requires that any exclusive licensor of an invention that was partially funded by federal grants (which is the case with the subject matter of certain patents issued in the Company's name) agree that it will not grant exclusive rights to use or sell the invention in the United States unless the grantee agrees that any products embodying

the invention will be manufactured substantially in the United States, although such requirement is subject to a discretionary waiver by the government. It is not expected that the government will exercise any such rights.

## **Marketing, Distribution and Sales**

The Company lacks experience in marketing, distributing or selling pharmaceutical products and will have to develop a pharmaceutical sales force and/or rely on collaborators, licensees or on arrangements with others to provide for the marketing, distribution and sales of any products it may develop. There can be no assurance that the Company will be able to establish marketing, distribution and sales capabilities or make arrangements with collaborators, licensees or others to perform such activities.

## **Competition**

The pharmaceutical industry is intensely competitive. Many companies, including biotechnology, chemical and pharmaceutical companies, are actively engaged in activities similar to those of the Company, including research and development of drugs for the treatment of immunological and infectious diseases and disorders. Many of these companies have substantially greater financial and other resources, larger research and development staffs, and more extensive marketing and manufacturing organizations than the Company. In addition, some of them have considerable experience in preclinical testing, clinical trials and other regulatory approval procedures. There are also academic institutions, governmental agencies and other research organizations which are conducting research in areas in which the Company is working; they may also market commercial products, either on their own or through collaborative efforts.

BioCryst expects to encounter significant competition for any of the pharmaceutical products it plans to develop. Companies that complete clinical trials, obtain required regulatory approvals and commence commercial sales of their products before their competitors may achieve a significant competitive advantage. In addition, certain pharmaceutical and biotechnology firms, including major pharmaceutical companies and specialized structure-based drug design companies have announced efforts in the field of structure-based drug design and in the field of PNP inhibitors, and the Company is aware that other companies or institutions are pursuing development of new drugs and technologies directly targeted at applications for which the Company is developing its drug compounds. The Company expects that the technology for structure-based drug design will attract significant additional competitors over time. In order to compete successfully, the Company's goal is to develop proprietary positions in patented drugs for therapeutic markets which have not been satisfactorily addressed by conventional research strategies and, in the process, extend its expertise in structure-based drug design.

## **Government Regulation**

BioCryst's research and development activities are, and its future business will be, subject to significant regulation by numerous governmental authorities in the United States, primarily, but not exclusively, by the FDA, and other countries. Pharmaceutical products intended for therapeutic or diagnostic use in humans are governed principally by the Federal Food, Drug and Cosmetic Act and by FDA regulations in the United States and by comparable laws and regulations in foreign countries. The process of completing clinical testing and obtaining FDA approval for a new drug product requires a number of years and the expenditure of substantial resources.

Following drug discovery, the steps required before a new pharmaceutical product may be marketed in the United States include (1) preclinical laboratory and animal tests, (2) the submission to the FDA of an application for an IND, (3) clinical and other studies to assess safety and parameters of use, (4) adequate and well-controlled clinical trials to establish the safety and effectiveness of the drug, (5) the submission of a New Drug Application ("NDA") to the FDA, and (6) FDA approval of the NDA prior to any commercial sale or shipment of the drug.

Typically, preclinical studies are conducted in the laboratory and in animal model systems to gain preliminary information on the drug's pharmacology and toxicology and to identify any potential safety problems that would preclude testing in humans. The results of these studies are submitted to the FDA as part of the IND application. Testing in humans may commence 30 days after submission of the IND to the FDA unless the FDA objects, although companies typically wait for approval from the FDA before commencing clinical trials. A three phase clinical trial program is usually required for FDA approval of a pharmaceutical product. Phase I clinical trials are designed to

determine the metabolism and pharmacologic effects of the drug in humans, the side effects associated with increasing doses, and, possibly, to obtain early indications of efficacy. These studies generally involve a small number of healthy volunteer subjects, but may be conducted in people with the disease the drug is intended to treat. Phase II studies are conducted in an expanded population to evaluate the effectiveness of the drug for a particular indication and thus involve patients with the disease under study. These studies are also intended to elicit additional safety data on the drug, including evidence of the short-term side effects and other risks associated with the drug. Phase III studies are generally designed to provide the substantial evidence of safety and effectiveness of a drug required to obtain FDA approval. They often involve a substantial number of patients in multiple study centers and may include chronic administration of the drug in order to assess the overall benefit-risk relationship of the drug. A clinical trial may combine the elements of more than one phase, and typically two or more Phase III studies are required. Upon completion of clinical testing which demonstrates that the product is safe and effective for a specific indication, an NDA may be submitted to the FDA. This application includes details of the manufacturing and testing processes, preclinical studies and clinical trials. The designation of a clinical trial as being of a particular phase is not necessarily indicative that such a trial will be sufficient to satisfy the requirements of a particular phase. For example, no assurance can be given that a Phase III clinical trial will be sufficient to support an NDA without further clinical trials. The FDA monitors the progress of each of the three phases of clinical testing and may alter, suspend or terminate the trials based on the data that have been accumulated to that point and its assessment of the risk/benefit ratio to the patient. Typical estimates of the total time required for completing such clinical testing vary between four and ten years. FDA approval of the NDA is required before the applicant may market the new product in the United States. The clinical testing and FDA review process for new drugs are likely to require substantial time, effort and expense. There can be no assurance that any approval will be granted to the Company on a timely basis, if at all. The FDA may refuse to approve an NDA if applicable statutory and/or regulatory criteria are not satisfied, or may require additional testing or information. There can be no assurance that such additional testing or the provision of such information, if required, will not have a material adverse effect on the Company. The regulatory process can be modified by Congress or the FDA in specific situations.

In 1988, the FDA issued regulations intended to expedite the development, evaluation, and marketing of new therapeutic products to treat life-threatening and severely debilitating illnesses for which no satisfactory alternative therapies exist. These regulations provide for early consultation between the sponsor and the FDA in the design of both preclinical studies and clinical trials. Phase I clinical trials may sometimes be carried out in people with the disease that the drug is intended to treat rather than in healthy volunteers, as is customary, followed by studies to establish effectiveness in Phase II. If the results of Phase I and Phase II trials support the safety and effectiveness of the therapeutic agent, and their design and execution are deemed satisfactory upon review by the FDA, marketing approval can be sought at the end of Phase II trials. NDA approval granted under these regulations may be restricted by the FDA as necessary to ensure safe use of the drug. In addition, post-marketing clinical studies may be required. If after approval a post-marketing clinical study establishes that the drug does not perform as expected, or if post-marketing restrictions are not adhered to or are not adequate to ensure safe use of the drug, FDA approval may be withdrawn. The expedited approval may shorten the traditional drug development process by an estimated two to three years. There can be no assurance, however, that any compound the Company may develop will be eligible for evaluation by the FDA under the 1988 regulations or, if eligible, will be approved for marketing at all or, if approved for marketing, will be approved for marketing sooner than would be traditionally expected.

Under the Orphan Drug Act, the FDA may grant orphan drug designation to drugs intended to treat a "rare disease or condition," which generally is a disease or condition that affects populations of fewer than 200,000 individuals in the United States. Orphan drug designation must be requested before submitting an NDA. After the FDA grants orphan drug designation, the generic identity of the therapeutic agent and its potential orphan use are publicized by the FDA. Under current law, orphan drug designation grants certain U.S. marketing exclusivity to the first company to receive FDA approval to market such designated drug, subject to certain limitations. A product that is considered by the FDA to be different from a particular orphan drug or is approved for different indications is not barred from sale in the United States during the seven year exclusivity period. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory approval process. In October 1993, the Company obtained from the FDA an orphan drug designation for BCX-34 to treat CTCL, and may request orphan drug designation for more of its products and/or additional indications as part of its overall regulatory strategy in the future. There is no assurance, however, that any of its products will receive an orphan drug designation or be the first to be approved by the FDA for the designated indication and, hence, obtain orphan drug marketing exclusivity. Although obtaining FDA approval to market a product with an orphan drug designation can be advantageous, there can be no assurance that the scope of protection or the level of marketing exclusivity that is currently afforded by orphan drug designation and marketing approval will remain in

effect in the future. There can be no assurance that the Company will receive FDA approval to market BCX-34 to treat CTCL. In addition, it is possible that other competitors of the Company could obtain orphan drug designation for product candidates that are not the same as BCX-34 though they are intended for use to treat CTCL.

Even after initial FDA approval has been obtained, further studies may be required to provide additional data on safety or to gain approval for the use of a product as a treatment in clinical indications other than those for which the product was initially tested. The FDA may also require post-marketing testing and surveillance programs to monitor the drug's effects. Side effects resulting from the use of pharmaceutical products may prevent or limit the further marketing of products.

Once the sale of a product is approved, the FDA regulates production, marketing, and other activities under the Federal Food, Drug, and Cosmetic Act and the FDA's implementing regulations. A post-marketing testing, surveillance and reporting program may be required to continuously monitor the product's usage and effects. Product approvals may be withdrawn, or other actions may be ordered, or sanctions imposed if compliance with regulatory requirements is not maintained. Other countries in which any products developed by the Company or its licensees may be marketed impose a similar regulatory process.

In June 1995, the Company notified the FDA that it had submitted incorrect efficacy data to the FDA pertaining to its Phase II dose-ranging studies of BCX-34 for CTCL and psoriasis. Upon learning of the error, the Company initiated internal and external audits and submitted corrected analyses to the FDA. In addition, the Company hired a new Vice President of Clinical Development and outside expert personnel to manage clinical development and monitor studies, developed additional standard operating procedures, and contracted with a contract research organization to assist the Company in monitoring its trial for BCX-34 for CTCL.

In November 1995, the FDA inspected the Company in relation to a February 1995 48-hour skin stripping study involving application of BCX-34. At the conclusion of the inspection, the FDA issued to the Company a List of Inspectional Observations ("Form FDA 483") including the observation that there was no documentation of any monitoring of the study or of several other studies. The Company responded to this and the other observation in the Form FDA 483. Although the FDA has not raised any additional questions in the matter, the Company does not know whether its responses were satisfactory to the FDA.

In June 1996, the FDA inspected the Company and one of its clinical sites in relation to Phase II dose-ranging studies of BCX-34 for CTCL and psoriasis, each of which was concluded in early 1995. At the conclusion of the inspection, the FDA issued to the Company a Form FDA 483 citing deficiencies relating to the monitoring of the studies and the Company's procedures for generating, archiving, and safeguarding the randomization tables used in the studies. The deficient procedures failed to prevent the use of an incorrect randomization table which ultimately resulted in the initial submission to the FDA of data which reported false statistical significance. The FDA issued a Form FDA 483 to the principal investigator at one of the Company's clinical sites, citing numerous significant deficiencies in the conduct of the Phase II dose-ranging study of BCX-34 for CTCL and psoriasis. These deficiencies included improper delegations of authority by the principal investigator, failures to follow the protocols, institutional review board deviations, and discrepancies or deficiencies in documentation and reporting. As a result of the FDA inspections, the Company has been notified that the FDA will not accept data from these studies at that clinical site. As a consequence of the FDA inspections and such resulting Form FDA 483s, the Company's ongoing clinical studies are likely to receive increased scrutiny from the FDA.

The Company believes that its procedures and monitoring practices are now in compliance with the FDA's requirements governing Good Clinical Practice ("GCP"). There can be no assurance, however, that the FDA will agree or that, even if it does agree, it will not seek to impose administrative, civil, or other sanctions in connection with the earlier studies and submission.

In addition to regulations enforced by the FDA, the Company also is subject to regulation under the Occupational Safety and Health Act, the Environmental Protection Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act and other similar Federal, state and local regulations governing permissible laboratory activities, waste disposal handling of toxic, dangerous or radioactive materials and other matters. The Company believes that it is in compliance with such regulations.

For marketing outside the United States, the Company will be subject to foreign regulatory requirements governing human clinical trials and marketing approval for drugs and devices. The requirements relating to the conduct of clinical trials, product licensing, pricing and reimbursement vary widely from country to country.

### **Human Resources**

As of March 15, 1999, the Company had 56 employees, of whom 42 were engaged in research and development and 14 were in general and administrative functions. The Company's scientific staff (18 of whom hold Ph.D. or M.D. degrees) has diversified experience in biochemistry, pharmacology, X-ray crystallography, synthetic organic chemistry, computational chemistry, medicinal chemistry and pharmacology. The Company considers its relations with its employees to be satisfactory.

### **Scientific Advisory Board and Consultants**

BioCryst has assembled a Scientific Advisory Board comprised of five members (the "Scientific Advisors") who are leaders in certain of the Company's core disciplines or who otherwise have specific expertise in its therapeutic focus areas. The Scientific Advisory Board meets as a group at scheduled meetings and the Scientific Advisors meet more frequently, on an individual basis, with the Company's scientific personnel and management to discuss the Company's ongoing research and drug discovery and development projects. The Company also has consulting agreements with a number of other scientists (the "Consultants") with expertise in the Company's core disciplines or in its therapeutic focus areas who are consulted from time to time by the Company.

The Scientific Advisors and the Consultants are reimbursed for their expenses and receive nominal cash compensation in connection with their service and have been issued options and/or shares of Common Stock. The Scientific Advisors have been issued a total of 4,975 shares of Common Stock for nominal consideration and granted stock options to purchase a total of 77,000 shares of Common Stock at a weighted average exercise price of \$7.08 per share. Consultants have also been granted stock options to purchase a total of 65,000 shares at a weighted average exercise price of \$6.98 per share. The Scientific Advisors and the Consultants are all employed by or have consulting agreements with entities other than the Company, some of which may compete with the Company in the future. The Scientific Advisors and the Consultants are expected to devote only a small portion of their time to the business of the Company, although no specific time commitment has been established. They are not expected to participate actively in the Company's affairs or in the development of the Company's technology. Certain of the institutions with which the Scientific Advisors and the Consultants are affiliated may adopt new regulations or policies that limit the ability of the Scientific Advisors and the Consultants to consult with the Company. The loss of the services of certain of the Scientific Advisors and the Consultants could adversely affect the Company to the extent that the Company is pursuing research or development in areas of such Scientific Advisors' and Consultants' expertise. To the extent members of the Company's Scientific Advisory Board or the Consultants have consulting arrangements with or become employed by any competitor of the Company, the Company could be materially adversely affected. One member of the Scientific Advisory Board, Dr. Gordon N. Gill, is a member of the Board of Directors of the Agouron Institute. The Agouron Institute is a shareholder in, and has had contractual relationships with, Agouron Pharmaceuticals, Inc., a company utilizing core technology which is similar to the core technology employed by BioCryst.

The Scientific Advisory Board consists of the following individuals:

Name ----	Position -----
Albert F. LoBuglio, M.D. (Chairman) .....	Professor of Medicine and the Director of the Comprehensive Cancer Center of UAB
Gordon N. Gill, M.D. ....	Professor of Medicine and Chair of the Faculty of Basic Biomedical Sciences at the University of California, San Diego School of Medicine
Herbert A. Hauptman, Ph.D. ....	Research Professor in Biophysical Science at the State University of New York (Buffalo), the President of the Hauptman-Woodward Medical Research Institute, Inc. (formerly the Medical Foundation (Buffalo), Inc.), and Research Professor in Biophysical Sciences at the State University of New York (Buffalo), recipient of the Nobel Prize in Chemistry (1985)
Yuichi Iwaki, M.D., Ph.D. ....	Professor of Urology and Pathology, University of Southern California School of Medicine
Hamilton O. Smith, M.D. ....  University  Institute	Professor, Molecular Biology and Genetics Department at The Johns Hopkins  School of Medicine, retired, Director of DNA Resources at Celera Genomics Corporation, Investigator at The  for Genomic Research, recipient of the Nobel Prize in Medicine (1978)

Any inventions or processes independently discovered by the Scientific Advisors or the Consultants may not become the property of the Company and will probably remain the property of such persons or of such persons' employers. In addition, the institutions with which the Scientific Advisors and the Consultants are affiliated may make available the research services of their personnel, including the Scientific Advisors and the Consultants, to competitors of the Company pursuant to sponsored research agreements. The Company requires the Scientific Advisors and the Consultants to enter into confidentiality agreements which prohibit the disclosure of confidential information to anyone outside the Company and require disclosure and assignment to the Company of their ideas, developments, discoveries or inventions. However, no assurance can be given that competitors of the Company will not gain access to trade secrets and other proprietary information developed by the Company and disclosed to the Scientific Advisors and the Consultants.

## ITEM 2. PROPERTIES

The Company's administrative offices and principal research facility are located in 41,250 square feet of leased office space in Riverchase Industrial/Research Park in Birmingham, Alabama. The lease runs through June 30, 2003 with an option to lease for an additional three years at current market rates. The Company believes that its facilities are adequate for its current operations. Additional facilities will be necessary to manufacture sufficient quantities under good manufacturing practices to conduct extensive clinical trials or if the Company undertakes commercial manufacturing. See Note 5 to the Financial Statements.

## ITEM 3. LEGAL PROCEEDINGS

None.

## ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS



None.

## PART II

### ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

The Company's common stock trades on the Nasdaq National Market tier of The Nasdaq Stock Market<sup>SM</sup> under the symbol BCRX. The following table sets forth the low and high prices as reported by Nasdaq for each quarter in 1998 and 1997:

	1998		1997	
	Low	High	Low	High
	---	----	---	----
First quarter \$17.00	\$6.88	\$9.50	\$11.50	
Second quarter 14.75	6.00	9.13	10.06	
Third quarter 13.75	6.00	8.00	4.25	
Fourth quarter 8.38	4.38	8.44	6.25	

The last sale price of the common stock on February 26, 1999 as reported by Nasdaq was \$9.00 per share.

As of February 26, 1999, there were approximately 520 holders of record of the common stock.

The Company has never paid cash dividends and does not anticipate paying cash dividends.

### ITEM 6. SELECTED FINANCIAL DATA

	Years Ended December 31, (In thousands, except per share)				
	1998	1997	1996	1995	1994
	-----	-----	-----	-----	-----
Statement of Operations Data:					
Total revenues	\$ 7,626	\$ 2,693	\$ 2,652	\$ 885	\$ 734
Research and development expenses	\$ 9,291	\$ 10,577	\$ 7,586	\$ 7,107	\$ 5,552
Net loss	\$ (4,785)	\$ (10,619)	\$ (7,698)	\$ (8,576)	\$ (6,938)
Net loss per share	\$ (.34)	\$ (.77)	\$ (.69)	\$ (.96)	\$ (1.02)
Weighted average shares outstanding	14,120	13,780	11,171	8,905	6,787

	December 31, (In thousands)				
	1998	1997	1996	1995	1994
	-----	-----	-----	-----	-----
Balance Sheet Data:					
Cash, cash equivalents and securities	\$ 27,012	\$ 24,643	\$ 35,785	\$ 11,414	\$ 10,873
Total assets	29,100	26,485	37,149	13,056	12,803
Long-term debt and obligations under capital leases, excluding current portion	22	34	58	300	573
Accumulated deficit	(53,170)	(48,384)	(37,766)	(30,067)	(21,491)
Total stockholders' equity	27,682	25,285	35,403	11,326	11,176

## **ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

This Annual Report contains certain statements of a forward-looking nature relating to future events or the future financial performance of the Company. Such statements are only predictions and the actual events or results may differ materially from the results discussed in the forward-looking statements. Factors that could cause or contribute to such differences include those discussed below as well as those discussed in other filings made by the Company with the Securities and Exchange Commission.

### **Overview**

Since its inception in 1986, the Company has been engaged in research and development activities (including drug discovery, manufacturing compounds, conducting preclinical studies and clinical trials) and organizational efforts (including recruiting its scientific and management personnel), establishing laboratory facilities, engaging its Scientific Advisory Board and raising capital. The Company has not received any revenue from the sale of pharmaceutical products and does not expect to receive such revenues to a significant extent for at least several years, if at all. The Company has incurred operating losses since its inception. The Company expects to incur significant additional operating losses over the next several years and expects such losses to increase as the Company's research, development and clinical trial efforts expand.

### **Year Ended December 31, 1998 Compared with the Year Ended December 31, 1997**

Collaborative and other research and development revenue increased 537.1% to \$6,371,095 in 1998 from \$1,000,000 in 1997, primarily due to the \$6.0 million in up front fees received from PRI and Ortho-McNeil in 1998 for a license agreement for the Company's influenza neuraminidase inhibitors compared to the \$1.0 million milestone payment received from Torii in 1997. Interest and other income decreased 25.9% to \$1,254,881 in 1998 from \$1,692,521 in 1997, primarily due to a decline in the weighted average investment for 1998.

Research and development expenses decreased 12.2% to \$9,291,146 in 1998 from \$10,577,369 in 1997. Such expenses vary from period to period based on the status of the Company's projects. The Company completed two Phase III clinical trials in 1997. In 1998, the Company commenced two Phase I clinical trials for its serine protease inhibitor, continued its two Phase I/II clinical trials for an oral formulation of its PNP inhibitor and initiated preclinical studies for its influenza neuraminidase and serine protease inhibitors. Overall, the decline in costs associated with the Company's PNP inhibitor project were partially offset by the increases in the Company's serine protease and influenza neuraminidase projects. As a result, there was a slight decrease in 1998 in the outside research and development efforts associated with the Company's three primary research and development projects. The Company reduced some of its other discretionary costs, which was offset by one-time costs associated with signing a license agreement for the Company's influenza neuraminidase inhibitors and certain related agreements in September 1998.

General and administrative expenses increased 15.8% to \$3,104,925 in 1998 from \$2,682,137 in 1997. The increase was primarily due to the fees and expenses incurred in connection with the license agreement (and related agreements) for the Company's influenza neuraminidase inhibitors signed in September 1998.

Interest expense decreased 71.1% to \$14,986 in 1998 from \$51,880 in 1997. The decrease was primarily due to a decline in capitalized lease obligations resulting in lesser interest expense. The Company obtained most of its leases in connection with the move to its facilities in April 1992.

### **Year Ended December 31, 1997 Compared with the Year Ended December 31, 1996**

Collaborative and other research and development revenue decreased 35.8% to \$1,000,000 in 1997 from \$1,558,543 in 1996, primarily due to a \$1.0 million milestone payment received from Torii in 1997 compared to the \$1.5 million license fee received from Torii and a Factor D grant in 1996. Interest and other income increased 54.8% to \$1,692,521 in 1997 from \$1,093,617 in 1996, primarily due to interest earned on funds invested from the Company's public offering in September 1996.

Research and development expenses increased 39.4% to \$10,577,369 in 1997 from \$7,586,159 in 1996. The increase was primarily attributable to costs associated with manufacturing compounds, clinical trials and preclinical studies and expenses associated with increased personnel. These costs tend to fluctuate from period to period depending upon the stage of development and the conduct of clinical trials.

General and administrative expenses increased .7% to \$2,682,137 in 1997 from \$2,664,197 in 1996. The increase was in several categories, primarily increased personnel costs and the fact that 1996 expenses were reduced by the reversal of a liability recorded in 1995 for use taxes assessed that the Company successfully contested in 1996, and was partially offset by decreased fees and taxes on the Torii milestone in 1997 versus the fees and taxes on the Torii license in 1996 and decreased legal expenses in 1997.

Interest expense decreased 48.1% to \$51,880 in 1997 from \$100,031 in 1996. The decrease was primarily due to a decline in capitalized lease obligations, along with long-term debt, resulting in lesser interest expense. The Company obtained most of its leases in connection with the move to its facilities in April 1992.

### **Liquidity and Capital Resources**

Cash expenditures have exceeded revenues since the Company's inception. Operations have principally been funded through public offerings and private placements of equity and debt securities, equipment lease financing, facility leases, collaborative and other research and development agreements (including licenses and options for licenses), research grants and interest income. In addition, the Company has attempted to contain costs and reduce cash flow requirements by renting scientific equipment or facilities, contracting with third parties to conduct certain research and development and using consultants. The Company expects to incur additional expenses, resulting in significant losses, as it continues and expands its research and development activities and undertakes additional preclinical studies and clinical trials of compounds which have been or may be discovered. The Company also expects to incur substantial administrative, manufacturing and commercialization expenditures in the future as it seeks Food and Drug Administration (the "FDA") approval for its compounds and establishes its manufacturing capability under Good Manufacturing Practices, and substantial expenses related to the filing, prosecution, maintenance, defense and enforcement of patent and other intellectual property claims.

At December 31, 1998, the Company's cash, cash equivalents and securities held-to-maturity were \$27,012,093, an increase of \$2,368,607 from December 31, 1997 principally due to the \$6.0 million equity investment in the Company in connection with the influenza neuraminidase license offsetting the cash used in operations.

The Company has financed its equipment purchases primarily with lease lines of credit. The Company currently has a \$500,000 line of credit with its bank to finance capital equipment. In January 1992, the Company entered into an operating lease for its current facilities which, based on an extension signed in June 1998, expires on June 30, 2003, with an option to lease for an additional three years at current market rates. The operating lease requires the Company to pay monthly rent (ranging from \$21,405 and escalating annually to a minimum of \$24,814 per month in the final year), and a pro rata share of operating expenses and real estate taxes in excess of base year amounts.

At December 31, 1998, the Company had long-term capital lease and operating lease obligations which provide for aggregate minimum payments of \$280,254 in 1999, \$288,128 in 2000 and \$285,816 in 2001.

Pursuant to the license agreement for the Company's influenza neuraminidase inhibitors, Ortho-McNeil and PRI paid the Company an initial \$6.0 million for reimbursement of research and development expenses and in license fees and JJDC, pursuant to the Stock Purchase Agreement, made a \$6.0 million equity investment in the Company. While the License Agreement provides for potential milestone payments of up to an additional \$43.0 million and royalties on future sales of licensed products, there can be no assurance that PRI will continue to develop the product or, that if it does so, that it will result in meeting the milestones or achieving future sales of licensed products. The Company also entered into an exclusive license agreement with Torii under which Torii paid the Company \$1.5 million in initial license fees and made a \$1.5 million equity investment in the Company in 1996. The first milestone payment of \$1.0 million was received in 1997. While the Torii license agreement provides for potential milestone payments of up to an

additional \$18.0 million and royalties on future sales of licensed products in Japan, there can be no assurance that Torii will continue to develop the product in Japan or, that if it does so, that it will result in meeting the milestones or achieving future sales of licensed products in Japan.

The Company plans to finance its needs principally from its existing capital resources and interest thereon, from payments under collaborative and licensing agreements with corporate partners, through research grants, and to the extent available, through lease or loan financing and future public or private financings. The Company believes that its available funds will be sufficient to fund the Company's operations at least through the end of 2000. However, this is a forward-looking statement, and no assurance can be given that there will be no change that would consume available resources significantly before such time. The Company's long-term capital requirements and the adequacy of its available funds will depend upon many factors, including results of research and development, results of preclinical studies and clinical trials, relationships with strategic partners, changes in the focus and direction of the Company's research and development programs, competitive and technological advances, changes in existing collaborative, licensing, research or development relationships, the ability of the Company to establish additional collaborative relationships and the FDA regulatory process. Additional funding, whether through additional sales of securities or collaborative or other arrangements with corporate partners or from other sources, may not be available when needed or on terms acceptable to the Company. The issuance of preferred or Common Stock or convertible securities, on terms and prices significantly more favorable than those of the currently outstanding Common Stock, could have the effect of diluting or adversely affecting the holdings or rights of existing stockholders of the Company. In addition, collaborative arrangements may require the Company to transfer certain material rights to such corporate partners. Insufficient funds may require the Company to delay, scale-back or eliminate certain of its research and development programs or to license third parties to commercialize products or technologies that the Company would otherwise undertake itself.

### **Risks Associated with the Year 2000**

The year 2000 issue ("Year 2000 Issue") is the result of computer programs being written using two digits rather than four digits to represent the year and affects both information technology (IT) and non-IT systems. Thus, computer software may recognize a date using "00" as the year 1900 rather than the year 2000. This could result in system failures or miscalculations causing disruptions of operations, including among others, a temporary inability to process certain data or engage in similar normal business activities.

Plan and Status. The Company's plan to resolve the Year 2000 Issue involves four phases: assessment, remediation, testing and implementation. The Company has completed its assessment of its IT systems. In 1997, the Company installed a computer network, upgraded its MacIntosh computers to IBM compatible personal computers and upgraded its IT software to a common standard. As a consequence, most of its IT systems are identified by the manufacturer as Year 2000 compliant. The Company is completing its assessment of non-IT systems, most of which is equipment used in the laboratories. Major vendors and suppliers are also being contacted with regard to their Year 2000 compliance and the Company will continue to monitor their compliance. The Company anticipates completing its assessment by the end of the first quarter of 1999. Systems identified as not being Year 2000 compliant will be brought into compliance by upgrading either the software or hardware. The Company expects to begin remediation and testing by the second quarter of 1999 and to be fully implemented by the end of the third quarter of 1999.

While the Company has queried its significant suppliers, vendors and other outside parties and will continue to monitor their Year 2000 compliance status, the Company has no means of ensuring that suppliers, vendors and other outside parties will be Year 2000 ready. The inability of suppliers, vendors and other outside parties (including the government) to complete their Year 2000 resolution process in a timely fashion could materially impact the Company. The effect of non-compliance by suppliers, vendors and outside parties is not determinable.

Costs. The costs incurred to date for Year 2000 compliance have not been material (less than \$50,000) and are not expected to be material when completed (less than \$100,000). The Company anticipates that it will be able to fund its costs from current funds available for operations. If, however, the costs are higher than anticipated, this could have a material adverse effect on the Company's business, results of operations and financial condition.

Risks. While management of the Company believes it has an effective program in place to resolve the Year 2000 Issue

in a timely manner, as noted above, the Company has not completed all necessary phases of the Year 2000 program for compliance. In the event that the Company or third parties do not complete any additional phases, the Company may not be able to complete the testing of its compounds and advancing its projects into human clinical trials in support of an NDA filing. In addition, disruptions in the economy generally resulting from Year 2000 Issues could also materially adversely effect the Company. The Company is unable to estimate if it has any potential liability or potential lost revenue at this time. There can be no assurance that the Company will not discover Year 2000 compliance issues that will have a material adverse effect on the Company's business, results of operations and financial condition.

Contingency. The Company has contingency plans for certain critical applications and is working on such plans for others. These contingency plans involve, among other actions, manual workarounds, increasing inventories and adjusting staffing strategies. There can be no assurance that these contingency plans will be adequate.

#### Certain Factors That May Affect Future Results, Financial Condition and the Market Price of Securities

##### Early Stage of Development; Uncertainty of Product Development; Technological Uncertainty

BioCryst is at an early stage of development. All of the Company's compounds are in research and development, and no revenues have been generated from sales of its compounds. It will be a number of years, if ever, before the Company will recognize significant revenues from product sales or royalties. To date, most of the Company's resources have been dedicated to the research and development of pharmaceutical compounds based upon its purine nucleoside phosphorylase ("PNP") program for the treatment of T-cell proliferative diseases and disorders and for the development of inhibitors of influenza neuraminidase and enzymes and proteins involved in the complement cascade. The Company and PRI have conducted preclinical studies with its influenza neuraminidase inhibitor and the Company is conducting clinical studies with its lead drugs, BCX-34 and BCX-1470, and results from these studies may not support future human clinical testing or further development of the compounds. Phase III trials completed in 1997 with a cream formulation of BCX-34 for treatment of cutaneous T-cell lymphoma ("CTCL") and psoriasis and a Phase I/II trial completed in 1998 for a topical ointment treatment for psoriasis did not show statistical efficacy. Accordingly, the Company has discontinued further development of these topical formulations of BCX-34, but is continuing its oral trials for BCX-34. T-cell proliferative diseases, as well as the other disease indications the Company is studying, are highly complex and their causes are not fully known. The Company's compounds under development will require significant additional, time-consuming and costly research and development, preclinical testing and extensive clinical testing prior to submission of any regulatory application for commercial use. Product development of new pharmaceuticals is highly uncertain, and unanticipated developments, clinical or regulatory delays, unexpected adverse side effects or inadequate therapeutic efficacy could slow or prevent product development efforts and have a material adverse effect on the Company. One of BioCryst's lead drugs, BCX-34, reversibly inhibits T-cell activity, an essential component of the human immune system. In addition to any direct toxicities or side effects the drug may cause, BCX-34, while inhibiting T-cells, may compromise the immune system's ability to fight infection. Although the Company will monitor immunosuppression during drug dosing, there can be no assurance that the drug will not cause irreversible immunosuppression. There can be no assurance that the Company's research or product development efforts as to any particular compound will be successfully completed, that the compounds currently under development will be safe or efficacious, that required regulatory approvals can be obtained, that products can be manufactured at acceptable cost and with appropriate quality or that any approved products can be successfully marketed or will be accepted by patients, health care providers and third-party payors. Few drugs discovered by use of structure-based drug design have been successfully developed, approved by the FDA or marketed. Within the pharmaceutical industry, treatment of the disease indications being pursued by the Company, especially T-cell proliferative diseases such as CTCL and psoriasis, have proven difficult. There can be no assurance that drugs resulting from the approach of structure-based drug design employed by the Company will overcome the difficulties of drug discovery and development or result in commercially successful products.

##### Uncertainty Associated with Preclinical and Clinical Testing

Before obtaining regulatory approvals for the commercial sale of any of its products, BioCryst must undertake extensive preclinical and clinical testing to demonstrate their safety and efficacy in humans. The Company has limited experience in conducting clinical trials. To date, the Company has conducted initial preclinical testing of certain of its

compounds and is testing an oral formulation of BCX-34 and an intravenous formulation of BCX-1470 in various clinical trials. The results of initial preclinical and clinical testing of compounds under development by the Company are neither necessarily predictive of results that will be obtained from subsequent or more extensive preclinical and clinical testing nor necessarily acceptable to the FDA to support applications for marketing permits. However, the Company completed in 1997 two Phase III trials of a topical cream formulation and in 1998 a Phase I/II trial of a topical ointment formulation of BCX-34 which did not show statistical efficacy. Even if the results of subsequent clinical tests are positive, products, if any, resulting from the Company's research and development programs are not likely to be commercially available for several years. Additionally, the Company has made and may in the future make changes to the formulation of its drugs and/or to the processes for manufacturing its drugs. Any such future changes in formulation or manufacturing processes could result in delays in conducting further preclinical and clinical testing, in unexpected adverse events in further preclinical and clinical testing, and/or in additional development expenses. Furthermore, there can be no assurance that clinical studies of products under development will be acceptable to the FDA or demonstrate the safety and efficacy of such products at all or to the extent necessary to obtain regulatory approvals of such products. Companies in the industry have suffered significant setbacks in advanced clinical trials, even after promising results in earlier trials. The failure to comply with good clinical practices requirements for data integrity or to adequately demonstrate the safety and efficacy of a therapeutic product under development could delay or prevent regulatory approval of the product, and would have a material adverse effect on the Company.

The rate of completion of clinical trials is dependent upon, among other factors, the rate of enrollment of patients. Patient accrual is a function of many factors, including the size of the patient population, the proximity of patients to clinical sites, the eligibility criteria for the study and the existence of competitive clinical trials. Delays in planned patient enrollment in the Company's current trials or future clinical trials may result in increased costs and/or program delays which could have a material adverse effect on the Company.

Dependence on Collaborative Partners; Relationship with The University of Alabama at Birmingham ("UAB")

The Company's strategy for research, development and commercialization of certain of its products is to rely in part upon various arrangements with corporate partners, licensees and others. As a result, the Company's products are dependent in large part upon the subsequent success of such third parties in performing preclinical studies and clinical trials, obtaining regulatory approvals, manufacturing and marketing. The Company entered into an exclusive license agreement with Ortho-McNeil and PRI in September 1998 to develop, manufacture and commercialize its influenza neuraminidase inhibitor compounds for the flu. The Company also entered into an exclusive license agreement with Torii in May 1996 to develop, manufacture and commercialize in Japan BCX-34 and certain other PNP inhibitor compounds for three indications. The Company has also entered into collaborative arrangements with 3-Dimensional Pharmaceuticals, Inc. to share resources and technology to expedite the identification of inhibitors of key serine protease enzymes and with Novartis to pursue development of certain types of PNP inhibitors. The Company intends to pursue additional collaborations in the future. There can be no assurance that the Company will be able to negotiate additional acceptable collaborative arrangements or that such arrangements will be successful. No assurance can be given that the Company's collaborative partners, particularly Ortho-McNeil and PRI, will be able to obtain FDA approval for any licensed compounds, that any such licensed compounds, if so approved, will be able to be commercialized successfully, or that the Company will realize any revenues pursuant to such arrangements, including any milestone or royalty payments under the License Agreement. Although the Company believes that parties to collaborative arrangements generally have an economic motivation to succeed in performing their contractual responsibilities, the amount and timing of resources which they devote to these activities are not within the control of the Company. There can be no assurance that such parties will perform their obligations as expected or that current or potential collaborators will not pursue treatments for other diseases or seek alternative means of developing treatments for the diseases targeted by collaborative programs with the Company or that any additional revenues will be derived from such arrangements. If any of the Company's collaborators breaches or terminates its agreement with the Company or otherwise fails to conduct its collaborative activities in a timely manner, the development or commercialization of the product candidate or research program under such collaboration agreement may be delayed, the Company may be required to undertake unforeseen additional responsibilities or to devote unforeseen additional resources to such development or commercialization, or such development or commercialization could be terminated. The termination or cancellation of collaborative arrangements, particularly by Ortho-McNeil and PRI, could also adversely affect the Company's financial condition, intellectual property position and operations. In addition, disagreements between

collaborators and the Company have in the past and could in the future lead to delays in the collaborative research, development or commercialization of certain product candidates, or could require or result in legal process or arbitration for resolution. These consequences could be time-consuming, expensive and could have material adverse effects on the Company.

The successful commercialization of the Company's compounds and product candidates is also dependent upon the Company's ability to develop collaborative arrangements with academic institutions and consultants to support research and development efforts and to conduct clinical trials. The Company's primary academic collaboration has been with UAB to support its ongoing research and development programs. In 1998, the Company completed its funding obligations with UAB for the development of inhibitors for influenza neuraminidase and Factor D. UAB, however, will continue to share in any revenues derived from those two projects and the Company intends to continue using certain UAB faculty members as consultants to the Company. There can be no assurance that the Company's current arrangements with UAB will continue or that the Company will be able to develop successful collaborative arrangements with academic institutions and consultants in the future.

### **Government Regulation; No Assurance of Product Approval**

The research, testing, manufacture, labeling, distribution, advertising, marketing and sale of drug products are subject to extensive regulation by governmental authorities in the United States and other countries. Prior to marketing, compounds developed by the Company must undergo an extensive regulatory approval process required by the FDA and by comparable agencies in other countries. This process, which includes preclinical studies and clinical trials of each compound to establish its safety and effectiveness and confirmation by the FDA that good laboratory, clinical and manufacturing practices were maintained during testing and manufacturing, can take many years, requires the expenditure of substantial resources and gives larger companies with greater financial resources a competitive advantage over the Company. To date, no compound or drug candidate being evaluated by the Company has been submitted for approval to the FDA or any other regulatory authority for marketing, and there can be no assurance that any such compound or drug candidate will ever be approved for marketing or that the Company will be able to obtain the labeling claims desired for its compounds or drug candidates. The Company is and will continue to be dependent upon the laboratories and medical institutions conducting its preclinical studies and clinical trials to maintain both good laboratory and good clinical practices and, except for the formulating and packaging of small quantities of its drug formulations which the Company is currently undertaking, upon the manufacturers of its compounds to maintain compliance with current GMP requirements. Data obtained from preclinical studies and clinical trials are subject to varying interpretations which could delay, limit or prevent FDA regulatory approval. Delays or rejections may be encountered based upon changes in FDA policy for drug approval during the period of development and FDA regulatory review. Similar delays also may be encountered in foreign countries. Moreover, even if approval is granted, such approval may entail commercially unacceptable limitations on the labeling claims for which a compound may be marketed. Even if such regulatory approval is obtained, a marketed drug or compound and its manufacturer are subject to continual review and inspection, and later discovery of previously unknown problems with the product or manufacturer may result in restrictions or sanctions on such product or manufacturer, including withdrawal of the product from the market, and other enforcement actions.

In June 1995 the Company notified the FDA that it had submitted incorrect efficacy data to the FDA pertaining to its Phase II dose-ranging studies of BCX-34 for CTCL and psoriasis. The FDA inspected the Company in November 1995 in relation to a study involving the topical application of BCX-34 concluded in early 1995, and in June 1996 the FDA inspected the Company and one of its clinical sites in relation to a Phase II dose-ranging study of BCX-34 for CTCL and a Phase II dose ranging study for psoriasis, both of which were concluded in early 1995. After each inspection, the FDA issued to the Company a List of Inspectional Observations ("Form FDA 483") setting forth certain deficient Good Clinical Practices procedures followed by the Company, some of which resulted in submission to the FDA of efficacy data which reported false statistical significance. The FDA also issued a Form FDA 483 to the principal investigator at one of the Company's clinical sites citing numerous significant deficiencies in the conduct of the Phase II dose-ranging studies of BCX-34 for CTCL and psoriasis. These deficiencies included improper delegations of authority by the principal investigator, failures to follow the protocols, institutional review board deviations, and discrepancies or deficiencies in documentation and reporting. The Company received notice from the FDA in November 1997 that work in support of products under FDA jurisdiction performed by this investigator would not be accepted by the FDA



without validating information. Currently, the Company does not intend to pursue a topical treatment for BCX-34, which is the clinical study this investigator pursued for the Company. As a consequence of the FDA inspections and such resulting Form FDA 483s, the Company's ongoing and future clinical studies may receive increased scrutiny; this may delay the regulatory review process or require the Company to increase the number of patients at other sites to obtain approval (which can not be assured on a timely basis or at all). The Company has adjusted certain of its procedures, but there can be no assurance that the FDA will find such adjustments to be in compliance with FDA requirements or that, even if it does find such adjustments to be in compliance, it will not seek to impose administrative, civil or other sanctions in connection with the earlier studies.

Such sanctions or other government regulation may delay or prevent the marketing of products being developed by the Company, impose costly procedures upon the Company's activities and confer a competitive advantage to larger companies or companies that are more experienced in regulatory affairs and that compete with the Company. There can be no assurance that FDA or other regulatory approval for any products developed by the Company will be granted on a timely basis, or at all. Delay in obtaining or failure to obtain such regulatory approvals will materially adversely affect the marketing of any products which may be developed by the Company, as well as the Company's results of operations.

#### History of Operating Losses; Accumulated Deficit; Uncertainty of Future Profitability

BioCryst, to date, has generated no revenue from product sales and has incurred losses since its inception. As of December 31, 1998, the Company's accumulated deficit was approximately \$53.2 million. Losses have resulted principally from costs incurred in research activities aimed at discovering, designing and developing the Company's pharmaceutical product candidates and from general and administrative costs. These costs have exceeded the Company's revenues, which to date have been generated primarily from collaborative arrangements, licenses, research grants and from interest income. The Company expects to incur significant additional operating losses over the next several years and expects such losses to increase as the Company's research and development and clinical trial efforts continue. The Company's ability to achieve profitability depends in part upon its ability to develop drugs and to obtain regulatory approval for its products that may be developed, to enter into agreements with collaborative partners for product development, manufacturing and commercialization, and to develop the capacity to manufacture, market and sell its products. There can be no assurance that the Company will ever achieve significant revenues or profitable operations.

#### **Additional Financing Requirements; Uncertainty of Additional Funding**

The Company has incurred negative cash flows from operations in each year since its inception. The Company expects that the funding requirements for its operating activities will increase substantially in the future due to continued research and development activities (including preclinical studies and clinical trials), the development of manufacturing capabilities and the development of marketing and distribution capabilities. The Company anticipates that its capital resources are adequate to satisfy its capital requirements for approximately the next 24 months at the current level of operations. However, this is a forward-looking statement, and no assurance can be given that there will be no change that would consume available resources significantly before such time. The Company's future capital requirements will depend on many factors, including continued scientific progress in its research, drug discovery and development programs, the magnitude of these programs, progress with preclinical studies and clinical trials, prosecuting and enforcing patent claims, competing technological and market developments, changes in existing collaborative research or development relationships, the ability of the Company to establish additional collaborative relationships, and the cost of manufacturing scale-up and effective marketing activities and arrangements. The Company anticipates, based on its current business plan, that it will be necessary to raise additional funds in 2000 or earlier. Additional funds, if any, may possibly be raised through financing arrangements or collaborative relationships and/or the issuance of preferred or common stock or convertible securities, on terms and prices significantly more favorable than those of the currently outstanding Common Stock, which could have the effect of diluting or adversely affecting the holdings or rights of existing stockholders of the Company. In addition, collaborative arrangements may require the Company to transfer certain material rights to such corporate partners. If adequate funds are not available, the Company will be required to delay, scale back or eliminate one or more of its research, drug discovery or development programs or attempt to obtain funds through arrangements with collaborative partners or others that may require the Company to relinquish some or

all of its rights to certain of its intellectual property, product candidates or products. No assurance can be given that additional financing will be available to the Company on acceptable terms, if at all.

## **Competition**

The Company is engaged in the pharmaceutical industry, which is characterized by extensive research efforts, rapid technological progress and intense competition. There are many public and private companies, including well-known pharmaceutical companies, chemical companies, specialized biotechnology companies and academic institutions, engaged in developing synthetic pharmaceuticals and biotechnological products for human therapeutic applications that represent significant competition to the Company. Existing products and therapies and improvements thereto will compete directly with products the Company is seeking to develop and market, and the Company is aware that other companies or institutions are pursuing development of new drugs and technologies directly targeted at applications for which the Company is developing its drug compounds. Many of the Company's competitors have substantially greater financial and technical resources and production and marketing capabilities and experience than does the Company. The Company has granted Novartis Corporation, formerly Ciba-Geigy Corporation, ("Novartis"), a worldwide exclusive license to several compounds in the Company's sixth group of PNP inhibitors. Such arrangement with Novartis does not include BCX-34 or most of the Company's other compounds. No assurance can be given that Novartis will or will not develop compounds under such arrangements, will be able to obtain FDA approval for any licensed compounds, that any such licensed compounds if so approved will be able to be commercialized successfully, or that the Company will realize any revenues pursuant to such arrangements. If commercialized, these compounds could compete directly against other compounds, including BCX-34, being developed by the Company.

Many of the Company's competitors have significantly greater experience in conducting preclinical studies and clinical trials of new pharmaceutical compounds and in obtaining FDA and other regulatory approvals for health care products. Accordingly, BioCryst's competitors may succeed in obtaining approvals for their drug candidates more rapidly than the Company and in developing products that are safer or more effective or less costly than any that may be developed by the Company and may also be more successful than the Company in the production and marketing of such products. Many of the Company's competitors also have current GMP facilities and significantly greater experience in implementing GMP or in obtaining and maintaining the requisite regulatory standards for manufacturing. Moreover, other technologies are, or may in the future become, the basis for competitive products. Competition may increase further as a result of the potential advances from structure-based drug design and greater availability of capital for investment in this field. There can be no assurance that the Company's competitors will not succeed in developing technologies and products that are more effective than any being developed by the Company or that would render the Company's technology and product candidates obsolete or noncompetitive.

## **Uncertainty of Protection of Patents and Proprietary Rights**

The Company's success will depend in part on its ability to obtain and enforce patent protection for its products, preserve its trade secrets, and operate without infringing on the proprietary rights of third parties, both in the United States and in other countries. In the absence of patent protection, the Company's business may be adversely affected by competitors who develop substantially equivalent technology. Because of the substantial length of time and expense associated with bringing new products through development and regulatory approval to the marketplace, the pharmaceutical and biotechnology industries place considerable importance on obtaining and maintaining patent and trade secret protection for new technologies, products and processes. To date, the Company has been issued seven United States patents related to its PNP inhibitor compounds. One of these compounds is under a patent issued to Warner-Lambert and the Company may require a license from Warner-Lambert to market a product containing this compound. The Company has the right of first refusal to negotiate a license from Warner-Lambert for that compound, however, there can be no assurance that such a license would be available or obtainable on terms acceptable to the Company. A patent has also been issued to BioCryst by the U.S. Patent and Trademark Office ("PTO") on a new process to prepare BCX-34 and other PNP inhibitors and an additional patent application has been filed for another new process to prepare BCX-34 and other PNP inhibitors. In addition, two patent applications and two provisional patents have been filed with the PTO relating to inhibitors of influenza neuraminidase. Also, two provisional United States patent applications have been filed with the PTO on complement inhibitors. The Company has filed certain corresponding foreign patent applications and intends to file additional foreign patent applications and additional

United States patent applications, as appropriate. There can be no assurance that patents will be issued from such applications, that the Company will develop additional products that are patentable or that present or future patents will provide sufficient protection to the Company's present or future technologies, products and processes. In addition, there can be no assurance that others will not independently develop substantially equivalent proprietary information, design around the Company's patents or obtain access to the Company's know-how or that others will not successfully challenge the validity of the Company's patents or be issued patents which may prevent the sale of one or more of the Company's product candidates, or require licensing and the payment of significant fees or royalties by the Company to third parties in order to enable the Company to conduct its business. Legal standards relating to the scope of claims and the validity of patents in the fields in which the Company is pursuing research and development are still evolving, are highly uncertain and involve complex legal and factual issues. No assurance can be given as to the degree of protection or competitive advantage any patents issued to the Company will afford, the validity of any such patents or the Company's ability to avoid violating or infringing any patents issued to others. Further, there can be no guarantee that any patents issued to or licensed by the Company will not be infringed by the products of others. Litigation and other proceedings involving the defense and prosecution of patent claims can be expensive and time consuming, even in those instances in which the outcome is favorable to the Company, and can result in the diversion of resources from the Company's other activities. An adverse outcome could subject the Company to significant liabilities to third parties, require the Company to obtain licenses from third parties or require the Company to cease any related research and development activities or sales.

The Company's success is also dependent upon the skills, knowledge and experience (none of which is patentable) of its scientific and technical personnel. To help protect its rights, the Company requires all employees, consultants, advisors and collaborators to enter into confidentiality agreements which prohibit the disclosure of confidential information to anyone outside the Company and requires disclosure and assignment to the Company of their ideas, developments, discoveries and inventions. There can be no assurance, however, that these agreements will provide adequate protection for the Company's trade secrets, know-how or other proprietary information in the event of any unauthorized use or disclosure or the lawful development by others of such information.

The Company's management and scientific personnel have been recruited primarily from other pharmaceutical companies and academic institutions. In many cases, these individuals are continuing research in the same areas with which they were involved prior to joining BioCryst and may be restricted by agreement from disclosing to the Company trade secrets they learned elsewhere. As a result, the Company could be subject to allegations of violation of such agreements and similar claims and litigation regarding such claims could ensue.

#### **Dependence on Key Management and Qualified Personnel**

The Company is highly dependent upon the efforts of its senior management and scientific team. The loss of the services of one or more members of the senior management and scientific team could significantly impede the achievement of development objectives. Although the Company maintains, and is the beneficiary of, a \$2 million key-man insurance policy on the life of Charles E. Bugg, Ph.D., Chairman of the Board of Directors and Chief Executive Officer, the Company does not believe the proceeds would be adequate to compensate for his loss. Due to the specialized scientific nature of the Company's business, the Company is also highly dependent upon its ability to attract and retain qualified scientific, technical and key management personnel. There is intense competition for qualified personnel in the areas of the Company's activities, and there can be no assurance that the Company will be able to continue to attract and retain qualified personnel necessary for the development of its existing business and its expansion into areas and activities requiring additional expertise, such as production and marketing. The loss of, or failure to recruit, scientific, technical and managerial personnel could have a material adverse effect on the Company. In addition, the Company relies on members of its Scientific Advisory Board and consultants to assist the Company in formulating its research and development strategy. All of the members of the Scientific Advisory Board and all of the Company's consultants are employed by other employers, and each such member or consultant may have commitments to, or consulting or advisory contracts with, other entities that may limit their availability to the Company.

#### **Lack of Manufacturing, Marketing or Sales Capability**

The Company has not yet manufactured or marketed any products and currently does not have the facilities to

manufacture its product candidates in commercial quantities under GMP as prescribed and required by the FDA. To be successful, the Company's products must be manufactured in commercial quantities under GMP and at acceptable costs. Although the Company is formulating and packaging under GMP conditions small amounts of certain drug formulations which are the subject of preclinical studies and clinical trials, the current facilities of the Company are not adequate for commercial scale production. Therefore, the Company will need to develop its own GMP manufacturing facility and/or depend on its collaborators, licensees or contract manufacturers for the commercial manufacture of its products. The Company has no experience in such commercial manufacturing and no assurance can be given that the Company will be able to make the transition to commercial production successfully or at an acceptable cost. In addition, no assurance can be given that the Company will be able to make arrangements with third parties to manufacture its products on acceptable terms, if at all. The inability of the Company to manufacture or provide for the manufacture of any products it may develop on a cost-effective basis would have a material adverse effect on the Company.

The Company has no experience in marketing, distributing or selling pharmaceutical products and will have to develop a pharmaceutical sales force and/or rely on its collaborators, licensees or arrangements with others to provide for the marketing, distribution and sales of any products it may develop. There can be no assurance that the Company will be able to establish marketing, distribution and sales capabilities or make arrangements with collaborators, licensees or others to perform such activities.

### **Uncertainty of Third-Party Reimbursement and Product Pricing**

Successful commercialization of any pharmaceutical products the Company may develop will depend in part upon the availability of reimbursement or funding from third-party health care payors such as government and private insurance plans. There can be no assurance that third-party reimbursement or funding will be available for newly approved pharmaceutical products or will permit price levels sufficient to realize an appropriate return on the Company's investment in its pharmaceutical product development. The U.S. Congress is considering a number of legislative and regulatory reforms that may affect companies engaged in the health care industry in the United States. Although the Company cannot predict whether these proposals will be adopted or the effects such proposals may have on its business, the existence and pendency of such proposals could have a material adverse effect on the Company in general. In addition, the Company's ability to commercialize potential pharmaceutical products may be adversely affected to the extent that such proposals have a material adverse effect on other companies that are prospective collaborators with respect to any of the Company's pharmaceutical product candidates.

Third-party payors are continuing their efforts to contain or reduce the cost of health care through various means. For example, third-party payors are increasingly challenging the prices charged for medical products and services. Also, the trend toward managed health care in the United States and the concurrent growth of organizations, such as health maintenance organizations, which can control or significantly influence the purchase of health care services and products, as well as legislative proposals to reform health care or reduce government insurance programs, may result in lower prices for pharmaceutical products. The cost containment measures that health care providers are instituting and the effect of any health care reform could materially adversely affect the Company's ability to sell its products if successfully developed and approved.

### **Risk of Product Liability; Availability of Insurance**

The Company's business may be affected by potential product liability risks which are inherent in the testing, manufacturing and marketing of pharmaceutical and other products under development by the Company. There can be no assurance that product liability claims will not be asserted against the Company, its collaborators or licensees. The use of compounds or drug candidates developed by the Company in clinical trials and the subsequent sale of such products is likely to cause BioCryst to bear all or a portion of those risks. The Company does not have product liability insurance but does maintain coverage for clinical trials in the amount of \$6.0 million per occurrence and in the aggregate. No assurance can be given that such insurance will be adequate to cover claims made with respect to the clinical trials. There can be no assurance that the Company will be able to obtain or maintain adequate product liability insurance on acceptable terms or that such insurance will provide adequate coverage against potential liabilities. Furthermore, there can be no assurance that any collaborators or licensees of BioCryst will agree to indemnify the

Company, be sufficiently insured or have a net worth sufficient to satisfy any such product liability claims.

### **Hazardous Materials; Compliance with Environmental Regulations**

The Company's research and development involves the controlled use of hazardous materials, chemicals and various radioactive compounds. Although the Company believes that its safety procedures for handling and disposing of such materials comply with the standards prescribed by state and federal regulations, the risk of accidental contamination or injury from these materials cannot be completely eliminated. In the event of such an accident, the Company could be held liable for any damages that result and any such liability could exceed the resources of the Company. The Company may incur substantial costs to comply with environmental regulations if the Company develops manufacturing capacity.

### **Control by Existing Management and Stockholders; Effect of Certain Anti-Takeover Considerations**

The Company's directors, executive officers and certain principal stockholders and their affiliates own beneficially approximately 37.6% of the Common Stock. Accordingly, such holders, if acting together, may have the ability to exert significant influence over the election of the Company's Board of Directors and other matters submitted to the Company's stockholders for approval. The voting power of these holders may discourage or prevent any proposed takeover of the Company unless the terms thereof are approved by such holders. Pursuant to the Company's Composite Certificate of Incorporation (the "Certificate of Incorporation"), shares of Preferred Stock may be issued by the Company in the future without stockholder approval and upon such terms as the Board of Directors may determine. The rights of the holders of Common Stock will be subject to, and may be adversely affected by, the rights of the holders of any Preferred Stock that may be issued in the future. The issuance of Preferred Stock could have the effect of discouraging a third party from acquiring a majority of the outstanding Common Stock of the Company and preventing stockholders from realizing a premium on their shares. The Company's Certificate of Incorporation also provides for staggered terms for the members of the Board of Directors. A staggered Board of Directors and certain provisions of the Company's by-laws and of Delaware law applicable to the Company could delay or make more difficult a merger, tender offer or proxy contest involving the Company.

### **Price Volatility**

The securities markets have from time to time experienced significant price and volume fluctuations that have often been unrelated to the operating performance of particular companies. In addition, the market prices of the common stock of many publicly traded emerging pharmaceutical and biopharmaceutical companies have in the past been, and can in the future be expected to be, especially volatile. Announcements of technological innovations or new products by the Company or its competitors, developments or disputes concerning patents or proprietary rights or collaboration partners, achieving or failing to achieve development milestones, publicity regarding actual or potential medical results relating to products under development by the Company or its competitors, regulatory developments in both U.S. and foreign countries, public concern as to the safety of pharmaceutical products and economic and other external factors, as well as period-to-period fluctuations in the Company's financial results, may have a significant impact on the market price of the Common Stock.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

BALANCE SHEETS

	December 31,	
	1998	1997
Assets		
Cash and cash equivalents (Notes 1 and 3)	\$ 12,311,348	\$ 3,757,098
Securities held-to-maturity (Notes 1 and 3)	9,961,017	15,723,631
Prepaid expenses and other current assets	598,463	214,777
Total current assets	22,870,828	19,695,506
Securities held-to-maturity (Notes 1 and 3)	4,739,728	5,162,757
Furniture and equipment, net (Notes 1 and 2)	1,407,780	1,557,537
Patents	81,723	68,928
Total assets	\$ 29,100,059	\$ 26,484,728
Liabilities and Stockholders' Equity		
Accounts payable	\$ 243,075	\$ 245,180
Accrued expenses (Note 4)	611,455	306,433
Accrued taxes, other than income (Note 4)	136,726	166,177
Accrued vacation	91,919	89,777
Current maturities of capital lease obligations (Note 5)	12,603	57,896
Total current liabilities	1,095,778	865,463
Capital lease obligations (Note 5)	21,866	34,469
Deferred license fee (Note 9)	300,000	300,000
Stockholders' equity (Notes 7 and 8):		
Preferred stock, \$.01 par value, shares authorized- 5,000,000; none issued and outstanding		
Common stock, \$.01 par value; shares authorized - 45,000,000; shares issued and outstanding - 14,960,088 - 1998; 13,817,667 - 1997	149,600	138,177
Additional paid-in capital	80,702,381	73,531,104
Accumulated deficit	(53,169,566)	(48,384,485)
Total stockholders' equity	27,682,415	25,284,796
Commitments and contingency (Notes 5 and 9)		
Total liabilities and stockholders' equity	\$ 29,100,059	\$ 26,484,728

See accompanying notes to financial statements.

## STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	1998	1997	1996
Revenues:			
Collaborative and other research and development (Notes 1 and 9)	\$ 6,371,095	\$ 1,000,000	\$ 1,558,543
Interest and other	1,254,881	1,692,521	1,093,617
Total revenues	7,625,976	2,692,521	2,652,160
Expenses:			
Research and development	9,291,146	10,577,369	7,586,159
General and administrative	3,104,925	2,682,137	2,664,197
Interest	14,986	51,880	100,031
Total expenses	12,411,057	13,311,386	10,350,387
Net loss	\$ (4,785,081)	\$(10,618,865)	\$ (7,698,227)
Net loss per share (Note 1)	\$ (.34)	\$ (.77)	\$ (.69)
Weighted average shares outstanding (Note 1)	14,120,364	13,779,698	11,171,035

See accompanying notes to financial statements.

## STATEMENTS OF STOCKHOLDERS' EQUITY

	Common Stock	Additional Paid-in Capital	Accumulated Deficit	Total Stock- Holders' Equity
Balance at December 31, 1995	\$ 95,043	\$ 41,298,848	\$(30,067,393)	\$ 11,326,498
Sale of common stock, 3,376,608 shares	33,766	30,495,652		30,529,418
Exercise of stock options, 45,255 shares	453	190,987		191,440
Employee stock purchase plan sales, 18,101 shares	181	147,362		147,543
Exercise of warrants, 753,439 shares	7,534	883,266		890,800
Compensation cost		15,749		15,749
Net loss			(7,698,227)	(7,698,227)
Balance at December 31, 1996	136,977	73,031,864	(37,765,620)	35,403,221
Exercise of stock options, 79,670 shares	797	272,389		273,186
Employee stock purchase plan sales, 15,933 shares	160	163,632		163,792
Exercise of warrants, 24,330 shares	243	(274)		(31)
Compensation cost		63,493		63,493
Net loss			(10,618,865)	(10,618,865)
Balance at December 31, 1997	138,177	73,531,104	(48,384,485)	25,284,796
Sale of common stock, 918,836 shares	9,188	5,937,047		5,946,235
Exercise of stock options, 144,102 shares	1,441	614,655		616,096
Employee stock purchase plan sales, 23,597 shares	236	144,010		144,246
Exercise of warrants, 55,806 shares	558	295,842		296,400
Compensation cost		179,723		179,723
Net loss			(4,785,081)	(4,785,081)
Balance at December 31, 1998	\$149,600	\$ 80,702,381	\$(53,169,566)	\$ 27,682,415

See accompanying notes to financial statements.



## STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	1998	1997	1996
	-----	-----	-----
Operating activities:			
Net loss	\$ (4,785,081)	\$ (10,618,865)	\$ (7,698,227)
Adjustments to reconcile net loss to net cash used in operating activities-			
Depreciation and amortization	529,124	648,935	524,367
Non-monetary compensation cost	179,723	63,493	15,749
Changes in operating assets and liabilities-			
Prepaid expenses and other assets	(383,686)	18,677	45,932
Patents	(12,795)	(68,928)	
Accounts payable	(2,105)	(370,253)	405,256
Accrued expenses	305,022	65,555	53,205
Accrued taxes, other than income	(29,451)	(43,777)	(140,269)
Accrued vacation	2,142	6,500	(27,427)
	-----	-----	-----
Net cash used in operating activities	(4,197,107)	(10,298,663)	(6,821,414)
	-----	-----	-----
Investing activities:			
Purchases of furniture and equipment	(379,367)	(1,075,682)	(292,374)
Purchase of marketable securities	(13,564,857)	(12,200,183)	(36,950,717)
Maturities of marketable securities	19,750,500	23,462,683	10,080,905
	-----	-----	-----
Net cash provided by/(used in) investing activities	5,806,276	10,186,818	(27,162,186)
	-----	-----	-----
Financing activities:			
Principal payments of debt and capital lease obligations	(57,896)	(254,547)	(274,789)
Capital leases		50,763	
Exercise of stock options	616,096	273,186	191,440
Employee Stock Purchase Plan stock sales	144,246	163,792	147,543
Exercise of warrants	296,400	(31)	890,800
Sale of common stock, net of issuance costs	5,946,235		30,529,418
	-----	-----	-----
Net cash provided by financing activities	6,945,081	233,163	31,484,412
	-----	-----	-----
Increase (decrease) in cash and cash equivalents	8,554,250	121,318	(2,499,188)
Cash and equivalents at beginning of period	3,757,098	3,635,780	6,134,968
	-----	-----	-----
Cash and cash equivalents at end of period	\$ 12,311,348	\$ 3,757,098	\$ 3,635,780
	=====	=====	=====

See accompanying notes to financial statements.

## NOTES TO FINANCIAL STATEMENTS

### Note 1 - Accounting Policies

#### The Company

BioCryst Pharmaceuticals, Inc., a Delaware corporation, (the "Company") is a pharmaceutical company using structure-based drug design to discover and design novel, small-molecule pharmaceutical products for the treatment of major immunological, viral, and cardiovascular diseases and disorders. The Company has three primary research projects, of which two are in clinical trials and one has been licensed to a big pharmaceutical company for clinical development. While the prospects for a project may increase as the project advances to the next stage of development, a project can be terminated at any stage of development. Until the Company generates revenues from either a research project or an approved product, its ability to continue research projects is dependent upon its ability to raise funds. The Company relies on sole suppliers to manufacture its BCX-34 compound for clinical trials and is evaluating supply sources for commercial production.

#### Net Loss Per Share

The Company computes net income (loss) per share in accordance with Statement of Financial Accounting Standards No. 128, Earnings per Share. Net loss per share is based upon the weighted average number of common shares outstanding during the period. Common equivalent shares from unexercised stock options and warrants are excluded from the computation as their effect is anti-dilutive. Common stock equivalents of approximately 2,469,348, 2,267,176 and 2,638,882 shares were not used to calculate net loss per share in 1998, 1997 and 1996, respectively, because of their anti-dilutive effect. There were no reconciling items in calculating the numerator for net loss per share for any of the periods presented.

#### Securities Held-to-Maturity

The Company is required to classify debt and equity securities as held-to-maturity, available-for-sale or trading. The appropriateness of each classification is reassessed at each reporting date. The only dispositions were maturities of securities held-to-maturity. At December 31, 1998, securities held-to-maturity consisted of \$11,533,273 of U.S. Treasury and Agency securities and \$3,167,472 of high-grade domestic corporate debt carried at amortized cost. All of the non-current portion of securities held-to-maturity are U.S. Treasury and Agency securities that mature in 2000. The amortized cost of all these securities at December 31, 1998 approximated market value.

#### Furniture and Equipment

Furniture and equipment are recorded at cost. Depreciation is computed using the straight-line method with estimated useful lives of five and seven years. Leased laboratory equipment is amortized over the lease life of five years. Leasehold improvements are amortized over the remaining lease period.

#### Income Taxes

The liability method is used in accounting for income taxes in accordance with Statement of Financial Accounting Standards No. 109 ("Statement No. 109"). Under this method, deferred tax assets and liabilities are determined based on differences between financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse.

#### Revenue Recognition

Research and development revenue on cost-reimbursement agreements is recognized as expenses are incurred, up to contractual limits. Research and development revenues, license fees and option fees are recognized as revenue when irrevocably due. Payments received which are related to future performance are deferred and taken into income as earned over a specified future performance period.

## Statements of Cash Flows

For purposes of the statements of cash flows, the Company considers cash equivalents to be all cash held in money market accounts or investments in debt instruments with maturities of three months or less at the time of purchase.

## Stock-Based Compensation

The Company accounts for stock-based compensation under Accounting Principles Board Opinion No. 25, Accounting for Stock Issued to Employees (APB No. 25). Under APB No. 25, the Company's stock option and employee stock purchase plans qualify as noncompensatory plans. Consequently, no compensation expense is recognized. Stock issued to non-employees is compensatory and a compensation expense is recognized under Statement of Financial Accounting Standards No. 123, Accounting for Stock-Based Compensation ("Statement No. 123").

## Use of Estimates

Management is required to make estimates and assumptions that affect the amounts reported in the financial statements. Actual results could differ from those estimates.

## Note 2 - Furniture and Equipment

Furniture and equipment consisted of the following at December 31:

	1998	1997
	----	----
Furniture and fixtures	\$ 626,756	\$
580,077		
Laboratory equipment	1,263,873	
1,023,440		
Leased equipment	153,937	
396,765		
Leasehold improvements	1,179,730	
1,170,719		
-----		
	3,224,296	
3,171,001		
Less accumulated depreciation and amortization	1,816,516	
1,613,464		
-----		
Furniture and equipment, net	\$1,407,780	
\$1,557,537		
=====		

The Company does not have any significant impairment losses under Statement of Financial Accounting Standards No. 121, Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to be Disposed Of.

## Note 3 - Concentration of Credit and Market Risk

The Company invests its excess cash principally in marketable securities from a diversified portfolio of institutions with strong credit ratings and in U.S. government and agency bills and notes, and by policy, limits the amount of credit exposure at any one institution. These investments are generally not collateralized and primarily mature within one year. The Company has not realized any losses from such investments. At December 31, 1998, approximately \$11,575,696 is invested in the Fidelity Institution Cash Portfolio, which invests in treasury notes and repurchase agreements. The Fidelity Institution Cash Portfolio is not insured.

## Note 4 - Accrued Expenses and Taxes

Accrued expenses and taxes were comprised of the following at December 31:

	1998	1997
	----	----
Accrued clinical trials	\$427,161	
\$159,183		
Accrued bonus	50,000	
50,000		
Stock plan purchase withholdings	82,356	
48,640		
Accrued other	51,938	
48,610		
	-----	
-----		
Accrued expenses	\$611,455	
\$306,433		
	=====	
=====		

Accrued franchise tax	\$ 86,540
\$120,000	
Accrued other	50,186
46,177	
-----	-----
Accrued taxes, other than income	\$136,726
\$166,177	
=====	=====

**Note 5 - Capital Lease Obligations**

The Company paid \$14,986, \$51,880 and \$100,031 in interest on debt and lease obligations for the years ended December 31, 1998, 1997 and 1996, respectively. The Company had an unused line of credit of \$500,000 at December 31, 1998.

The Company has the following capital lease obligations and operating leases at December 31, 1998:

Operating	Capital	
	Leases	Leases
	-----	-----
1999	\$17,615	\$
262,639		
2000	17,615	
270,513		
2001	7,191	
278,625		
2002		
286,986		
2003		
146,715		
-----	-----	
Total minimum payments	42,421	
\$1,245,478		
=====		
Less interest	7,952	
	-----	
Present value of future minimum payments	34,469	
Less current portion	12,603	
	-----	
Non-current portion	\$21,866	
	=====	

Rent expense for operating leases was \$299,811, \$186,004 and \$191,880 in 1998, 1997 and 1996, respectively.

**Note 6 - Income Taxes**

The Company has not had taxable income since incorporation and, therefore, has not paid any income tax. Deferred tax assets of approximately \$23,100,000 and \$20,500,000 at December 31, 1998 and 1997, respectively, have been recognized principally for the net operating loss and research and development credit carryforwards and have been reduced by a valuation allowance of \$23,100,000 and \$20,500,000 at December 31, 1998 and 1997, respectively, which will remain until it is more likely than not that the related tax benefits will be realized.

At December 31, 1998, the Company had net operating loss and research and development credit carryforwards ("Carryforward Tax Benefits")

of approximately \$49,500,000 and \$4,000,000, respectively, which will expire in 2005 through 2018. Use of the Carryforward Tax Benefits will be subject to a substantial annual limitation due to the change of ownership provisions of the Tax Reform Act of 1986. The annual limitation is expected to result in the expiration of a portion of Carryforward Tax Benefits before utilization, which has been considered by the Company in its computations under Statement No. 109. Additional sales of the Company's equity securities may result in further annual limitations on the use of the Carryforward Tax Benefits against taxable income in future years.

## **Note 7 - Stockholders' Equity**

### **Warrants**

During 1998, warrants were exercised to purchase 49,400 shares with cash and warrants to exercise 6,406 shares were exercised via net issue exercise by giving up warrants to purchase 92,394 shares. During 1997, warrants were exercised to purchase 24,330 shares via net issue exercise by giving up warrants to purchase 25,875 shares. There were no warrants outstanding at December 31, 1998.

## Options

In November 1991, the Board of Directors adopted the 1991 Stock Option Plan ("Plan") for key employees and consultants of the Company and reserved 500,000 shares of common stock for the Plan. The Plan was approved by the stockholders on December 19, 1991. The term of the Plan is for ten years and includes both incentive stock options and non-statutory options. The option price for the incentive stock options shall not be less than the fair market value of common stock on the grant date. The option price per share for non-statutory stock options may not be less than 85% of the fair market value of common stock on the date of grant. The options generally vest 25% after one year and monthly thereafter on a pro rata basis over the next three years until fully vested after four years. Options are generally granted to all full-time employees.

There are an aggregate of 2,730,107 shares reserved for future issuance for the options and the Stock Purchase Plan discussed in Note 8.

The Company follows APB No. 25 in accounting for its Stock Option and Stock Purchase Plans and accordingly does not recognize a compensation cost. The Company has adopted the disclosure requirement of Statement No. 123 commencing in 1996. Since Statement No. 123 is only applied to options granted after 1994, the pro forma disclosure should not necessarily be considered indicative of future pro forma results when the full four-year vesting (the period in which the compensation cost is recognized) is included in the disclosure in 1999. The fair value of each option grant is estimated on the grant date using the Black-Scholes option-pricing method with the following weighted-average assumptions used for grants in 1998, 1997 and 1996, respectively: no dividends, expected volatility of 65.6, 57.8 and 52.3 percent, risk-free interest rate of

4.9, 6.0 and 6.1 percent and expected lives of five years. The weighted-average grant-date fair values of options granted during 1997 under the Stock Option and Employee Stock Purchase Plans were \$4.12 and \$2.17, respectively. Had the Company adopted Statement No. 123 and determined its compensation cost based on the fair value at the grant dates in 1998, 1997 and 1996, the Company's net loss and net loss per share would have been increased to the pro forma amounts shown below:

		1998	1997	1996
		----	----	----
Net loss	As reported	\$(4,785,081)	\$(10,618,865)	
\$(7,698,227)	Pro forma	(6,363,575)	(11,657,646)	
(8,279,551)				
Net loss per share	As reported	(.34)	(.77)	
(.69)	Pro forma	(.45)	(.85)	
(.74)				

The stockholders on April 16, 1993 and on March 1, 1994 (approving the Board of Directors' action of December 1993) authorized an amended and restated 1991 Stock Option Plan and approved an additional 1,000,000 shares of common stock for issuance ("Amended Plan"). The Amended Plan includes an increase of common stock reserved for issuance to 1,500,000 shares and establishes an automatic option grant program. The automatic option grant program grants options to new non-employee Board members to purchase 25,000 shares of common stock at an exercise price of the fair market value at the grant date for a maximum of ten years and is subject to vesting restrictions and early termination upon the optionee's cessation of Board service. The vesting and exercise provisions of the options issued under the Amended Plan are subject to acceleration, under certain circumstances, upon the occurrence of a hostile tender offer for more than 50% of the outstanding stock of the Company or if the Company is acquired. On May 29, 1995, the stockholders approved extending the automatic option grant to cover non-employee Board members not previously eligible for an automatic grant and approved an additional 500,000 shares of common stock for issuance, increasing the common stock reserved for issuance to 2,000,000 shares. On May 14, 1997, the stockholders approved increasing the automatic option grant to 40,000 shares and approved an additional 1,000,000 shares (of which 75,576 were approved by the Board of Directors in 1996) of common stock for issuance, increasing the common stock reserved for issuance to 3,000,000 shares. The following is an analysis of stock options for the three years ending December 31, 1998:

Price	Options Available	Options Outstanding	Weighted Average Exercise
-----	-----	-----	
Balance December 31, 1995	247,814	1,630,062	\$ 5.49
Option plan amended	75,576		
Options granted	(302,540)	302,540	14.68
Options exercised		(45,255)	4.23
Options canceled	45,625	(45,625)	4.19
-----	-----	-----	
Balance December 31, 1996	66,475	1,841,722	7.06
Option plan amended	924,424		
Options granted	(590,810)	590,810	10.21
Options exercised		(87,450)	4.02
Options canceled	139,850	(139,850)	10.33
-----	-----	-----	
Balance December 31, 1997	539,939	2,205,232	7.82
Options granted	(495,400)	495,400	6.88
Options exercised		(144,102)	4.28
Options canceled	77,016	(77,016)	10.38
-----	-----	-----	
Balance December 31, 1998	121,555	2,479,514	7.61
	=====	=====	

There were 1,456,715, 1,254,263 and 1,027,416 options exercisable at December 31, 1998, 1997 and 1996, respectively. The weighted-average exercise price for options exercisable was \$6.94, \$5.84 and \$4.92 at December 31, 1998, 1997 and 1996, respectively.

The following table summarizes at December 31, 1998, by price range, (1) for options outstanding the number of options outstanding, their weighted-average remaining life and their weighted-average exercise price and (2) for options exercisable the number of options exercisable and their weighted-average exercise price:

Range	Number	Outstanding		Exercisable	
		Life	Price	Number	Price
\$ 2 to \$ 5 3.82	538,664	5.6	\$ 3.82	538,664	\$
5 to 8 6.07	1,076,725	2.3	6.28	499,926	
8 to 12 9.01	372,825	2.3	8.73	192,636	
12 to 17 14.63	491,300	1.8	14.59	225,489	
-----	-----			-----	
2 to 17 6.95	2,479,514	2.9	7.61	1,456,715	
	=====			=====	

## Note 8 - Employee Benefit Plans

On January 1, 1991, the Company adopted an employee retirement plan ("401(k) Plan") under Section 401(k) of the Internal Revenue Code covering all employees. Employee contributions may be made to the 401(k) Plan up to limits established by the Internal Revenue Service. Company matching contributions may be made at the discretion of the Board of Directors. The Company made a contribution of \$57,137, \$45,603 and \$30,000 in 1998, 1997 and 1996.



On May 29, 1995, the stockholders approved an employee stock purchase plan ("Stock Purchase Plan") effective February 1, 1995. The Company has reserved 200,000 shares of common stock under the Stock Purchase Plan, of which 129,038 shares remain available for purchase at December 31, 1998. Eligible employees may authorize up to 15% of their salary to purchase common stock at the lower of 85% of the beginning or 85% of the ending price during the six-month purchase intervals. No more than 3,000 shares may be purchased by any one employee at the six-month purchase dates and no employee may purchase stock having a fair market value at the commencement date of \$25,000 or more in any one calendar year. There were 23,597 shares, 15,933 shares and 18,101 shares of common stock purchased under the Stock Purchase Plan in 1998, 1997 and 1996, respectively, at a weighted average price of \$6.11, \$10.28 and \$8.15, respectively, per share.

## Note 9 - Collaborative and Other Research and Development Contracts

The Company granted Novartis Corporation, formerly Ciba-Geigy Corporation ("Novartis"), an option in 1990 to acquire exclusive licenses to a class of inhibitors arising from research performed by the Company by February 1991. The option was exercised and a \$500,000 fee was paid to the Company in 1993. Milestone payments are due upon approval of a new drug application. The Company will also receive royalties based upon a percentage of sales of any resultant products. Up to \$300,000 of the initial fee received is refundable if sales of any resultant products are below specified levels.

On November 7, 1991, the Company entered into a joint research and license agreement with The University of Alabama at Birmingham ("UAB"). UAB performed specific research on Factor D for the Company for a period of approximately three years in return for research and license fees. The agreement was replaced by a new agreement on July 18, 1995 granting the Company a worldwide license in exchange for funding certain UAB research and sharing in any royalties or sublicense fees arising from the joint research. On November 17, 1994, the Company entered into another agreement for a joint research and license agreement on influenza neuraminidase granting the Company a worldwide license. Under this agreement, the Company funded certain UAB research and UAB shares in any royalties or sublicense fees arising from the joint research. The Company completed its funding required by the agreements for both projects in 1998.

In May 1996, the Company entered into an exclusive license agreement with Torii Pharmaceutical Co., Ltd. ("Torii"), a majority owned subsidiary of Japan Tobacco Inc., to develop, manufacture and commercialize BCX-34 and certain other PNP inhibitor compounds in Japan for the treatment of rheumatoid arthritis, T-cell cancers and atopic dermatitis. Upon entering into the agreement, Torii paid the Company \$1.5 million in license fees and made a \$1.5 million equity investment in the Company, purchasing 76,608 shares of common stock at a purchase price of \$19.58 per share. The first milestone payment of \$1.0 million was received in 1997. The agreement further provides for additional potential milestone payments of up to \$18.0 million and royalties on future sales of licensed products in Japan. Torii is responsible for all development, regulatory and commercialization expenses in Japan. The agreement is subject to termination by Torii at any time and by the Company in certain circumstances. Pursuant to the agreement, Torii may negotiate a license with the Company to develop BCX-34 and certain other PNP inhibitor compounds for additional indications.

In September 1998, the Company entered into a worldwide license agreement with The R.W. Johnson Pharmaceutical Research Institute ("PRI") and Ortho-McNeil Pharmaceutical, Inc. ("Ortho-McNeil"), both Johnson & Johnson companies, to develop and market products to treat and prevent viral influenza. Under the terms of the agreement, the Company received an initial \$6.0 million. The agreement provides for additional potential milestone payments of up to \$43.0 million and royalties based on future sales of licensed products. PRI and Ortho-McNeil are responsible for all development, regulatory and commercialization expenses. The agreement is subject to termination by PRI and Ortho-McNeil at any time and by the Company in certain circumstances. In addition, Johnson & Johnson Development Corporation ("JJDC"), another Johnson & Johnson company, made a \$6.0 million equity investment in the Company in connection with signing the license agreement.

## Note 10 - Quarterly Financial Information (Unaudited)(In thousands, except per

share)

	First -----	Second -----	Third -----	Fourth -----
1998 Quarters				
Revenues	\$ 382	\$ 289	\$ 6,249	\$ 706
Net income (loss) (1,465)	(3,006)	(2,981)	2,667	
Net income (loss) per share (.10)	(.22)	(.21)	.19	
1997 Quarters				
Revenues	452	1,427	387	427
Net (loss) (2,877)	(3,149)	(2,080)	(2,513)	
Net (loss) per share (.21)	(.23)	(.15)	(.18)	

## REPORT OF INDEPENDENT AUDITORS

The Board of Directors  
BioCryst Pharmaceuticals, Inc.

We have audited the accompanying balance sheets of BioCryst Pharmaceuticals, Inc. as of December 31, 1998 and 1997, and the related statements of operations, stockholders' equity and cash flows for each of the three years in the period ended December 31, 1998. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of BioCryst Pharmaceuticals, Inc. at December 31, 1998 and 1997 and the results of its operations and its cash flows for each of the three years in the period ended December 31, 1998, in conformity with generally accepted accounting principles.

*LLP*

*/s/Ernst & Young,*

*Birmingham, Alabama  
January 15, 1999*

### **ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE**

None.

### PART III

#### ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

The directors and executive officers of the Company are as follows:

Name	Age	Position(s) with the Company
Charles E. Bugg, Ph.D.	57	Chairman, Chief Executive Officer and Director
J. Claude Bennett, M.D.	65	President, Chief Operating Officer and Director
John A. Montgomery, Ph.D.	75	Senior Vice President, Secretary, Chief Scientific Officer and Director
Ronald E. Gray	58	Chief Financial Officer, Assistant Secretary and Treasurer
John R. Urhin	46	Vice President, Corporate Development
William W. Featheringill (1)(2)	56	Director
Edwin A. Gee, Ph.D. (1)(2)	79	Director
Zola P. Horovitz, Ph.D.	64	Director
Lindsay A. Rosenwald, M.D. (1)	43	Director
Joseph H. Sherrill, Jr.	58	Director
William M. Spencer, III (1)(2)	78	Director
Randolph C. Steer, M.D., Ph.D.	49	Director

(1) Member of the Compensation Committee ("Compensation Committee").

(2) Member of the Audit Committee ("Audit Committee").

Charles E. Bugg, Ph.D., was named Chairman of the Board, Chief Executive Officer and Director in November 1993 and President in January 1995. Dr. Bugg relinquished the position of President in December 1996 when Dr. Bennett joined the Company in that position. Prior to joining the Company, Dr. Bugg had served as the Director of the Center for Macromolecular Crystallography, Associate Director of the Comprehensive Cancer Center and Professor of Biochemistry at UAB since 1975. He was a Founder of the Company and served as the Company's first Chief Executive Officer from 1987-1988 while on a sabbatical from UAB. Dr. Bugg also served as Chairman of the Company's Scientific Advisory Board from January 1986 to November 1993. He continues to hold the position of Professor Emeritus in Biochemistry and Molecular Genetics at UAB, a position he has held since January 1994.

J. Claude Bennett, M.D., was named President and Chief Operating Officer in December 1996 and elected a Director in January 1997. Prior to joining the Company, Dr. Bennett was President of UAB from October 1993 to December 1996 and Professor and Chairman of the Department of Medicine of UAB from January 1982 to October 1993. Dr. Bennett served on the Company's Scientific Advisory Board from 1989-96. He also continues to hold the position of Distinguished University Professor Emeritus at UAB.

John A. Montgomery, Ph.D., has been a Director since November 1989 and has been Secretary and Chief Scientific Officer since joining the Company in February 1990. He was Executive Vice President from February 1990 until May 1997, at which time he was named Senior Vice President. Dr. Montgomery was a Founder of BioCryst. Prior to joining the Company, Dr. Montgomery served as Senior Vice President of Southern Research Institute ("SRI") of Birmingham from January 1981 to February 1990. He continues to hold the position of Distinguished Scientist at SRI, a position he has held since February 1990.

Ronald E. Gray joined BioCryst in January 1993 as Chief Financial Officer. In 1994, Mr. Gray received the additional title of Treasurer and Assistant Secretary. Prior to joining BioCryst, from June 1992 to September 1992, Mr. Gray was Chief Financial Officer of The ACB Companies, a collection agency. From July 1988 to March 1992, Mr. Gray was Chief Financial Officer and Secretary of Image Data Corporation, a medical imaging company. He was previously Vice

President of Finance, Secretary and Treasurer of CyCare Systems, Inc., a health care information processing company.

John R. Uhrin joined BioCryst in March 1998 as Vice President, Corporate Development. Prior to joining BioCryst, Mr. Uhrin was Director, Special Projects/Managed Care for Genentech, Inc., the first biotechnology company to go public, from 1987 until February 1998.

William W. Featheringill was elected a Director in May 1995. Mr. Featheringill is Chairman and Chief Executive Officer, since June 1995, of Electronic Healthcare Systems, a software company, and President, Chief Executive Officer and director, since 1973, of Private Capital Corporation, a venture capital management company. Mr. Featheringill was Chairman and Chief Executive Officer of MACESS Corporation, which designs and installs paperless data management systems for the managed care industry, from 1988 to November 1995. MACESS Corporation merged with Sungard Data Systems in late 1995. From 1985 to December 1994, Mr. Featheringill was the developer, Chairman and President of Complete Health Services, Inc., a health maintenance organization which grew, under his direction, to become one of the largest HMOs in the southeastern United States. Complete Health Services, Inc. was acquired by United HealthCare Corporation in June 1994. Mr. Featheringill is a director of Citation Corporation.

Edwin A. Gee, Ph.D., was elected a Director in August 1993. Dr. Gee, who retired in 1985 as Chairman of the Board and Chief Executive Officer of International Paper Company, has been active as an executive in biotechnology, pharmaceutical and specialty chemical companies since 1970. He is Chairman Emeritus and a director of OSI Pharmaceuticals, Inc., one of the leading biotechnology companies for the diagnosis and treatment of cancer.

Zola P. Horovitz, Ph.D., was elected a Director in August 1994. Dr. Horovitz was Vice President of Business Development and Planning at Bristol-Myers Squibb from 1991 until his retirement in April 1994 and previously was Vice President of Licensing at the same company from 1990 to 1991. Prior to that he spent over 30 years with The Squibb Institute for Medical Research, most recently as Vice President Research, Planning, & Scientific Liaison. He has been an independent consultant in pharmaceutical sciences and business development since his retirement from Bristol-Myers Squibb in April 1994. He serves on the Boards of Directors of Avigen, Inc., Clinitor Inc., Diacrin, Inc., Magainin Pharmaceuticals, Inc., Procept Corporation, Roberts Pharmaceutical Corporation and Synaptic Pharmaceutical Corp. Dr. Horovitz is also Chairman of Magainin Pharmaceuticals, Inc.

Lindsay A. Rosenwald, M.D., has been a Director of the Company since December 1991. Dr. Rosenwald is President and Chairman of Paramount Capital Investments, LLC, a medical venture capital and merchant banking firm; President and Chairman of Paramount Capital, Inc., an investment banking firm specializing in the health sciences industry; and, since 1994, President of Paramount Capital Asset Management, Inc., a fund manager. From June 1987 to February 1992, he served in various capacities at the investment banking firm of D. H. Blair & Co., where he ultimately became a Managing Director of Corporate Finance and manager of their Health Care Services Group. He is Chairman of the Board of Interneuron Pharmaceuticals, Inc., which he co-founded in 1988, and a director of Neose Technologies, Inc., Sparta Pharmaceuticals, Inc. and VIMrx Pharmaceuticals, Inc.

Joseph H. Sherrill, Jr., was elected a Director in May 1995. Mr. Sherrill served as President of R. J. Reynolds ("RJR") Asia Pacific, based in Hong Kong, where he oversaw RJR operations across Asia, including licensing, joint ventures and a full line of operating companies from August 1989 to his retirement in October 1994. Prior management positions with RJR include Senior Vice President of Marketing for R.J. Reynolds International, President and Chief Executive Officer of R.J. Reynolds Tabacos de Brazil, and President and General Manager of R.J. Reynolds Puerto Rico.

William M. Spencer, III, was a founder and has been a Director of the Company since its inception. Mr. Spencer, who is retired, is also a private investor in Birmingham, Alabama. He served as Chairman of the Board of the Company from its founding in 1986 until April 1992. He co-founded and operated Motion Industries from 1946 through its merger into Genuine Parts Company in 1976. He has founded several businesses and has served on the Board of Directors of numerous private corporations.

Randolph C. Steer, M.D., Ph.D., was elected a Director in February 1993. Dr. Steer has been active as a consultant to biotechnology and pharmaceutical companies since 1989. Dr. Steer serves on the Board of Directors of Techne

## Corporation.

In accordance with the terms of the Company's Certificate of Incorporation, the Board of Directors has been divided into three classes with members of each class holding office for staggered three-year terms. Mr. Featheringill's, Mr. Sherrill's and Dr. Rosenwald's terms expire at the 1999 annual meeting, Dr. Bennett's, Dr. Horovitz's, Mr. Spencer's and Dr. Steer's terms expire at the 2000 annual meeting and Dr. Bugg's, Dr. Montgomery's and Dr. Gee's terms expire at the 2001 annual meeting (in all cases subject to the election and qualification of their successors or to their earlier death, resignation or removal). Dr. Rosenwald has declined to stand for reelection. At each annual stockholder meeting, the successors to the Directors whose terms expire are elected to serve from the time of their election and qualification until the third annual meeting of stockholders following their election and until a successor has been duly elected and qualified. The provisions of the Company's Certificate of Incorporation governing the staggered Director election procedure can be amended only by a shareholder's vote of at least 75% of the eligible voting securities. There are no family relationships among any of the directors and executive officers of the Company. The Board has by resolution established the number of directors of the Company at nine (9) commencing with the 1999 Annual Meeting of Stockholders.

The Company has an Audit Committee, consisting of Messrs. Featheringill, Gee and Spencer, which is responsible for the review of internal accounting controls, financial reporting and related matters. The Audit Committee also recommends to the Board the independent accountants selected to be the Company's auditors and reviews the audit plan, financial statements and audit results.

The Company also has a Compensation Committee consisting of Mr. Featheringill, Dr. Gee, Dr. Rosenwald and Mr. Spencer. The Compensation Committee is responsible for the annual review of officer compensation and other incentive programs and is authorized to award options under the Company's 1991 Stock Option Plan.

The Company has a Nominating Committee comprised of all outside directors with terms not expiring in the current year for which the Nominating Committee will be nominating persons for election or re-election as directors.

## ITEM 11. EXECUTIVE COMPENSATION

The following table sets forth the annual and long-term compensation paid by the Company during the 1998, 1997 and 1996 fiscal years to the Company's Chief Executive Officer and each of the Company's four other most highly compensated executive officers whose annual salary and bonus for the 1998 fiscal year exceeded \$100,000 (collectively the "Named Executive Officers"):

### SUMMARY COMPENSATION TABLE

Name and Principal Position	Year	Annual Compensation			Long-term Compensation
		Salary	Bonus	Other Annual Compensation(2)	Awards-Securities Underlying Options
Charles E. Bugg, Ph.D. Chairman and Chief Executive Officer	1998	\$257,232	\$50,000 (1)	\$3,200	50,000
	1997	244,992	50,000 (1)	3,000	125,000
	1996	212,008	50,000 (1)	1,959	50,000
J. Claude Bennett, M.D. President and Chief Operating Officer	1998	229,248	0	0	45,200
	1997	220,008	0	0	35,000
	1996	800	0	0	103,000
John A. Montgomery, Ph.D. Senior Vice President, Secretary and Chief Scientific Officer	1998	156,312	0	0	22,100
	1997	150,000	0	0	37,000
	1996	133,656	0	0	12,000
Ronald E. Gray Chief Financial Officer, Treasurer and Assistant Secretary	1998	123,672	0	2,473	5,500
	1997	119,784	0	2,396	14,400
	1996	109,088	0	1,959	5,400
John R. Uhrin Vice President, Corporate Development	1998	137,500 (3)	0	1,650	70,900
	1997	0	0	0	0
	1996	0	0	0	0

(1) Paid pursuant to Employment Agreements dated December 17, 1996 and November 19, 1993 between the Company and Dr. Bugg. See "Executive Compensation - Employment Agreements."

(2) Represents the Company's contribution to the 401(k) Plan.

(3) Mr. Uhrin joined the Company in March 1998.

#### Employment Agreements

Charles E. Bugg, Ph.D., entered into a new three-year employment agreement with the Company on December 17, 1996 for the years 1997, 1998 and 1999 (the "Bugg Agreement"). Under the terms of the Agreement, Dr. Bugg will serve as Chairman of the Board of Directors and Chief Executive Officer of the Company. Dr. Bugg will receive annual compensation of \$245,000 and a discretionary bonus of \$50,000. The Board may, in its discretion, grant other cash or stock bonuses to Dr. Bugg as an award or incentive. Dr. Bugg is also entitled to all employee benefits generally made available to executive officers. Dr. Bugg may, if he desires, also hold positions at UAB, provided that he does not devote more than ten percent of his time to such activities. The term of the Agreement is for three years unless terminated (i) by the Company for cause or (ii) upon the permanent disability of Dr. Bugg.

Dr. Bugg will receive, on the last day of each year during the term of the Agreement, an additional option to purchase a minimum of 25,000 shares of Common Stock of the Company under the Company's 1991 Stock Option Plan. The exact

number of shares will be determined by the plan administrator based on Dr. Bugg's performance and the results of operations of the Company during such year. Under the Bugg Agreement and his previous employment agreement, Dr. Bugg received an option to purchase 50,000 shares of Common Stock at the end of 1998, an option to purchase 75,000 shares of Common Stock at the end of 1997, 50,000 shares of Common Stock at the end of 1996, 50,000 shares of Common Stock related to 1996 performance granted in May 1997 after the 1991 Stock Option Plan was amended, 100,000 shares of Common Stock at the end of 1995 and 1994 and 200,000 shares of Common Stock in November 1993.

Dr. Bugg will receive an additional stock option to purchase 100,000 shares of Common Stock under the Company's 1991 Stock Option Plan upon the Company's submission to the FDA of any new drug application and another additional stock option to purchase 100,000 shares of Common Stock under the Company's 1991 Stock Option Plan upon the final approval by the FDA of each such new drug application. The exercise price shall be the fair market value of the Company's Common Stock on the date such additional stock option is granted. These additional stock options will vest 25% one year after the date of issuance and the remaining 75% will vest at the rate of 1/48 per month thereafter.

The options may be exercised immediately in the event of a merger or acquisition of the Company. The options may be exercised within 24 months of Dr. Bugg's death or permanent disability. In the event Dr. Bugg's employment is terminated for cause he may exercise the options within three months of the date of such termination to the extent such options were exercisable immediately prior to such termination. In the event Dr. Bugg's employment is terminated for a reason other than cause, death or permanent disability, the options then outstanding shall become immediately exercisable in full.

All options granted to Dr. Bugg pursuant to the Agreement are intended to qualify as incentive stock options as defined in Section 422 of the Internal Revenue Code of 1986, as amended, except to the extent the portion of such options which become exercisable in any year have an aggregate exercise price in excess of \$100,000. All options shall expire no later than ten years from the date of grant.

J. Claude Bennett, M.D., entered into an employment agreement with the Company on December 18, 1996 (the "Bennett Agreement"). Under the terms of the Bennett Agreement, Dr. Bennett serves as President and Chief Operating Officer of the Company. The Company also agreed to use its best efforts to cause Dr. Bennett to be elected as a director of the Company. Dr. Bennett receives annual compensation of \$220,000. Dr. Bennett was also granted an option to purchase 100,000 shares of Common Stock of the Company. The Board may, in its discretion, grant other cash or stock bonuses to Dr. Bennett as an award or incentive. Options to purchase 45,200 shares of Common Stock were granted in 1998 and an option to purchase 35,000 shares of Common Stock was granted in December 1997. Dr. Bennett is also entitled to all employee benefits generally made available to executive officers. Dr. Bennett may, if he desires, also hold positions at UAB, provided that he does not devote more than ten percent of his time to such activities. The term of the Bennett Agreement is for three years unless terminated (i) by the Company for cause or (ii) upon the permanent disability of Dr. Bennett.



## Option Grants in 1998

The following table shows, with respect to the Company's Named Executive Officers, certain information with respect to option grants in 1998. All of the grants were made under the Company's 1991 Stock Option Plan. No stock appreciation rights were granted during such year.

Name	Number of Securities Underlying Options Granted	% of Total Options Granted	Exercise Price Per Share	Expiration Date	Potential Realizable Value at Assumed Annual Rates of Stock Price Appreciation for Option Term(1)	
					5%	10%
Charles E. Bugg, Ph.D.	50,000	10.1%	\$6.25	12/14/2008	\$196,530	\$498,045
J. Claude Bennett, M.D.	15,000 30,200	3.0% 6.1%	6.50 6.25	09/13/2008 12/14/2008	61,317 118,704	155,390 300,819
John A. Montgomery, Ph.D.	22,100	4.5%	6.25	12/14/2008	86,866	220,136
Ronald E. Gray	5,500	1.1%	6.25	12/14/2008	21,618	54,785
John R. Uhrin	45,000 10,000 15,900	9.1% 2.0% 3.2%	7.75 6.50 6.25	03/01/2008 09/13/2008 12/14/2008	219,327 40,878 62,496	555,818 103,593 158,378

(1) Amounts represent hypothetical gains that could be achieved for the respective options at the end of the ten-year option term. The assumed 5% and 10% rates of stock appreciation are mandated by rules of the Securities and Exchange Commission and do not represent the Company's estimate of the future market price of the Common Stock.

## Aggregate Option Exercises in 1998 and Year-end Option Values

The following table shows, with respect to the Company's Named Executive Officers, the number and value of unexercised options held by the Named Executive Officers as of December 31, 1998. No stock appreciation rights were exercised during the 1998 fiscal year and no such rights were outstanding at the end of that year.

Name	Shares Acquired on Exercise	Value Realized	Number of Securities Underlying Unexercised Options		Values of Securities Underlying Unexercised Options (1)	
			Exercisable	Unexercisable	Exercisable	Unexercisable
Charles E. Bugg, Ph.D.	0	0	476,041	186,459	\$634,375	\$65,625
J. Claude Bennett, M.D.	0	0	68,812	122,388	15,375	43,275
John A. Montgomery, Ph.D.	0	0	113,750	56,850	256,750	25,950
Ronald E. Gray	0	0	71,337	20,963	122,250	7,500
John R. Uhrin	0	0	9,375	61,525	0	16,925

(1) Amounts reflect the net values of outstanding stock options computed as the difference between \$7.00 per share (the fair market value at December 31, 1998) and the exercise price therefor.

## **Director Compensation**

Directors do not receive a fee for attending Board or committee meetings. Outside directors are reimbursed for expenses incurred in attending Board or committee meetings and while representing the Company in conducting certain business. Individuals who first become non-employee Board members on or after March 3, 1994, at the time of commencement of Board service, receive a grant of options to purchase up to 40,000 shares (25,000 shares prior to May 15, 1997) pursuant to the automatic option grant program under the Company's 1991 Stock Option Plan, and, under the Company's 1991 Stock Option Plan, each non-employee director, including those persons presently serving as directors, will receive grants of options to purchase 40,000 additional shares of Common Stock every four years while they continue to serve as directors. A special one-time grant was given to those directors not scheduled to receive a periodic automatic option grant at the conclusion of the 1997 Meeting so as to equalize the rate at which they vest options with those directors scheduled to receive a grant at the end of the 1997 Meeting. All current outside directors of the Company have received options to purchase 25,000 shares of Common Stock. In May 1997, Messrs. Featheringill and Sherrill received grants to purchase 7,500 shares and Messrs. Horovitz, Rosenwald and Spencer received special one-time grants to purchase 3,750 shares. Options vest 25% after one year and 1/48 per month thereafter until fully vested after four years, except that Dr. Gee's option, which was granted prior to March 3, 1994, vested over a two-year period and the special one-time grants vest over a two- or one-year period. Dr. Horovitz and Dr. Steer also serve as consultants to the Company for a quarterly fee of \$4,000 each.

## **Compensation Committee Interlocks and Insider Participation**

The Compensation Committee consists of Mr. Featheringill, Dr. Gee, Dr. Rosenwald and Mr. Spencer. There are no Compensation Committee interlocks.

**ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT**

The following table sets forth information regarding beneficial ownership of the Company's Common Stock as of March 15, 1999 by (i) each director, (ii) each of the Named Executive Officers, (iii) all directors and executive officers of the Company as a group and (iv) each person known to the Company to be the beneficial owner of more than five percent of the Company's Common Stock:

Name and Address -----	Amount and Nature of Beneficial Ownership (1) -----	Percent of Class -----
William W. Featheringill 100 Brookwood Place, #410 Birmingham, Alabama 35209	2,619,468 (2)	17.4%
Johnson & Johnson Development Corporation One Johnson & Johnson Plaza New Brunswick, NJ 08933	918,836 (3)	6.1
Charles E. Bugg, Ph.D.	568,998 (4)	3.7
William M. Spencer, III	524,859 (5)	3.5
Lindsay A. Rosenwald, M.D.	473,159 (6)	3.1
Joseph H. Sherrill, Jr.	419,146 (7)	2.8
John A. Montgomery, Ph.D.	150,838 (8)	1.0
Ronald E. Gray	83,042 (9)	*
J. Claude Bennett, M.D.	82,515 (10)	*
Randolph C. Steer, M.D., Ph.D.	69,165 (11)	*
Edwin A. Gee, Ph.D.	34,165 (11)	*
Zola P. Horovitz, Ph.D.	28,750 (11)	*
John R. Uhrin	14,287 (12)	*
All executive officers and directors as a group (12 persons)	5,068,392 (13)	31.8

(\* ) Less than one percent.

(1) Gives effect to the shares of Common Stock issuable within 60 days after March 15, 1999 upon the exercise of all options and other rights beneficially held by the indicated stockholder on that date.

(2) Includes 364,900 shares of Common Stock held by the Featheringill Family Trust of which he is a beneficial owner and 31,146 shares of Common Stock issuable upon exercise of stock options.

(3) Johnson & Johnson Development Corporation is a wholly owned subsidiary of Johnson & Johnson and shares investment and voting power with Johnson & Johnson.

(4) Includes 498,955 shares of Common Stock issuable upon exercise of stock options.

(5) Includes 28,750 shares of Common Stock issuable upon exercise of stock options and 10,000 shares of Common Stock held by Mr. Spencer's spouse. Mr. Spencer disclaims beneficial ownership of the 10,000 shares of Common Stock held by his spouse.

(6) Includes 28,750 shares of Common Stock issuable upon exercise of stock options and 3,125 shares of Common

Stock which Dr. Rosenwald holds jointly with his spouse. Also includes 77,539 shares of Common Stock held by Dr. Rosenwald's spouse individually and as custodian for their minor children, as to which Dr. Rosenwald disclaims beneficial ownership. Dr. Rosenwald has granted options to seven individuals to purchase an aggregate of 15,950 shares of Common Stock held by him at purchase prices ranging from \$0.60 to \$7.20 per share.

(7) Includes 366,000 shares of Common Stock held in a Flint Trust for his benefit by his father who serves as trustee with investment and voting power, 31,146 shares of Common Stock issuable upon exercise of stock options, 10,000 shares of Common Stock which Mr. Sherrill holds jointly with his spouse, 1,000 shares of Common Stock held by Mr. Sherrill's son and 10,000 shares of Common Stock held by Mr. Sherrill's spouse. Mr. Sherrill disclaims beneficial ownership of the 11,000 shares of Common Stock held by his spouse and son.

(8) Includes 118,750 shares of Common Stock issuable upon exercise of stock options and 12,600 shares of Common Stock held by Dr. Montgomery's spouse. Dr. Montgomery disclaims beneficial ownership of the 12,600 shares of Common Stock held by his spouse.

(9) Includes 1,500 shares of Common Stock held by the retirement accounts of Mr. Gray and his spouse and 73,904 shares of Common Stock issuable upon exercise of stock options.

(10) Includes 78,227 shares of Common Stock issuable upon exercise of stock options.

(11) Includes shares of Common Stock issuable upon exercise of stock options.

(12) Represents 12,187 shares of Common Stock issuable upon exercise of stock options.

(13) See Notes (1) through (12).

### **ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS**

Dr. Bugg, an executive officer and Director of the Company, is a Professor Emeritus of UAB and is paid an annual stipend of \$9,040 by UAB. Dr. Bennett, an executive officer and Director of the Company, is a consultant to and a Distinguished University Professor of UAB and is paid an annual stipend of \$12,500 by UAB Education Foundation. The Company paid approximately \$877,000 to UAB in 1998 for conducting certain clinical trials, research and data analysis.

Dr. Montgomery, an executive officer and Director of the Company, is a former executive officer of SRI. The Company paid approximately \$209,000 to SRI in 1998 for certain research, laboratory rental and supplies. Dr. Montgomery is currently a Distinguished Scientist at SRI and was paid approximately \$6,482 by SRI in 1998 for various consulting services unrelated to the services performed by SRI for the Company.

In September 1998, the Company entered into a worldwide license agreement with the PRI and Ortho-McNeil, both Johnson & Johnson companies, to develop and market products to treat and prevent viral influenza. Under the terms of the agreement, the Company received an initial \$6.0 million. The agreement provides for additional potential milestone payments and royalties based on future sales of licensed products. PRI and Ortho-McNeil are responsible for all development, regulatory and commercialization expenses. The agreement is subject to termination by PRI and Ortho-McNeil at any time and by the Company in certain circumstances. In addition, JJDC, another Johnson & Johnson company, made a \$6.0 million equity investment in the Company in connection with signing the license agreement.

PART IV

ITEM 14. EXHIBITS, FINANCIAL STATEMENT SCHEDULES  
AND REPORTS ON FORM 8-K

(a) Financial Statements

	Page in Form
10-K	
The following financial statements appear in Item 8 of this Form 10-K:	
Balance Sheets at December 31, 1998 and 1997	27
Statements of Operations for the years ended December 31, 1998, 1997 and 1996	28
Statements of Stockholders' Equity for the years ended December 31, 1998, 1997 and 1996	29
Statements of Cash Flows for the three years ended December 31, 1998, 1997 and 1996	30
Notes to Financial Statements	31 to
36	
Report of Independent Auditors	37

No financial statement schedules are included because the information is either provided in the financial statements or is not required under the related instructions or is inapplicable and such schedules therefore have been omitted.

(b) Reports on Form 8-K

None

(c) Exhibits

Number	Description
3.1	Composite Certificate of Incorporation of Registrant. Incorporated by reference to Exhibit 3.1 to the Company's
Form	10-Q for the second quarter ending June 30, 1995 dated August 11, 1995.
3.1	3.2 Bylaws of Registrant. Incorporated by reference to Exhibit to the Company's Form 10-Q for the second quarter ending June 30, 1995 dated August 11, 1995.
4.1	See Exhibits 3.1 and 3.2 for provisions of the Composite Certificate of Incorporation and Bylaws of the Registrant defining rights of holders of Common Stock of the Registrant.
10.1	1991 Stock Option Plan, as amended and restated. Incorporated by reference to Exhibit 99.1 to the Company's Form S-8 Registration Statement (Registration No. 333-30751).
10.2	Form of Notice of Stock Option Grant and Stock Option Agreement. Incorporated by reference to Exhibit 99.2 and 99.3 to the Company's Form S-8 Registration Statement
(Registration	No. 33-95062).
10.3	Warehouse Lease dated January 17, 1992 between Principal Mutual Life Insurance Company and the Registrant.
Incorporated	by reference to Exhibit 10.21 to the Company's Form S-1 Registration Statement (Registration No. 33-73868).
10.4	Employment Agreement dated December 17, 1996 between the Registrant and Charles E. Bugg, Ph.D. Incorporated by reference to Exhibit 10.11 to the Company's Form 10-K for the year ended December 31, 1996 dated March 28, 1997.
10.5	Employment Agreement dated December 18, 1996 between the Registrant and J. Claude Bennett. Incorporated by reference
to	Exhibit 10.12 to the Company's Form 10-K for the year ended December 31, 1996 dated March 28, 1997.
10.6#	License Agreement dated April 15, 1993 between Ciba-Geigy Corporation (now merged into Novartis) and the Registrant. Incorporated by reference to Exhibit 10.40 to the Company's Form S-1 Registration Statement (Registration No. 33-73868).
10.7	Employee Stock Purchase Plan. Incorporated by reference to Exhibit 99.4 to the Company's Form S-8 Registration Statement (Registration No. 33-95062).



10.8 First Amendment to Lease Agreement between Registrant and Principal Mutual Life Insurance Company, Inc. for office/warehouse space. Incorporated by reference to Exhibit 10.21 to the Company's Form 10-K for the year ending December 31, 1994 dated March 28, 1995.

of  
30,  
10.9 Form of Stock Purchase Agreement dated May 1995 between Registrant and various parties to purchase 1,570,000 shares common stock. Incorporated by reference to Exhibit 10.22 to the Company's Form 10-Q for the second quarter ending June 1995 dated August 11, 1995.

10.10 Form of Registration Rights Agreement dated May 1995 between Registrant and various parties. Incorporated by reference to Exhibit 10.23 to the Company's Form 10-Q for the second quarter ending June 30, 1995 dated August 11, 1995.

10.11 Form of Stock Purchase Agreement dated March 22, 1996 among Registrant and certain investors to purchase 1,000,000 shares of common stock. Incorporated by reference to Exhibit 10.1 to the Company's Form 8-K dated March 22, 1996.

10.12 Form of Registration Rights Agreement dated March 22, 1996 among Registrant and certain investors. Incorporated by reference to Exhibit 10.2 to the Company's Form 8-K dated March 22, 1996.

10.13# License Agreement, dated May 31, 1996, between Registrant and Torii Pharmaceutical Co., Ltd. ("Torii"). Incorporated by reference to Exhibit 10.1 to the Company's Form 8-K/A dated May 3, 1996 and filed August 2, 1996.

10.14# Stock Purchase Agreement, dated May 31, 1996, between Registrant and Torii. Incorporated by reference to Exhibit 10.2 to the Company's Form 8-K/A dated May 3, 1996 and filed August 2, 1996.

10.15 Second Amendment to Lease Agreement between Registrant and Principal Mutual Life Insurance Company, Inc. for office/warehouse space. Incorporated by reference to Exhibit 10.24 to the Company's Form 10-Q for the first quarter ending March 31, 1997 dated May 12, 1997.

10.16 Third Amendment to Lease Agreement between Registrant and Principal Mutual Life Insurance Company, Inc. for office/warehouse space. Incorporated by reference to Exhibit 10.24 to the Company's Form 10-Q for the first quarter ending March 31, 1998 dated April 29, 1998.

ending  
10.17 Fourth Amendment to Lease Agreement between Registrant and Principal Mutual Life Insurance Company, Inc. for office/warehouse space. Incorporated by reference to Exhibit 10.22 to the Company's Form 10-Q for the second quarter June 30, 1998 dated April 29, 1998.

10,  
10.18# License Agreement dated as of September 14, 1998 between Registrant and The R.W. Johnson Pharmaceutical Research Institute and Ortho-McNeil Pharmaceutical, Inc. Incorporated by reference to Exhibit 10.23 to the Company's Form 10-Q for the third quarter ending September 30, 1998 dated November

the  
30,  
10.19 Stock Purchase Agreement dated as of September 14, 1998 between Registrant and Johnson & Johnson Development Corp. Incorporated by reference to Exhibit 10.24 to Company's Form 10-Q for the third quarter ending September 1998 dated November 10, 1998



# Confidential treatment granted.

## SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized in the City of Birmingham, State of Alabama, on this 29th day of March, 1999.

### **BIOCRYST PHARMACEUTICALS, INC.**


*By: /s/Charles E. Bugg*

-----  
*Charles E. Bugg, Ph.D.*  
*Chairman and Chief Executive*  
*Officer*

Pursuant to the requirements of the Securities Exchange Act of 1934 this report has been signed by the following persons in the capacities indicated on March 29th, 1999:

<i>Signature</i>	<i>Title(s)</i>
<i>/s/Charles E. Bugg</i> ----- <i>(Charles E. Bugg, Ph.D.)</i>	<i>Chairman, Chief Executive Officer and Director</i>
<i>/s/J. Claude Bennett</i> <i>and</i> ----- <i>(J. Claude Bennett, M.D.)</i>	<i>President, Chief Operating Officer  Director</i>
<i>/s/John A. Montgomery</i> ----- <i>(John A. Montgomery, Ph.D.)</i>	<i>Executive Vice President, Secretary, Chief Scientific Officer and Director</i>
<i>/s/Ronald E. Gray</i> ----- <i>(Ronald E. Gray)</i>	<i>Chief Financial Officer (Principal Financial and Accounting Officer)</i>
<i>/s/William W. Featheringill</i> ----- <i>(William W. Featheringill)</i>	<i>Director</i>
<i>/s/Edwin A. Gee</i> ----- <i>(Edwin A. Gee, Ph.D.)</i>	<i>Director</i>
<i>/s/Zola P. Horovitz</i> ----- <i>(Zola P. Horovitz, Ph.D.)</i>	<i>Director</i>
----- <i>(Lindsay A. Rosenwald, M.D.)</i>	<i>Director</i>
<i>/s/William M. Spencer, III</i> ----- <i>(William M. Spencer, III)</i>	<i>Director</i>
<i>/s/Joseph H. Sherrill, Jr.</i> ----- <i>(Joseph H. Sherrill, Jr.)</i>	<i>Director</i>
<i>/s/Randolph C. Steer</i> ----- <i>(Randolph C. Steer, M.D., Ph.D.)</i>	<i>Director</i>

## INDEX TO EXHIBITS

Number Page	Description	Sequentially Numbered
3.1	Composite Certificate of Incorporation of Registrant. Incorporated by reference to Exhibit 3.1 to the Company's Form 10-Q for the second quarter ending June 30, 1995 dated August 11, 1995.	
3.2	Bylaws of Registrant. Incorporated by reference to Exhibit 3.1 to the Company's Form 10-Q for the second quarter ending June 30, 1995 dated August 11, 1995.	
4.1	See Exhibits 3.1 and 3.2 for provisions of the Composite Certificate of Incorporation and Bylaws of the Registrant defining rights of holders of Common Stock of the Registrant.	
10.1	1991 Stock Option Plan, as amended and restated. Incorporated by reference to Exhibit 99.1 to the Company's Form S-8 Registration Statement (Registration No. 333-30751).	
10.2	Form of Notice of Stock Option Grant and Stock Option Agreement. Incorporated by reference to Exhibit 99.2 and 99.3 to the Company's Form S-8 Registration Statement (Registration No. 33-95062).	
10.3	Warehouse Lease dated January 17, 1992 between Principal Mutual Life Insurance Company and the Registrant. Incorporated by reference to Exhibit 10.21 to the Company's Form S-1 Registration Statement (Registration No. 33-73868).	
10.4	Employment Agreement dated December 17, 1996 between the Registrant and Charles E. Bugg, Ph.D. Incorporated by reference to Exhibit 10.11 to the Company's Form 10-K for the year ended December 31, 1996 dated March 28, 1997.	
10.5	Employment Agreement dated December 18, 1996 between the Registrant and J. Claude Bennett. Incorporated by reference to Exhibit 10.12 to the Company's Form 10-K for the year ended December 31, 1996 dated March 28, 1997.	
10.6#	License Agreement dated April 15, 1993 between Ciba-Geigy Corporation (now merged into Novartis) and the Registrant. Incorporated by reference to Exhibit 10.40 to the Company's Form S-1 Registration Statement (Registration No. 33-73868).	
10.7	Employee Stock Purchase Plan. Incorporated by reference to Exhibit 99.4 to the Company's Form S-8 Registration Statement (Registration No. 33-95062).	
10.8	First Amendment to Lease Agreement between Registrant and Principal Mutual Life Insurance Company, Inc. for office/warehouse space. Incorporated by reference to Exhibit 10.21 to the Company's Form 10-K for the year ending December 31, 1994 dated March 28, 1995.	
10.9	Form of Stock Purchase Agreement dated May 1995 between Registrant and various parties to purchase 1,570,000 shares of common stock. Incorporated by reference to Exhibit 10.22 to the Company's Form 10-Q for the second quarter ending June 30, 1995 dated August 11, 1995.	
10.10	Form of Register  Agreement dated <del>the</del> May 1995 between Registrant and various parties. Incorporated by reference to Exhibit 10.23 to the Company's Form 10-Q for the second quarter ending June 30, 1995 dated August 11, 1995.	



- 10.14# Stock Purchase Agreement, dated May 31, 1996, between Registrant and Torii. Incorporated by reference to Exhibit 10.2 to the Company's Form 8-K/A dated May 3, 1996 and filed August 2, 1996.
  - 10.15 Second Amendment to Lease Agreement between Registrant and Principal Mutual Life Insurance Company, Inc. for office/warehouse space. Incorporated by reference to Exhibit 10.24 to the Company's Form 10-Q for the first quarter ending March 31, 1997 dated May 12, 1997.
  - 10.16 Third Amendment to Lease Agreement between Registrant and Principal Mutual Life Insurance Company, Inc. for office/warehouse space. Incorporated by reference to Exhibit 10.24 to the Company's Form 10-Q for the first quarter ending March 31, 1998 dated April 29, 1998.
  - 10.17 Fourth Amendment to Lease Agreement between Registrant and Principal Mutual Life Insurance Company, Inc. for office/warehouse space. Incorporated by reference to Exhibit 10.22 to the Company's Form 10-Q for the second quarter ending June 30, 1998 dated April 29, 1998.
  - 10.18# License Agreement dated as of September 14, 1998 between Registrant and The R.W. Johnson Pharmaceutical Research Institute and Ortho-McNeil Pharmaceutical, Inc. Incorporated by reference to Exhibit 10.23 to the Company's Form 10-Q for the third quarter ending September 30, 1998 dated November 10, 1998.
  - 10.19 Stock Purchase Agreement dated as of September 14, 1998 between Registrant and Johnson & Johnson Development Corporation. Incorporated by reference to Exhibit 10.24 to the Company's Form 10-Q for the third quarter ending September 30, 1998 dated November 10, 1998.
  - 10.20 Stockholder's Agreement dated as of September 14, 1998 between Registrant and Johnson & Johnson Development Corporation. Incorporated by reference to Exhibit 10.25 to the Company's Form 10-Q for the third quarter ending September 30, 1998 dated November 10, 1998.
  - 23.1 Consent of Independent Auditors.  
52
  - 27.1 Financial Data Schedule.  
53
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# Confidential treatment granted.

**EXHIBIT 23.1**

**CONSENT OF INDEPENDENT AUDITORS**

We consent to the incorporation by reference in the Registration Statements (Forms S-8 No. 33-81110, 33-95062 and 333-30751) pertaining to the BioCryst Pharmaceuticals, Inc. 1991 Stock Option Plan of our report dated January 15, 1999, with respect to the financial statements of BioCryst Pharmaceuticals, Inc. included in the Annual Report (Form 10-K) for the year ended December 31, 1998.

*LLP*

*/s/ Ernst & Young*

*Birmingham, Alabama  
March 29, 1999*



**ARTICLE 5**

This schedule contains summary financial information extracted from the BioCryst Pharmaceuticals, Inc. Financial Statements, and is qualified in its entirety by reference to such financial statements.

PERIOD TYPE	YEAR
FISCAL YEAR END	Dec 31 1998
PERIOD END	Dec 31 1998
CASH	12,311,348
SECURITIES	14,700,745
RECEIVABLES	0
ALLOWANCES	0
INVENTORY	0
CURRENT ASSETS	22,870,828
PP&E	3,224,296
DEPRECIATION	1,816,516
TOTAL ASSETS	29,100,059
CURRENT LIABILITIES	1,095,778
BONDS	0
PREFERRED MANDATORY	0
PREFERRED	0
COMMON	149,600
OTHER SE	27,532,815
TOTAL LIABILITY AND EQUITY	29,100,059
SALES	0
TOTAL REVENUES	7,625,976
CGS	0
TOTAL COSTS	0
OTHER EXPENSES	12,396,071
LOSS PROVISION	0
INTEREST EXPENSE	14,986
INCOME PRETAX	(4,785,081)
INCOME TAX	0
INCOME CONTINUING	0
DISCONTINUED	0
EXTRAORDINARY	0
CHANGES	0
NET INCOME	(4,785,081)
EPS PRIMARY	(.34)
EPS DILUTED	(.34)

# End of Filing