

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM S-8

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

BIOCRYS T PHARMACEUTICALS, INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware
(State of Incorporation)

62-1413174
(I.R.S. Employer Identification No.)

**2190 Parkway Lake Drive
Birmingham, Alabama**
(Address of Principal Executive Offices)

35244
(Zip Code)

**Stock Incentive Plan
Employee Stock Purchase Plan**
(Full Titles of the Plans)

**Jon P. Stonehouse
President and Chief Executive Officer
BioCryst Pharmaceuticals, Inc.
2190 Parkway Lake Drive
Birmingham, Alabama 35244**
(Name and Address of Agent for Service)

(205) 444-4600
(Telephone Number, Including Area Code, of Agent for Service)

Copies to:
**Brian Lane, Esq.
Gibson, Dunn and Crutcher LLP
1050 Connecticut Ave. N.W.
Washington, DC 20036
(202) 955-8500**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company
(do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered (1)	Proposed Maximum Offering Price Per Share (3)	Proposed Maximum Aggregate Offering Price (3)	Amount of Registration Fee (3)
Stock Incentive Plan, Common Stock, \$0.01 par value	2,840,000(2)	\$6.285	\$17,849,400	\$1,272.66
Employee Stock Purchase Plan, Common Stock, \$0.01 par value	225,000(2)	\$6.285	\$ 1,414,125	\$ 100.83
Total	3,065,000	\$6.285	\$19,263,525	\$1,373.49

- (1) Pursuant to Rule 416(a) under the Securities Act of 1933, this Registration Statement shall also cover any additional shares of Common Stock which become issuable by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without the receipt of consideration which results in an increase in the number of the Registrant's outstanding shares of Common Stock.
 - (2) Increase in authorized number of shares under the amended Stock Incentive Plan and Employee Stock Purchase Plan as approved by the Registrant's stockholders in April 2009 and May 2010.
 - (3) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(h) under the Securities Act of 1933, as amended, based upon the average of the high and low prices of the Registrant's Common Stock on June 22, 2010, as reported on The Nasdaq Global Market.
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PART I

INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

Documents containing the information specified in Part I of Form S-8 have been and/or will be sent or given to employees as specified by Rule 428(b)(1) of the Securities Act of 1933, as amended (the "Securities Act"). In accordance with the instructions of Part I of Form S-8, such documents will not be filed with the Securities and Exchange Commission (the "Commission") either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 under the Securities Act. These documents and the documents incorporated by reference pursuant to Item 3 of Part II of this Registration Statement, taken together, constitute the prospectus as required by Section 10(a) of the Securities Act.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents filed by BioCryst Pharmaceuticals, Inc. (the "Registrant") with the Commission pursuant to the Securities Exchange Act of 1934, as amended (the "Exchange Act") are incorporated by reference in this Registration Statement:

- (a) The Registrant's Annual Report on Form 10-K for the year ended December 31, 2009;
- (b) The Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2010;
- (c) The Registrant's Current Reports on Form 8-K as filed with the Commission on May 7, 2010 and May 18, 2010;

(d) Registration Statement No. 0-23186 on Form 8-A filed with the Commission on January 7, 1994, together with the amendment thereto filed with the Commission on March 14, 1994, pursuant to Section 12 of the Exchange Act, in which there is described the terms, rights and provisions applicable to the Registrant's outstanding Common Stock; and

(e) Registration Statement No. 0-23186 on Form 8-A filed with the Commission on June 17, 2002, pursuant to Section 12 of the Exchange Act, in which there is described the terms, rights and provisions applicable to the Registrant's preferred stock purchase rights.

All reports and other documents subsequently filed with the Commission by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, prior to the filing of a post-effective amendment which indicates that all securities offered herein have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference in this Registration Statement and to be a part hereof from the date of filing of such documents, excluding any information furnished under Item 7.01 or Item 2.02 of any Current Report on Form 8-K. Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for the purposes of this Registration Statement to the extent that a statement contained herein or in any other subsequently filed document that also is or is deemed to be incorporated by reference herein modifies or replaces such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law (the “DGCL”) sets forth the circumstances in which a Delaware corporation is permitted and/or required to indemnify its directors and officers. The DGCL permits a corporation to indemnify its directors and officers in certain proceedings if the director or officer has complied with the standard of conduct set out in the DGCL. The standard of conduct requires that the director or officer must have acted in good faith, in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to matters in a criminal proceeding, the director or officer must have had no reason to believe that his or her conduct was unlawful. With respect to suits by or in the right of the corporation, the DGCL permits indemnification of directors and officers if the person meets the standard of conduct, except that it precludes indemnification of directors and officers who are adjudged liable to the corporation, unless the Court of Chancery or the court in which the corporation’s action or suit was brought determines that the director or officer is fairly and reasonably entitled to indemnity for expenses. To the extent that a present or former director or officer of the corporation is successful on the merits or otherwise in his or her defense of a proceeding, the corporation is required to indemnify the director or officer against reasonable expenses incurred in defending himself or herself. The rights provided in Section 145 of the DGCL are not exclusive, and the corporation may also provide for indemnification under bylaw, agreement, vote of stockholders or disinterested directors or otherwise.

The Registrant’s Third Restated Certificate of Incorporation, as amended (the “Certificate of Incorporation”), provides for indemnification of any director or officer who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he is or was, or has agreed to become, a director or officer of the Registrant, or is or was serving, or agreed to serve, at the request of the Registrant, as a director, officer or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (including any employee benefit plan), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys’ fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by him or on his behalf in connection with such action, suit or proceeding and any appeal therefrom, in each case to the fullest extent permitted by the DGCL. The Registrant shall not indemnify any person seeking indemnification in connection with a proceeding or part thereof initiated by such person unless the initiation was approved by the Board of Directors of the Registrant. The Certificate of Incorporation further provides for permissible indemnification of employees and other agents to the maximum extent permitted by the Delaware General Corporation Law and the Certificate of Incorporation with respect to directors and officers.

Section 102(b)(7) of the DGCL provides that a corporation may relieve its directors from personal liability to the corporation or its stockholders for monetary damages for any breach of their fiduciary duty as directors except for (i) a breach of the duty of loyalty; (ii) acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law; (iii) willful or negligent violations of certain provisions in the DGCL imposing certain requirements with respect to stock repurchases, redemptions and dividends; or (iv) for any transactions from which the director derived an improper personal benefit. The Registrant’s Certificate of Incorporation provides that no directors of the Registrant shall be liable to the Registrant or its stockholders for monetary damages for breach of fiduciary duty as a director to the fullest extent permitted by the DGCL.

In addition, the Registrant currently maintains liability insurance for its directors and officers insuring them against certain liabilities asserted against them in their capacities as directors or officers or arising out of such status.

Item 7. Exemption from Registration Claimed.

Not applicable.

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Item 8. Exhibits.

The following exhibits are submitted herewith or incorporated by reference herein.

<u>Exhibit Number</u>	<u>Description</u>
5.1	Opinion of Gibson, Dunn and Crutcher LLP (filed herewith).
10.1*	Stock Incentive Plan, as amended and restated effective March 31, 2010 (incorporated by reference to Appendix A to the Registrant's Definitive Proxy Statement, filed April 6, 2010, File No. 000-23186).
10.2*	Employee Stock Purchase Plan, as amended and restated effective March 31, 2010 (incorporated by reference to Appendix B to the Registrant's Definitive Proxy Statement, filed April 6, 2010, File No. 000-23186).
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm (filed herewith).
23.2	Consent of Gibson, Dunn and Crutcher LLP (included in Exhibit 5.1).
24.1	Power of Attorney (included on signature page).

* Incorporated by reference

Item 9. Undertakings.

a. The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act.

(ii) To reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in this Registration Statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in this Registration Statement or any material change to such information in this Registration Statement;

provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in this Registration Statement.

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(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

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

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

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

SIGNATURES

Pursuant to the requirements of the Securities Act, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Birmingham, State of Alabama, on the 28th day of June, 2010.

BIOCRYST PHARMACEUTICALS, INC.

By: /s/ Jon P. Stonehouse
Jon P. Stonehouse
President & Chief Executive Officer

POWER OF ATTORNEY

We, the undersigned officers and directors of BIOCRYST PHARMACEUTICALS, INC. hereby constitute and appoint Jon P. Stonehouse and Stuart Grant, and each of them, as our true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for us and in our name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as we might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Jon P. Stonehouse</u> Jon P. Stonehouse	President, Chief Executive Officer and Director (Principal Executive Officer)	June 23, 2010
<u>/s/ Stuart Grant</u> Stuart Grant	Chief Financial Officer and Senior Vice President (Principal Financial Officer)	June 28, 2010
<u>/s/ J. Michael Mills</u> J. Michael Mills	Controller (Principal Accounting Officer)	June 28, 2010
<u>/s/ Stephen R. Biggar, M.D., Ph.D.</u> Stephen R. Biggar, M.D., Ph.D.	Director	June 25, 2010

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<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Stanley C. Erck</u> Stanley C. Erck	Director	June 28, 2010
<u>/s/ William W. Featheringill</u> William W. Featheringill	Director	June 28, 2010
<u>/s/ John L. Higgins</u> John L. Higgins	Director	June 23, 2010
<u>/s/ Zola P. Horovitz, Ph.D.</u> Zola P. Horovitz, Ph.D.	Director	June 28, 2010
<u>/s/ Charles A. Sanders, M.D.</u> Charles A. Sanders, M.D.	Director	June 28, 2010
<u>/s/ Beth C. Seidenberg, M.D.</u> Beth C. Seidenberg, M.D.	Director	June 28, 2010

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* Incorporated by reference

[LETTERHEAD OF GIBSON, DUNN & CRUTCHER]

Client Matter No.: C 12412-00001

Direct: 202.955.8500

Fax: 202.467.0539

June 28, 2010

BioCryst Pharmaceuticals, Inc.

2190 Parkway Lake Drive

Birmingham, Alabama 35244

Re: Proposed Offering of up to 2,840,000 Shares of Common Stock pursuant to the BioCryst Pharmaceuticals, Inc. Stock Incentive Plan and up to 225,000 Shares of Common Stock pursuant to the BioCryst Pharmaceuticals, Inc. Employee Stock Purchase Plan

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-8 (the "Registration Statement") filed with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Act") with respect to the offer and sale of up to 2,840,000 shares of common stock, par value \$0.01 per share ("Common Stock"), of BioCryst Pharmaceuticals, Inc., a Delaware corporation (the "Company"), issuable pursuant to the Company's Stock Incentive Plan (the "Incentive Plan," and such shares, the "Incentive Plan Shares") and up to 225,000 shares of Common Stock of the Company (the "Purchase Plan Shares," and together with the Incentive Plan Shares, the "Shares") issuable pursuant to the Company's Employee Stock Purchase Plan (the "Purchase Plan," and together with the Incentive Plan, the "Plans").

We have examined the originals, or photostatic or certified copies, of such records of the Company and certificates of officers of the Company and of public officials and such other documents as we have determined relevant and necessary as the basis for the opinions set forth below. In our examination, we have assumed the genuineness of all signatures, the legal capacity and competency of all natural persons, the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as copies.

The Company has represented to us, and we assume for purposes of this opinion letter, that there are no agreements or understandings between or among the Company and any participants in the Plans that would expand, modify, or otherwise affect the terms of the Plans or the respective rights or obligations of the participants thereunder.

BioCryst Pharmaceuticals, Inc.

June 28, 2010

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Based upon the foregoing examination and in reliance thereon, and subject to the assumptions stated and in reliance on statements of fact contained in the documents that we have examined, we are of the opinion that the Shares have been validly authorized for issuance and, when issued and sold in accordance with the terms set forth in the Plans, and, when (a) the Registration Statement has become effective under the Act, (b) the pertinent provisions of any applicable state securities law have been complied with, and (c) in the case of options issued under the Incentive Plan and the Purchase Plan Shares, the Shares have been paid for, the Shares so issued will be validly issued and will be fully paid and nonassessable.

We express no opinion regarding the effectiveness of any waiver (whether or not stated as such) contained in the Plans of rights of any party, or duties owing to it, that is broadly or vaguely stated or does not describe the right or duty purportedly waived with reasonable specificity or any provision in the Plans relating to indemnification, exculpation or contribution.

Our opinions set forth herein are limited to the effect of the present corporate laws of the State of Delaware and to the present judicial interpretations thereof and to the facts as they presently exist. Although we are not admitted to practice in the State of Delaware, we are familiar with the Delaware General Corporation Law and have made such investigation thereof as we deemed necessary for the purpose of rendering the opinion contained herein. We assume no obligation to revise or supplement our opinions should the present laws, or the interpretation thereof, be changed or to revise or supplement these opinions in respect of any circumstances or events that occur subsequent to the date hereof.

We consent to the filing of this opinion as an exhibit to the Registration Statement, and we further consent to the use of our name appearing on the cover of the Registration Statement. In giving these consents, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Act or the Rules and Regulations of the Commission.

Very truly yours,

/s/ Gibson, Dunn & Crutcher LLP

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the Stock Incentive Plan and Employee Stock Purchase Plan of BioCryst Pharmaceuticals, Inc. of our reports dated March 9, 2010, with respect to the financial statements of BioCryst Pharmaceuticals, Inc and the effectiveness of internal control over financial reporting of BioCryst Pharmaceuticals, Inc., included in its Annual Report (Form 10-K) for the year ended December 31, 2009, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Birmingham, Alabama
June 28, 2010