

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

SCHEDULE 13D
Under the Securities Exchange Act of 1934
(Amendment No. 5)

BioMimetic Therapeutics, Inc.

(Name of Issuer)

Common Stock, \$0.001 par value
(Title of Class of Securities)

09064X101
(CUSIP Number)

Thorkil Kastberg Christensen
Novo A/S
Krogshøjvej 41
Bagsvaerd, Denmark DK-2880

(Name, Address and Telephone Number of Person Authorized
to Receive Notices and Communications)

April 4, 2009
(Date of Event which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of Rule 13d-1(e), 13d-1(f) or 13d-1(g), check the following box ☐.

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

1.	NAMES OF REPORTING PERSONS NOVO A/S		
2.	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
3.	SEC USE ONLY		
4.	SOURCE OF FUNDS WC		
5.	CHECK IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e) <input type="checkbox"/>		
6.	CITIZENSHIP OR PLACE OF ORGANIZATION Denmark		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7.	SOLE VOTING POWER 3,376,659	
	8.	SHARED VOTING POWER 0	
	9.	SOLE DISPOSITIVE POWER 3,376,659	
	10.	SHARED DISPOSITIVE POWER BY EACH REPORTING PERSON 0	
11.	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 3,376,659		
12.	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES <input type="checkbox"/>		
13.	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 18.0%		
14.	TYPE OF REPORTING PERSON CO		

(1) This percentage is calculated based upon 18,718,664 shares of the Issuer's Common Stock outstanding (as of March 6, 2009), as set forth in the Issuer's Form 10-Q filed with the Securities and Exchange Commission on March 12, 2009.

Introductory note: This Amendment No. 5 to Schedule 13D (this “Amendment No. 5”) is being filed by the undersigned Reporting Person pursuant to Rule 13d-2(a) of the Rules and Regulations promulgated under the Securities and Exchange Act of 1934, as amended, to amend and supplement the statement on Schedule 13D as originally filed by the Reporting Person on March 20, 2007 and as subsequently amended by Amendment No. 1 to the Schedule 13D filed on July 9, 2007, Amendment No. 2 to the Schedule 13D filed on May 20, 2008, Amendment No. 3 to the Schedule 13D filed on June 26, 2008 and Amendment no. 4 to the Schedule 13D filed on September 18, 2008 (as amended, the “Schedule 13D”). This Schedule 13D relates to the common stock of BioMimetic Therapeutics, Inc., a Delaware corporation (the “Company” or the “Issuer”). Capitalized terms used in this Amendment No. 5 and not otherwise defined herein have the meanings set forth in the Schedule 13D. The information set forth in response to each separate Item shall be deemed to be a response to all Items where such information is relevant.

Item 2. Identity and Background

Schedule I to this Schedule 13D is hereby amended and restated to provide the following updated information regarding each director and executive officer of Novo A/S: (i) name; (ii) residence or business address; (iii) principal occupation or employment and the name and principal business address of any corporation or other organization in which such employment is conducted; and (iv) citizenship. The following information regarding each controlling person of Novo A/S is set forth in Schedule I to this Schedule 13D: (i) name; (ii) place of organization; (iii) principal business; and (iv) address.

Within the last five years, neither Novo A/S nor any person or entity named in Schedule I (i) has been convicted in any criminal proceedings or (ii) was a party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.

Item 3. Source and Amount of Funds or Other Consideration

Item 3 is hereby amended by adding the following:

On November 11, 2008, Novo A/S purchased 500 shares of the Issuer common stock on the open market. The aggregate purchase price was \$4,000.00.

On January 29, 2009, Novo A/S purchased 50,000 shares of the Issuer common stock on the open market. The aggregate purchase price was \$481,440.00.

As described in Item 6 below, Novo A/S has entered into a Standby Purchase Agreement with the Issuer, dated April 4, 2009 (the “Standby Purchase Agreement”) in connection with a rights offering by the Issuer. As further described in Item 6 below, under the Standby Purchase Agreement, Novo A/S has agreed to invest up to \$15 million to purchase shares of Issuer common stock directly from the Issuer at a price of \$8.50 per share.

The purchase price paid by Novo A/S for the November 11, 2008 and January 29, 2009 transactions came from its working capital. The purchase price to be paid by Novo A/S to purchase additional shares of common stock in connection with the rights offering and under the Standby Purchase Agreement, will come from its working capital.

Item 4. Purpose of Transaction

Item 4 is hereby amended and restated as follows:

As described in Item 6 below and elsewhere in this Schedule 13D, Novo A/S proposes to acquire additional shares of common stock of the Company pursuant to the Standby Purchase Agreement, in connection with the rights offering made by the Company. Novo A/S acquired and holds the common stock of the Company currently beneficially owned by it for general investment purposes. Novo A/S is acquiring the additional shares of Company common stock subject to the Standby Purchase Agreement for general investment purposes, in the ordinary course of its business, and not with the purpose of changing or influencing the control of the Company. Novo A/S retains the right to change its investment intent. Thorkil K. Christensen, the Chief Financial Officer of Novo A/S, is one of three candidates nominated for election to serve a three year term as a member of the Company's Board of Directors in the definitive proxy statement filed by the Company with the SEC relating to its 2009 annual meeting of stockholders, to be held on June 18, 2009. There is no contractual or other obligation or arrangement between the Company and Novo A/S or other persons who manage, own or control Novo A/S with respect to the addition of Mr. Christensen to the Board of Directors of the Company.

Except as set forth herein or in the exhibits attached hereto, Novo A/S has no current plans or proposals that relate to or would result in any of the transactions described in subparagraphs (a) through (j) of Item 4 of Schedule 13D.

Item 5. Interest in Securities of the Issuer

The information provided under Items 5(a) and 5(b) of the Schedule 13D is hereby amended and restated in its entirety as follows:

(a) Based upon 18,718,664 shares of the Issuer's Common Stock outstanding (as of March 6, 2009), as set forth in the Issuer's Form 10-Q filed with the Securities and Exchange Commission on March 12, 2009, Novo A/S beneficially owns 3,376,659 shares of Issuer common stock, which constitute approximately 18.0% of the common stock of the Issuer as calculated in accordance with Rule 13d-3(d)(1).

Except as described in this Schedule 13D, none of the persons or entities listed on Schedule I beneficially owns any common stock of the Issuer.

(b) Novo A/S holds the sole power to direct the vote as to, and to direct the disposition of, 3,376,659 shares of Issuer common stock.

Novo A/S is a Danish private limited liability company wholly owned by the Novo Nordisk Foundation. The Board of Directors of Novo A/S has sole voting and investment control over the shares owned by Novo A/S. The Board of Directors of Novo A/S is comprised of Ulf J. Johansson, Jorgen Boe, Goran Ando and Jeppe Christiansen, none of whom has

individual voting or investment power with respect to such shares and each disclaims beneficial ownership of the shares held by Novo A/S. Except as described in this Schedule 13D, none of the persons or entities listed on Schedule I has the power to direct the vote as to, or the disposition of, any common stock of the Issuer.

The information provided under Item 5(c) of the Schedule 13D is hereby amended and supplemented as follows:

(c) Except as set forth in this Schedule 13D, Novo A/S has not effected any transactions in Issuer common stock within the past 60 days and none of the persons or entities listed on Schedule I has effected any transactions in Issuer common stock within the past 60 days.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer

The information provided under Item 6 of the Schedule 13D is hereby amended and supplemented as follows:

On April 6, 2009, the Company announced that its Board of Directors approved a rights offering to be made to the Company's existing stockholders. The Company subsequently filed a registration statement relating to the rights offering on Form S-3 (No. 333-158591) with the SEC, and stated that it intends to proceed with the rights offering once that registration statement has been declared effective. In the rights offering, the Company is to distribute non-transferable subscription rights to its stockholders of record on April 21, 2009 for the purchase of an aggregate of 2,000,000 shares of the Company's common stock at a subscription price equal to \$8.50 per share. Under the rights offering, eligible stockholders have the right to exercise all, a portion or none of their subscription rights. Accordingly, the Company may raise up to \$17.0 million in the rights offering or a lesser amount, depending on the participation of the stockholders, in their sole discretion.

In connection with the rights offering, the Company separately entered into a standby purchase agreement with Novo A/S, pursuant to which Novo A/S agreed to backstop the rights offering by agreeing to purchase from the Company in the rights offering, at the same subscription price offered to the other stockholders, any shares of common stock that are not subscribed for pursuant to the exercise of the offered subscription privileges by other stockholders, subject to a maximum total commitment by Novo A/S of \$15.0 million (the "Standby Purchase Agreement"). The securities to be purchased by Novo A/S will be purchased in a private placement. Any purchases by Novo A/S will be made for investment purposes and not with a view toward resale with respect to the shares of common stock acquired in the rights offering. The Company agreed to provide customary resale registration rights to Novo A/S in the Standby Purchase Agreement, and to use its best efforts to have the resale registration statement relating to the future potential resale from time to time of the shares subscribed to by Novo A/S declared effective by September 30, 2009. The Company also agreed to reimburse Novo A/S for all of the attorney's fees it incurred and will incur in connection with the Standby Purchase Agreement and the standby purchase, subject to a maximum of \$20,000.

The right and obligation of Novo A/S to make the standby purchase is subject to a number of conditions, including: approval of the issuance of shares in the rights offering to Novo

A/S as standby purchaser by the holders of 66 2 / 3 % of the Company's voting stock not owned by Novo A/S or its affiliates or associates, in compliance with Section 203 of the Delaware General Corporation Law; and the effectiveness of the registration statement for the completion of the rights offering. The obligations of Novo A/S are also conditioned upon the performance by the Company of other customary obligations. Either the Company or Novo A/S may terminate the Standby Purchase Agreement if the rights offering has not closed by June 30, 2009. The Company has filed a definitive proxy statement with the SEC relating to its 2009 annual meeting of stockholders, to be held on June 18, 2009 (the "Proxy Statement"), which includes a proposal seeking stockholder approval of the issuance of shares in the rights offering to Novo A/S as standby purchaser by the requisite vote of the stockholders.

In addition, the issuance of shares to Novo A/S in connection with the rights offering may be deemed a change of control of the Company under the rules of The Nasdaq Stock Market Inc., if Novo A/S were to own more than 20% of the Company's issued and outstanding shares of common stock upon the closing of the rights offering. Accordingly, in the Proxy Statement the Company is seeking the approval by holders of a majority of the outstanding common stock of the Company of the issuance of shares of its common stock to Novo A/S, which will also be deemed to be the approval of a potential change in control transaction for purposes of the rules of The Nasdaq Stock Market Inc. In the absence of receiving the requisite approvals by the stockholders of the Company, Novo A/S may participate in the rights offering only up to its pro rata amount.

According to the Proxy Statement, there were 19,685,290 shares of common stock of the Company outstanding as of April 21, 2009, of which Novo A/S owned 3,376,659 shares, or approximately 17.2% of the Company's outstanding common stock. The number of shares that will be purchased by Novo A/S in connection with the rights offering can only be determined upon the completion of the offering. If no shares of common stock are subscribed for by other stockholders of the Company, and Novo A/S purchases its maximum total commitment of \$15.0 million as set forth in the Standby Purchase Agreement, Novo A/S would acquire 1,764,705 new shares of common stock, and would own 5,141,364 shares out of 21,449,995 shares of common stock outstanding, or approximately 24.0% of the Company's outstanding common stock. If all shareholders of the Company exercise their rights in full, including Novo A/S, Novo A/S would own 3,720,692 shares out of 21,685,290 shares of Company common stock outstanding, or approximately 17.2% of the Company's outstanding common stock.

Except for the agreements described above, to the best knowledge of the Reporting Person, there are no contracts, arrangements, understandings or relationships (legal or otherwise), including, but not limited to, transfer or voting of any of the securities, finder's fees, joint ventures, loan or option arrangements, puts or calls, guarantees of profits, division of profits or loss or the giving or withholding of proxies, among the persons enumerated in Item 2, or between them and any other person, with respect to any securities of the Issuer, including any securities pledged or otherwise subject to a contingency the occurrence of which would give another person voting power or investment power over such securities other than proceeds, standard default and similar provisions contained in loan agreements.

Item 7. Material to be Filed as Exhibits

- 99.1** Standby Purchase Agreement dated as of April 4, 2009, by and between BioMimetic Therapeutics, Inc., a Delaware corporation, and Novo A/S, a Danish private limited liability company (incorporated by reference to Exhibit 10.1 to the Registration Statement on Form S-3 (amendment no. 2) filed by BioMimetic Therapeutics, Inc. on May 14, 2009).

Signature

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Dated: June 16, 2009

NOVO A/S

/s/ Thorkil Kastberg Christensen

By: Thorkil Kastberg Christensen
Its: Chief Financial Officer

Schedule I

Information regarding each director and executive officer of Novo A/S is set forth below.

Name, Title	Address	Principal Occupation	Citizenship
Jan Ulf Sigvard Johansson Chairman of the Board	Strandvägen 43, 4 tr, S-114 56 Stockholm, Sweden	Self-employed, professional board director	Sweden
Jørgen Boe Director	Margrethevej 6, DK-2960 Rungsted Kyst, Denmark	Attorney, Kromann Reumert Sundkrogsgade 5 DK-2100 Copenhagen, Denmark	Denmark
Göran Ando Director	Essex Woodlands, Berkeley Square House, Berkeley Square, London, W1J 6BD United Kingdom	Self-employed, professional board director	Sweden
Jeppe Christiansen Director	Kollemose 37, DK-2830 Virum, Denmark	CEO, Fondsmaeglerselskabet LD invest A/S, Vendersgade 28, DK - 1363 Copenhagen, Denmark	Denmark
Henrik Gürtler Chief Executive Officer	Hjortekærsvej 140A, DK-2800 Kongens Lyngby, Denmark	Chief Executive Officer, Novo A/S	Denmark

Information regarding the controlling person of Novo A/S is set forth below.

The Foundation is a Danish self-governing and profit-making foundation, whose objectives are to provide a stable basis for commercial and research activities undertaken by the companies in the Novo group and support scientific, humanitarian and social purposes. Novo A/S is wholly owned by the Foundation. The address of the Foundation is Brogårdsvej 70, PO Box 71, DK-2820, Gentofte, Denmark.

EXHIBITS

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