

**AMENDMENT NO. 1 DATED JUNE 2, 2016
to Prospectus Supplement dated March 1, 2016
(to Prospectus dated March 24, 2015)**

**Filed pursuant to Rule 424(b)(5)
Registration No. 333-202808**



**\$40,000,000
Common Stock**

This Amendment No. 1 to Prospectus Supplement, or this amendment, amends our prospectus supplement dated March 1, 2016, or the prospectus supplement. This amendment should be read in conjunction with the prospectus supplement and the prospectus dated March 24, 2015, each of which are to be delivered with this amendment. This amendment amends only those sections of the prospectus supplement listed in this amendment; all other sections of the prospectus supplement remain as is.

On March 1, 2016, we entered into a certain Sales Agreement, or the sales agreement, with Cowen and Company, LLC, or Cowen, relating to shares of our common stock offered by the prospectus supplement, as amended by this amendment. In accordance with the terms of the sales agreement, we may offer and sell shares of our common stock having an aggregate offering price of up to \$40.0 million (which amount includes shares we have already sold pursuant to the sales agreement prior to the date of this amendment) from time to time through Cowen acting as a sales agent. As of the date of this amendment, we have sold an aggregate of 477,577 shares of our common stock pursuant to the sales agreement for gross proceeds of \$3,001,208.

Our common stock is traded on the NASDAQ Global Market, or the Exchange, under the symbol "GLYC." On June 1, 2016, the last reported sale price of our common stock was \$8.32 per share. Based on 19,552,012 shares of outstanding common stock as of June 1, 2016, of which 10,331,737 were held by non-affiliates as of such date, and a per share price of \$8.32 as of June 1, 2016, the last reported sales price of our common stock on the Exchange on such date, the aggregate market value of our outstanding common stock held by non-affiliates is approximately \$86 million.

Sales of our common stock, if any, under the prospectus supplement, as amended by this amendment, may be made in sales deemed to be "at-the-market" equity offerings as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, or the Securities Act, including sales made directly on or through the Exchange, the existing trading market for our common stock, sales made to or through a market maker other than on an exchange or otherwise, in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices, and/or any other method permitted by law. Cowen is not required to sell any specific number or dollar amount of securities, but will act as a sales agent using commercially reasonable efforts consistent with its normal trading and sales practices, on mutually agreed terms between Cowen and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

The compensation to Cowen for sales of common stock sold pursuant to the sales agreement will be an amount equal to 3% of the gross proceeds of any shares of common stock sold under the sales agreement. In connection with the sale of the common stock on our behalf, Cowen may be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Cowen may be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to Cowen with respect to certain liabilities, including liabilities under the Securities Act or the Exchange Act of 1934, as amended, or the Exchange Act.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading "Risk Factors" on page S-2 of this amendment and under similar headings in the prospectus supplement dated March 1, 2016 and other documents that are incorporated by reference into the prospectus supplement and accompanying prospectus.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED IF THIS AMENDMENT, THE PROSPECTUS SUPPLEMENT AND THE ACCOMPANYING PROSPECTUS ARE TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

Cowen and Company

The date of this Amendment No. 1 to Prospectus Supplement is June 2, 2016.

TABLE OF CONTENTS
Amendment No. 1 to Prospectus Supplement

	<u>Page</u>
ABOUT THIS AMENDMENT TO PROSPECTUS SUPPLEMENT	i
THE OFFERING	S-1
RISK FACTORS	S-2
DILUTION	S-3
PLAN OF DISTRIBUTION	S-4
LEGAL MATTERS	S-5

ABOUT THIS AMENDMENT TO PROSPECTUS SUPPLEMENT

The prospectus supplement is part of a registration statement that we have filed with the Securities and Exchange Commission, or the SEC, utilizing a “shelf” registration process. Under the shelf registration process, we may offer shares of our common stock having an aggregate offering price of up to \$150,000,000. Under the prospectus supplement dated March 1, 2016, as amended by this amendment, we may offer shares of our common stock having an aggregate offering price of up to \$40,000,000 from time to time at prices and on terms to be determined by market conditions at the time of offering (which amount includes shares we have already sold pursuant to the prospectus supplement prior to the date of this amendment).

Before buying any of the common stock that we are offering, we urge you to carefully read this amendment, the prospectus supplement and the accompanying prospectus, together with the information incorporated by reference in the prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering when making your investment decision. You should also read and consider the information in the documents we have referred you to in the prospectus supplement under the headings “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.” These documents contain important information that you should consider when making your investment decision.

The prospectus supplement, as amended by this amendment, describes the terms of this offering of common stock and also adds to and updates information contained in the documents incorporated by reference into the prospectus supplement and the accompanying prospectus. To the extent there is a conflict between the information contained in this amendment or the prospectus supplement, on the one hand, and the information contained in any document incorporated by reference into the prospectus supplement and the accompanying prospectus that was filed with the SEC before the date of this amendment or the prospectus supplement, on the other hand, you should rely on the information in this amendment or the prospectus supplement, as applicable. If any statement in one of these documents is inconsistent with a statement in another document having a later date — for example, a document incorporated by reference into the prospectus supplement — the statement in the document having the later date modifies or supersedes the earlier statement.

You should rely only on the information contained in or incorporated by reference in the prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering. We have not, and the sales agent has not, authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and the sales agent is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted.

You should assume that the information appearing in the prospectus supplement, the documents incorporated by reference in the prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering, is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read the prospectus supplement, the documents incorporated by reference in the prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering, in their entirety before making an investment decision.

Unless otherwise mentioned or unless the context requires otherwise, all references in this amendment and the prospectus supplement to “GlycoMimetics,” “company,” “we,” “us” and “our” or similar references refer to GlycoMimetics, Inc.

This amendment, the prospectus supplement, the accompanying prospectus and the information incorporated by reference therein include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into the prospectus supplement and the accompanying prospectus are the property of their respective owners.

THE OFFERING

The following summary is qualified in its entirety by, and should be read together with, the more detailed information and financial statements and related notes thereto appearing elsewhere or incorporated by reference in this amendment, the prospectus supplement and the accompanying prospectus. Before you decide to invest in our common stock, you should read this entire amendment, the prospectus supplement and the accompanying prospectus carefully, including the risk factors and the financial statements and related notes included or incorporated by reference in, the prospectus supplement and the accompanying prospectus.

Common Stock Offered By Us	Shares of our common stock having an aggregate offering price of up to \$40.0 million, which includes \$3,001,208 in gross proceeds from the prior sale of common stock under the sales agreement.
Manner of Offering	“At-the-market” offering that may be made from time to time through our sales agent, Cowen. See “Plan of Distribution” on page S-4 of this amendment.
Use of Proceeds	We currently intend to use the net proceeds from this offering to conduct planned clinical trials of GMI-1271, to fund the research and development of our preclinical pipeline, including drug discovery, and for working capital and other general corporate purposes. See “Use of Proceeds” on page S-7 of the prospectus supplement.
Risk Factors	Investing in our common stock involves significant risks. See “Risk Factors” on page S-2 of this amendment and page S-5 of the prospectus supplement, and under similar headings in other documents incorporated by reference into the prospectus supplement and the accompanying prospectus.
NASDAQ Global Market Symbol	“GLYC”

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully review the risks and uncertainties described below and under the section titled "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2015, as updated by our annual, quarterly and other reports and documents that are incorporated by reference into the prospectus supplement and the accompanying prospectus and any free writing prospectus with respect to this offering filed by us with the SEC, before deciding whether to invest in our common stock. Each of the risk factors could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our securities, and the occurrence of any of these risks might cause you to lose all or part of your investment. Additional risks not presently known to us or that we currently believe are immaterial may also significantly impair our business operations.

Additional Risks Related to This Offering

You may experience dilution.

The offering price per share in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Assuming that an aggregate of 4,807,692 shares of our common stock are sold at a price of \$8.32 per share, the last reported sale price of our common stock on the Exchange on June 1, 2016, for aggregate gross proceeds of \$40.0 million, and after deducting commissions and estimated offering expenses payable by us, you would experience immediate dilution of \$5.27 per share, representing the difference between our as adjusted net tangible book value per share as of March 31, 2016, after giving effect to this offering, and the assumed offering price. The exercise of outstanding stock options and warrants would result in further dilution of your investment. See the section entitled "Dilution" below for a more detailed illustration of the dilution you would incur if you participate in this offering. Because the sales of the shares offered hereby will be made directly into the market or in negotiated transactions, the prices at which we sell these shares will vary and these variations may be significant. Purchasers of the shares we sell, as well as our existing shareholders, will experience significant dilution if we sell shares at prices significantly below the price at which they invested.

DILUTION

Our net tangible book value as of March 31, 2016 was approximately \$34.8 million, or \$1.80 per share. Net tangible book value per share is determined by dividing our total tangible assets, less total liabilities, by the number of shares of our common stock outstanding as of March 31, 2016. Dilution with respect to net tangible book value per share represents the difference between the amount per share paid by purchasers of shares of common stock in this offering and the net tangible book value per share of our common stock immediately after this offering.

After giving effect to the sale of 4,807,692 shares of our common stock with an aggregate offering price of \$40.0 million at an assumed offering price of \$8.32 per share, the last reported sale price of our common stock on the Exchange on June 1, 2016, and after deducting estimated offering commissions and offering expenses payable by us, our as adjusted net tangible book value as of March 31, 2016 would have been approximately \$73.4 million, or \$3.05 per share. This represents an immediate increase in net tangible book value of \$1.25 per share to existing stockholders and immediate dilution of \$5.27 per share to investors purchasing our common stock in this offering at the public offering price. The following table illustrates this dilution on a per share basis:

Assumed public offering price per share	\$8.32
Net tangible book value per share of as March 31, 2016	\$
Increase in net tangible book value per share attributable to this offering	<u>\$1.25</u>
As adjusted net tangible book value per share as of March 31, 2016, after giving effect to this offering	<u>\$3.05</u>
Dilution per share to investors purchasing our common stock in this offering	<u>\$5.27</u>

The above discussion and table are based on 19,280,690 shares outstanding as of March 31, 2016, and exclude:

- 578,687 shares of common stock issuable upon the exercise of warrants outstanding as of March 31, 2016, having a weighted average exercise price of \$0.40 per share;
- 2,733,339 shares of common stock issuable upon the exercise of stock options outstanding as of March 31, 2016, having a weighted average exercise price of \$5.77 per share;
- 19,333 shares of common stock issuable upon the vesting of restricted stock units outstanding as of March 31, 2016;
- 2,417 shares of vested but unsettled restricted stock units outstanding as of March 31, 2016; and
- an aggregate of 673,713 shares of common stock reserved for future issuance under our equity incentive and employee stock purchase plans as of March 31, 2016.

The table above assumes for illustrative purposes that an aggregate of 4,807,692 shares of our common stock are sold during the term of the sales agreement with Cowen at a price of \$8.32 per share, the last reported sale price of our common stock on the Exchange on June 1, 2016, for aggregate gross proceeds of \$40.0 million. The shares subject to the sales agreement with Cowen are being sold from time to time at various prices. An increase of \$1.00 per share in the price at which the shares are sold from the assumed offering price of \$8.32 per share shown in the table above, assuming all of our common stock in the aggregate amount of \$40.0 million during the term of the sales agreement with Cowen is sold at that price, would increase our adjusted net tangible book value per share after the offering to \$3.11 per share and would increase the dilution in net tangible book value per share to new investors in this offering to \$6.21 per share, after deducting commissions and estimated aggregate offering expenses payable by us. A decrease of \$1.00 per share in the price at which the shares are sold from the assumed offering price of \$8.32 per share shown in the table above, assuming all of our common stock in the aggregate amount of \$40.0 million during the term of the sales agreement with Cowen is sold at that price, would decrease our adjusted net tangible book value per share after the offering to \$2.96 per share and would decrease the dilution in net tangible book value per share to new investors in this offering to \$4.36 per share, after deducting commissions and estimated aggregate offering expenses payable by us. This information is supplied for illustrative purposes only.

To the extent that outstanding options or warrants outstanding as of March 31, 2016 have been or may be exercised or other shares issued, investors purchasing our common stock in this offering may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

PLAN OF DISTRIBUTION

We have entered into a sales agreement with Cowen, under which we may issue and sell from time to time up to \$40.0 million of our common stock through Cowen as our sales agent. As of the date of this amendment, we have sold an aggregate of 477,577 shares of our common stock pursuant to the sales agreement for gross proceeds of \$3.0 million. Additional sales of our common stock, if any, will be made at market prices by any method that is deemed to be an “at the market” offering as defined in Rule 415 under the Securities Act, including sales made directly on the Exchange or any other trading market for our common stock, or sales to or through a market maker other than on an exchange. If authorized by us in writing, Cowen may also sell our shares of common stock by any other method permitted by law, including negotiated transactions, and Cowen may also purchase shares of our common stock as principal.

Cowen will offer our common stock subject to the terms and conditions of the sales agreement on a daily basis or as otherwise agreed upon by us and Cowen. We will designate the maximum amount of common stock to be sold through Cowen on a daily basis or otherwise determine such maximum amount together with Cowen. Subject to the terms and conditions of the sales agreement, Cowen will use its commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us. We may instruct Cowen not to sell common stock if the sales cannot be effected at or above the price designated by us in any such instruction. Cowen or we may suspend the offering of our common stock being made through Cowen under the sales agreement upon proper notice to the other party. Cowen and we each have the right, by giving written notice as specified in the sales agreement, to terminate the sales agreement in each party’s sole discretion at any time.

The aggregate compensation payable to Cowen as sales agent equals 3.0% of the gross sales price of the shares sold through it pursuant to the sales agreement. In addition, we have agreed to reimburse Cowen for fees and disbursements related to its legal counsel in an amount not to exceed \$50,000, and for certain other expenses, including Cowen’s FINRA counsel fees in an amount up to \$12,500. We estimate that the total expenses of the offering payable by us, excluding commissions payable to Cowen under the sales agreement, will be approximately \$200,000.

The remaining sales proceeds, after deducting any expenses payable by us and any transaction fees imposed by any governmental, regulatory, or self-regulatory organization in connection with the sales, will equal our net proceeds for the sale of such common stock.

Cowen will provide written confirmation to us following the close of trading on the Exchange on each day in which common stock is sold through it as sales agent under the sales agreement. Each confirmation will include the number of shares of common stock sold through it as sales agent on that day, the volume weighted average price of the shares sold, the percentage of the daily trading volume and the net proceeds to us.

We will report at least quarterly the number of shares of common stock sold through Cowen under the sales agreement, the net proceeds to us and the compensation paid by us to Cowen in connection with the sales of common stock.

Settlement for sales of common stock will occur, unless the parties agree otherwise, on the third business day that is also a trading day following the date on which any sales were made in return for payment of the net proceeds to us. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

In connection with the sales of our common stock on our behalf, Cowen may be deemed to be an “underwriter” within the meaning of the Securities Act, and the compensation paid to Cowen may be deemed to be underwriting commissions or discounts. We have agreed in the sales agreement to provide indemnification and contribution to Cowen against certain liabilities, including liabilities under the Securities Act. As sales agent, Cowen will not engage in any transactions that stabilizes our common stock.

Our common stock is listed on the Exchange and trades under the symbol “GLYC.” The transfer agent of our common stock is American Stock Transfer & Trust Company.

Cowen and/or its affiliates have provided, and may in the future provide, various investment banking and other financial services for us for which services they have received and, may in the future receive, customary fees.

LEGAL MATTERS

The validity of the common stock offered by this amendment and the prospectus supplement will be passed upon by Cooley LLP, Reston, Virginia. Goodwin Procter LLP, New York, New York, is counsel for Cowen in connection with this offering.