

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

**FORM S-3
REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933**

PULSE BIOSCIENCES, INC.
(Exact name of registrant as specified in its charter)

| | |
|---|---|
| Delaware (State or other jurisdiction of incorporation or organization) | 46-5696597 (I.R.S. Employer Identification Number) |
| 3957 Point Eden Way Hayward, California 94545 (510) 906-4600 (Address, including zip code, and telephone number, including area code, of registrant's principal executive offices) | |

Darrin R. Uecker
 President and Chief Executive Officer
 Pulse Biosciences, Inc.
 3957 Point Eden Way
 Hayward, California
 (510) 906-4600
 (Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Andrew D. Hoffman
 Wilson Sonsini Goodrich & Rosati
 650 Page Mill Road
 Palo Alto, CA 94304
 (650) 493-9300

Sandra A. Gardiner
 Chief Financial Officer, Executive
 Vice President of Finance and
 Administration, Secretary and
 Treasurer
 Pulse Biosciences, Inc.
 3957 Point Eden Way
 Hayward, California 94545
 (510) 906-4600

From time to time, after the effective date of this Registration Statement
 (Approximate date of commencement of proposed sale to the public)

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

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

| | | | |
|-------------------------|--------------------------|---------------------------|-------------------------------------|
| Large Accelerated filer | <input type="checkbox"/> | Accelerated filer | <input checked="" type="checkbox"/> |
| Non-accelerated filer | <input type="checkbox"/> | Smaller reporting company | <input checked="" type="checkbox"/> |
| | | Emerging growth company | <input checked="" type="checkbox"/> |

If an emerging growth company, indicate by check mark if the registrant has selected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

| Title of Each Class of Securities to be Registered ⁽¹⁾ | Amount To Be Registered | Proposed Maximum Offering Price Per Unit or Share | Proposed Maximum Aggregate Offering Price | Amount of Registration Fee |
|---|-------------------------|---|---|----------------------------|
| Common Stock, \$0.001 par value per share | — | — | \$30,000,000 ⁽³⁾ | \$3,894.00 ⁽²⁾ |
| Subscription rights to purchase common stock | — | — | — | — ⁽³⁾ |

- This registration statement relates to: (a) non-transferable subscription rights to purchase the registrant's common stock, which subscription rights are to be issued to holders of the registrant's common stock on a pro rata basis without consideration, and (b) the shares of the registrant's common stock issuable upon the exercise of such non-transferable subscription rights pursuant to the rights offering.
- Calculated pursuant to Rule 457(o) based on an estimate of the proposed maximum offering price. The actual number of subscription rights and shares of the registrant's common stock to be issued in connection with the rights offering will be determined based on the market price of the registrant's common stock at a future date.
- The subscription rights are being issued without consideration. Pursuant to Rule 457(g), no separate registration fee is payable with respect to the subscription rights being offered hereby since the subscription rights are being registered in the same registration statement as the securities to be offered pursuant thereto.

The registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until this Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

PROSPECTUS

SUBJECT TO COMPLETION, DATED APRIL 6, 2020



**Pulse Biosciences, Inc.
Up to \$30,000,000 of Shares of Common Stock**

Pulse Biosciences, Inc. is distributing at no charge to the holders of our common stock, par value \$0.001 per share, non-transferable subscription rights to purchase up to \$30,000,000 of shares of our common stock at a subscription price per share equal to the lesser of (i) \$[•] (the "Initial Price") and (ii) [•] on the Expiration Date (as defined below) (the "Alternate Price"), as provided herein. Each stockholder will receive one subscription right for each share of our common stock owned at 5:00 p.m., Eastern Time, on [•], 2020 and each subscription right will entitle its holder to purchase [•] shares of our common stock at the Initial Price. To the extent that the Alternate Price is lower than the Initial Price, we will issue additional shares in the rights offering. If you fully exercise your basic subscription right and other stockholders do not fully exercise their basic subscription rights, you may also exercise an over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to the availability and pro rata allocation of shares among persons exercising this over-subscription right. If all the rights were exercised, the total purchase price of the shares offered in this rights offering would be \$30 million.

The purpose of this rights offering is to raise equity capital in a cost-effective manner that provides all of our existing stockholders the opportunity to participate. The net proceeds will be used for general working capital purposes, including the ongoing investment in current and future clinical studies evaluating the safety and efficacy of Pulse Biosciences' proprietary Nano-Pulse Stimulation™ (NPS) technology, the development and enhancement of Pulse Biosciences' CellFX® (CellFX) System, obtaining regulatory clearance for our CellFX System, sales and marketing activities and general corporate operations.

The subscription rights will be distributed and exercisable beginning on [•], 2020, the record date of this rights offering. The subscription rights will expire and will have no value if they are not exercised prior to the expiration date of this rights offering, which is currently expected to be 5:00 p.m. Eastern Time, on [•], 2020 (the "Expiration Date"), unless we, in our sole discretion, extend the period for exercising the subscription rights. We will extend the duration of the rights offering as required by applicable law, and may choose to extend the rights offering if we decide that changes in the market price of our common stock warrant an extension or if we decide that the degree of participation in this rights offering by holders of our common stock is less than the level we desire. You should carefully consider whether or not to exercise your subscription rights before the Expiration Date. We reserve the right to cancel the rights offering at any time before the expiration of the rights offering, for any reason.

Robert W. Duggan, chairman of our board of directors and the beneficial owner of approximately 43% of our outstanding common stock prior to this rights offering, has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to availability, but has not made any formal binding commitment to do so.

There is no minimum number of shares that we must sell in order to complete the rights offering. If you exercise your rights in full, you may also exercise an over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to the availability and allocation of shares among persons exercising this over-subscription right and certain other limitations as further described elsewhere in this prospectus. Stockholders who do not participate in the rights offering will continue to own the same number of shares, but will own a smaller percentage of the total shares outstanding to the extent that other stockholders participate in the rights offering. Rights that are not exercised by the Expiration Date will expire and have no value.

We are distributing the rights and offering the underlying shares of common stock directly to you. We have not employed any brokers, dealers or underwriters in connection with the solicitation or exercise of rights in the rights offering and no commissions, fees or discounts will be paid in connection with the rights offering. Broadridge Corporate Issuer Solutions, Inc. is acting as the subscription agent and information agent for the rights offering. While certain of our directors, officers and other employees may solicit responses from you, those directors, officers and other employees will not receive any commissions or compensation for their services other than their normal compensation.

The subscription rights may not be sold or transferred except as required by operation of law.

Our common stock is listed on the Nasdaq Capital Market under the symbol "PLSE." On April 3, 2020, the last reported sale price for our common stock on the Nasdaq Capital Market was \$6.56 per share.

Investing in our common stock involves risks. You should carefully review and consider the information contained in this prospectus, including the risk factors beginning on page 17 of this prospectus, as well as the risk factors and other information contained in any documents we incorporate by reference into this prospectus before exercising your subscription rights. See "Where You Can Find Additional Information" beginning on page 44. Neither the Securities and Exchange Commission nor any state securities regulators have approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is [•], 2020.

TABLE OF CONTENTS

| | <u>Page</u> |
|--|--------------------|
| About This Prospectus | 1 |
| Cautionary Note Regarding Forward-Looking Statements | 2 |
| Prospectus Summary | 3 |
| Questions and Answers About The Rights Offering | 9 |
| Risk Factors | 17 |
| Use of Proceeds | 26 |
| Description of Capital Stock | 27 |
| Dilution | 30 |
| The Rights Offering | 31 |
| Material U.S. Federal Income Tax Consequences | 39 |
| Plan of Distribution | 42 |
| Legal Matters | 43 |
| Experts | 43 |
| Incorporation by Reference | 43 |
| Where You Can Find Additional Information | 44 |

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the United States Securities and Exchange Commission (the “SEC”). Under this registration statement, we may distribute, at any time and from time to time, in one or more offerings, non-transferable subscription rights to purchase up to \$30,000,000 of shares of our common stock.

You should only rely on the information contained or incorporated by reference in this prospectus. No person has been authorized to give any information or make any representations other than those contained or incorporated by reference in this prospectus in connection with the offering described herein and therein, and, if given or made, such information or representations must not be relied upon as having been authorized by us or the selling stockholders.

You should read the entire prospectus, as well as the documents incorporated by reference into this prospectus, before making an investment decision. Neither the delivery of this prospectus nor any sale made hereunder shall under any circumstances imply that the information contained or incorporated by reference herein is correct as of any date subsequent to the date hereof, as applicable. You should assume that the information appearing in this prospectus, or any document incorporated by reference is accurate only as of the date of the applicable documents, regardless of the time of delivery of this prospectus or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

This prospectus is neither an offer to sell nor a solicitation of an offer to buy any securities other than those registered by this prospectus, nor it is an offer to sell or a solicitation of an offer to buy securities in any jurisdiction where an offer or solicitation would be unlawful.

Unless the context requires otherwise, references in this prospectus to “Pulse,” “Pulse Biosciences,” the “Company,” “we,” “us” and “our” refer to Pulse Biosciences, Inc., a Delaware corporation, and our consolidated subsidiaries, unless expressly indicated or the context otherwise requires. This prospectus, including the documents incorporated herein by reference, contains references to a number of trademarks that are our registered trademarks or those of our affiliates, or trademarks for which we or our affiliates have pending registration applications or common law rights. This prospectus may also include trade names, trademarks and service marks of other companies and organizations. Pulse Biosciences, CellFX, Nano-Pulse Stimulation, NPS and the stylized logos are among the trademarks and/or registered trademarks of Pulse Biosciences, Inc. in the United States (U.S.) and in other countries.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus includes “forward-looking statements”, as such term is used within the meaning of the Private Securities Litigation Reform Act of 1995. These “forward-looking statements” are not based on historical fact and involve assessments of certain risks, developments, and uncertainties in our business looking to the future. Such forward-looking statements can be identified by the use of terminology such as “may”, “will”, “could”, “would”, “should”, “expect”, “anticipate”, “estimate”, “intend”, “continue”, “plan”, “potential”, or “believe”, or the negatives or other variations of these terms or comparable terminology. Forward-looking statements may include projections, forecasts, or estimates of future performance and developments. Forward-looking statements contained in this prospectus are based upon assumptions and assessments that we believe to be reasonable as of the date of this prospectus. Whether those assumptions and assessments will be realized will be determined by future factors, developments, and events, which are difficult to predict and may be beyond our control. Actual results, factors, developments, and events may differ materially from those we assumed and assessed. Risks, uncertainties, contingencies, and developments, including those identified in the section titled “Risk Factors” beginning on page [17](#) of this prospectus and in our most recent Annual Report on Form 10-K, subsequent quarterly reports on Form 10-Q and other filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), incorporated by reference herein, could cause our future operating results to differ materially from those set forth in any forward-looking statement. There can be no assurance that any such forward-looking statement, projection, forecast or estimate contained can be realized or that actual returns, results, or business prospects will not differ materially from those set forth in any forward-looking statement. Given these uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements. We disclaim any obligation to update any such factors or to publicly announce the results of any revisions to any of the forward-looking statements contained herein to reflect future results, events or developments.

PROSPECTUS SUMMARY

This summary description about us and our business highlights selected information contained elsewhere in this prospectus or incorporated in this prospectus by reference. This summary does not contain all of the information you should consider before investing in our common stock. You should carefully read this entire prospectus, including each of the documents incorporated herein or therein by reference, before making an investment decision.

Overview

We are a novel bioelectric medicine company committed to health innovation that improves and potentially extends the lives of patients. We are pursuing regulatory clearance from the U.S. Food and Drug Administration (“FDA”) to market our first product, our proprietary CellFX® (“CellFX”) System. The CellFX System utilizes its patented Nano-Pulse Stimulation™ (“NPS”) technology to treat a variety of applications for which an optimal solution remains unfulfilled. NPS is a proprietary technology that delivers nanosecond duration pulses of high amplitude electrical energy to non-thermally clear targeted cells while sparing adjacent non-cellular tissue. The cell-specific effects of NPS technology have been validated in a series of completed and ongoing clinical studies.

We have incurred substantial operating losses and have used cash in our operating activities since inception. Our ability to continue as a going concern over the next twelve months following this registration statement is dependent upon raising financing from this rights offering or other means to maintain current operations and continue research and development efforts. Based on our current operating plan, if we are not successful in raising this rights offering or other means, we believe we will not have sufficient cash and cash equivalents on hand to support current operations for at least twelve months from the date of this prospectus. To finance our operations beyond that point, we will need to raise additional capital, which cannot be assured. There is no assurance that this rights offering will be successful, or that additional financing will be available when needed or that management will be able to obtain financing on terms acceptable to us.

Robert W. Duggan, the beneficial owner of approximately 43% of our outstanding common formal stock prior to this rights offering, has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to availability, but has not made any formal binding commitment to do so. If other stockholders do not exercise their subscription rights and Mr. Duggan exercises all of his subscription rights, Mr. Duggan would be the only stockholder to subscribe for shares in connection with this rights offering, which would result in Mr. Duggan becoming the beneficial owner of approximately [•]% of our common stock. Mr. Duggan’s beneficial ownership following the completion of the rights offering, assuming no other stockholders subscribe for shares and Mr. Duggan exercises all of his subscription rights, is calculated by adding 9,043,648, which is the number of shares Mr. Duggan owned prior to this rights offering to [•], which is the approximate number of shares we will issue in this rights offering assuming no additional shares of common stock are issued by us prior to consummation of the rights offering and assuming all offered shares are sold in the rights offering at the Initial Price. Percentages are calculated based on [•] shares of common stock outstanding as of [•], 2020. If Mr. Duggan acquires a majority of our common stock, we would be considered a “controlled” company under the Nasdaq Stock Market rules and would be exempt from the obligation to comply with certain Nasdaq Stock Market corporate governance requirements.

Our long-term success is dependent upon our ability to successfully develop, commercialize, and market our products and technologies, earn revenue, obtain additional capital when needed, and ultimately achieve profitable operations. As of December 31, 2019, we had cash, cash equivalents and investments of \$25.4 million. During the twelve months ended December 31, 2019, we incurred a net loss of \$47.0 million and used \$34.2 million in cash for operating activities. In addition, we had an accumulated deficit of \$122.7 million as of December 31, 2019.

Corporate Information

Pulse Biosciences, Inc., formerly Electroplate, Inc., was incorporated in the State of Nevada on May 19, 2014, and was reincorporated in the State of Delaware on June 18, 2018. Our corporate offices are located at 3957 Point Eden Way, Hayward, California 94545, and our telephone number is (510) 906-4600. We maintain a website at www.pulsebiosciences.com where general information about us is available. Our website, and the information contained therein, or that can be accessed through, our website, is not a part of this prospectus, and the inclusion of our website address is an inactive textual reference only.

We are an “emerging growth company” as defined in the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”) as well as a “smaller reporting company”. We will remain an emerging growth company until the earliest to occur of (1) the last day of the fiscal year in which we have \$1.07 billion or more in annual revenue; (2) the date we qualify as a “large accelerated filer,” with at least \$700 million of equity securities held by non-affiliates; (3) the date on which we have issued, in any three-year period, more than \$1.0 billion in non-convertible debt securities; or (4) the last day of the fiscal year ending after the fifth anniversary of our initial public offering.

The Offering

Securities Offered

We are distributing to you, at no charge, one non-transferable subscription right for each share of our common stock that you owned as of 5:00 p.m., Eastern Time, on [•], 2020, either as a holder of record or, in the case of shares held of record by custodian banks, brokers, dealers or other nominees on your behalf, as a beneficial owner of such shares

Basic Subscription Rights

Each subscription right will entitle the holder to purchase [•] shares of our common stock at the Initial Price (as defined below), which shall be paid in cash. To the extent that the Alternate Price (as defined below) is lower than the Initial Price, we will issue additional shares in the rights offering.

Over-Subscription Rights

We do not expect that all of our stockholders will exercise all of their basic subscription rights. If you fully exercise your basic subscription right and other stockholders do not fully exercise their basic subscription rights, the over-subscription right of each right entitles you to subscribe for additional shares of our common stock unclaimed by other holders of rights in this rights offering at the same subscription price per share. If an insufficient number of shares is available to fully satisfy all over-subscription right requests, the available shares will be distributed proportionately among rights holders who exercise their over-subscription right based on the number of shares each rights holder subscribed for under the basic subscription right. The proration process will be repeated until all common shares have been allocated or all over-subscription exercises have been fulfilled, whichever occurs earlier.

Subscription Price

The subscription price will be the lesser of (i) \$[•] (the “Initial Price”) and (ii) [•] on the Expiration Date (as defined below) (the “Alternate Price”). Subscribers must fund their subscriptions pursuant to both the basic subscription right and over-subscription right at the Initial Price. To be effective, any payment related to the exercise of a right must clear prior to the expiration of the rights offering.

Excess Subscription Amount

If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any excess subscription amounts paid by a subscriber (the “Excess Subscription Amount”) will be put towards the purchase of additional shares in the rights offering. For more information, see “Questions and Answers About the Rights Offering” below.

| | |
|--|---|
| Record Date | 5:00 p.m., Eastern Time, on [•], 2020. |
| Expiration of the Rights Offering | 5:00 p.m., Eastern Time, on [•] (the “Expiration Date”), subject to extension or earlier termination. |
| Amendment, Extension and Termination | We have the option to extend the rights offering and the period for exercising your subscription rights, although we do not presently intend to do so. The board of directors, in its sole discretion, reserves the right to amend or modify the terms of the rights offering. We also reserve the right to terminate the rights offering at any time prior to the Expiration Date for any reason, in which event all funds received in connection with the rights offering will be returned without interest or deduction to those persons who exercised their subscription rights. |
| Fractional Shares | We will not issue fractional shares, but rather will round down the aggregate number of shares you are entitled to receive to the nearest whole number. Any Excess Subscription Amount resulting from the reduction of the subscription price from the Initial Price to the Alternate Price will be put towards the purchase of additional shares in the rights offering (either towards your basic subscription right, if available, or towards the over-subscription right if you have already exercised your basic subscription right in full). |
| Non-Transferability of Rights | The subscription rights may not be sold, transferred or assigned and will not be listed for trading on the Nasdaq Capital Market or any other stock exchange or trading market. |
| Procedure for Exercising Rights | You may exercise your subscription rights by properly completing and executing your rights certificate and delivering it, together with the subscription price for each share of common stock for which you subscribe under the basic subscription right and over-subscription right, to the subscription agent, Broadridge Corporate Issuer Solutions, Inc., on or prior to the Expiration Date. If you use mail, we recommend that you use insured, registered mail, with return receipt requested. |
| How Rights Holders Can Exercise Rights Through Others | If you hold our common stock through a custodian bank, broker, dealer, or other nominee, we will ask your custodian bank, broker, dealer or other nominee to notify you of the rights offering. If you wish to exercise your rights, you will need to have your custodian bank, broker, dealer or other nominee act for you. To indicate your decision, you should complete and return to your custodian bank, broker, dealer or other nominee the form entitled “Beneficial Owners Election Form.” You should receive this form from your custodian bank, broker, dealer or other nominee with the other rights offering materials. You should contact your custodian bank, broker, dealer or other nominee if you believe you are entitled to participate in the rights offering but you have not received this form. |

How Foreign Stockholders and Other Stockholders Can Exercise Rights

The subscription agent will not mail rights certificates to you if you are a stockholder whose address is outside the United States or if you have an Army Post Office or a Fleet Post Office address. Instead, we will have the subscription agent hold the subscription rights certificates for your account. To exercise your rights, you must notify the subscription agent prior to 11:00 a.m., Eastern Time, at least three (3) business days prior to the Expiration Date, and establish to the satisfaction of the subscription agent that it is permitted to exercise your subscription rights under applicable law. If you do not follow these procedures by such time, your rights will expire and will have no value.

No Revocation

Once you submit the form of rights certificate to exercise any subscription rights, you may not revoke or change your exercise or request a refund of monies paid. All exercises of rights are irrevocable, even if you subsequently learn information about us that you consider to be unfavorable. You should not exercise your subscription rights unless you are certain that you wish to purchase additional shares of our common stock in the rights offering.

Payment Adjustments

If you send a payment that is insufficient to purchase the number of shares requested, or if the number of shares requested is not specified in the rights certificate, the payment received will be applied to exercise your subscription rights to the extent of the payment. If the payment exceeds the amount necessary for the full exercise of your subscription rights, including any over-subscription rights exercised and permitted and, on the Expiration Date, the Alternate Price is lower than the Initial Price, any Excess Subscription Amount will be put towards the purchase of additional shares in the rights offering (either towards your Basic Subscription Right, if available, or towards the Over-Subscription Right if you have already exercised your Basic Subscription Right in full). Otherwise, the excess will be returned to you as soon as practicable, in the form in which made. You will not receive interest or a deduction on any payments refunded to you under the rights offering.

Conditions

See “The Rights Offering — Conditions to the Rights Offering” beginning on page [32](#).

Purchase Commitments

Robert W. Duggan, the beneficial owner of approximately 43% of our outstanding common stock prior to this rights offering, has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to availability, but has not made any formal binding commitment to do so. If other stockholders do not exercise their subscription rights, and Mr. Duggan exercises all of his subscription rights,

No Recommendation to Rights Holders

Mr. Duggan would be the only stockholder to subscribe for shares in connection with this rights offering, which would result in Mr. Duggan becoming the beneficial owner of approximately [•]% of our common stock. See the subsection titled “Overview” above for information on how this percentage is calculated.

Although our directors are investing their own money in the rights offering, our board of directors is making no recommendation regarding your exercise of the subscription rights. You are urged to make your decision based on your own assessment of our business and the rights offering. An investment in shares of our common stock must be made according to your evaluation of your own best interests and after considering all of the information herein, including the section titled “Risk Factors” beginning on page [17](#) of this prospectus. Neither we nor our board of directors are making any recommendation regarding whether you should exercise your subscription rights.

Use of Proceeds

Although we cannot determine what the actual net proceeds from the sale of the shares of common stock in the rights offering will be until the rights offering is completed, assuming all subscription rights are exercised, we estimate that the aggregate net proceeds from the rights offering, after deducting estimated offering expenses, will be approximately \$29.6 million. We currently intend to use the net proceeds from this offering, if any, for general working capital purposes, including the ongoing investment in current and future clinical studies evaluating the safety and efficacy of Pulse Biosciences’ proprietary NPS technology, the development and enhancement of Pulse Biosciences’ CellFX System, obtaining regulatory clearance for our CellFX System, sales and marketing activities and general corporate operations. We may also use a portion of the net proceeds from this offering to acquire or invest in complementary businesses, technologies, product candidates or other intellectual property, although we have no present commitments or agreements to do so. See “Use of Proceeds” beginning on page [26](#).

Material U.S. Federal Income Tax Consequences.

Although the authorities governing transactions such as this rights offering are complex and unclear in certain respects, we believe and intend to take the position that the distribution of subscription rights to you with respect to your shares of common stock should generally be treated, for United States federal income tax purposes, as a non-taxable distribution if you are a United States person. For a detailed discussion, see “Material U.S. Federal Income Tax Consequences” beginning on page [39](#). You should consult your tax advisor as to the particular consequences to you of the rights offering.

Issuance of Our Common Stock

If you purchase shares of common stock through the Rights Offering, we will issue those shares to you in book-entry, or uncertificated, form as soon as practicable after the completion of the Rights Offering. Stock certificates will not be issued for shares of our common stock purchased in the rights offering.

Listing of Common Stock

Our common stock is listed on the Nasdaq Capital Market under the symbol “PLSE.” The shares to be issued in connection with the rights offering will also be listed on the Nasdaq Capital Market under the same symbol. The subscription rights will not be listed for trading on the Nasdaq Capital Market or any other stock exchange or market.

Fees and Expenses

We are not charging any fee or sales commission to issue subscription rights to you or to issue shares to you if you exercise your subscription rights (other than the subscription price). If you exercise your subscription rights through a custodian bank, broker, dealer or other nominee, you are responsible for paying any fees your nominee may charge you.

Treatment of Warrants

As of December 31, 2019, we had outstanding warrants to purchase an aggregate of 167,847 additional shares of common stock. Holders of our warrants may not participate in the rights offering without first exercising their warrants for shares of common stock.

Subscription Agent

Broadridge Corporate Issuer Solutions, Inc.

Information Agent

You should direct any questions or requests for assistance concerning the method of subscribing for common shares or for additional copies of this prospectus to the information agent, Broadridge Corporate Issuer Solutions, Inc., toll free at 1-888-789-8409, by e-mail at shareholder@broadridge.com, or by mail at:
Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718

Risk Factors

Before investing in our common stock, you should carefully read and consider the information set forth in “Risk Factors” beginning on page [17](#) of this prospectus and all other information appearing elsewhere and incorporated by reference in this prospectus.

For additional information concerning the rights offering, see “The Rights Offering,” beginning on page [31](#).

The information set forth in this prospectus is based on 20,825,469 shares of common stock outstanding as of December 31, 2019, and assumes that no options or warrants are exercised, RSUs vest, new options are issued under our equity incentive plans or we otherwise issue additional shares of common stock prior to consummation of the rights offering.

QUESTIONS AND ANSWERS ABOUT THE RIGHTS OFFERING

The following are examples of what we anticipate will be common questions about the rights offering. The answers are based on selected information included elsewhere in this prospectus. The following questions and answers do not contain all of the information that may be important to you and may not address all of the questions that you may have about the rights offering. This prospectus and the documents incorporated by reference contain more detailed descriptions of the terms and conditions of the rights offering and provide additional information about us and about our business, including potential risks related to the rights offering, our common stock, and our business.

Exercising the subscription rights and investing in our securities involve a high degree of risk. We urge you to carefully read the section titled “Risk Factors” beginning on page [17](#) of this prospectus and all other information included in, or incorporated by reference into, this prospectus in its entirety before you decide whether to exercise your subscription rights.

Q: *What is the rights offering?*

A: We are distributing to you, at no charge, one non-transferable subscription right for each share of our common stock that you owned as of 5:00 p.m., Eastern Time, on [•], 2020, either as a holder of record or, in the case of shares held of record by custodian banks, brokers, dealers or other nominees on your behalf, as a beneficial owner of such shares.

Q: *Why are we conducting the rights offering?*

A: The purpose of this rights offering is to raise equity capital in a cost-effective manner that provides all of our existing stockholders the opportunity to participate. We are conducting the rights offering to provide for our general working capital purposes, including the ongoing investment in current and future clinical and pre-clinical studies evaluating the safety and efficacy of Pulse Biosciences’ proprietary NPS technology, the development and enhancement of Pulse Biosciences’ CellFX System, obtaining regulatory clearance for our CellFX System, sales and marketing activities and general corporate operations. We may also use a portion of the net proceeds from this offering to acquire or invest in complementary business, technologies, product candidates or other intellectual property, although we have no present commitments or agreements to do so. For a detailed discussion, see “Use of Proceeds” beginning on page [26](#).

Q: *How was the subscription price determined?*

A: In determining the subscription price, our board of directors, with the advice and input of management and advisors, considered a number of factors, including: the likely cost of capital from other sources, the price at which our stockholders might be willing to participate in the rights offering, historical and current trading prices for our common stock, our need for liquidity and capital and the desire to provide an opportunity to our stockholders to participate in the rights offering on a pro rata basis. In conjunction with its review of these factors, our board of directors also reviewed a range of subscription prices in various prior rights offerings of public companies. The subscription price is not necessarily related to our book value, net worth or any other established criteria of value and may or may not be considered the fair value of our common stock to be offered in the rights offering. We cannot give any assurance that our common shares will trade at or above the subscription price in any given time period. You should not consider the subscription price as an indication of value of us or our common stock. You should obtain a current quote for our common stock before exercising your subscription rights and make your own assessment of our business and financial condition, our prospects for the future, and the terms of the rights offering.

Q: *Why did our board of directors elect to price the rights offering at the lesser of the Initial Price and the Alternate Price?*

A: Our board of directors elected to price the rights offering at the lesser of the Initial Price and the Alternate Price to attempt to protect stockholders from any decline in the price of the Company’s common stock which may occur after the commencement of the rights offering and prior to the Expiration Date. While there is no guarantee that this mechanism will sufficiently protect stockholders that exercise their rights (see “Risk Factors” below), our board of directors and management wanted to encourage participation in the offering and strike what they believe to be a fair balance between the capital needs of the Company and the fair value of its common stock sold to the stockholders in this offering.

Q: *Because the final subscription price may not be determined until the Expiration Date, how much money should I send to the subscription agent if I want to exercise my rights?*

A: For purposes of initially exercising your rights, you should assume that the subscription price will equal the Initial Price of \$[•] per share. Accordingly, for each right that you would like to exercise, including any rights that you would like the opportunity to exercise pursuant to the over-subscription right, you should send \$[•] per share. For assistance you may contact the information agent, Broadridge Corporate Issuer Solutions, Inc., toll free at 1-888-789-8409 or by e-mail at shareholder@broadridge.com.

Q: *What happens if the final subscription price is less than the Initial Price?*

A: If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any Excess Subscription Amounts paid by a subscriber will be put towards the purchase of additional shares in the rights offering. For example, assume that the initial subscription price is \$5.00 per share. If you want to exercise your rights to purchase 100 shares, you will promptly send payment to the subscription agent in the amount of \$500. If the final subscription price decreases to \$4.00 per share, you will receive 125 shares rather than 100 shares and no cash back. Detailed instructions to exercise your rights, including regarding payment of the subscription price, are also included on your rights certificate. For assistance you may contact the information agent, Broadridge Corporate Issuer Solutions, Inc., toll free at 1-888-789-8409 or by e-mail at shareholder@broadridge.com.

Q: *What is the basic subscription right?*

A: Each subscription right gives our stockholders the right to purchase [•] shares of Pulse Biosciences' common stock at the Initial Price, which shall be payable in cash and subject to the limits described below. To the extent that the Alternate Price is lower than the Initial Price, we will issue additional shares in the rights offering. We have granted to you, as a stockholder of record as of 5:00 p.m., Eastern Time, on the record date, one subscription right for each share of our common stock you owned at that time. For example, if you owned 100 shares of our common stock as of 5:00 p.m., Eastern Time, on the record date, you would have received 100 subscription rights and would have the right to purchase [•] shares of common stock at the Initial Price subject to certain limitations. You may exercise all or a portion of your basic subscription rights or you may choose not to exercise any subscription rights at all. However, if you exercise fewer than all of your basic subscription rights, you will not be entitled to purchase any additional shares pursuant to the over-subscription right.

Q: *What is the over-subscription right?*

A: We do not expect all of our stockholders to exercise all of their basic subscription rights. The over-subscription right provides stockholders that exercise all of their basic subscription rights the opportunity to purchase the shares that are not purchased by other stockholders. If you fully exercise your basic subscription right, the over-subscription right of each right entitles you to subscribe for additional shares of our common stock unclaimed by other holders of rights in this rights offering at the same subscription price per share. If an insufficient number of shares is available to fully satisfy all over-subscription right requests, the available shares will be distributed proportionately among rights holders who exercise their over-subscription right based on the number of shares each rights holder subscribed for under the basic subscription right. The proration process will be repeated until all common shares have been allocated or all over-subscription exercises have been fulfilled, whichever occurs earlier.

In order to properly exercise your over-subscription right, you must deliver the subscription payment for exercise of your over-subscription right before the expiration of the rights offering. Because we will not know the total number of unsubscribed shares before the expiration of the rights offering, if you wish to maximize the number of shares you purchase pursuant to your over-subscription right, you will need to deliver payment in an amount equal to the aggregate subscription price for the maximum number of shares available, assuming that no stockholder other than you has purchased any shares pursuant to such stockholder's basic subscription right and over-subscription right. Any excess subscription payments received by the subscription agent caused by proration will be returned by the subscription agent to you by mail, without interest or penalty, as soon as practicable after the Expiration Date of the rights offering. The subscription agent will return any excess payments in the form in which it was made. Any Excess Subscription Amount resulting from the reduction of the subscription price from the Initial Price to the Alternate Price will be put towards the purchase of additional

TABLE OF CONTENTS

shares in the rights offering (either towards your basic subscription right, if available, or towards the over-subscription right if you have already exercised your basic subscription right in full). See “The Rights Offering — Subscription Rights — Over-Subscription Rights” beginning on page [31](#).

Q: *Who will receive subscription rights?*

A: Holders of our common stock will receive one non-transferable subscription right for each share of common stock owned as of [•], 2020, the record date.

Q: *How many shares may I purchase if I exercise my subscription rights?*

A: You will receive one non-transferable subscription right for each share of our common stock that you owned on [•], 2020, the record date. Each subscription right evidences a right to purchase [•] shares of our common stock at the Initial Price, which shall be paid in cash. To the extent that the Alternate Price is lower than the Initial price, we will issue additional shares in the rights offering. You may exercise any number of your subscription rights.

Q: *Am I required to subscribe in the rights offering?*

A: No.

Q: *What happens if I choose not to exercise my subscription rights?*

A: If you choose not to exercise your subscription rights you will retain your current number of shares of common stock of Pulse Biosciences. As a result, the percentage of the common stock of Pulse Biosciences that you own will decrease and your voting rights and other rights will be diluted.

Q: *Am I required to exercise all of the subscription rights I receive in the rights offering?*

A: No. You may exercise any number of your subscription rights, or you may choose not to exercise any subscription rights. If you do not exercise any subscription rights, the number of shares of our common stock you own will not change; however, you will own a smaller proportional interest in us than if you had timely exercised all or a portion of your subscription rights. If you choose not to exercise your subscription rights or you exercise fewer than all of your subscription rights and other stockholders fully exercise their subscription rights or exercise a greater proportion of their subscription rights than you exercise, the percentage of our common stock owned by these other stockholders will increase relative to your ownership percentage, and your voting and other rights in us will likewise be diluted. In addition, if you do not exercise your basic subscription right in full, you will not be entitled to participate in the over-subscription right.

Q: *If I am a holder of stock options or warrants, may I participate in the rights offering?*

A: No. Holders of stock options or warrants on the record date will not be entitled to participate in the rights offering, except to the extent they hold shares of our common stock on the record date.

Q: *Will the equity awards of our employees, officers and directors automatically convert into common stock in connection with the rights offering?*

A: Holders of our equity awards, including outstanding stock options and restricted stock units, will not receive rights in the rights offering in connection with such equity awards, but will receive subscription rights in connection with any shares of our common stock held as of the record date.

Q: *How soon must I act to exercise my subscription rights?*

A: If you received a rights certificate and elect to exercise any or all of your subscription rights, the subscription agent must receive your completed and signed rights certificate and payment (and your payment must clear) prior to the expiration of the rights offering, which is [•], 2020, at 5:00 p.m., Eastern Time. If you hold your shares in the name of a custodian bank, broker, dealer or other nominee, your nominee may establish a deadline prior to 5:00 p.m., Eastern Time, on [•], 2020 by which you must provide it with your instructions to exercise

TABLE OF CONTENTS

your subscription rights and payment for your shares. Our board of directors may, in its discretion, extend the rights offering one or more times. Our board of directors may cancel or amend the rights offering at any time before its expiration. In the event that the rights offering is cancelled, all subscription payments received will be returned promptly, without interest or penalty.

Q: *Does Pulse Biosciences need to achieve a minimum participation level in order to complete the rights offering?*

A: No. We may choose to consummate, amend, extend or terminate the rights offering regardless of the number of shares actually purchased.

Q: *Can Pulse Biosciences terminate the rights offering?*

A: Yes. Our board of directors may decide to terminate the rights offering at any time prior to the expiration of the rights offering, for any reason. If we cancel the rights offering, any money received from subscribing stockholders will be refunded as soon as practicable, without interest or a deduction on any payments refunded to you under the rights offering. See “The Rights Offering — Expiration of the Rights Offering and Extensions, Amendments and Termination” beginning on page [32](#).

Q: *May I transfer my subscription rights if I do not want to purchase any shares?*

A: No. Should you choose not to exercise your rights, you may not sell, give away or otherwise transfer your rights. However, rights will be transferable as required by operation of law, for example, upon the death of the recipient.

Q: *When will the rights offering expire?*

A: The subscription rights will expire and will have no value, if not exercised prior thereto, at 5:00 p.m., Eastern Time, on [•], 2020, unless we decide to extend the rights offering Expiration Date until some later time or terminate it earlier. See “The Rights Offering — Expiration of the Rights Offering and Extensions, Amendments and Termination” beginning on page [32](#). The subscription agent must actually receive all required documents and payments in cash, as provide herein, before the Expiration Date. There is no maximum duration for the rights offering.

Q: *Is there a guaranteed delivery period?*

A: No. There is no guaranteed delivery period in connection with this rights offering, so you must ensure that you properly complete all required steps prior to 5:00 p.m., Eastern Time, on [•], 2020, unless we decide to extend the rights offering Expiration Date until some later time or terminate it earlier.

Q: *How do I exercise my subscription rights if I own shares in certificate form?*

A: You may exercise your subscription rights by properly completing and executing your rights certificate and delivering it, together in full with the subscription price for each share of common stock you subscribe for, to the subscription agent on or prior to the Expiration Date. If you use mail, we recommend that you use insured, registered mail, return receipt requested.

If you send a payment that is insufficient to purchase the number of shares you requested, or if the number of shares you requested is not specified in the forms, the payment received will be applied to exercise your subscription rights to the fullest extent possible based on the amount of the payment received, subject to the availability of shares in the rights offering and the elimination of fractional shares. Any excess subscription payments received by the subscription agent will be returned promptly, without interest, following the expiration of the rights offering.

Q: *What form of payment is required to purchase the shares of our common stock?*

A: As described in the instructions accompanying the rights certificate, you must timely pay the full subscription price for the full number of shares of Common Stock you wish to acquire under your subscription rights at the Initial Price by delivering to Broadridge Corporate Issuer Solutions, Inc., the subscription agent for this rights offering, a certified check, bank draft, cashier’s check, personal check that clears before the Expiration Date, money order, or wire transfer of funds.

TABLE OF CONTENTS

Please note that funds paid by uncertified personal check may take at least five (5) business days to clear. Accordingly, if you wish to pay by means of an uncertified personal check, we urge you to make payment sufficiently in advance of the Expiration Date to ensure that the subscription agent receives cleared funds before that time.

Q: *What should I do if I want to participate in the rights offering but my shares are held in the name of my custodian bank, broker, dealer or other nominee?*

A: If you hold our common stock through a custodian bank, broker, dealer or other nominee, we will ask your custodian bank, broker, dealer or other nominee to notify you of the rights offering. If you wish to exercise your rights, you will need to have your custodian bank, broker, dealer or other nominee act for you. To indicate your decision, you should complete and return to your custodian bank, broker, dealer or other nominee the form entitled “Beneficial Owner Election Form” substantially in the form accompanying this prospectus. You should receive this form from your custodian bank, broker, dealer or other nominee with the other rights offering materials. You should contact your custodian bank, broker, dealer or other nominee if you believe you are entitled to participate in the rights offering but you have not received this form.

Q: *What should I do if I want to participate in the rights offering, but I am a stockholder with a foreign address or a stockholder with an Army Post Office or Fleet Post Office address?*

A: The subscription agent will not mail rights certificates to you if you are a stockholder whose address is outside the United States or if you have an Army Post Office or a Fleet Post Office address. To exercise your rights, you must notify the subscription agent prior to 11:00 a.m., Eastern Time, at least three (3) business days prior to the Expiration Date, and establish to the satisfaction of the subscription agent that it is permitted to exercise your subscription rights under applicable law. If you do not follow these procedures by such time, your rights will expire and will have no value.

Q: *Will I be charged a sales commission or a fee if I exercise my subscription rights?*

A: We will not charge a brokerage commission or a fee to rights holders for exercising their subscription rights. However, if you exercise your subscription rights through a custodian bank, broker, dealer or nominee, you will be responsible for any fees charged by your custodian bank, broker, dealer or nominee.

Q: *Are there any conditions to my right to exercise my subscription rights?*

A: Yes. We may terminate the rights offering, in whole or in part, if at any time before completion of the rights offering there is any judgment, order, decree, injunction, statute, law or regulation entered, enacted, amended or held to be applicable to the rights offering that in the sole judgment of our board of directors would or might make the rights offering or its completion, whether in whole or in part, illegal or otherwise restrict or prohibit completion of the rights offering. See “The Rights Offering — Conditions to the Rights Offering” beginning on page [32](#).

Q: *Has the board of directors made a recommendation regarding the rights offering?*

A: Neither the Company, nor our board of directors is making any recommendation as to whether or not you should exercise your subscription rights. You are urged to make your decision based on your own assessment of the rights offering, after considering all of the information herein, including the “Risk Factors” beginning on page [17](#) of this prospectus, and of your best interests.

Q: *Have any directors, officers, and/or stockholders agreed to exercise their rights?*

A: All holders of our common stock as of the record date for the rights offering will receive, at no charge, the non-transferable subscription rights to purchase shares of our common stock as described in this prospectus. To the extent that our directors and officers held shares of our common stock (including shares of restricted common stock) as of the record date, they will receive the subscription rights and, while they are under no obligation to do so, will be entitled to participate in the rights offering.

Robert W. Duggan, the beneficial owner of approximately 43% of our outstanding common stock prior to this rights offering, has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration

of the rights offering, subject to availability, but has not made any formal binding commitment to do so. If other stockholders do not exercise their subscription rights and Mr. Duggan exercises all of his subscription rights, Mr. Duggan would be the only stockholder to subscribe for shares in connection with this rights offering, which would result in Mr. Duggan becoming the beneficial owner of approximately [•]% of our common stock. See the section titled “Prospectus Summary” above for information on how this percentage is calculated. If Mr. Duggan acquires a majority of our common stock, we would be considered a “controlled” company under the Nasdaq Stock Market rules and would be exempt from the obligation to comply with certain Nasdaq Stock Market corporate governance requirements.

Q: *May stockholders in all states participate in the rights offering?*

A: Although we intend to distribute the rights to all stockholders, we reserve the right in some states to require stockholders, if they wish to participate, to state and agree upon exercise of their respective rights that they are acquiring the shares for investment purposes only, and that they have no present intention to resell or transfer any shares acquired. Our securities are not being offered in any jurisdiction where the offer is not permitted under applicable local laws.

Q: *Are there risks in exercising my subscription rights?*

A: The exercise of your subscription rights involves significant risks. Exercising your rights means buying additional shares of our common stock and should be considered as carefully as you would consider any other equity investment. Among other things, you should carefully consider the risks described under the heading “Risk Factors,” beginning on page [17](#).

Q: *How many shares of our common stock will be outstanding after the rights offering?*

A: The number of shares of our common stock that will be outstanding after the rights offering will depend on the number of shares that are purchased in the rights offering. Assuming no additional shares of common stock are issued by us prior to consummation of the rights offering and assuming all offered shares are sold in the rights offering at the Initial Price, we will issue approximately [•] shares of common stock. In that case, we will have approximately [•] shares of common stock outstanding after the rights offering. This would represent an increase of approximately [•]% in the number of outstanding shares of common stock. To the extent that the Alternate Price is lower than the Initial Price, we will issue additional shares in the rights offering and the number of shares of common stock outstanding after the rights offering will be higher.

The issuance of shares of our common stock in the rights offering will dilute, and thereby reduce, your proportionate ownership in our shares of common stock, unless you fully exercise your basic subscription rights. In addition, the issuance of shares of our common stock at a subscription price that is less than the market price as of the record date for the rights offering will likely reduce the price per share of our common stock held by you prior to the rights offering.

Q: *What will be the proceeds of the rights offering?*

A: If all rights are exercised, we will receive gross proceeds of approximately \$30 million before expenses, as provided herein. We are offering shares in the rights offering with no minimum purchase requirement. As a result, there is no assurance we will be able to sell all or any of the shares being offered, and it is not likely that all of our stockholders will participate in the rights offering.

Q: *After I exercise my rights, can I change my mind and cancel my purchase?*

A: No. Once you exercise and send in your subscription rights certificate and subscription payment, as provided herein, you cannot revoke the exercise of your subscription rights, even if you later learn information about Pulse Biosciences that you consider to be unfavorable. You should not exercise your subscription rights unless you are certain that you wish to purchase additional shares of our common stock at the Initial Price. See “The Rights Offering — No Revocation or Change” beginning on page [36](#).

Q: *What are the material U.S. Federal income tax consequences of exercising my subscription rights?*

A: Although the authorities governing transactions such as this rights offering are complex and unclear in certain respects, we believe and intend to take the position that the distribution of subscription rights to a holder with

TABLE OF CONTENTS

respect to such holder's shares of common stock should generally be treated, for United States federal income tax purposes, as a non-taxable distribution. For a detailed discussion, see "Material U.S. Federal Income Tax Consequences" beginning on page 39. You should consult your tax advisor as to the particular consequences to you of the rights offering.

Q: *If the rights offering is not completed, for any reason, will my subscription payment be refunded to me?*

A: Yes. The subscription agent will hold all funds it receives in a segregated bank account until the rights offering is completed. If the rights offering is not completed, for any reason, any money received from subscribing stockholders will be refunded in the form which paid as soon as practicable, without interest or deduction. If your shares are held in the name of a custodian bank, broker, dealer or other nominee, it may take longer for you to receive the refund of your subscription payment than if you were a record holder of your shares because the subscription agent will return payments through the record holder of your shares.

Q: *Will I receive interest on any funds I deposit with the subscription agent?*

A: No. You will not be entitled to any interest on any funds that are deposited with the subscription agent pending completion or cancellation of the rights offering. If the rights offering is cancelled for any reason, the subscription agent will return this money to subscribers, without interest or penalty, as soon as practicable.

Q: *If I exercise my subscription rights, when will I receive shares of common stock I purchased in the rights offering?*

A: We will issue those shares to you in book-entry, or uncertificated, form of our common stock purchased in the rights offering as soon as practicable after the expiration of the rights offering and after all pro rata allocations and adjustments have been completed. We will not be able to calculate the number of shares to be issued to each exercising holder until after the Expiration Date of the rights offering.

Q: *When can I sell the shares of common stock I receive upon exercise of the subscription rights?*

A: If you exercise your subscription rights, you will be able to resell the shares of common stock purchased by exercising your subscription rights once your account has been credited with those shares, provided you are not otherwise restricted from selling the shares (for example, because you are an insider or affiliate of the Company or because you possess material nonpublic information about the Company). Although we will endeavor to issue the shares as soon as practicable after completion of the rights offering, there may be a delay between the Expiration Date of the rights offering and the time that the shares are issued due to factors such as the time required to complete all necessary calculations. In addition, we cannot assure you that, following the exercise of your subscription rights, you will be able to sell the shares purchased in the rights offering at a price equal to or greater than the subscription price.

Q: *To whom should I send my forms and payment?*

A: If your shares are held in the name of a custodian bank, broker, dealer or other nominee, the nominee will notify you of the rights offering and provide you with the rights offering materials, including a form entitled "Beneficial Owners Election Form." You should send the Beneficial Owner Election form and payment, as provided therein, to the nominee, at the deadline that your nominee sets which may be earlier than the expiration of the rights offering. You should contact your custodian bank, broker, dealer or other nominee if you believe you are entitled to participate in the rights offering but you have not received this form.

If your shares are held in your name such that you are the record holder, then you should send your subscription documents, rights certificate and subscription payment, as provided herein, by first class mail or courier service to Broadridge Corporate Issuer Solutions, Inc., the subscription agent. The address for delivery to the subscription agent is as follows:

By Mail:
Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718

By Overnight Delivery:
Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS IWS
51 Mercedes Way
Edgewood, NY 11717

TABLE OF CONTENTS

Your delivery to a different address or other than by the methods set forth above will not constitute valid delivery. You, or, if applicable, your nominee, are solely responsible for ensuring the subscription agent receives your subscription documents, rights certificate, and subscription payment. You should allow sufficient time for delivery of your subscription materials to the subscription agent and clearance of payment before the expiration of the rights offering period.

Q: *What if I have other questions?*

A: If you have other questions about the rights offering, please contact our information agent, Broadridge Corporate Issuer Solutions, Inc., toll free at 1-888-789-8409, by e-mail at shareholder@broadridge.com, or by mail at:

Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before deciding to invest in our common stock, please read carefully the risks and uncertainties described below and incorporated by reference in this prospectus. These risks and uncertainties include those discussed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, which is incorporated by reference and may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. See “Incorporation by Reference” and “Where You Can Find Additional Information.” The risks described below are not the only risks facing us. Risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially affect our business, financial condition, results of operations and prospects. If any of the risks or uncertainties described in this prospectus or our SEC filings or any such additional risks and uncertainties actually occur, our business, financial condition or results of operations could be materially and adversely affected, which could cause our actual operating results to differ materially from those indicated or suggested by forward-looking statements made in this prospectus or our SEC filings or presented elsewhere by management from time to time. In that case, the trading price of our common stock could decline and you could lose all or part of your investment. Please also see “Cautionary Note Regarding Forward-Looking Statements” beginning on page 2.

Risks Related to Our Business

There is substantial doubt about our ability to continue as a going concern.

In connection with our Annual Report on Form 10-K for the year ended December 31, 2019, our independent registered public accounting firm has issued a “going concern” opinion, meaning that there is substantial doubt we can continue as an ongoing business for the next twelve months from the date that our audited consolidated financial statements in our Annual Report on Form 10-K for the year ended December 31, 2019 were issued unless we obtain additional capital. To date, we have not generated any revenue. As a result, we have incurred significant operating losses in each year since our inception and we expect to continue to incur additional losses for the next several years. In addition, in February 2020, we received a not substantially equivalent (NSE) letter from the FDA, indicating that based on the data provided, we had not demonstrated that the CellFX System is substantially equivalent to the predicate device, concluding the 510(k) review process without clearance.

Our ability to continue as a going concern over the next twelve months following this registration statement is dependent upon raising financing from this rights offering or other means to maintain current operations and continue research and development efforts. Based on our current operating plan, if we are not successful in raising this rights offering or other means, we believe we do not have sufficient cash and cash equivalents on hand to support current operations for at least twelve months from the date of this prospectus. To finance our operations beyond that point, we will need to raise additional capital, which cannot be assured. There is no assurance that this rights offering will be successful, or that additional financing will be available when needed or that management will be able to obtain financing on terms acceptable to us.

If we are unable to obtain sufficient funding, we may be unable to execute our business plan and fund operations. We may not be able to obtain additional financing on commercially reasonable terms, or at all.

We have experienced operating losses, and we expect to continue to incur operating losses for the next several years as we implement our business plan. Currently, we have no revenue and do not have arrangements in place for all the anticipated financing that would be required to fully implement our business plan. Our prior losses combined with expected future losses, have had and will continue to have, for the foreseeable future, an adverse effect on our stockholders’ equity and working capital.

We will need to raise additional capital in order to continue to execute our business plan in the future including by pursuing this rights offering to raise net proceeds of approximately \$29.6 million, assuming such rights offering is fully subscribed. There is no assurance that this rights offering will be successful, or that additional financing will be available when needed or that management will be able to obtain financing on terms acceptable to us. If we are unable to raise sufficient additional funds, we will have to scale back our operations.

We cannot give any assurance that we will be able to obtain all the necessary funding that we may need. In addition, we believe that we will require additional capital in the future to fully develop our technologies and planned products to the stage of a commercial launch. We have pursued and may pursue additional funding through various financing sources, including the private sale of our equity and debt securities, licensing fees for our

technology, joint ventures with capital partners and project type financing. If we raise funds by issuing equity or equity-linked securities, dilution to certain of our stockholders will result. Any equity securities issued may also provide for rights, preferences or privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings could impose significant restrictions on our operations. We also may seek government-based financing, such as development and research grants. There can be no assurance that funds will be available on commercially reasonable terms, if at all.

The incurrence of indebtedness or the issuance of certain equity securities could result in increased fixed payment obligations and could also result in restrictive covenants, such as limitations on our ability to incur additional debt or issue additional equity, limitations on our ability to acquire or license intellectual property rights, and other operating restrictions that could adversely affect our ability to conduct our business. In addition, the issuance of additional equity securities by us, or the possibility of such issuance, may cause the market price of our common stock to decline. In the event that we enter into collaborations or licensing arrangements to raise capital, we may be required to accept unfavorable terms. These agreements may require that we relinquish, or license to a third party on unfavorable terms, our rights to technologies or product candidates that we otherwise would seek to develop or commercialize ourselves, or reserve certain opportunities for future potential arrangements when we might otherwise be able to achieve more favorable terms. In addition, we may be forced to work with a partner on one or more of our products or market development programs, which could lower the economic value of those programs to us.

If we are unable to obtain adequate financing or financing on terms satisfactory to us when we require it, we may terminate or delay the development of one or more of our products, delay clinical trials necessary to market our products, or delay establishment of sales and marketing capabilities or other activities necessary to commercialize our products. If this were to occur, our ability to grow and support our business and to respond to market challenges could be significantly limited or we may be unable to continue operations, in which case our investors could lose their entire investment.

Risks Related to the Rights Offering

The subscription price determined for this rights offering is not an indication of our value.

In determining the subscription price for the rights offering, our board of directors, with the advice and input of management and advisors, considered a number of factors, including: the likely cost of capital from other sources, the price at which our stockholders might be willing to participate in the rights offering, historical and current trading prices for our common stock, our need for liquidity and capital and the desire to provide an opportunity to our stockholders to participate in the rights offering on a pro rata basis. In conjunction with its review of these factors, our board of directors also reviewed a range of subscription prices in various prior rights offerings of public companies. The subscription price is not necessarily related to our book value, net worth or any other established criteria of value and may or may not be considered the fair value of our common stock to be offered in the rights offering. We cannot give any assurance that our common shares will trade at or above the subscription price in any given time period. After the date of this prospectus, our common stock may trade at prices above or below the subscription price.

The market price of our common stock may decline.

We cannot assure you that the market price of our common stock will not either increase or decline before the subscription rights expire. Depending upon the trading price of our common stock at the time of our announcement of the rights offering, the announcement of the rights offering and its terms, including the subscription price, together with the number of shares of common stock we could issue if the Rights Offering is completed, may result in a decrease in the trading price of our common stock. This decline may continue after the completion of rights offering. Further, if a substantial number of rights are exercised and the holders of the shares received upon exercise of those rights choose to sell some or all of the shares of common stock, the resulting sales could depress the market price of our common stock.

There is no guarantee that by the time the shares are delivered to you, the market price of our common stock will be above your subscription price. Further, because the exercise of your rights is not revocable and because the rights are not transferrable, you will not be able to revoke your subscription if the market price decreases prior to the delivery of the shares or transfer of the shares until after they are delivered.

There is no guarantee that the subscription price, whether it is set at the Initial Price or the Alternate Price, will be lower than the market price of our common stock at the time that the shares are purchased and delivered. Further, because the exercise of your rights is not revocable and because the rights are not transferable, you will not be able

TABLE OF CONTENTS

to revoke your subscription if the market price decreases prior to the delivery of the shares or transfer of the shares until after they are delivered to you. Accordingly, the subscription price at which you are purchasing shares of common stock may be above the prevailing market price by the time that the shares of common stock are purchased and delivered.

If you exercise your subscription rights and the market price of the common stock falls below the subscription price, then you will have committed to buy shares of common stock in the rights offering at a price that is higher than the market price. Moreover, we cannot assure you that you will ever be able to sell shares of common stock that you purchased in the rights offering at a price equal to or greater than the subscription price. Until shares are issued to you in book-entry, or uncertificated, form upon expiration of the rights offering, you may not be able to sell the shares of our common stock that you purchase in the rights offering. We will issue shares of our common stock that you purchased in book-entry, or uncertificated, form as soon as practicable after expiration of the rights offering. We will not pay you interest on funds delivered to the subscription agent pursuant to the exercise of rights.

If you do not exercise your subscription rights in full, your percentage ownership and voting rights in Pulse Biosciences will experience dilution.

If you choose not to exercise your subscription rights, you will retain your current number of shares of our common stock. However, if you choose not to exercise your subscription rights, your percentage ownership and voting rights in Pulse Biosciences will experience dilution if and to the extent that other stockholders exercise their subscription rights. In that event, the percentage ownership, voting rights and other rights of all stockholders who do not fully exercise their subscription rights will be diluted.

The subscription rights are non-transferable and thus there will be no market for them.

You may not sell, transfer or assign your subscription rights to anyone else, unless as required by operation of law. We do not intend to list the subscription rights on any securities exchange or any other trading market. Because the subscription rights are non-transferable, there is no market or other means for you to directly realize any value associated with the subscription rights.

You may not be able to resell any shares of our common stock that you purchase pursuant to the exercise of subscription rights immediately upon expiration of the subscription rights offering period or be able to sell your shares at a price equal to or greater than the subscription price.

If you exercise subscription rights, you may not be able to resell the common stock purchased by exercising your subscription rights until you, or your custodian bank, broker, dealer or other nominee, if applicable, has received those shares. Moreover, you will have no rights as a stockholder of the shares you purchased in the rights offering until we issue the shares to you. Although we will endeavor to issue the shares as soon as practicable after completion of the rights offering, and after all necessary calculations have been completed, there may be a delay between the Expiration Date of the rights offering and the time that the shares are issued. In addition, we cannot assure you that, following the exercise of your subscription rights, you will be able to sell your common stock at a price equal to or greater than the subscription price.

Because no minimum subscription is required and because we do not have formal commitments from our stockholders for the entire amount we seek to raise pursuant to the rights offering, we cannot assure you of the amount of proceeds that we will receive from the rights offering.

No minimum subscription is required for consummation of the rights offering. Although Robert W. Duggan, the beneficial owner of approximately 43% of our outstanding common stock prior to this rights offering, has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to availability, he has not made any formal binding commitment to do so, and we do not have formal commitments from our stockholders for the amount we seek to raise pursuant to the rights offering, and it is possible that no additional rights will be exercised in connection with the rights offering. As a result, we cannot assure you of the amount of proceeds that we will receive in the rights offering. Therefore, if you exercise all or any portion of your subscription rights, but other stockholders do not, we may not raise the desired amount of capital in the rights offering, the market price of our common stock could be adversely impacted and we may find it necessary to pursue alternative means of financing, which may be dilutive to your investment.

Because we may terminate the rights offering at any time prior to the Expiration Date, your participation in the rights offering is not assured.

We do not intend, but have the right, to terminate the rights offering at any time prior to the Expiration Date. If we determine to terminate the rights offering, we will not have any obligation with respect to the subscription rights except to return any money received from subscribing stockholders as soon as practicable, without interest or deduction.

You will need to act promptly and to carefully follow the subscription instructions, or your exercise of rights may be rejected.

Stockholders who desire to purchase shares in the rights offering must act promptly to ensure that all required forms and payments are actually received by the subscription agent prior to the Expiration Date, which is currently set to be 5:00 p.m. on [•], 2020. If you are a beneficial owner of shares, you must act promptly to ensure that your custodian bank, broker, dealer or other nominee acts for you and that all required forms and payments are actually received by the subscription agent prior to the Expiration Date. Your nominee may establish a deadline prior to the Expiration Date by which you must provide it with your instructions to exercise your subscription rights and payment for your shares. We will not be responsible if your custodian bank, broker, dealer or nominee fails to ensure that all required forms and payments are actually received by the subscription agent prior to the Expiration Date. If you fail to complete and sign the required subscription forms, send an incorrect payment amount, or otherwise fail to follow the subscription procedures that apply to your desired transaction the subscription agent may, depending on the circumstances, reject your subscription or accept it to the extent of the payment received. Neither we nor our subscription agent will undertake to contact you concerning, or attempt to correct, an incomplete or incorrect subscription form or payment. We have the sole discretion to determine whether a subscription exercise properly follows the subscription procedures.

By participating in the rights offering and executing a rights certificate, you are making binding and enforceable representations to the Company.

By signing the rights certificate and exercising their rights, each stockholder agrees, solely with respect to such stockholder's exercise of rights in the rights offering, that we have the right to void and cancel (and treat as if never exercised) any exercise of rights, and shares issued pursuant to an exercise of rights, if any of the agreements, representations or warranties of a subscriber in the subscription documents are false.

If you make payment of the subscription price by uncertified personal check, your check may not clear in sufficient time to enable you to purchase shares in the rights offering.

Any uncertified personal check used to pay the subscription price in the rights offering must clear prior to the Expiration Date of the rights offering, and the clearing process may require at least five (5) business days. As a result, if you choose to use an uncertified personal check to pay the subscription price, it may not clear prior to the Expiration Date, in which event you would not be eligible to exercise your subscription rights. You may eliminate this risk by paying the subscription price by a certified check, bank draft, cashier's check, U.S. postal money order, or wire transfer of funds to ensure that the subscription agent receives your funds prior to the expiration of the rights offering.

If you exercise the over-subscription right, you may not receive all of the shares for which you subscribe.

Exercise of the over-subscription right will only be honored if and to the extent that the basic subscription rights have not been exercised in full. If sufficient shares of common stock are available, we will seek to honor your over-subscription request in full. If, however, over-subscription requests exceed the number of shares of common stock available to be purchased pursuant to the over-subscription right, we will allocate the available shares of common stock proportionately among stockholders who exercised their over-subscription rights based on the number of shares each stockholder subscribed for under such stockholder's basic subscription rights. As a result, you may not receive any or all of the shares of common stock for which you exercise your over-subscription right.

As soon as practicable after the Expiration Date, the subscription agent will determine the number of shares of common stock that you may purchase pursuant to the over-subscription right. If you have properly exercised your over-subscription right, we will issue those shares to you in book-entry, or uncertificated, form, representing the number of shares you purchased as soon as practicable after the Expiration Date and after all allocations and

adjustments have been effected. If you request and pay for more shares than are allocated to you, we will refund the overpayment, without interest or deduction. In connection with the exercise of the over-subscription right, custodian banks, brokers, dealers and other nominee holders of subscription rights who act on behalf of beneficial owners will be required to certify to us and to the subscription agent as to the aggregate number of subscription rights exercised, and the number of shares of common stock requested through the over-subscription right, by each beneficial owner on whose behalf the nominee holder is acting.

The tax treatment of the rights offering may be treated as a taxable event to you.

We believe and intend to take the position that the distribution of the subscription rights in connection with the rights offering generally should not be a taxable event to holders of our common stock for United States federal income tax purposes. If the rights offering is deemed to be part of a “disproportionate distribution” under Section 305 of the Internal Revenue Code of 1986, as amended (the “Code”), holders of our common stock may recognize taxable income for United States federal income tax purposes in connection with the receipt of subscription rights in the rights offering. Holders of our common stock are urged to consult their tax advisors with respect to the tax consequences of the rights offering. Please see the section titled “Material U.S. Federal Income Tax Consequences” beginning on page [39](#) for further information.

We have broad discretion in the use of proceeds of the rights offering. Because our management will have broad discretion over the use of the net proceeds from the rights offering, you may not agree with how we use the proceeds, and we may not invest the proceeds successfully.

We currently intend to use the net proceeds from this offering, if any, for general working capital purposes, including the ongoing investment in current and future clinical and pre-clinical studies evaluating the safety and efficacy of Pulse Biosciences’ proprietary NPS technology, the development and enhancement of Pulse Biosciences’ CellFX System, obtaining regulatory clearance for our CellFX System, sales and marketing activities and general corporate operations. We may also use a portion of the net proceeds from this offering to acquire or invest in complementary businesses, technologies, product candidates or other intellectual property, although we have no present commitments or agreements to do so. Our board of directors and management will have considerable discretion in the application of the net proceeds from the rights offering, and it is possible that we may allocate the proceeds differently than investors in the rights offering may desire or that we may fail to maximize the return on these proceeds. Accordingly, you will be relying on the judgment of our management with regard to the use of the proceeds from the rights offering, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that the proceeds will be invested in a way that does not yield a favorable, or any, return for the Company.

Risks Related to Owning Our Common Stock

The price of our common stock has been, and we expect it to continue to be, highly volatile, and you may be unable to sell your shares at or above the price you paid to acquire them.

The market price of our common stock has been highly volatile, and we expect it to continue to be highly volatile for the foreseeable future in response to many risk factors listed in this prospectus and in our Annual Report on Form 10-K, and others beyond our control, including:

- results of clinical trials of our planned products or those of our competitors;
- actions by regulatory bodies, such as the FDA, that affect our business or have the effect of delaying or rejecting approval or clearance of our planned products such as the CellFX System;
- actual or anticipated fluctuations in our financial condition and operating results;
- announcements by our customers, partners or suppliers relating directly or indirectly to our products, services or technologies;
- announcements of technological innovations by us or our competitors;
- changes in laws or regulations applicable to our planned products;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, capital commitments or achievement of significant milestones;

TABLE OF CONTENTS

- additions or departures of key personnel;
- competition from existing products or new products that may emerge;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- disputes or other developments related to proprietary rights, including patents, litigation matters or our ability to obtain intellectual property protection for our technologies;
- actual or alleged security breaches;
- announcements or expectations of additional financing efforts;
- sales of our common stock by us or our stockholders;
- stock price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- reports, guidance and ratings issued by securities or industry analysts;
- overall conditions in our industry and market including the impact of COVID-19; and
- general economic and market conditions.

If any of the foregoing occurs, it may cause our stock price or trading volume to decline. Stock markets in general, and the market for companies in our industry in particular have experienced price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. These broad market and industry fluctuations, as well as general economic, political and market conditions such as recessions, interest rate changes or international currency fluctuations, may negatively impact the market price of our common stock. Investors may not realize any return on their investment in us and may lose some or all of their investment. In the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns and adversely impact our ability to raise capital to fund operations, which could seriously harm our business.

Sales or purchases of shares of our common stock may adversely affect the market for our common stock.

If we or our stockholders, particularly our directors, executive officers and significant stockholders, sell or purchase, register for sale, or indicate an intent to sell or purchase, shares of our common stock in the public market, it may have a material adverse effect on the market price of our common stock. In particular, Robert W. Duggan is not subject to any contractual restrictions with us on his ability to sell or transfer our common stock, and these sales or transfers could create substantial declines in the price of our securities or, if these sales or transfers were made to a single buyer or group of buyers, could contribute to a transfer of control of our company to a third party. Sales by Robert W. Duggan of a substantial number of shares, or the expectation of such sales, could cause a significant reduction in the market price of our common stock.

We maintain a shelf registration statement on Form S-3 pursuant to which we may, from time to time, sell up to an aggregate of \$150.0 million of our common stock, preferred stock, depositary shares, warrants, debt securities or units. We may also issue shares of common stock or securities convertible into exchangeable, or exercisable for our common stock from time to time in connection with financings, acquisitions, investments or otherwise. Any such issuances would result in dilution to certain of our existing stockholders and could cause our stock price to fall. We may also sell shares or other securities at a price per share that is less than the price per share paid by existing investors, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders.

We do not know whether an active, liquid and orderly trading market will be maintained for our common stock and as a result it may be difficult for you to sell your common stock.

Prior to our initial public offering in May 2016, there was no public market for our common stock. Although our common stock is listed on the Nasdaq Capital Market, the market for our shares has demonstrated varying levels of trading activity. As a result of these and other factors, you may not be able to sell your common stock quickly or at or above the price paid to acquire the stock or at all. Further, an inactive market may also harm our ability to raise capital by selling additional common stock and may harm our ability to enter into strategic collaborations or acquire companies or products by using our common stock as consideration.

Concentration of ownership by our principal stockholder may limit your ability to influence the outcome of director elections and other transactions requiring stockholder approval.

A significant percentage of our outstanding stock is held by Mr. Duggan, who beneficially owns approximately 43% of our common stock outstanding as of the date of this prospectus. As a result, Mr. Duggan has significant influence over corporate actions requiring stockholder approval, including the following actions:

- to elect or defeat the election of our directors;
- to amend or prevent amendment of our certificate of incorporation or bylaws;
- to effect or prevent a merger, sale of assets or other corporate transaction; and
- to control the outcome of any other matter submitted to our stockholders for vote.

Mr. Duggan has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to availability, but has not made any formal binding commitment to do so. If other stockholders do not exercise their subscription rights and Mr. Duggan exercises all of his subscription rights, Mr. Duggan would be the only stockholder to subscribe for shares in connection with this rights offering, which would result in Mr. Duggan becoming the beneficial owner of approximately [•]% of our common stock. See the section titled “Prospectus Summary” above for information on how this percentage is calculated. If Mr. Duggan acquires a majority of our common stock, we would be considered a “controlled” company under the Nasdaq Stock Market rules and would be exempt from the obligation to comply with certain Nasdaq Stock Market corporate governance requirements.

Mr. Duggan’s stock ownership may discourage a potential acquirer from making a tender offer or otherwise attempting to obtain control of our company, which in turn could reduce our stock price or prevent our stockholders from realizing a premium over our stock price. In addition, Mr. Duggan is not subject to any contractual restrictions on his ability to acquire additional shares of common stock and any such purchases, including purchases in connection with this proposed rights offering or any alternative equity or equity-linked offering that we may conduct, could result in his acquisition of a majority of our common stock. If this were to occur, we would be considered a “controlled” company under the Nasdaq rules and would be exempt from the obligation to comply with certain Nasdaq corporate governance requirements.

Management currently beneficially holds a small percentage of our common stock. Other than their positions as directors or officers, and the restriction on the stockholders being able to call a special meeting limited to holders of 15% or more of the outstanding shares of common stock, our management will not be able to greatly influence corporate actions requiring stockholder approval.

Robert W. Duggan’s significant ownership position may impact our stock price and may deter or prevent efforts by other companies to acquire us, which could prevent our stockholders from realizing a control premium.

Mr. Duggan, the beneficial owner of approximately 43% of our outstanding common stock prior to this rights offering, has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to availability, but has not made any formal binding commitment to do so. If other stockholders do not exercise their subscription rights and Mr. Duggan exercises all of his subscription rights, Mr. Duggan would be the only stockholder to subscribe for shares in connection with this rights offering, which would result in Mr. Duggan becoming the beneficial owner of approximately [•]% of our common stock. See “Concentration of ownership by our principal stockholder may limit your ability to influence the outcome of director elections and other transactions requiring stockholder approval” above. In addition, Mr. Duggan is not subject to any contractual restrictions on his ability to acquire additional shares of common stock, and any such purchases, including purchases in connection with this rights offering or any alternative equity or equity-linked offering that we may conduct, could result in his acquisition of a majority of our common stock. If Mr. Duggan acquires a majority of our common stock, we would be considered a “controlled” company under the Nasdaq Stock Market rules and would be exempt from the obligation to comply with certain Nasdaq Stock Market corporate governance requirements. As a result of Mr. Duggan’s significant ownership and position as Chairman of our board of directors, other companies may be less inclined to pursue an acquisition of us and therefore we may not have the opportunity to be acquired in a transaction that stockholders might otherwise deem favorable, including transactions in which our stockholders might realize a substantial premium for their shares. In addition, public speculation regarding Mr. Duggan, as well as our relationship with Mr. Duggan, could cause our stock price to fluctuate.

We have incurred and will continue to incur costs as a result of operating as a public company and our management has been and will be required to devote substantial time to public company compliance initiatives.

As a public company, listed in the United States, we have incurred and will continue to incur significant legal, accounting and other expenses due to our compliance with regulations and disclosure obligations applicable to us, including compliance with the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, as well as rules implemented by the SEC and the Nasdaq Stock Market. The SEC and other regulators have continued to adopt new rules and regulations and make additional changes to existing regulations that require our compliance.

Stockholder activism, the current political environment, and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact, in ways we cannot currently anticipate, the manner in which we operate our business. Our management and other personnel have and will continue to devote a substantial amount of time to these compliance programs and monitoring of public company reporting obligations and, as a result of the new corporate governance and executive compensation related rules, regulations, and guidelines prompted by the Dodd-Frank Wall Street Reform and Protection Act, or the Dodd-Frank Act, and further regulations and disclosure obligations expected in the future, we will likely need to devote additional time and costs to comply with such compliance programs and rules. New laws and regulations as well as changes to existing laws and regulations affecting public companies, including the provisions of the Sarbanes-Oxley Act of 2002, the Dodd-Frank Act, and rules adopted by the SEC and the Nasdaq Stock Market, will likely result in increased costs to us as we respond to their requirements. We are currently evaluating and monitoring developments with respect to these rules and regulations, and we cannot predict or estimate the amount of additional costs we may incur or the timing of such costs.

Furthermore, these and future rules and regulations could make it more difficult or more costly for us to obtain certain types of insurance, including director and officer liability insurance, and we may be forced to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as our executive officers.

We are an “emerging growth company” under the JOBS Act as well as a “smaller reporting company”, as a result, we cannot be certain if the applicable reduced disclosure requirements will make our common stock less attractive to investors.

We are an “emerging growth company,” as defined in the JOBS Act, and we may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not “emerging growth companies” including, but not limited to, not being required to comply with the auditor attestation requirements of section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We also qualify as a “smaller reporting company,” as defined in the Exchange Act, and so long as we remain a smaller reporting company, we benefit from and may take advantage of scaled disclosure requirements.

We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile and it may be difficult for us to raise additional capital as and when we need it. Investors may be unable to compare our business with other companies in our industry if they believe that our reporting is not as transparent as other companies in our industry. If we are unable to raise additional capital as and when we need it, our financial condition and results of operations may be materially and adversely affected. We will remain an “emerging growth company” for up to five years from our IPO in 2016, although we will lose that status sooner if our revenues exceed \$1.07 billion, if we issue more than \$1.0 billion in non-convertible debt in a three-year period, or if the market value of our common stock that is held by non-affiliates exceeds \$700 million as of June 30.

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our market price and trading volume could decline.

The trading market for our common stock will depend on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. We currently have only limited analyst coverage of us and there can be no assurance that analysts will continue to cover us or provide

TABLE OF CONTENTS

favorable coverage. If one or more of the analysts who cover us downgrade our stock or change their opinion of our stock, our market price would likely decline. If analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

We have not paid dividends in the past and have no plans to pay dividends.

We plan to reinvest all of our earnings, to the extent we have earnings, into our product research and development. We do not plan to pay any cash dividends with respect to our securities in the foreseeable future. We cannot assure you that we would, at any time, generate sufficient surplus cash that would be available for distribution to the holders of our common stock as a dividend. Therefore, you should not expect to receive cash dividends on our outstanding common stock.

Anti-takeover provisions in our charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management and limit the market price of our common stock.

Certain anti-takeover provisions of Delaware law and provisions in our certificate of incorporation and bylaws may have the effect of delaying or preventing a change of control or changes in our management. These provisions could also make it difficult for stockholders to elect directors that are not nominated by the current members of our board of directors or take other corporate actions, including effecting changes in our management. Our certificate of incorporation and bylaws include provisions that:

- authorize our board of directors to issue, without further action by the stockholders, up to 50,000,000 shares of preferred stock and up to approximately 500,000,000 shares of authorized but unissued shares of common stock;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- specify that special meetings of our stockholders can be called only by our board of directors, the chairman of our board of directors, any of our officers, or any stockholder holding at least fifteen percent (15%) of the voting power of the capital stock issued and outstanding and entitled to vote;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;
- the requirement for the affirmative vote of holders of at least 66 2/3% of the voting power of all the then outstanding shares of our voting stock, voting together as a single class, to amend provisions of our certificate of incorporation or our bylaws;
- the ability of our board of directors by majority vote, to amend the bylaws; and
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum.

These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management. In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which limits the ability of stockholders owning in excess of 15% of our outstanding voting stock to engage in certain types of transactions with us.

USE OF PROCEEDS

Although we cannot determine what the actual net proceeds from the sale of the shares of common stock in the rights offering will be until the rights offering is completed, assuming all subscription rights are exercised, we estimate that the aggregate net proceeds from the rights offering, after deducting estimated offering expenses, will be approximately \$29.6 million. We currently intend to use the net proceeds from this offering, if any, for general working capital purposes, including the ongoing investment in current and future clinical and pre-clinical studies evaluating the safety and efficacy of Pulse Biosciences' proprietary NPS technology, the development and enhancement of Pulse Biosciences' CellFX System, obtaining regulatory clearance for our CellFX System, sales and marketing activities and general corporate operations. We may also use a portion of the net proceeds from this offering to acquire or invest in complementary businesses, technologies, product candidates or other intellectual property, although we have no present commitments or agreements to do so. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. As a result, our management will have broad discretion regarding the timing and application of the net proceeds from this offering. Pending the uses described above, we intend to invest the net proceeds in interest-bearing, investment-grade securities.

DESCRIPTION OF CAPITAL STOCK

The following description of the capital stock of the Company is a summary of the rights of our capital stock and summarizes certain provisions of our certificate of incorporation and bylaws. This summary does not purport to be complete and is qualified in its entirety by the provisions of our certificate of incorporation and bylaws, which have been filed with the SEC as exhibits to our registration statement, of which this prospectus forms a part, and to the applicable provisions of Delaware law.

Our authorized capital stock consists of 550,000,000 shares, with a par value of \$0.001 per share, of which:

- 500,000,000 shares are designated as common stock; and
- 50,000,000 shares are designated as preferred stock.

Common Stock

Holders of shares of common stock are entitled to one vote per share on all matters to be voted upon by the stockholders generally and do not have cumulative voting rights. Subject to the preferences that may be applicable to any preferred stock outstanding at the time, the holders of outstanding shares of our common stock are entitled to receive such dividends as may be declared from time to time by the board of directors out of funds legally available therefor, and in the event of liquidation, dissolution or winding up of the company to share ratably in all assets remaining after payment of liabilities and the liquidation preference of any then outstanding shares of preferred stock. The holders of shares of common stock have no preemptive or conversion rights. There are no redemption or sinking fund provisions applicable to the common stock.

Our common stock is listed on the Nasdaq Capital Market under the symbol "PLSE." The transfer agent and registrar for our common stock is Broadridge Corporate Issuers Solutions, Inc.

Preferred Stock

The following description of preferred stock is not complete. These descriptions are qualified in their entirety by reference to our certificate of incorporation and the certificate of designation relating to any series of preferred stock. The rights, preferences, rights and restrictions of the preferred stock of each series will be fixed by the certificate of designation relating to that series. Under the terms of our certificate of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors may designate the powers, designations, preferences, and relative participation, optional or other rights, if any, and the qualifications, limitations or restrictions thereof, including dividend rights, conversion rights, voting rights, redemption rights, liquidation preference, sinking fund terms and the number of shares constituting any series or the designation or any series. There are no restrictions presently on the repurchase or redemption of any shares of our preferred stock.

The issuance of shares of preferred stock will affect, and may adversely affect, the rights of holders of common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock on the rights of holders of common stock until our board of directors determines the specific rights attached to that preferred stock. The effects of issuing additional preferred stock could include one or more of the following:

- restricting dividends on the common stock;
- diluting the voting power of the common stock;
- impairing the liquidation rights of the common stock; or
- delaying or preventing changes in control or management of our company.

Registration Rights

Underwriters' Warrants

In connection with the Underwriting Agreement, dated May 17, 2016, between the Company and MDB, as representative of the underwriters, we issued warrants to purchase 574,985 shares of our common stock. Pursuant to such warrants, we agreed, upon request, to file a registration statement to cover the resale of shares issuable upon exercise of such warrants, and to keep such registration statement effective until the date on which all of the shares registered for sale or resale under such registration statement are either sold pursuant to such registration statement or can be sold publicly without restriction or limitation under Rule 144 under the Securities Act.

Purchase Agreements

On February 7, 2017, we entered into a Purchase Agreement (the “February Purchase Agreement”) with certain investors pursuant to which we issued and sold in a private placement a total of 819,673 shares of common stock. Pursuant to the February Purchase Agreement, we agreed to file a registration statement to cover the resale of the shares issued to the investors, and to keep such registration statement effective until the date on which all of the shares registered for sale or resale under such registration statement are either sold pursuant to such registration statement or can be sold publicly without restriction or limitation under Rule 144 under the Securities Act.

On September 24, 2017, we entered into a Purchase Agreement (the “September Purchase Agreement”) with an investor pursuant to which we issued and sold in a private placement a total of 2,000,000 shares of common stock. Pursuant to the September Purchase Agreement, we agreed to file a registration statement to cover the resale of the shares issued to the investor, and to keep such registration statement effective until the date on which all of the shares registered for sale or resale under such registration statement are either sold pursuant to such registration statement or can be sold publicly without restriction or limitation under Rule 144 under the Securities Act.

Effect of Certain Provisions of our Certificate of Incorporation and Bylaws and the Delaware Anti-Takeover Statute

Some provisions of Delaware law and our certificate of incorporation and bylaws contain provisions that could make the following transactions more difficult:

- acquisition of us by means of a tender offer;
- acquisition of us by means of a proxy contest or otherwise; or
- removal of our incumbent officers and directors.

Those provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids and to promote stability in our management. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors.

Certificate of Incorporation and Bylaws

Our certificate of incorporation and our bylaws provide for the following:

- *Undesignated Preferred Stock.* The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue one or more series of preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of our company. These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of our company.
- *Stockholder Meetings.* Our bylaws provide that in general a special meeting of stockholders may be called only by our board of directors, the chairman of our board of directors, any of our officers, or any stockholder holding at least fifteen percent (15%) of the voting power of the capital stock issued and outstanding and entitled to vote.
- *Requirements for Advance Notification of Stockholder Nominations and Proposals.* Our bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of our board of directors or a committee of the board of directors.
- *Limits on Ability of Stockholders to Act by Written Consent.* We have provided in our bylaws that our stockholders may not act by written consent. This limit on the ability of our stockholders to act by written consent may lengthen the amount of time required to take stockholder actions. As a result, a holder controlling a majority of our capital stock would not be able to amend our bylaws or remove directors without holding a meeting of our stockholders called in accordance with our bylaws.
- *Amendment of Certificate of Incorporation and Bylaws.* The amendment of the above provisions of our certificate of incorporation and bylaws requires approval by holders of at least two-thirds of our outstanding capital stock entitled to vote generally in the election of directors.

Delaware Anti-Takeover Statute

We are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging, under certain circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, but not for determining the outstanding voting stock owned by the interested stockholder, (i) shares owned by persons who are directors and also officers, and (ii) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- at or subsequent to the date of the transaction, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66-2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is a person who, together with affiliates and associates, owns 15% or more of a corporation's outstanding voting stock or is an affiliate or associate of a corporation and was the owner of 15% or more of the corporation's outstanding voting stock within three years prior to the determination of interested stockholder status.

DILUTION

Our net tangible book value as of December 31, 2019 was approximately \$17.79 million, or \$0.85 per share of our common stock. Net tangible book value per share is equal to our total net tangible book value, which is our total tangible assets less our total liabilities, divided by the number of shares of our outstanding common stock. Dilution per share equals the difference between the amount per share paid by purchasers of shares of common stock in the rights offering and the net tangible book value per share of our common stock immediately after the rights offering.

After giving effect to the assumed sale of [•] shares in the rights offering, based on the assumed subscription price of \$[•] per share (the Initial Price), and after deducting estimated offering expenses payable by us, our pro forma net tangible book value as of December 31, 2019 would have been approximately \$[•], or \$[•] per share. This represents an immediate increase in pro forma net tangible book value to existing stockholders of \$[•] per share and an immediate dilution to purchasers in the rights offering of \$[•] per share.

The following table illustrates this per-share dilution (assuming a fully subscribed for rights offering of shares at the assumed subscription price of \$[•] per share) (the Initial Price). To the extent that the Alternate Price is lower than the Initial Price, purchasers of our common stock in the rights offering will experience further dilution.

| | |
|--|---------------|
| Assumed subscription price per share | \$[•] |
| Net tangible book value per share at December 31, 2019 | \$0.85 |
| Net increase per share attributable to the rights offering | <u>\$ [•]</u> |
| Pro forma net tangible book value per share after giving effect to the rights offering | <u>\$[•]</u> |
| Dilution in net tangible book value per share to purchasers | <u>\$[•]</u> |

The information above is illustrative only and will adjust based on the actual subscription price and the actual number of shares issued and sold in the rights offering. The number of shares to be outstanding after this rights offering is based on 20,825,469 shares of common stock outstanding as of December 31, 2019 and excludes:

- 3,749,186 shares of common stock subject to options outstanding as of December 31, 2019, with a weighted average exercise price of \$16.18 per share;
- 42,500 performance stock options granted during the year ended December 31, 2019;
- 215,500 shares of common stock subject to options granted subsequent to December 31, 2019, with a weighted average exercise price of \$5.76 per share;
- 167,847 shares of common stock that have been reserved for issuance upon the exercise of outstanding warrants as of December 31, 2019, with a weighted average exercise price of \$4.36;
- 222,606 shares of our common stock subject to outstanding restricted stock units as of December 31, 2019;
- 998,288 shares of common stock reserved for future issuance under our 2017 Equity Incentive Plan and as of December 31, 2019 (not including 833,018 shares reserved for issuance thereunder subsequent to December 31, 2019);
- 78,950 shares of common stock reserved for future issuance under our 2017 Inducement Equity Incentive Plan as of December 31, 2019; and
- 440,195 shares of common stock reserved for future issuance under our Employee Stock Purchase Plan as of December 31, 2019.

To the extent that any options or warrants are exercised, RSUs vest, new options are issued under our equity incentive plans or we otherwise issue additional shares of common stock in the future at a price less than the public offering price, there will be further dilution to new investors.

THE RIGHTS OFFERING

Subscription Rights

Basic Subscription Rights

We will distribute to each holder of our common stock who is a record holder of our common stock on the record date, which is [•], 2020 at no charge, one non-transferable subscription right for each share of common stock owned. The subscription rights will be evidenced by non-transferable subscription rights certificates. Each subscription right will entitle the rights holder to purchase [•] shares of our common stock at the Initial Price, which shall be paid in cash, upon timely delivery of the required documents and payment of the subscription price. We will not issue fractional shares, but rather will round down the aggregate number of shares you are entitled to receive to the nearest whole number. If rights holders wish to exercise their subscription rights, they must do so prior to 5:00 p.m., Eastern Time, on [•], 2020, the Expiration Date for the rights offering, subject to extension. After the Expiration Date, the subscription rights will expire and will have no value. See below “—Expiration of the Rights Offering and Extensions, Amendments and Termination.” You are not required to exercise all of your subscription rights. We will issue to the record holders who purchase shares in the rights offering shares in book-entry, or uncertificated, form as soon as practicable after the rights offering has expired.

Over-Subscription Rights

Subject to the allocation described below, each subscription right also grants the holder an over-subscription right to purchase additional shares of our common stock that are not purchased by other rights holders pursuant to their basic subscription rights. You are entitled to exercise your over-subscription right only if you exercise your basic subscription right in full.

If you wish to exercise your over-subscription right, you should indicate the number of additional shares that you would like to purchase in the space provided on your rights certificate, as well as the number of shares that you beneficially own without giving effect to any shares to be purchased in this rights offering. When you send in your rights certificate, you must also send the full purchase price, as provided herein, for the number of additional shares that you have requested to purchase (in addition to the payment, as provided herein, due for shares purchased through your basic subscription right). If the number of shares remaining after the exercise of all basic subscription rights is not sufficient to satisfy all requests for shares pursuant to over-subscription rights, you will be allocated additional shares (subject to elimination of fractional shares) in the proportion which the number of shares you purchased through the basic subscription right bears to the total number of shares that all oversubscribing stockholders purchased through the basic subscription right. The subscription agent will return any excess payments in the form in which made.

As soon as practicable after the Expiration Date, the subscription agent will determine the number of shares of common stock that you may purchase pursuant to the over-subscription right. You will receive shares in book-entry, or uncertificated, form as soon as practicable after the Expiration Date and after all allocations and adjustments have been effected. If you request and pay for more shares than are allocated to you, we will refund the overpayment in the form in which made. In connection with the exercise of the over-subscription right, custodian banks, brokers, dealers and other nominee holders of subscription rights who act on behalf of beneficial owners will be required to certify to us and to the subscription agent as to the aggregate number of subscription rights exercised, and the number of shares of common stock requested through the over-subscription right, by each beneficial owner on whose behalf the nominee holder is acting.

Subscription Price

The subscription price will be the lesser of (i) \$[•] (the “Initial Price”) and (ii) [•] on the Expiration Date (the “Alternate Price”). Subscribers must fund their subscriptions pursuant to both the basic subscription right and over-subscription right at the Initial Price.

In determining the subscription price, our board of directors, with the advice and input of management and advisors, considered a number of factors, including: the likely cost of capital from other sources, the price at which our stockholders might be willing to participate in the rights offering, historical and current trading prices for our common stock, our need for liquidity and capital and the desire to provide an opportunity to our stockholders to participate in the rights offering on a pro rata basis. In conjunction with its review of these factors, our board of

TABLE OF CONTENTS

directors also reviewed a range of subscription prices in various prior rights offerings of public companies. The subscription price is not necessarily related to our book value, net worth or any other established criteria of value and may or may not be considered the fair value of our common stock to be offered in the rights offering. The Company cannot give any assurance that our common shares will trade at or above the subscription price in any given time period. You should not consider the subscription price as an indication of value of the Company or our common stock. You should obtain a current quote for our common stock before exercising your subscription rights and make your own assessment of our business and financial condition, our prospects for the future, and the terms of the rights offering.

Expiration of the Rights Offering and Extensions, Amendments and Termination

You may exercise your subscription rights at any time prior to 5:00 p.m., Eastern Time, on [•], 2020, the Expiration Date for the rights offering. If you do not exercise your subscription rights before the Expiration Date of the rights offering, your subscription rights will expire and will have no value. We will not be required to issue shares of our common stock to you if the subscription agent receives your rights certificate or payment, after the Expiration Date, regardless of when you sent the rights certificate and payment.

We may, in our sole discretion, extend the time for exercising the subscription rights. We may extend the Expiration Date at any time after the record date. If the commencement of the rights offering is delayed for a period of time, the Expiration Date of the rights offering may be similarly extended. We will extend the duration of the rights offering as required by applicable law, and may choose to extend the duration of the rights offering for any reason. We may extend the Expiration Date of the rights offering by giving oral or written notice to the subscription agent on or before the scheduled Expiration Date. If we elect to extend the Expiration Date of the rights offering, we will issue a press release announcing such extension no later than 9:00 a.m., Eastern Time, on the next business day after the most recently announced Expiration Date.

We reserve the right, in our sole discretion, to amend or modify the terms of the rights offering. We also reserve the right to terminate the rights offering at any time prior to the Expiration Date for any reason, in which event all funds received in connection with the rights offering will be returned without interest or deduction to those persons who exercised their subscription rights as soon as practicable.

Calculation of Subscription Rights Exercised; Missing or Incomplete Subscription Information

If you do not indicate the number of subscription rights being exercised, or do not forward full payment of the total subscription price payment for the number of subscription rights that you indicate are being exercised, then you will be deemed to have exercised your subscription rights with respect to the maximum number of whole subscription rights that may be exercised with the aggregate subscription price payment you delivered to the subscription agent. If your aggregate subscription price payment is greater than the amount you owe for exercise of your basic subscription right in full, you will be deemed to have exercised your over-subscription right to purchase the maximum number of shares of our common stock with your over-payment.

If an insufficient number of shares is available to fully satisfy all over-subscription right requests, the available shares will be distributed proportionately among rights holders who exercise their oversubscription right based on the number of shares each rights holder subscribed for under the basic subscription right. The proration process will be repeated until all common shares have been allocated or all oversubscription exercises have been fulfilled, whichever occurs earlier. Any excess subscription payments received by the subscription agent caused by proration will be returned by the subscription agent to you by mail, without interest or penalty, as soon as practicable after the Expiration Date of the rights offering. The subscription agent will return any excess payments in the form in which it was made. Any Excess Subscription Amount resulting from the reduction of the subscription price from the Initial Price to the Alternate Price will be put towards the purchase of additional shares in the rights offering (either towards your basic subscription right, if available, or towards the over-subscription right if you have already exercised your basic subscription right in full).

Conditions to the Rights Offering

We may terminate the rights offering, in whole or in part, if at any time before completion of the rights offering there is any judgment, order, decree, injunction, statute, law or regulation entered, enacted, amended or held to be applicable to the rights offering that in the sole judgment of our board of directors would or might make the rights offering or its completion, whether in whole or in part, illegal or otherwise restrict or prohibit completion of the rights

offering. We may waive any of these conditions and choose to proceed with the rights offering even if one or more of these events occur. If we terminate the rights offering, in whole or in part, all affected subscription rights will expire without value and all subscription payments in the form in which received by the subscription agent will be returned in the form in which paid, without interest or deduction, as soon as practicable. See also “—Expiration of the Rights Offering and Extensions, Amendments and Termination.”

Method of Exercising Subscription Rights

The exercise of subscription rights is irrevocable and may not be cancelled or modified. Your subscription rights will not be considered exercised unless the subscription agent receives from you, your custodian bank, broker, dealer or nominee, as the case may be, all of the required documents properly completed and executed and your full subscription price payment in cash, as provided herein, prior to the Expiration Date of the rights offering, which is currently set to be 5:00 p.m., Eastern Time, on [•], 2020. Rights holders may exercise their rights as follows:

Subscription by Registered Holders

Rights holders who are registered holders of our common stock as of the record date may exercise their subscription right by properly completing and executing the rights certificate together with any required signature guarantees and forwarding it, together with payment in full, as provided herein, of the subscription price for each share of the common stock for which they subscribe, to the subscription agent at the address set forth under the subsection titled “—Delivery of Subscription Materials and Payment,” on or prior to the Expiration Date.

Subscription by Depository Trust Company (“DTC”) Participants

Banks, trust companies, securities dealers and brokers (each, a “Nominee”) that hold shares of our Common Stock on the Record Date as nominee for more than one beneficial owner may, upon proper showing to the subscription agent, exercise such beneficial owner’s subscription right through DTC on the same basis as if the beneficial owners were stockholders on the Record Date. Such Nominee may exercise the subscription right on behalf of the exercising beneficial owner through DTC’s PSOP Function on the “agents subscription over PTS” procedure by (1) providing a certification as to the aggregate number of subscription rights exercised by the beneficial owner on whose behalf such Nominee is acting, and (2) instructing DTC to charge the Nominee’s applicable DTC account for the subscription payment for the new shares to facilitate the delivery of the full subscription payment to the subscription agent. DTC must receive the subscription instructions and payment for the new shares no later than the Expiration Date.

Subscription by Beneficial Owners

Rights holders who are beneficial owners of shares of our common stock as of the record date and whose shares are registered in the name of a custodian bank, broker, dealer or other nominee, or would prefer to have an institution conduct the transaction relating to the rights on their behalf, should instruct their custodian bank, broker, dealer or other nominee or institution to exercise their rights and deliver all documents and payment, on their behalf, prior to the Expiration Date. A rights holder’s subscription rights will not be considered exercised unless the subscription agent receives from such rights holder or the rights holder’s custodian bank, broker, dealer, or other nominee or institution, as the case may be, all of the required documents and such holder’s full subscription price payment.

Method of Payment

You must timely pay the full subscription price, in U.S. currency, for the full number of shares of our common stock at the Initial Price you wish to acquire pursuant to the exercise of rights (including any exercise of the over-subscription rights, if available) by delivering:

- an uncertified check drawn against a U.S. bank payable to “Broadridge Corporate Issuer Solutions, Inc. (acting as Subscription Agent for Pulse Biosciences)”;
- a wire transfer of immediately available funds to accounts maintained by the subscription agent;
- a certified check, bank draft, or cashier’s check drawn against a U.S. bank payable to “Broadridge Corporate Issuer Solutions, Inc. (acting as Subscription Agent for Pulse Biosciences)”;

TABLE OF CONTENTS

- an U.S. Postal money order payable to “Broadridge Corporate Issuer Solutions, Inc. (acting as Subscription Agent for Pulse Biosciences)”.

Rights certificates received after the Expiration Date of the rights offering will not be honored, and we will return your payment to you in the form received as soon as practicable, without interest or deduction.

The subscription agent will be deemed to receive payment upon:

- clearance of any uncertified check deposited by the subscription agent;
- receipt of collected funds wired in the subscription agent’s account;
- receipt by the subscription agent of any certified check, bank draft, or cashier’s check drawn upon a U.S. bank; or
- receipt by the subscription agent of any U.S. Postal money order.

If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any Excess Subscription Amounts paid by a subscriber will be put towards the purchase of additional shares in the rights offering.

Clearance of Uncertified Personal Checks

If you are paying by uncertified personal check, please note that payment will not be deemed to have been received by the subscription agent until the check has cleared, which could take at least five (5) business days. Any personal check used to pay for shares of our common stock must clear the appropriate financial institutions prior to 5:00 p.m., Eastern Time, on [•], 2020, the expected Expiration Date of this rights offering, unless we, in our sole discretion, extend the period for exercising the subscription rights. Accordingly, holders that wish to pay the subscription price by means of an uncertified personal check are urged to make payment sufficiently in advance of the expiration of the rights offering to ensure such payment is received and clears by such date. If you elect to exercise your subscription rights, we urge you to consider using a certified check, cashier’s check, bank draft, U.S. Postal money order, or wire transfer of funds to ensure that the subscription agent receives your funds prior to the expiration of the rights offering.

Instructions for Completing Your Subscription Rights Certificate

You should read the instruction letter accompanying the rights certificate carefully and strictly follow it. **DO NOT SEND RIGHTS CERTIFICATES OR PAYMENTS TO THE COMPANY.** We will not consider your subscription received until the subscription agent has received delivery of a properly completed and duly executed rights certificate and payment of the full subscription amount. The risk of delivery of all documents and payments is on you or your nominee, not us or the subscription agent.

The method of delivery of rights certificates and payment of the subscription amount to the subscription agent will be at the risk of the holders of rights, but, if sent by mail, we recommend that you send those certificates and payments by overnight courier or by registered mail, properly insured, with return receipt requested, and that a sufficient number of days be allowed to ensure delivery to the subscription agent and clearance of payment before the expiration of the subscription period.

Unless a rights certificate provides that the shares of common stock are to be delivered to the record holder of such rights or such certificate is submitted for the account of a bank or a broker, signatures on such rights certificate must be guaranteed by an “Eligible Guarantor Institution,” as such term is defined in Rule 17Ad-15 of the Securities Exchange Act of 1934 (an “Eligible Institution”), subject to any standards and procedures adopted by the subscription agent. See “—Medallion Guarantee May Be Required.”

Medallion Guarantee May Be Required

If you completed any part of the subscription rights certificate to provide that the Common Stock purchased pursuant to your exercise of Subscription Rights were to be (x) issued in a name other than that of the registered holder, or (y) issued to an address other than that shown on the front of the subscription rights certificate, your signature on each subscription rights certificate must be guaranteed by an Eligible Institution, such as a member firm of a registered national securities exchange or a member of the Financial Industry Regulatory Authority, Inc., or a commercial bank or trust company having an office or correspondent in the United States, or by a member of a Stock Transfer Association approved medallion program such as STAMP, SEMP or MSP subject to standards and procedures adopted by the subscription agent.

Subscription and Information Agent

The subscription agent and information agent for this rights offering is Broadridge Corporate Issuer Solutions, Inc. We will pay all fees and expenses of Broadridge related to the rights offering and have also agreed to indemnify Broadridge from certain liabilities that it may incur in connection with the rights offering. Broadridge can be contacted at the following address and telephone number:

Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718
Toll Free: 1-888-789-8409

Delivery of Subscription Materials and Payment

You should deliver your subscription rights certificate and payment of the subscription price, as provided herein, or, if applicable, nominee holder certifications, to the subscription agent by one of the methods described below:

By mail:
*Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718*

By overnight courier:
*Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS IWS
51 Mercedes Way
Edgewood, NY 11717*

Your delivery to an address or by any method other than as set forth above will not constitute valid delivery and we may not honor the exercise of your subscription rights.

You should direct any questions or requests for assistance concerning the method of subscribing for the shares of common stock or for additional copies of this prospectus to the information agent.

Funding Arrangements; Return of Funds

Broadridge Corporate Issuer Solutions, Inc., the subscription agent, will hold funds received in payment for shares of our common stock in a segregated account pending completion of the rights offering. The subscription agent will hold this money until the rights offering is completed or is withdrawn or terminated. If the rights offering is canceled for any reason, all subscription payments received by the subscription agent will be returned to subscribers, without interest or penalty, as soon as practicable.

Guaranteed Delivery

There is no guaranteed delivery period in connection with this rights offering, so you must ensure that you properly complete all required steps prior to 5:00 p.m., Eastern Time, on [•], 2020, unless we decide to extend the rights offering Expiration Date until some later time or terminate it earlier.

Notice to Beneficial Holders

If you are a broker, a trustee or a depositary for securities who holds shares of our common stock for the account of others as of the record date, you should notify the respective beneficial owners of such shares of the rights offering as soon as possible to find out their intentions with respect to exercising their subscription rights. You should obtain instructions from the beneficial owners with respect to their subscription rights, as set forth in the instructions we have provided to you for your distribution to beneficial owners. If a beneficial owner so instructs, you should complete the appropriate subscription rights certificates and submit them to the subscription agent with the proper payment. If you hold shares of our common stock for the account(s) of more than one beneficial owner, you may exercise the number of subscription rights to which all such beneficial owners in the aggregate otherwise would have been entitled had they been direct record holders of our common stock on the record date, provided that you, as a nominee record holder, make a proper showing to the subscription agent by submitting the form entitled "Nominee Holder Certification" substantially in the form accompanying this prospectus. If you did not receive this form, you should contact the subscription agent to request a copy.

Beneficial Owners

If you are a beneficial owner of shares of our common stock or will receive subscription rights through a custodian bank, broker, dealer or other nominee, we will ask your custodian bank, broker, dealer or other nominee

to notify you of the rights offering. If you wish to exercise your subscription rights, you will need to have your custodian bank, broker, dealer or other nominee act for you. If you hold shares of our common stock directly under your name in stock certificate(s) or in book-entry, or uncertificated, form, but would prefer to have your custodian bank, broker, dealer or other nominee act for you, you should contact your nominee and request it to effect the transactions for you. Your nominee may establish a deadline prior to the Expiration Date by which you must provide it with your instructions to exercise your subscription rights and payment for your shares.

To indicate your decision with respect to your subscription rights, you should complete and return to your custodian bank, broker, dealer or other nominee the form entitled “Beneficial Owners Election Form” substantially in the form accompanying this prospectus. You should receive the “Beneficial Owners Election Form” from your custodian bank, broker, dealer or other nominee with the other rights offering materials. If you wish to obtain a separate subscription rights certificate, you should contact the nominee as soon as possible and request that a separate subscription rights certificate be issued to you. You should contact your custodian bank, broker, dealer or other nominee if you do not receive this form but you believe you are entitled to participate in the rights offering. We are not responsible if you do not receive this form from your custodian bank, broker, dealer or nominee or if you receive it without sufficient time to respond.

Determinations Regarding the Exercise of Your Subscription Rights

We will decide all questions concerning the timeliness, validity, form and eligibility of the exercise of your subscription rights and any such determinations by us will be final and binding. We, in our sole discretion, may waive, in any particular instance, any defect or irregularity, or permit, in any particular instance, a defect or irregularity to be corrected within such time as we may determine. We will not be required to make uniform determinations in all cases. We may reject the exercise of any of your subscription rights because of any defect or irregularity. We will not accept any exercise of subscription rights until all irregularities have been waived by us or cured by you within such time as we decide, in our sole discretion. Our interpretations of the terms and conditions of the rights offering will be final and binding. Neither we, nor the subscription agent, will be under any duty to notify you of any defect or irregularity in connection with your submission of subscription rights certificates and we will not be liable for failure to notify you of any defect or irregularity. We reserve the right to reject your exercise of subscription rights if your exercise is not in accordance with the terms of the rights offering or in proper form. We will also not accept the exercise of your subscription rights if our issuance of shares of our common stock to you could be deemed unlawful under applicable law.

No Revocation or Change

Once you submit the form of rights certificate to exercise any subscription rights, you may not revoke or change your exercise or request a refund of monies paid. All exercises of rights are irrevocable, even if you subsequently learn information about us that you consider to be unfavorable. You should not exercise your rights unless you are certain that you wish to purchase additional shares of our common stock at the Initial Price.

Non-Transferability of the Rights

The subscription rights granted to you are non-transferable and, therefore, may not be assigned, gifted, purchased, sold or otherwise transferred to anyone else. Notwithstanding the foregoing, you may transfer your rights as required by operation of law; for example, a transfer of rights to the estate of the recipient upon the death of the recipient would be permitted. If the rights are transferred as permitted, evidence satisfactory to us that the transfer was proper must be received by us prior to the Expiration Date.

Uncertificated Shares of Common Stock

All shares of our common stock that you purchase in the rights offering will be issued in book-entry, or uncertificated, form. When issued, the shares will be registered in the name of the subscription rights holder of record. As soon as practicable after the expiration of the rights offering, the subscription agent will arrange for issuance to each subscription rights holder of record that has validly exercised its subscription rights the shares of common stock purchased in the rights offering. Subject to state securities laws and regulations, we have the discretion to delay distribution of any shares you may have elected to purchase by exercise of your rights in order to comply with state securities laws.

Validity of Subscriptions

We will resolve all questions regarding the validity and form of the exercise of your subscription rights, including time of receipt and eligibility to participate in the rights offering. Our determination will be final and binding. Once made, subscriptions and directions are irrevocable, and we will not accept any alternative, conditional or contingent subscriptions or directions. We reserve the absolute right to reject any subscriptions or directions not properly submitted or the acceptance of which would be unlawful. You must resolve any irregularities in connection with your subscriptions before the subscription period expires, unless waived by us in our sole discretion. Neither the subscription agent nor we shall be under any duty to notify you or your representative of defects in your subscriptions. A subscription will be considered accepted, subject to our right to cancel the rights offering, only when a properly completed and duly executed subscription rights certificate and any other required documents and payment of the full subscription amount have been received by the subscription agent (and any payment by uncertified personal check has cleared) and any defects or irregularities therein waived by us. Our interpretations of the terms and conditions of the rights offering will be final and binding.

Rights of Subscribers

You will have no rights as a stockholder with respect to shares you subscribe for in the rights offering until your account, or your account at your custodian bank, broker, dealer or other nominee, is credited with such shares. You will have no right to revoke your subscriptions after you deliver your completed rights certificate, subscription payment, as provided herein, and any other required documents to the subscription agent.

Foreign Stockholders and Stockholders with Army Post Office or Fleet Post Office Addresses

The subscription agent will not mail rights certificates to you if you are a stockholder whose address is outside the United States or if you have an Army Post Office or a Fleet Post Office address. Instead, we will have the subscription agent hold the subscription rights certificates for your account. To exercise your rights, you must notify the subscription agent prior to 11:00 a.m., Eastern Time, at least three (3) business days prior to the Expiration Date, and establish to the satisfaction of the subscription agent that it is permitted to exercise your subscription rights under applicable law. If you do not follow these procedures by such time, your rights will expire and will have no value.

No Board of Directors Recommendation

An investment in shares of our common stock must be made according to your evaluation of your own best interests and after considering all of the information herein, including the section titled "Risk Factors" beginning on page [17](#) of this prospectus. Neither we nor our board of directors are making any recommendation regarding whether you should exercise your subscription rights.

Purchase Commitments

Robert W. Duggan has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to availability, but has not made any formal binding commitment to do so.

Shares of Common Stock Outstanding After the Rights Offering

The number of shares of our common stock that will be outstanding after the rights offering will depend on the number of shares that are purchased in the rights offering. Assuming no additional shares of common stock are issued by us prior to consummation of the rights offering and assuming all offered shares are sold in the rights offering at the Initial Price, we will issue approximately [•] shares of common stock. In that case, we will have approximately [•] shares of common stock outstanding after the rights offering. This would represent an increase of approximately [•]% in the number of outstanding shares of common stock. To the extent that the Alternate Price is lower than the Initial Price, we will issue additional shares in the rights offering and the number of shares of common stock outstanding after the rights offering will be higher.

Fees and Expenses

Neither we, nor the subscription agent, will charge a brokerage commission or a fee to subscription rights holders for exercising their rights. However, if you exercise your subscription rights through a custodian bank, broker, dealer or nominee, you will be responsible for any fees charged by your custodian bank, broker, dealer or nominee.

Questions About Exercising Subscription Rights

If you have any questions or require assistance regarding the method of exercising your subscription rights or requests for additional copies of this document or any document mentioned herein, you should contact the subscription agent at the address and telephone number set forth above under “— Delivery of Subscription Materials and Payment.”

Other Matters

Pulse Biosciences is not making the rights offering in any state or other jurisdiction in which it is unlawful to do so, nor is Pulse Biosciences distributing or accepting any offers to purchase any shares of our common stock from subscription rights holders who are residents of those states or of other jurisdictions or who are otherwise prohibited by federal or state laws or regulations to accept or exercise the subscription rights. Pulse Biosciences may delay the commencement of the rights offering in those states or other jurisdictions, or change the terms of the rights offering, in whole or in part, in order to comply with the securities law or other legal requirements of those states or other jurisdictions. Subject to state securities laws and regulations, Pulse Biosciences also has the discretion to delay allocation and distribution of any shares you may elect to purchase by exercise of your subscription rights in order to comply with state securities laws. Pulse Biosciences may decline to make modifications to the terms of the rights offering requested by those states or other jurisdictions, in which case, if you are a resident in one of those states or jurisdictions or if you are otherwise prohibited by federal or state laws or regulations from accepting or exercising the subscription rights you will not be eligible to participate in the rights offering.

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES

The following summary does not purport to be a complete analysis of all of the potential United States federal income tax considerations, and does not address any tax consequences arising under any state, local or foreign tax laws or any other United States federal tax laws, including the United States federal estate or gift tax laws. This discussion applies only to holders that are United States persons (as defined below) and does not address all aspects of United States federal income taxation that may be relevant to holders in light of their particular circumstances or to holders who may be subject to special tax treatment under the Code, including, without limitation, holders who are dealers in securities or foreign currency, foreign persons, certain former citizens or long-term residents of the United States, insurance companies, tax-exempt organizations, banks, financial institutions or broker-dealers, holders who hold our common stock as part of a hedge, straddle, conversion or other risk reduction transaction, or holders who acquired our common stock pursuant to the exercise of compensatory stock options or otherwise as compensation.

This summary is of a general nature only and is not intended to constitute a complete analysis of all tax consequences relating to the receipt, exercise and expiration of the subscription rights. It is not intended to constitute, and should not be construed to constitute, legal or tax advice to any particular holder. This discussion neither binds nor precludes the Internal Revenue Service (“IRS”) from adopting a position contrary to, or otherwise challenging, the positions addressed in this prospectus, and we cannot assure you that such a contrary position could not be asserted successfully by the IRS or adopted by a court if the position or matter was litigated. We have not sought, and will not seek, either (i) a ruling from the IRS or (ii) an opinion from legal counsel, in either instance regarding the tax considerations discussed herein. Holders should consult their own tax advisors as to the tax consequences in their particular circumstances.

For purposes of this discussion, a “United States person” means a beneficial owner of subscription rights that is:

- An individual who is a citizen or resident of the United States;
- A corporation (or entity treated as a corporation for United States federal income tax purposes) created or organized, or treated as created or organized, in or under the laws of the United States, any state thereof or the District of Columbia;
- An estate whose income is subject to United States federal income tax regardless of its source; or
- A trust (i) if a United States court can exercise primary supervision over the trust’s administration and one or more United States persons are authorized to control all substantial decisions of the trust, or (ii) that has a valid election in effect under applicable Treasury Regulations to be treated as a United States person.

If a partnership (including any entity treated as a partnership for United States federal income tax purposes) receives the subscription rights or holds the stock received upon exercise of the subscription right, the tax treatment of a partner in such partnership generally will depend upon the status of the partner and the activities of the partnership. Such a partner and the partnership are urged to consult their own tax advisors as to the United States federal income tax consequences of receiving the subscription rights and exercising (or allowing to expire) the subscription right.

EACH HOLDER OF SHARES OF OUR COMMON STOCK IS STRONGLY URGED TO CONSULT SUCH HOLDER’S OWN TAX ADVISORS REGARDING THE SPECIFIC FEDERAL, STATE, LOCAL AND NON-UNITED STATES INCOME AND OTHER TAX CONSIDERATIONS OF THE RECEIPT AND EXERCISE OF THE SUBSCRIPTION RIGHTS AND THE RECEIPT, OWNERSHIP AND DISPOSITION OF OUR STOCK.

United States Federal Income Tax Considerations Applicable to the Receipt of Subscription Rights

Although the authorities governing transactions such as this rights offering are complex and unclear in certain respects, we believe and intend to take the position that the distribution of subscription rights to a holder with respect to such holder’s shares of common stock should generally be treated, for United States federal income tax purposes, as a non-taxable distribution.

However, the general rule regarding nonrecognition is subject to certain exceptions, including if receipt by a holder of subscription rights is part of a “disproportionate distribution.” A “disproportionate distribution” is a distribution or a series of distributions, including deemed distributions, that has the effect of the receipt of cash or

other property by some holders and an increase in the proportionate interest of other holders in our assets or earnings and profits. During the last 36 months, we have not made any distributions of cash or other property with respect to our stock, nor do we have any current intention of making any distributions with respect to our stock. Currently, our common stock is our sole outstanding class of stock, and we have no current intention of issuing another class of stock or convertible debt. However, the fact that we have outstanding options, warrants and similar equity-based awards could cause, under certain circumstances that cannot currently be predicted, the receipt of subscription rights pursuant to this rights offering to be part of a disproportionate distribution. The Company intends to take the position that the outstanding options, warrants and similar equity-based awards do not cause the subscription rights issued pursuant to this rights offering to be part of a disproportionate distribution, but there can be no assurances in this regard.

Our position regarding the tax-free treatment of the receipt of subscription rights is not binding on the IRS or the courts. If this position is finally determined to be incorrect, whether on the basis that the issuance of the subscriptions rights is a “disproportionate distribution” or otherwise, the fair market value of the subscription rights would be taxable to holders of our common stock as a dividend to the extent of the holder’s pro rata share of our current and accumulated earnings and profits, if any, with any excess being treated as a return of capital to the extent of the holder’s basis in shares of our common stock and thereafter as capital gain. Although no assurance can be given, it is anticipated that we will not have current and accumulated earnings and profits through the end of 2020.

The following discussion assumes that the receipt by a holder of subscription rights with respect to such holder’s common stock pursuant to this rights offering is non-taxable for United States federal income tax purposes.

Tax Basis in the Subscription Rights

- A holder’s tax basis in its subscription rights will depend on the relative fair market value of the subscription rights received by such holder and the common stock owned by such holder at the time the subscription rights are distributed. If either (i) the fair market value of the subscription rights on the date such subscription rights are distributed is equal to at least 15% of the fair market value on such date of the common stock with respect to which the subscription rights are received or (ii) the holder elects, in its United States federal income tax return for the taxable year in which the subscription rights are received, to allocate part of its tax basis in such common stock to the subscription rights, then upon exercise of the subscription rights, the holder’s tax basis in the common stock will be allocated between the common stock and the subscription rights in proportion to their respective fair market values on the date the subscription rights are distributed. If the subscription rights received by a holder have a fair market value that is less than 15% of the fair market value of the common stock owned by such holder at the time the subscription rights are distributed, the holder’s tax basis in its subscription rights will be zero unless the holder elects to allocate its adjusted tax basis in the common stock owned by such holder in the manner described in the previous sentence. The fair market value of the subscription rights on the date the subscription rights are received is uncertain, and we have not obtained, and do not intend to obtain, an appraisal of the fair market value of the subscription rights as of that date. Fair market value is defined generally as the price at which property would hypothetically change hands between a willing buyer and a willing seller, where neither is under any compulsion to buy or sell. Fair market value is a factual determination.
- A holder that allows the subscription rights received in the rights offering to expire will not recognize any gain or loss, and the tax basis in the common stock owned by such holder with respect to which such subscription rights were distributed will be equal to the tax basis in such common stock immediately before the receipt of the subscription rights in the rights offering.
- A holder will not recognize any gain or loss upon the exercise of the subscription rights received in the rights offering. The tax basis in the common stock acquired through exercise of the subscription rights will equal the sum of the subscription price for the common stock and the holder’s tax basis, if any, in the rights as described above. The holding period for the common stock acquired through exercise of the subscription rights will begin on the date the subscription rights are exercised.

Information Reporting and Backup Withholding

United States backup withholding (currently at a rate of 24%) is imposed upon certain distributions (or deemed distributions) to persons who fail (or are unable) to furnish the information required pursuant to United States information reporting requirements. Distributions (or deemed distributions or similar transactions) to a holder will

[TABLE OF CONTENTS](#)

generally be exempt from backup withholding, provided the holder meets applicable certification requirements, including (i) providing the Company with such holder's U.S. taxpayer identification number (*e.g.*, an individual's social security number or individual taxpayer identification number, or an entity's employer identification number, each a "TIN") or (ii) otherwise establishing an exemption (*e.g.*, an exemption from backup withholding as a corporate payee), in each instance on a properly filled out IRS Form W-9, certifying under penalties of perjury that, among others, such TIN or exemption is correct, together with such other certifications as may be required by law.

Backup withholding does not represent an additional tax. Any amounts withheld from a payment to a holder under the backup withholding rules will generally be allowed as a credit against such holder's U.S. federal income tax liability, and may entitle such holder to a refund, provided the required information and returns are timely furnished by such holder to the IRS.

AS INDICATED ABOVE, THE FOREGOING DISCUSSION IS FOR GENERAL INFORMATION PURPOSES ONLY AND SHOULD NOT BE VIEWED AS COMPLETE OR COMPREHENSIVE TAX ADVICE. HOLDERS RECEIVING A DISTRIBUTION OF STOCK RIGHTS CONTEMPLATED IN THIS RIGHTS OFFERING AND HOLDERS CONSIDERING THE PURCHASE OF OUR COMMON STOCK BY EXERCISING SUCH STOCK RIGHTS ARE URGED TO CONSULT THEIR OWN TAX ADVISORS REGARDING THE APPLICATION OF THE UNITED STATES FEDERAL TAX LAWS TO THEIR PARTICULAR SITUATIONS AND THE APPLICABILITY AND EFFECT OF STATE, LOCAL AND FOREIGN LAWS TO THEM.

PLAN OF DISTRIBUTION

We are distributing rights certificates and copies of this prospectus to those persons who were holders of our common stock on [•], 2020, the record date for the rights offering, promptly following the effective date of the registration statement of which this prospectus forms a part. We have not employed any brokers, dealers or underwriters in connection with the solicitation or exercise of rights in the rights offering and no commissions, fees or discounts will be paid in connection with the rights offering. While certain of our directors, officers and other employees may solicit responses from you, those directors, officers and other employees will not receive any commissions or compensation for their services other than their normal compensation, and will not register with the SEC as brokers in reliance on certain safe harbor provisions contained in Rule 3a4-1 under the Exchange Act.

Delivery of Shares

As soon as practicable after the record date for the rights offering, we will distribute the rights, rights certificates and copies of this prospectus to individuals who owned shares of common stock on 5:00 p.m., Eastern Time, on [•], 2020. If your shares are held in the name of a custodian bank, broker, dealer or other nominee, then you should send your subscription documents and subscription payment to that record holder. If you are the record holder, then you should send your subscription documents, rights certificate, and subscription payment to the subscription agent, Broadridge Corporate Issuer Solutions, Inc., at the following address. If sent by mail, we recommend that you send documents and payments by registered mail, properly insured, with return receipt requested, and that a sufficient number of days be allowed to ensure delivery to the subscription agent. Do not send or deliver these materials to the Company.

By Mail:

*Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718*

By Overnight Delivery:

*Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS IWS
51 Mercedes Way
Edgewood, NY 11717*

In the event that the rights offering is not fully subscribed, holders of rights who exercise all of their rights pursuant to their basic subscription right will have the opportunity to subscribe for unsubscribed rights pursuant to the over-subscription right. See further the section titled “The Rights Offering” beginning on page [31](#).

We have not agreed to enter into any standby or other arrangement to purchase or sell any rights or any of our securities. Robert W. Duggan has indicated that he intends to exercise all of his basic subscription rights and any over-subscription right to purchase additional shares of common stock that remain unsubscribed at the expiration of the rights offering, subject to availability, but has not made any formal binding commitment to do so.

We have not entered into any agreements regarding stabilization activities with respect to our securities. If you have any questions, you should contact the information agent at Broadridge Corporate Issuer Solutions, Inc., Attn: BCIS Re-Reorganization Dept., P.O. Box 1317, Brentwood, NY 11717-0718, by telephone at 1-888-789-8409 or by email at shareholder@broadridge.com. We have agreed to pay the subscription agent and information agent a fee plus certain expenses, which we estimate will total approximately \$12,000. We estimate that our total expenses in connection with the rights offering will be approximately \$426,000.

Other than as described herein, we do not know of any existing agreements between any stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the shares of common stock.

LEGAL MATTERS

The validity of the rights and shares of common stock offered by this prospectus have been passed upon for us by Wilson Sonsini Goodrich & Rosati, P.C., Palo Alto, California.

EXPERTS

The financial statements as of December 31, 2019 and 2018, and for each of the two years in the period ended December 31, 2019, incorporated by reference in this Prospectus, have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report, which is incorporated by reference herein. Such financial statements have been incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

Gumbiner Savett Inc., who was our independent registered public accounting firm until April 6, 2018, has audited our consolidated financial statements for the fiscal year ended December 31, 2017 which are included in our Annual Report on Form 10-K for the year ended December 31, 2019. Our financial statements are incorporated by reference in reliance on Gumbiner Savett Inc.'s reports, given on their authority as experts in accounting and auditing.

INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus certain information we file with it, which means that we can disclose important information by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and information that we file later with the SEC will automatically update and supersede information contained in this prospectus. We incorporate by reference the documents listed below that we have previously filed with the SEC (excluding any portions of any Form 8-K that are not deemed "filed" pursuant to the General Instructions of Form 8-K):

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, filed on [March 16, 2020](#), as amended by our Annual Report on Form 10-K/A for the fiscal year ended December 31, 2019, filed on [March 30, 2020](#);
- our Current Reports on Form 8-K filed with the SEC on [February 14, 2020](#) (in each case, not including any information furnished under Items 2.02 or 7.01 of Form 8-K, including the related exhibits, which information is not incorporated by reference herein); and
- the description of our common stock contained in the Registration Statement on [Form 8-A](#) relating thereto, including any amendment or report filed for the purpose of updating such description.

We also incorporate by reference into this prospectus additional documents that we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the completion or termination of the offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information deemed furnished and not filed with the SEC. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

This prospectus may contain information that updates, modifies or is contrary to information in one or more of the documents incorporated by reference in this prospectus. You should rely only on the information incorporated by reference or provided in this prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus is accurate as of any date other than the date of this prospectus or the date of the documents incorporated by reference in this prospectus.

We will provide to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request, at no cost to the requester, a copy of any and all of the information that is incorporated by reference in this prospectus.

TABLE OF CONTENTS

Requests for such documents should be directed to:

Pulse Biosciences, Inc.
3957 Point Eden Way
Hayward, CA 94545
Attention: Chief Financial Officer

You may also access certain of the documents incorporated by reference in this prospectus through our website at www.pulsebiosciences.com. Except for the specific incorporated documents listed above, no information available on, or that can be accessed through, our website shall be deemed to be incorporated by reference into this prospectus or the registration statement of which it forms a part.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual, quarterly and other reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at <http://www.sec.gov>. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, including any amendments to those reports, and other information that we file with or furnish to the SEC pursuant to Section 13(a) or 15(d) of the Exchange Act can also be accessed free of charge through the Internet. These filings will be available as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC.

We have filed with the SEC a registration statement under the Securities Act of 1933 (the "Securities Act") relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement, at prescribed rates, from the SEC at the address listed above. The registration statement and the documents referred to below under "Information Incorporated by Reference" are also available on our website, www.pulsebiosciences.com. We have not incorporated by reference into this prospectus the information on, or that can be accessed through, our website, and it is not a part of this prospectus, and the inclusion of our website address is an inactive textual reference only.



PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses Of Issuance And Distribution.

The following table sets forth the costs and expenses payable by the registrant in connection with the sale of the common stock being registered. All of the amounts shown are estimates except the SEC registration fee.

| | |
|--|------------------|
| SEC Registration Fee | \$ 3,894 |
| Subscription and Information Agent Fees and Expenses | 12,000 |
| Legal Fees and Expenses | 300,000 |
| Accounting Fees and Expenses | 55,000 |
| Printing and Mailing Expenses | 45,000 |
| Miscellaneous Expenses | <u>10,106</u> |
| Total | <u>\$426,000</u> |

Item 15. Indemnification of Directors and Officers.

Under Section 145 of the Delaware General Corporation Law, Registrant has broad powers to indemnify its directors and officers against liabilities they may incur in such capacities, including liabilities under the Securities Act of 1933, as amended (the “Securities Act”). Registrant’s Bylaws (the “Bylaws”) provide that Registrant shall indemnify its directors and officers if such officer or director acted (i) in good faith, (ii) in a manner reasonably believed to be in or not opposed to the best interests of Registrant, and (iii) with respect to any criminal action or proceeding, had no reasonable cause to believe such conduct was unlawful. Registrant believes that indemnification under its Bylaws covers at least negligence and gross negligence, and requires Registrant to advance litigation expenses in the case of stockholder derivative actions or other actions, against an undertaking by the directors and officers to repay such advances if it is ultimately determined that the director is not entitled to indemnification. The Bylaws further provide that rights conferred under such Bylaws shall not be deemed to be exclusive of any other right such persons may have or acquire under any agreement, vote of stockholders or disinterested directors, or otherwise.

In addition, Registrant’s Certificate of Incorporation (the “Certificate of Incorporation”) provides that, pursuant to Delaware law, none of its directors shall be liable for monetary damages for breach of his or her fiduciary duty of care to Registrant and its stockholders to the fullest extent permitted by the Delaware General Corporation Law as it presently exists or may hereafter be amended from time to time. This provision in the Certificate of Incorporation does not eliminate the duty of care, and in appropriate circumstances equitable remedies such as injunctive or other forms of non-monetary relief will remain available under Delaware law. In addition, each director will continue to be subject to liability for breach of the director’s duty of loyalty to Registrant for acts or omissions not in good faith or involving intentional misconduct, for knowing violations of law, for actions leading to improper personal benefit to the director, and for payment of dividends or approval of stock repurchases or redemptions that are in willful or negligent violation of applicable Delaware law. The provision also does not affect a director’s responsibilities under any other law, such as the federal securities laws or state or federal environmental laws. The Certificate of Incorporation further provides that Registrant shall indemnify its directors and officers to the fullest extent permitted by law and requires Registrant to advance litigation expenses in the case of stockholder derivative actions or other actions, against an undertaking by the director to repay such advances if it is ultimately determined that the director is not entitled to indemnification. The Certificate of Incorporation also provides that rights conferred under such Certificate of Incorporation shall not be deemed to be exclusive of any other right such persons may have or acquire under any statute, the Certificate of Incorporation, the Bylaws, agreement, vote of stockholders or disinterested directors, or otherwise.

Registrant has obtained liability insurance policies for the officers and directors that, subject to certain limitations, terms and conditions, will insure them against losses arising from wrongful acts (as defined by the policy) in their capacity as directors or officers.

In addition, Registrant has entered into agreements to indemnify its directors and certain of its officers in addition to the indemnification provided for in the Certificate of Incorporation and Bylaws. These agreements, among

TABLE OF CONTENTS

other things, indemnify Registrant's directors and certain of its officers for certain expenses (including attorney's fees), judgments, fines and settlement amounts incurred by such person in any action or proceeding, including any action by or in the right of Registrant, on account of services as a director or officer of Registrant or as a director or officer of any subsidiary of Registrant, or as a director or officer of any other company or enterprise that the person provides services to at the request of Registrant.

[TABLE OF CONTENTS](#)

Item 16. Exhibits.

The following exhibits are filed herewith or incorporated by reference herein:

| Exhibit Number | Exhibit Description | Incorporation by Reference | | | |
|-----------------------|--|----------------------------|-----------|------------|---------------|
| | | Form | File No. | Exhibit(s) | Filing Date |
| 2.1 | Plan of Conversion of Pulse Biosciences, Inc. | 8-K12B | 001-37744 | 2.1 | June 18, 2018 |
| 3.1 | Articles of Conversion | 8-K12B | 001-37744 | 3.1 | June 18, 2018 |
| 3.2 | Certificate of Conversion | 8-K12B | 001-37744 | 3.2 | June 18, 2018 |
| 3.3 | Certificate of Incorporation of Pulse Biosciences, Inc. | 8-K12B | 001-37744 | 3.3 | June 18, 2018 |
| 3.4 | Bylaws of Pulse Biosciences, Inc. | 8-K12B | 001-37744 | 3.4 | June 18, 2018 |
| 4.1 | Specimen Common Stock Certificate | 8-K12B | 001-37744 | 4.1 | June 18, 2018 |
| 4.2* | Form of Non-Transferable Subscription Rights Certificates | | | | |
| 5.1* | Opinion of Wilson Sonsini Goodrich & Rosati, P.C. | | | | |
| 23.1* | Consent of Gumbiner Savett Inc., Independent Registered Public Accounting Firm | | | | |
| 23.2* | Consent of Deloitte and Touche LLP, Independent Registered Public Accounting Firm | | | | |
| 23.3* | Consent of Wilson Sonsini Goodrich & Rosati, P.C. (contained in Exhibit 5.1) | | | | |
| 24.1* | Powers of Attorney (included on the signature page to the registration statement) | | | | |
| 99.1* | Form of Instruction for Use of Pulse Biosciences, Inc.'s Non-Transferable Subscription Rights Certificates | | | | |
| 99.2* | Form of Letter to Stockholders Who are Record Holders | | | | |
| 99.3* | Form of Letter to Brokers and Other Nominee Holders | | | | |
| 99.4* | Form of Letter to Clients of Brokers and Other Nominee Holders | | | | |
| 99.5* | Form of Nominee Holder Certification | | | | |
| 99.6* | Form of Beneficial Owner Election | | | | |

* Filed herewith

Item 17. 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 the 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 the 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 SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

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

provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) of this section 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 SEC by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

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

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

(4) That, for the purpose of determining liability under the Securities Act to any purchaser:

(i) If the registrant is relying on Rule 430B,

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5) or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii) or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date; or

TABLE OF CONTENTS

(ii) If the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

(5) That, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer and sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(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 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the 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) The undersigned registrant hereby undertakes to supplement the prospectus, after the expiration of the subscription period, to set forth the results of the subscription offer, the transactions by the underwriters during the subscription period, the amount of unsubscribed securities to be purchased by the underwriters, and the terms of any subsequent reoffering thereof. If any public offering by the underwriters is to be made on terms differing from those set forth on the cover page of the prospectus, a post-effective amendment will be filed to set forth the terms of such offering.

(d) The undersigned registrant hereby undertakes to deliver or cause to be delivered with the prospectus, to each person to whom the prospectus is sent or given, the latest annual report to security holders that is incorporated by reference in the prospectus and furnished pursuant to and meeting the requirements of Rule 14a-3 or Rule 14c-3 under the Exchange Act; and, where interim financial information required to be presented by Article 3 of Regulation S-X are not set forth in the prospectus, to deliver, or cause to be delivered to each person to whom the prospectus is sent or given, the latest quarterly report that is specifically incorporated by reference in the prospectus to provide such interim financial information.

(e) 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 SEC 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

TABLE OF CONTENTS

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.

(f) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus 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.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement on Form S-3 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Hayward, California, on April 6, 2020.

PULSE BIOSCIENCES, INC.

By: /s/ Darrin R. Uecker

Darrin R. Uecker
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Darrin R. Uecker and Sandra A. Gardiner, and each of them acting individually, jointly and severally, as his or her true and lawful attorneys-in-fact and agents, with full power of each to act alone, with full powers of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Registration Statement on Form S-3 (including post-effective amendments), and to sign any registration statement for the same offering covered by this Registration Statement that is to be effective upon filing pursuant to Rule 462(b) promulgated under the Securities Act, and all post-effective amendments thereto, and to file the same, with all exhibits thereto and all documents in connection therewith, with the SEC, granting unto said attorneys-in-fact and agents, with full power of each to act alone, 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 for all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or his or their substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933 this registration statement has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

| <u>Signature</u> | <u>Title</u> | <u>Date</u> |
|---|---|---------------|
| <u>/s/ Darrin R. Uecker</u> Darrin R. Uecker | President, Chief Executive Officer and Director <i>(Principal Executive Officer)</i> | April 6, 2020 |
| <u>/s/ Sandra A. Gardiner</u> Sandra A. Gardiner | Chief Financial Officer, Executive Vice President of Finance and Administration, Secretary and Treasurer <i>(Principal Financial and Accounting Officer)</i> | April 6, 2020 |
| <u>/s/ Robert W. Duggan</u> Robert W. Duggan | Chairman of the Board of Directors | April 6, 2020 |
| <u>/s/ Kenneth A. Clark</u> Kenneth A. Clark | Director | April 6, 2020 |
| <u>/s/ Mitchell E. Levinson</u> Mitchell E. Levinson | Director | April 6, 2020 |
| <u>/s/ Manmeet S. Soni</u> Manmeet S. Soni | Director | April 6, 2020 |
| <u>/s/ Mahkam Zanganeh</u> Mahkam Zanganeh | Director | April 6, 2020 |

THE TERMS AND CONDITIONS OF THE RIGHTS OFFERING ARE SET FORTH IN THE COMPANY'S PROSPECTUS DATED [•], 2020 (THE "PROSPECTUS") AND ARE INCORPORATED HEREIN BY REFERENCE. COPIES OF THE PROSPECTUS ARE AVAILABLE UPON REQUEST FROM BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE SUBSCRIPTION AGENT, BY CALLING (888) 789-8409.

PULSE BIOSCIENCES, INC.

Incorporated under the laws of the State of Delaware

NON-TRANSFERABLE SUBSCRIPTION RIGHTS CERTIFICATE

Evidencing Non-Transferable Subscription Rights to Purchase Shares of Common Stock, Par Value \$0.001 per share, of Pulse Biosciences, Inc.

Subscription Price: To be determined as set forth below

THE SUBSCRIPTION RIGHTS WILL EXPIRE IF NOT EXERCISED ON OR BEFORE 5:00 P.M., EASTERN TIME, ON [•], 2020 (THE "EXPIRATION DATE")

REGISTERED OWNER:

THIS CERTIFIES THAT the registered owner whose name is inscribed hereon is the owner of the number of non-transferable subscription rights ("Rights") set forth above. The Rights entitle the holder thereof to subscribe for and purchase shares of common stock, par value \$0.001 per share (the "Common Stock"), of Pulse Biosciences, Inc., a Delaware corporation (the "Company"), at a subscription price per full share equal to the lesser of (i) \$[•] (the "Initial Price") and (ii) [•] on the Expiration Date (the "Alternate Price"), pursuant to a rights offering (the "Rights Offering"), on the terms and subject to the conditions set forth in the Prospectus.

Each Right includes a subscription right. Under the subscription right, for each share of common stock owned as of the record date of the Rights Offering, the holder hereof is entitled to purchase [•] shares of Common Stock at the Initial Price per full share.

The Rights represented by this Subscription Rights Certificate may be exercised by completing Form 1 and any other appropriate forms on the reverse side hereof and by returning the full payment of the subscription price for each share of Common Stock in accordance with the instructions contained herein.

This Non-Transferable Subscription Rights Certificate is not valid unless countersigned by Broadridge Corporate Issuer Solutions, Inc., the Subscription Agent. Witness the seal of Pulse Biosciences, Inc. and the signatures of its duly authorized officers.

DATED: [•], 2020

President and Chief Executive Officer

Secretary

DELIVERY OPTIONS FOR NON-TRANSFERABLE SUBSCRIPTION RIGHTS CERTIFICATE

Deliver other than in the manner or to the addresses listed below will not constitute valid delivery.

If delivering by hand or overnight courier:

If delivering by first class mail:

Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS IWS
51 Mercedes Way
Edgewood, NY 11717

Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718

SECTION 1 – EXERCISE OF SUBSCRIPTION RIGHTS

To subscribe for shares of Common Stock pursuant to your subscription right, please complete lines (a) and (b) and sign in part (c). If you do not indicate the number of Rights being exercised, or if you do not forward the full subscription payment for the number of Rights that you indicate are being exercised, then you will be deemed to have exercised the maximum number of Rights that may be exercised with the aggregate subscription payment you delivered to the Subscription Agent. Fractional shares of our Common Stock resulting from the exercise of the subscription rights will be eliminated by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the Subscription Agent will be returned, without interest, as soon as practicable.

(a) EXERCISE OF SUBSCRIPTION RIGHT:

(i) Basic Subscription Right

$$\begin{array}{rcccccc}
 \text{I exercise} & \underline{\hspace{2cm}} & \times & [\bullet] & = & \underline{\hspace{2cm}} & \times & \$[\bullet] & = & \$ \underline{\hspace{2cm}} \\
 & \text{(No. of} & & \text{x (Initial} & & \text{(No. of Basic} & & \text{(Initial Price)} & & \text{(Amount} \\
 & \text{shares} & & \text{ratio)} & & \text{Subscription} & & & & \text{Enclosed)} \\
 & \text{owned)} & & & & \text{Shares} & & & & \\
 & & & & & \text{Subscribed For)} & & & &
 \end{array}$$

(ii) Over-Subscription Right: If you fully exercise your Basic Subscription Right, above, and wish to subscribe for additional shares, you may exercise your Over-Subscription Right below.

$$\begin{array}{rcccccc}
 \text{I exercise} & \underline{\hspace{2cm}} & \times & \$[\bullet] & = & \$ \underline{\hspace{2cm}} \\
 & & & & & & & & & \\
 & \text{(No. of Over-} & & \text{x (Initial} & & \text{(Amount Enclosed)} & & & & \\
 & \text{Subscription} & & \text{Price)} & & & & & & \\
 & \text{Shares} & & & & & & & & \\
 & \text{Subscribed For)} & & & & & & & &
 \end{array}$$

(b) PAYMENT:

| | | |
|---------------------------|--------------------------------|--|
| | Amount Enclosed | |
| Basic Subscription Right: | \$ <u> </u> | <input type="checkbox"/> Check or bank draft drawn on a U.S. bank, or postal or express money order payable to Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent. |
| Over-Subscription Right: | \$ <u> </u> | <input type="checkbox"/> Wire transfer directly to the escrow account maintained by Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent. |
| Total Amount Enclosed: | \$ <u> </u> | |

Method of Payment All payments must be made in U.S. dollars by wire transfer of funds, U.S. Postal money order or cashier's, certified, or uncertified check drawn upon a U.S. bank payable to "Broadridge Corporate Issuer Solutions, Inc. (acting as Subscription Agent for Pulse Biosciences Inc.)". The Subscription Agent will not accept payment by any other means.

(c) SIGNATURE(S):

TO SUBSCRIBE: I acknowledge that I have received the Prospectus for the rights offering and I hereby irrevocably subscribe for the number of shares indicated above on the terms and conditions specified in the Prospectus. I hereby agree that if I fail to pay for the shares of Common Stock for which I have subscribed, Pulse Biosciences, Inc. may exercise its legal remedies against me.

This form must be signed by the registered holder(s) exactly as their name(s) appear(s) on the certificate(s) or book entry or by person(s) authorized to sign on behalf of the registered holder(s) by documents transmitted herewith.

Signature(s) of Subscriber(s)

Date

Daytime Telephone Number(s)

If signature is by trustee(s), executor(s), administrator(s), guardian(s), attorney(s)-in-fact, agent(s), officer(s) of a corporation or another acting in a fiduciary or representative capacity, please provide the following information (please print). See the instructions.

Name(s)

Full Title

Taxpayer ID # or Social
Security #

Date

SECTION 2 – SPECIAL ISSUANCE OR DELIVERY INSTRUCTIONS FOR SUBSCRIPTION RIGHTS HOLDERS

(a) To be completed ONLY if the book-entry representing the Common Stock is to be issued in a name other than that of the registered holder. (See the Instructions.)

DO NOT FORGET TO COMPLETE THE GUARANTEE OF SIGNATURE(S) SECTION BELOW.

Print Full Name: _____
Print Full Address: _____
Taxpayer ID # or Social Security #: _____

(b) To be completed ONLY if the book-entry representing the Common Stock is to be issued to an address other than that shown on the front of this certificate. (See the Instructions.)

DO NOT FORGET TO COMPLETE THE GUARANTEE OF SIGNATURE(S) SECTION BELOW.

Print Full Name: _____
Print Full Address: _____
Taxpayer ID # or Social Security #: _____

SIGNATURE GUARANTEE

This must be completed if you have completed any portion of Section 2.

Signature Guaranteed: _____
(Name of Bank or Form)

By: _____
(Signature of Officer)

IMPORTANT: The signature(s) should be guaranteed by an eligible guarantor institution (bank, stock broker, savings & loan association or credit union) with membership in an approved signature guarantee medallion program pursuant to Securities and Exchange Commission Rule 17Ad-15.

FOR INSTRUCTIONS ON THE USE OF NON-TRANSFERABLE SUBSCRIPTION RIGHTS CERTIFICATES, CONSULT BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE SUBSCRIPTION AGENT, AT (888)-789-8409 (TOLL-FREE). THE RIGHTS OFFERING EXPIRES AT 5:00 P.M., EASTERN TIME, ON [•], 2020, AND THIS NON-TRANSFERABLE SUBSCRIPTION RIGHTS CERTIFICATE IS VOID THEREAFTER.

THE RIGHTS OFFERING HAS BEEN REGISTERED OR QUALIFIED OR IS BELIEVED TO BE EXEMPT FROM REGISTRATION OR QUALIFICATION ONLY UNDER THE FEDERAL LAWS OF THE UNITED STATES AND THE LAWS OF THE STATES IN THE UNITED STATES. RESIDENTS OF OTHER JURISDICTIONS MAY NOT PURCHASE THE SECURITIES OFFERED HEREBY UNLESS THEY CERTIFY THAT THEIR PURCHASES OF SUCH SECURITIES ARE EFFECTED IN ACCORDANCE WITH THE APPLICABLE LAWS OF SUCH JURISDICTIONS.

April 6, 2020

Pulse Biosciences, Inc.
3957 Point Eden Way
Hayward, California 94545

Ladies and Gentlemen:

We have acted as counsel to Pulse Biosciences, Inc., a Delaware corporation (the “Company”), in connection with the filing by the Company with the Securities and Exchange Commission (the “Commission”) of a Registration Statement on Form S-3, as amended from time to time (the “Registration Statement”), under the Securities Act of 1933, as amended (the “Act”). Pursuant to the Registration Statement, the Company plans to distribute non-transferable subscription rights (the “Rights”) to its stockholders as of the Record Date (as defined in the Registration Statement), entitling the holders thereof to purchase an aggregate of up to \$30,000,000 of shares of the Company’s common stock, \$0.001 par value per share (the “Shares”).

We have examined the Registration Statement, together with the documents incorporated by reference therein, the related prospectus forming a part thereof (the “Prospectus”), and the form of certificate representing the Rights. In addition, we have examined originals or copies, certified or otherwise identified to our satisfaction, of such other instruments, documents, certificates and records which we have deemed relevant and necessary for the basis of our opinions hereinafter expressed. In such examination, we have assumed: (i) the authenticity of original documents and the genuineness of all signatures; (ii) the conformity to the originals of all documents submitted to us as copies; (iii) the truth, accuracy and completeness of the information, representations and warranties contained in the instruments, documents, certificates and records we have reviewed; (iv) that the Registration Statement, and any amendments thereto (including post-effective amendments), will have become effective under the Act; (v) that the Shares will be issued and sold in compliance with applicable U.S. federal and state securities laws and in the manner stated in the Registration Statement and the Prospectus; and (vi) the legal capacity of all natural persons. As to any facts material to the opinions expressed herein that were not independently established or verified, we have relied upon oral or written statements and representations of officers and other representatives of the Company.

We express no opinion herein as to the laws of any state or jurisdiction other than the General Corporation Law of the State of Delaware (including the statutory provisions and all applicable judicial decisions interpreting those laws) and the federal laws of the United States of America.

We express no opinion as to (i) the effect of any bankruptcy, insolvency, reorganization, arrangement, fraudulent conveyance, moratorium or other similar laws relating to or affecting the rights of creditors generally, (ii) rights to indemnification and contribution which may be limited by applicable law or equitable principles, or (iii) the effect of general principles of equity, including, without limitation, concepts of materiality, reasonableness, good faith and fair dealing, the effect of judicial discretion and the possible unavailability of specific performance, injunctive relief or other equitable relief, and the limitations on rights of acceleration, whether considered in a proceeding in equity or at law.

On the basis of the foregoing, we are of the opinion that:

1. the Rights, when issued, will be valid and binding obligations of the Company, enforceable against the Company in accordance with their terms; and
2. the Shares, when issued, delivered and paid for in accordance upon due exercise of the Rights as contemplated in the Prospectus, will be validly issued, fully paid and non-assessable.

We hereby consent to the filing of this opinion as an exhibit to the above-referenced Registration Statement and to the reference to our name under the heading “Legal Matters” in the Prospectus forming a part of the Registration Statement. In giving such consent, we do not believe that we are “experts” within the meaning of such term as used in the Act or the rules and regulations of the Securities and Exchange Commission issued thereunder with respect to any part of the Registration Statement, including this opinion as an exhibit or otherwise.

Very truly yours,

/s/ Wilson Sonsini Goodrich & Rosati

WILSON SONSINI GOODRICH & ROSATI
Professional Corporation



CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors
Pulse Biosciences, Inc.

We hereby consent to the use in this Registration Statement on Form S-3 of our report dated March 16, 2018, relating to Pulse Biosciences, Inc.'s consolidated statements of operations and comprehensive loss, stockholders' equity, and cash flows for the year ended December 31, 2017, and the related notes, which is incorporated by reference in the Registration Statement.

We also consent to the reference to us under the caption "Experts" in the Registration Statement.

/s/ Gumbiner Savett Inc.
April 6, 2020
Santa Monica, California

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-3 of our report dated March 16, 2020, relating to the financial statements of Pulse Biosciences, Inc. appearing in the Annual Report on Form 10-K of Pulse Biosciences, Inc. for the year ended December 31, 2019. We also consent to the reference to us under the heading “Experts” in such Registration Statement.

San Jose, California

April 6, 2020

THE TERMS AND CONDITIONS OF THE RIGHTS OFFERING ARE SET FORTH IN THE COMPANY'S PROSPECTUS DATED [•], 2020 (THE "PROSPECTUS") AND ARE INCORPORATED HEREIN BY REFERENCE. COPIES OF THE PROSPECTUS ARE AVAILABLE UPON REQUEST FROM BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE SUBSCRIPTION AGENT, BY CALLING (888) 789-8409.

**FORM OF INSTRUCTIONS AS TO USE OF PULSE BIOSCIENCES, INC.
NON-TRANSFERABLE SUBSCRIPTION RIGHTS CERTIFICATES**

PLEASE CONSULT THE SUBSCRIPTION AND INFORMATION AGENT,
YOUR BANK OR BROKER FOR ANY QUESTIONS

The following instructions relate to a rights offering by Pulse Biosciences, Inc., a Delaware corporation ("we," "us," "our," or the "Company"), to the stockholders (the "holder", or "you") of its Common Stock, par value \$0.001 per share (the "Common Stock"), as described in the prospectus dated [•], 2020 (the "Prospectus"). Holders of our Common Stock as of 5:00 p.m., Eastern Time, on [•], 2020 (the "Record Date") are receiving, at no charge, non-transferable subscription rights (each, a "Subscription Right") to purchase up to an aggregate of \$30,000,000 of shares of Common Stock at an Initial price per share equal to the lesser of (i) \$[•] (the "Initial Price") and (ii) [•] on the Expiration Time (as defined below) (the "Alternate Price"). Each stockholder will receive one Subscription Right for each share of Common Stock owned on the Record Date and each Subscription Right will entitle its holder to purchase [•] shares of Common Stock at the Initial Price (the "Basic Subscription Right"). To the extent the Alternate Price is lower than the Initial Price, we will issue additional shares in the rights offering to you.

The Subscription Rights will be evidenced by non-transferable subscription rights certificates (the "Non-Transferable Subscription Rights Certificate"). The number of Subscription Rights to which you are entitled is printed on the face of your Non-Transferable Subscription Rights Certificate.

Over-Subscription Right

If a holder purchases all of the shares of Common Stock available to it pursuant to its Basic Subscription Right, it may also exercise an over-subscription right (the "Over-Subscription Right") to purchase a portion of any shares of Common Stock that are not purchased by other stockholders through the exercise of their Basic Subscription Rights (the "Unsubscribed Shares"), subject to the availability and pro rata allocation of the Unsubscribed Shares among all persons exercising their Over-Subscription Rights.

If you wish to exercise your Over-Subscription Right, you should indicate the number of additional shares that you would like to purchase in the space provided on your Non-Transferable Subscription Rights Certificate, as well as the number of shares that you beneficially own without giving effect to any shares to be purchased in this rights offering. When you send in your Non-Transferable Subscription Rights Certificate, you must also send the full purchase price in cash, as provided herein, for the number of additional shares that you have requested to purchase, at the Initial Price (in addition to the payment in cash, as provided herein, due for shares purchased through your Basic Subscription Right).

If the number of shares remaining after the exercise of all Basic Subscription Rights is not sufficient to satisfy all requests for shares pursuant to Over-Subscription Rights, you will be allocated additional shares (subject to elimination of fractional shares) in the proportion which the number of shares you purchased through the Basic Subscription Right bears to the total number of shares that all oversubscribing stockholders purchased through the Basic Subscription Right. Broadridge Corporate Issuer Solutions, Inc. (the "Subscription Agent") will return any excess payments in the form in which made.

As soon as practicable after the Expiration Time, the Subscription Agent will determine the number of shares of Common Stock that you may purchase pursuant to the Over-Subscription Right. We will issue to you the shares in book-entry, or uncertificated, form as soon as practicable after the Expiration Time and after all allocations and adjustments have been effected. If you request and pay for more shares than are allocated to you, we will refund the overpayment in the form in which made. In connection with the exercise of the Over-Subscription Right, banks, brokers and other nominee holders of Subscription Rights who act on behalf of beneficial owners will be required to certify to us and to the Subscription Agent as to the aggregate number of Subscription Rights exercised, and the number of shares of Common Stock requested through the Over-Subscription Right, by each beneficial owner on whose behalf the nominee holder is acting.

We will not issue fractional shares, but rather will round down the aggregate number of shares you are entitled to receive to the nearest whole number, with the total exercise price being adjusted accordingly. If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any excess subscription amounts paid by a subscriber (the “Excess Subscription Amount”) will be put towards the purchase of additional shares in the rights offering (either towards your Basic Subscription Right, if available, or towards the Over-Subscription Right if you have already exercised your Basic Subscription Right in full). Otherwise, any excess subscription payments received by the Subscription Agent will be returned, without interest, as soon as practicable.

You are not required to exercise any or all of your Subscription Rights. However, if you do not exercise your Subscription Rights and the rights offering is completed, the number of shares of our Common Stock you own will not change but your percentage ownership of our total outstanding voting stock will decrease because shares will be purchased by other stockholders in the rights offering. Your percentage ownership of our voting stock may also decrease if you do not exercise your Subscription Right in full. Please see the discussion of risk factors related to the rights offering, including dilution, under the heading “Risk Factors—Risks Related to The Rights Offering,” in the Prospectus.

Expiration Time

THE SUBSCRIPTION RIGHTS WILL EXPIRE AND WILL HAVE NO VALUE AT 5:00 P.M., EASTERN TIME, ON [•], 2020, SUBJECT TO EXTENSION OR EARLIER TERMINATION (THE “EXPIRATION TIME”). YOUR NON-TRANSFERABLE SUBSCRIPTION RIGHTS CERTIFICATE AND SUBSCRIPTION PAYMENT FOR EACH RIGHT THAT IS EXERCISED PURSUANT TO THE SUBSCRIPTION RIGHT MUST BE RECEIVED BY THE SUBSCRIPTION AGENT ON OR BEFORE THE EXPIRATION TIME. ONCE YOU HAVE EXERCISED YOUR SUBSCRIPTION RIGHT, SUCH EXERCISE MAY NOT BE REVOKED, EVEN IF YOU LATER LEARN INFORMATION THAT YOU CONSIDER TO BE UNFAVORABLE TO THE EXERCISE OF YOUR SUBSCRIPTION RIGHTS. SUBSCRIPTION RIGHTS NOT EXERCISED PRIOR TO THE EXPIRATION TIME OF THE RIGHTS OFFERING WILL EXPIRE WITHOUT VALUE.

If you do not exercise your Subscription Rights prior to that time, your Subscription Rights will expire and will no longer be exercisable. We will not be required to issue shares of our Common Stock to you if the Subscription Agent receives your Non-Transferable Subscription Rights Certificate(s) or your subscription payment after the Expiration Time, regardless of when the Non-Transferable Subscription Rights Certificate(s) and subscription payment were sent. If you send your Non-Transferable Subscription Rights Certificate(s) and Initial Price payment by mail, we recommend that you send them by registered mail, properly insured, with return receipt requested, and that a sufficient number of days be allowed to ensure delivery to the Subscription Agent and clearance of payment before the expiration of the subscription period. See “The Rights Offering—Expiration of this rights offering and Extensions, Amendments and Termination” in the Prospectus.

The shares issued upon exercise of the Subscription Rights will be delivered as soon as practicable after the Expiration Time, and after all pro rata allocations and adjustments have been completed.

If you have any questions concerning the rights offering, please contact the Subscription Agent, Broadridge Corporate Issuer Solutions, Inc., at the following address and number:

Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718

Holder Inquiries:
(888)-789-8409 (toll free)
shareholder@broadridge.com

1. Method of Subscription—Exercise of Subscription Rights.

To exercise your Subscription Rights, please: (1) complete Section 1 on your Non-Transferable Subscription Rights Certificate, attached to these instructions; (2) sign Section 1 of your Non-Transferable Subscription Rights Certificate; and (3) mail the properly completed and executed Non-Transferable Subscription Rights Certificate evidencing such Basic Subscription Rights and, if applicable, Over-Subscription Rights subscribed, together with

payment in full of the Initial Price for each share of Common Stock subscribed for pursuant to the Basic Subscription Right and, if applicable, Over-Subscription Rights, to the Subscription Agent, on or prior to the Expiration Time.

Additionally, if the Common Stock to be issued pursuant to the Subscription Rights are to be issued in a name other than that of the registered holder, or sent to an address other than that shown on the front of the Non-Transferable Subscription Rights Certificate, please complete Section 2 of the Non-Transferable Subscription Rights Certificate and obtain a signature guarantee as described below prior to mailing the Non-Transferable Subscription Rights Certificate to the Subscription Agent, prior to the Expiration Time. Payment of the Initial Price will be held in a segregated account to be maintained by the Subscription Agent.

(a) *Method of Execution*

(i) *Execution by Registered Holder.* Your signature on the Non-Transferable Subscription Rights Certificate must correspond with the name of the registered holder exactly as it appears on the face of the Non-Transferable Subscription Rights Certificate without any alteration or change whatsoever. Persons who sign the Non-Transferable Subscription Rights Certificate in a representative or other fiduciary capacity must indicate their capacity when signing and, unless waived by the Subscription Agent in its sole and absolute discretion, must present to the Subscription Agent satisfactory evidence of their authority to so act.

(ii) *Execution by Person Other than Registered Holder.* If the Non-Transferable Subscription Rights Certificate is executed by a person other than the holder named on the face of the Non-Transferable Subscription Rights Certificate, proper evidence of authority of the person executing the Non-Transferable Subscription Rights Certificate must accompany the same unless, for good cause, the Subscription Agent dispenses with proof of authority.

(iii) *Signature Guarantees.* If you completed any part of Section 2 of the Non-Transferable Subscription Rights Certificate to provide that the Common Stock sold pursuant to your exercise of Subscription Rights to be (x) issued in a name other than that of the registered holder, or (y) sent to an address other than that shown on the front of the Non-Transferable Subscription Rights Certificate, your signature in Section 1 must be guaranteed in Section 2 by an “Eligible Guarantor Institution,” as such term is defined in Rule 17Ad-15 of the Securities Exchange Act of 1934, such as a member firm of a registered national securities exchange or a member of the Financial Industry Regulatory Authority, Inc., or a commercial bank or trust company having an office or correspondent in the United States, or by a member of a Stock Transfer Association approved medallion program such as STAMP, SEMP or MSP, subject to standards and procedures adopted by the Subscription Agent.

(b) *Method of Payment*

Payments must be made in full in U.S. currency by:

- uncertified check drawn against a U.S. bank payable to “Broadridge Corporate Issuer Solutions, Inc. (acting as Subscription Agent for Pulse Biosciences)”;
- wire transfer of immediately available funds to accounts maintained by the Subscription Agent for purposes of accepting subscription in the rights offering at:

Beneficiary Account Name: Broadridge Corporate Issuer Solutions
Account Number: 4124218686

ABA/Routing number: 121000248
Bank: Wells Fargo
420 Montgomery Street
San Francisco, CA 94104
United States

For Further Credit: Pulse Biosciences, Inc.
Account Number: 4396288102

- a certified check, bank draft, or cashier’s check drawn against a U.S. bank payable to “Broadridge Corporate Issuer Solutions, Inc. (acting as Subscription Agent for Pulse Biosciences)”;
- U.S. Postal money order payable to “Broadridge Corporate Issuer Solutions, Inc. (acting as Subscription Agent for Pulse Biosciences)”.

Payments will be deemed to have been received upon (i) clearance of any uncertified check, (ii) receipt by the Subscription Agent of any certified check, bank draft, or cashier's check drawn upon a U.S. bank or of any U.S. Postal money order or (iii) receipt of collected funds in the Subscription Account designated above. If paying by uncertified personal check, please note that the funds paid thereby may take at least five (5) business days to clear. Accordingly, holders who wish to pay the Initial Price by means of uncertified personal check are urged to make payment sufficiently in advance of the Expiration Time to ensure that such payment is received and clears by such date and are urged to consider payment by means of certified check, bank draft, cashier's check, U.S. Postal money order, or wire transfer of funds. Any wire transfer should clearly indicate the identity of the subscriber who is paying the Initial Price by wire transfer.

If you do not indicate the number of Subscription Rights being exercised, or if you do not forward the full subscription payment for the number of Subscription Rights that you indicate are being exercised, then you will be deemed to have exercised the maximum number of Subscription Rights that may be exercised with the aggregate subscription payment you delivered to the Subscription Agent. Any excess subscription payments received by the Subscription Agent will be returned to you by mail, without interest, as soon as practicable after completion of the rights offering and after all pro rata allocations and adjustments have been completed.

Fractional shares of our Common Stock resulting from the exercise of the Subscription Rights will be eliminated by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the Subscription Agent will be returned, without interest, as soon as practicable.

(c) Method of Delivery

Non-Transferable Subscription Rights Certificate and payments of Initial Price must be delivered to the Subscription Agent by one of the methods described below:

If delivering by hand or overnight courier:
Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS IWS
51 Mercedes Way
Edgewood, NY 11717

If delivering by first class mail:
Broadridge Corporate Issuer Solutions, Inc.
Attn: BCIS Re-Organization Dept.
P.O. Box 1317
Brentwood, NY 11717-0718

Delivery to an address or by a method other than those above will not constitute valid delivery.

The method of delivery of Non-Transferable Subscription Rights Certificates and payment of the Initial Price to the Subscription Agent will be at the election and risk of the Subscription Rights holder. However, if you elect to exercise your Subscription Rights, we urge you to consider using a certified check, bank draft, cashier's check, U.S. Postal money order, or wire transfer of funds to ensure that the Subscription Agent receives your funds prior to the Expiration Time. If you send an uncertificated check, payment will not be deemed to have been received by the Subscription Agent until the check has cleared, but if you send a certified check, bank draft, or cashier's check drawn upon a U.S. bank, or a U.S. Postal money order directly to the Subscription Agent's account, payment will be deemed to have been received by the Subscription Agent immediately upon receipt of such instruments. Any personal check used to pay for shares of Common Stock must clear the appropriate financial institutions prior to the Expiration Time. The clearinghouse may require at least five (5) business days. Accordingly, holders that wish to pay the Initial Price by means of an uncertified personal check are urged to make payment sufficiently in advance of the Expiration Time to ensure such payment is received and clears by such date.

2. Issuance of Common Stock.

The following deliveries and payments will be made and/or issued to the address shown on the face of your Non-Transferable Subscription Rights Certificate, unless you provide instructions to the contrary in your Non-Transferable Subscription Rights Certificate.

- (a) *Basic Subscription Right.* As soon as practicable following the Expiration Time and the valid exercise of the Subscription Rights, we will issue to each exercising Subscription Rights holder shares in book-entry, or uncertificated, form representing shares of Common Stock purchased pursuant to the Basic Subscription Right.

- (b) *Over-Subscription Right.* As soon as practicable following the Expiration Time and after all prorations and adjustments contemplated by the terms of the rights offering have been effected, we will issue to each Rights holder that validly exercises the Over-Subscription Right shares in book-entry, or uncertificated, form representing the number of shares of Common Stock, if any, allocated to such Rights holder pursuant to the Over-Subscription Right.
- (c) *Excess Cash Payments.* As soon as practicable following the Expiration Time and after all prorations and adjustments contemplated by the terms of the rights offering have been effected, any excess subscription payments received in payment of the Initial Price will be mailed by the Subscription Agent to each Subscription Rights holder, without interest.

3. No Sale or Transfer of Subscription Rights.

The Subscription Rights granted to you are non-transferable and, therefore, you may not sell, transfer or assign your Subscription Rights to anyone.

4. Special Provisions Relating to the Delivery of Subscription Rights through the Depository Trust Company.

Banks, trust companies, securities dealers and brokers (each, a “Nominee”) that hold shares of our Common Stock on the Record Date as nominee for more than one beneficial owner may, upon proper showing to the Subscription Agent, exercise such beneficial owner’s Subscription Right through DTC on the same basis as if the beneficial owners were stockholders on the Record Date. Such Nominee may exercise the Subscription Rights on behalf of the exercising beneficial owner through DTC’s PSOP Function on the “agents subscription over PTS” procedure by (1) providing a certification as to the aggregate number of Subscription Rights exercised by the beneficial owner on whose behalf such Nominee is acting, and (2) instruct DTC to charge the Nominee’s applicable DTC account for the subscription payment for the new shares to facilitate the delivery of the full subscription payment to the Subscription Agent. DTC must receive the subscription instructions and payment for the new shares no later than the Expiration Time.

5. Form W-9.

Each Subscription Rights holder who elects to exercise Subscription Rights should provide the Subscription Agent with a correct Taxpayer Identification Number (TIN) on IRS Form W-9. See “Material U.S. Federal Income Tax Consequences — Information Reporting and Backup Withholding” in the Prospectus. Failure to provide the information on the form may subject such holder to a \$50 penalty for each such failure and to 24% federal income tax withholding with respect to dividends (including deemed dividends) that may be paid by the Company on shares of its Common Stock. Foreign Persons are generally required to provide an appropriate IRS Form W-8 rather than IRS Form W-9 and may be subject to withholding on dividends (including deemed dividends) at a rate of up to 30%.

FORM OF LETTER TO STOCKHOLDERS WHO ARE RECORD HOLDERS

PULSE BIOSCIENCES, INC.

Subscription Rights to Purchase Shares of Common Stock
Offered Pursuant to Subscription Rights
Distributed to Stockholders
of Pulse Biosciences, Inc.

[•], 2020

Dear Stockholder:

Enclosed are materials relating to a rights offering by Pulse Biosciences, Inc., a Delaware corporation (“we,” “us,” “our,” or the “Company”), including the Prospectus dated [•], 2020 (the “Prospectus”). Please carefully review the Prospectus, which describes how you can participate in the rights offering. You will be able to exercise your subscription rights to purchase shares of our common stock, par value \$0.001 per share (the “Common Stock”), only during a limited period. Answers to some frequently asked questions about the rights offering can be found under the heading “Questions and Answers About the Rights Offering” in the Prospectus. Any prospective purchaser of shares of our Common Stock pursuant to the exercise of the subscription rights should read the Prospectus, including without limitation the risk factors contained therein, prior to making any decision to invest in the Company.

In the rights offering, we are offering an aggregate of \$30,000,000 of shares of Common Stock, as described in the Prospectus.

The subscription rights will expire if not exercised prior to 5:00 p.m., Eastern Time, on [•], 2020 (the “Expiration Time”).

As described in the Prospectus, you will receive one subscription right for each share of Common Stock (each, a “Basic Subscription Right”) owned at 5:00 p.m., Eastern Time, on [•], 2020 (the “Record Date”). Each Basic Subscription Right will allow you to subscribe for [•] shares of Common Stock (the “Basic Subscription Right”) at a cash price equal to the lesser of (i) \$[•] (the “Initial Price”) and (ii) [•] on the Expiration Time (the “Alternate Price”). For example, if you owned [•] shares of Common Stock as of 5:00 p.m., Eastern Time, on the Record Date, you would receive one Basic Subscription Right and would have the right to purchase [•] shares of Common Stock (rounded down to the nearest whole share, with the total subscription payment being adjusted accordingly, as discussed below) at the Initial Price. If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any excess subscription amounts paid by a subscriber (the “Excess Subscription Amount”) will be put towards the purchase of additional shares in the rights offering (either towards your Basic Subscription Right, if available, or towards the Over-Subscription Right if you have already exercised your Basic Subscription Right in full).

In the event that you purchase all of the shares of Common Stock available to you pursuant to your Basic Subscription Right, you may also exercise an over-subscription right (the “Over-Subscription Right”, collectively with the Basic Subscription Right, the “Subscription Rights”) to purchase a portion of any shares of Common Stock that are not purchased by stockholders through the exercise of their Basic Subscription Rights (the “Unsubscribed Shares”), subject to the availability and pro rata allocation of the Unsubscribed Shares among all persons exercising this Over-Subscription Right. To the extent the Unsubscribed Shares are not sufficient to satisfy all of the properly exercised Over-Subscription Rights, then the Unsubscribed Shares will be prorated among those who properly exercised Over-Subscription Right based on the number of shares each person subscribed for under the Basic Subscription Right. If this pro rata allocation results in any person receiving a greater number of Unsubscribed Shares than the person subscribed for pursuant to the exercise of the Over-Subscription Right, then such person will be allocated only that number of Unsubscribed Shares for which the person oversubscribed, and the remaining Unsubscribed Shares will be allocated among all other persons exercising the Over-Subscription Right on the same pro rata basis described above. The proration process will be repeated until all Unsubscribed Shares have been allocated or all Over-Subscription Rights have been fulfilled, whichever occurs earlier.

You will be required to submit payment in full for all the shares you wish to buy with your Over-Subscription Right. Because we will not know the total number of Unsubscribed Shares prior to the Expiration Date, if you wish to maximize the number of shares you may purchase pursuant to your Over-Subscription Right, you will need to

deliver payment in an amount equal to the aggregate Initial Subscription Price for the maximum number of shares of Common Stock available to you, assuming that no stockholder other than you has purchased any shares of Common Stock pursuant to the Basic Subscription Right and Over-Subscription Right. The Company will eliminate fractional shares of Common Stock resulting from the exercise of the Over-Subscription Right by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the Broadridge Corporate Issuer Solutions, Inc. (the "Subscription Agent") will be returned, without interest, as soon as practicable.

The Company can provide no assurances that you will actually be entitled to purchase the number of shares of Common Stock issuable upon the exercise of your Over-Subscription Right in full at the expiration of the Rights Offering. The Company will not be able to satisfy your exercise of the Over-Subscription Right if all of our stockholders exercise their Basic Subscription Rights in full, and we will only honor an Over-Subscription Right to the extent sufficient shares of Common Stock are available following the exercise of Subscription Rights under the Basic Subscription Rights.

- To the extent the aggregate Initial Price of the maximum number of Unsubscribed Shares available to you pursuant to the Over-Subscription Right is less than the amount you actually paid in connection with the exercise of the Over-Subscription Right, you will be allocated only the number of Unsubscribed Shares available to you as soon as practicable after the Expiration Time, and your excess subscription payment received by the Subscription Agent will be returned, without interest, as soon as practicable.
- To the extent the amount you actually paid in connection with the exercise of the Over-Subscription Right is less than the aggregate Initial Price of the maximum number of Unsubscribed Shares available to you pursuant to the Over-Subscription Right; you will be allocated the number of Unsubscribed Shares for which you actually paid in connection with the Over-Subscription Right. If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any Excess Subscription Amount will be put towards the purchase of additional shares in the rights offering (either towards your Basic Subscription Right, if available, or towards the Over-Subscription Right if you have already exercised your Basic Subscription Right in full). See "The Rights Offering — Subscription Rights — Over-Subscription Rights."

You are not required to exercise any or all of your Subscription Rights. If you do not exercise your Subscription Rights and the rights offering is completed, the number of shares of our Common Stock you own will not change but your percentage ownership of our total outstanding voting stock will decrease because shares will be purchased by other stockholders in the rights offering. Your percentage ownership of our voting stock may also decrease if you do not exercise your Subscription Right in full. Please see the discussion of risk factors related to the rights offering, including dilution, under the heading "Risk Factors—Risks Related to the Rights Offering," in the Prospectus.

The Subscription Rights will be evidenced by a Non-Transferable Subscription Rights Certificate issued to stockholders of record and will cease to have any value at the Expiration Time.

Enclosed are copies of the following documents:

1. Prospectus;
2. Non-Transferable Subscription Rights Certificate;
3. Instructions as to Use of Pulse Biosciences, Inc. Non-Transferable Subscription Rights Certificates; and
4. A return envelope addressed to Broadridge Corporate Issuer Solutions, Inc., the Subscription Agent.

Your prompt action is requested. To exercise the Subscription Rights, as indicated in the Prospectus, you should deliver to the Subscription Agent the properly completed and signed Non-Transferable Subscription Rights Certificate with payment of the Subscription Price in full for each share of Common Stock subscribed for pursuant to the Subscription Right. The Subscription Agent must receive the Non-Transferable Subscription Rights Certificate with payment of the Subscription Price prior to the Expiration Time. If you send your Non-Transferable Subscription Rights Certificate(s) and Subscription Price payment by mail, we recommend that you send them by registered mail, properly insured, with return receipt requested. We will not be required to issue shares of our Common Stock to you if the Subscription Agent receives your Non-Transferable Subscription Rights Certificate or your subscription payment after that time, regardless of when the Non-Transferable Subscription Rights Certificate and subscription payment were sent. See "The Rights Offering—Expiration Date and Amendments" in the Prospectus.

Once you have exercised your Subscription Rights, such exercise may not be revoked, even if you later learn information that you consider to be unfavorable to the exercise of your Subscription Rights.

Additional copies of the enclosed materials may be obtained from Broadridge Corporate Issuer Solutions, Inc., the Subscription Agent for this rights offering, by calling (888) 789-8409 (toll-free). Any questions or requests for assistance concerning the rights offering should be directed to the Subscription Agent.

Very truly yours,

Pulse Biosciences, Inc.

FORM OF LETTER TO BROKERS AND OTHER NOMINEE HOLDERS

PULSE BIOSCIENCES, INC.

Subscription Rights to Purchase Shares of Common Stock
Offered Pursuant to Subscription Rights
Distributed to Stockholders
of Pulse Biosciences, Inc.

[•], 2020

To Securities Dealers, Commercial Banks, Trust Companies and Other Nominees:

This letter is being distributed to securities dealers, commercial banks, trust companies and other nominees in connection with the rights offering by Pulse Biosciences, Inc., a Delaware corporation (“we,” “us,” “our,” or the “Company”), of shares of common stock, pursuant to non-transferable subscription rights distributed to all stockholders of record (the “Recordholders”) of shares of our common stock, par value \$0.001 per share (the “Common Stock”), at 5:00 p.m., Eastern Time, on [•], 2020 (the “Record Date”). The subscription rights and Common Stock are described in the prospectus dated [•], 2020 (the “Prospectus”).

In the rights offering, we are offering an aggregate of \$30,000,000 of shares of Common Stock, as described in the Prospectus.

The subscription rights will expire if not exercised prior to 5:00 p.m., Eastern Time, on [•], 2020 (the “Expiration Time”).

As described in the Prospectus, each beneficial owner of shares of Common Stock registered in your name or the name of your nominee is entitled to one subscription right for each share of Common Stock (each, a “Basic Subscription Right”) owned by such beneficial owner at 5:00 p.m., Eastern Time, on the Record Date. Each Basic Subscription Right will allow the holder thereof to subscribe for [•] shares of Common Stock at a cash price equal to the lesser of (i) \$[•] (the “Initial Price”) and (ii) [•] on the Expiration Time (the “Alternate Price”). For example, if a Recordholder owned [•] shares of Common Stock as of 5:00 p.m., Eastern Time, on the Record Date, it would receive one Basic Subscription Right and would have the right to purchase [•] shares of Common Stock (rounded down to the nearest whole share, with the total subscription payment being adjusted accordingly, as discussed below) at the Initial Price. If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any excess subscription amounts paid by a subscriber (the “Excess Subscription Amount”) will be put towards the purchase of additional shares in the rights offering (either towards the Recordholder’s Basic Subscription Right, if available, or towards the Over-Subscription Right if the Recordholder has already exercised its Basic Subscription Right in full).

In the event that Recordholder purchases all of the shares of Common Stock available to it pursuant to its Basic Subscription Right, Recordholder may also exercise an over-subscription right (the “Over-Subscription Right”, collectively with the Basic Subscription Right, the “Subscription Rights”) to purchase a portion of any shares of Common Stock that are not purchased by other Recordholders through the exercise of their Basic Subscription Rights (the “Unsubscribed Shares”), subject to the availability and pro rata allocation of the Unsubscribed Shares among all persons exercising this Over-Subscription Right. To the extent the Unsubscribed Shares are not sufficient to satisfy all of the properly exercised Over-Subscription Rights, then the Unsubscribed Shares will be prorated among those who properly exercised Over-Subscription Right based on the number of shares each person subscribed for under the Basic Subscription Right. If this pro rata allocation results in any person receiving a greater number of Unsubscribed Shares than the person subscribed for pursuant to the exercise of the Over-Subscription Right, then such person will be allocated only that number of Unsubscribed Shares for which the person oversubscribed, and the remaining Unsubscribed Shares will be allocated among all other persons exercising the Over-Subscription Right on the same pro rata basis described above. The proration process will be repeated until all Unsubscribed Shares have been allocated or all Over-Subscription Rights have been fulfilled, whichever occurs earlier.

Each Recordholder will be required to submit payment in full for all the shares it wishes to buy with its Over-Subscription Right. Because we will not know the total number of Unsubscribed Shares prior to the Expiration Time, if Recordholder wishes to maximize the number of shares Recordholder may purchase pursuant to its Over-Subscription Right, the Recordholder will need to deliver payment in an amount equal to the aggregate Initial Price for the maximum number of shares of Common Stock available to Recordholder, assuming that no stockholders

other than the Recordholder has purchased any shares of Common Stock pursuant to the Basic Subscription Right and Over-Subscription Right. The Company will eliminate fractional shares of Common Stock resulting from the exercise of the Over-Subscription Right by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the Broadridge Corporate Issuer Solutions, Inc. (the “Subscription Agent”) will be returned, without interest, as soon as practicable.

The Company can provide no assurances that each Recordholder will actually be entitled to purchase the number of shares of Common Stock issuable upon the exercise of its Over-Subscription Right in full at the expiration of the rights offering. The Company will not be able to satisfy its exercise of the Over-Subscription Right if all of our Recordholders exercise their Basic Subscription Rights in full, and we will only honor an Over-Subscription Right to the extent sufficient shares of Common Stock are available following the exercise of Subscription Rights under the Basic Subscription Rights.

- To the extent the aggregate Initial Price of the maximum number of Unsubscribed Shares available to Recordholder pursuant to the Over-Subscription Right is less than the amount Recordholder actually paid in connection with the exercise of the Over-Subscription Right, Recordholder will be allocated only the number of Unsubscribed Shares available to Recordholder as soon as practicable after the Expiration Time, and the Recordholder’s excess subscription payment received by the Subscription Agent will be returned, without interest, as soon as practicable.
- To the extent the amount Recordholder actually paid in connection with the exercise of the Over-Subscription Right is less than the aggregate Initial Price of the maximum number of Unsubscribed Shares available to Recordholder pursuant to the Over-Subscription Right; Recordholder will be allocated the number of Unsubscribed Shares for which the Recordholder actually paid in connection with the Over-Subscription Right. If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any Excess Subscription Amount will be put towards the purchase of additional shares in the rights offering (either towards the Recordholder’s Basic Subscription Right, if available, or towards the Over-Subscription Right if the Recordholder has already exercised its Basic Subscription Right in full). See “The Rights Offering—Subscription Rights—Over-Subscription Rights.”

The Subscription Rights will be evidenced by a Non-Transferable Subscription Rights Certificate registered in the Recordholder’s name or its nominee and will cease to have any value at the Expiration Time.

We are asking persons who hold shares of Common Stock beneficially and who have received the Subscription Rights distributable with respect to those shares through a broker, dealer, commercial bank, trust company or other nominee, as well as persons who hold certificates of Common Stock directly and prefer to have such institutions effect transactions relating to the Subscription Rights on their behalf, to contact the appropriate institution or nominee and request it to effect the transactions for them. In addition, we are asking beneficial owners who wish to obtain a separate Non-Transferable Subscription Rights Certificate to contact the appropriate nominee as soon as possible and request that a separate Non-Transferable Subscription Rights Certificate be issued.

All commissions, fees and other expenses (including brokerage commissions and transfer taxes), other than fees and expenses of the Subscription Agent, incurred in connection with the exercise of the Subscription Rights will be for the account of the holder of the Subscription Rights, and none of such commissions, fees or expenses will be paid by the Company or the Subscription Agent.

Enclosed are copies of the following documents:

1. Prospectus;
2. Instructions as to Use of Pulse Biosciences, Inc. Non-Transferable Subscription Rights Certificates;
3. A form of letter which may be sent to your clients for whose accounts you hold shares of our Common Stock registered in your name or the name of your nominee;
4. Beneficial Owner Election;
5. Nominee Holder Certification; and
6. A return envelope addressed to Broadridge Corporate Issuer Solutions, Inc., the Subscription Agent.

Your prompt action is requested. To exercise the Subscription Rights, as indicated in the Prospectus, you should deliver to the Subscription Agent the properly completed and signed Non-Transferable Subscription Rights Certificate with payment of the Initial Price in full for each share of Common Stock subscribed for pursuant to the Subscription Right. The Subscription Agent must receive the Non-Transferable Subscription Rights Certificate with payment of the Initial Price prior to the Expiration Time. Once a Recordholder has exercised its Subscription Right, such exercise may not be revoked, even if the Recordholder later learns information that it considers to be unfavorable to the exercise of its Subscription Rights.

Additional copies of the enclosed materials may be obtained from Broadridge Corporate Issuer Solutions, Inc., the Subscription Agent for this rights offering, by calling (888) 789-8409 (toll-free). Any questions or requests for assistance concerning the rights offering should be directed to the Subscription Agent.

Very truly yours,

Pulse Biosciences, Inc.

FORM OF LETTER TO CLIENTS OF BROKERS AND OTHER NOMINEE HOLDERS

PULSE BIOSCIENCES, INC.

Subscription Rights to Purchase Shares of Common Stock
Offered Pursuant to Subscription Rights
Distributed to Stockholders
of Pulse Biosciences, Inc.

[•], 2020

To Our Clients:

Enclosed for your consideration are a prospectus, dated [•], 2020 (the “Prospectus”), and the “Instructions as to Use of Pulse Biosciences, Inc. Non-Transferable Subscription Rights Certificates” relating to the rights offering by Pulse Biosciences, Inc., a Delaware corporation (the “Company”), of shares of its common stock, par value \$0.001 per share (the “Common Stock”), pursuant to non-transferable subscription rights distributed to all stockholders of record of the Company at 5:00 p.m., Eastern Time, on [•], 2020 (the “Record Date”). The subscription rights and Common Stock are described in the Prospectus.

In the rights offering, the Company is offering the rights to purchase an aggregate of up to \$30,000,000 of shares of its Common Stock, as described in the Prospectus.

The subscription rights will expire if not exercised prior to 5:00 p.m., Eastern Time, on [•], 2020 (the “Expiration Time”).

As described in the Prospectus, you will receive one subscription right for each share of Common Stock (each, a “Basic Subscription Right”) owned at 5:00 p.m., Eastern Time, on the Record Date. Each Basic Subscription Right will allow you to subscribe for [•] shares of Common Stock at a cash price equal to the lesser of (i) \$[•] (the “Initial Price”) and (ii) [•] on the Expiration Time (the “Alternate Price”). For example, if you owned [•] shares of Common Stock as of 5:00 p.m., Eastern Time, on the Record Date, you would receive one Basic Subscription Right and would have the right to purchase [•] shares of Common Stock (rounded down to the nearest whole share, with the total subscription payment being adjusted accordingly, as discussed below) at the Initial Price. If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any excess subscription amounts paid by a subscriber (the “Excess Subscription Amount”) will be put towards the purchase of additional shares in the rights offering (either towards your Basic Subscription Right, if available, or towards the Over-Subscription Right if you have already exercised your Basic Subscription Right in full).

In the event that you purchase all of the shares of Common Stock available to you pursuant to your Basic Subscription Right, you may also exercise an over-subscription right (the “Over-Subscription Right”, collectively with the Basic Subscription Right, the “Subscription Rights”) to purchase a portion of any shares of Common Stock that are not purchased by stockholders through the exercise of their Basic Subscription Rights (the “Unsubscribed Shares”), subject to the availability and pro rata allocation of the Unsubscribed Shares among all persons exercising this Over-Subscription Right. To the extent the Unsubscribed Shares are not sufficient to satisfy all of the properly exercised Over-Subscription Rights, then the Unsubscribed Shares will be prorated among those who properly exercised Over-Subscription Right based on the number of shares each person subscribed for under the Basic Subscription Right. If this pro rata allocation results in any person receiving a greater number of Unsubscribed Shares than the person subscribed for pursuant to the exercise of the Over-Subscription Right, then such person will be allocated only that number of Unsubscribed Shares for which the person oversubscribed, and the remaining Unsubscribed Shares will be allocated among all other persons exercising the Over-Subscription Right on the same pro rata basis described above. The proration process will be repeated until all Unsubscribed Shares have been allocated or all Over-Subscription Rights have been fulfilled, whichever occurs earlier.

You will be required to submit payment in full for all the shares you wish to buy with your Over-Subscription Right. Because we will not know the total number of Unsubscribed Shares prior to the Expiration Time, if you wish to maximize the number of shares you may purchase pursuant to your Over-Subscription Right, you will need to deliver payment in an amount equal to the aggregate Initial Price for the maximum number of shares of Common Stock available to you, assuming that no stockholder other than you has purchased any shares of Common Stock pursuant to the Basic Subscription Right and Over-Subscription Right. The Company will eliminate fractional shares

of Common Stock resulting from the exercise of the Over-Subscription Right by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. Any excess subscription payments received by the Broadridge Corporate Issuer Solutions, Inc. (the “Subscription Agent”) will be returned, without interest, as soon as practicable.

The Company can provide no assurances that each of you will actually be entitled to purchase the number of shares of Common Stock issuable upon the exercise of your Over-Subscription Right in full at the expiration of the rights offering. The Company will not be able to satisfy your exercise of the Over-Subscription Right if all of our stockholders exercise their Basic Subscription Rights in full, and we will only honor an Over-Subscription Right to the extent sufficient shares of Common Stock are available following the exercise of Subscription Rights under the Basic Subscription Rights.

- To the extent the aggregate Initial Price of the maximum number of Unsubscribed Shares available to you pursuant to the Over-Subscription Right is less than the amount you actually paid in connection with the exercise of the Over-Subscription Right, you will be allocated only the number of Unsubscribed Shares available to you as soon as practicable after the Expiration Time, and your excess subscription payment received by the Subscription Agent will be returned, without interest, as soon as practicable.
- To the extent the amount you actually paid in connection with the exercise of the Over-Subscription Right is less than the aggregate Initial Price of the maximum number of Unsubscribed Shares available to you pursuant to the Over-Subscription Right; you will be allocated the number of Unsubscribed Shares for which you actually paid in connection with the Over-Subscription Right. If, on the Expiration Date, the Alternate Price is lower than the Initial Price, any Excess Subscription Amount will be put towards the purchase of additional shares in the rights offering (either towards your Basic Subscription Right, if available, or towards the Over-Subscription Right if you have already exercised your Basic Subscription Right in full). See “The Rights Offering — Subscription Rights — Over-Subscription Rights.”

The Subscription Rights are evidenced by a Non-Transferable Subscription Rights Certificate issued to stockholders of record and will cease to have any value at the Expiration Time.

THE MATERIALS ENCLOSED ARE BEING FORWARDED TO YOU AS THE BENEFICIAL OWNER OF COMMON STOCK CARRIED BY US IN YOUR ACCOUNT BUT NOT REGISTERED IN YOUR NAME. THE SUBSCRIPTION RIGHTS MAY BE EXERCISED ONLY BY US AS THE RECORD OWNER AND PURSUANT TO YOUR INSTRUCTIONS.

Accordingly, we request instructions as to whether you wish us to elect to subscribe for any shares of Common Stock to which you are entitled pursuant to the terms and subject to the conditions set forth in the Prospectus. However, we urge you to read the document carefully before instructing us to exercise your Subscription Rights.

If you wish to have us, on your behalf, exercise the Subscription Rights for any shares of Common Stock to which you are entitled, please so instruct us by completing, executing and returning to us the Beneficial Owner Election form.

Your Beneficial Owner Election form to us should be forwarded as promptly as possible in order to permit us to exercise your Subscription Rights on your behalf in accordance with the provisions of the rights offering. The rights offering will expire at the Expiration Time. Please contact us for our deadline with respect to your submission of the Beneficial Owner Election form. Once you have exercised your Subscription Rights, such exercise may not be revoked, even if you later learn information that you consider to be unfavorable to the exercise of your Subscription Rights.

Additional copies of the enclosed materials may be obtained from Broadridge Corporate Issuer Solutions, Inc., the Subscription Agent for this rights offering, by calling (888) 789-8409 (toll free). Any questions or requests for assistance concerning the rights offering should be directed to the Subscription Agent.

Very truly yours,

Pulse Biosciences, Inc.

THE TERMS AND CONDITIONS OF THE RIGHTS OFFERING ARE SET FORTH IN THE COMPANY'S PROSPECTUS DATED [•], 2020 (THE "PROSPECTUS") AND ARE INCORPORATED HEREIN BY REFERENCE. COPIES OF THE PROSPECTUS ARE AVAILABLE UPON REQUEST FROM BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE SUBSCRIPTION AGENT, BY CALLING (888) 789-8409.

PULSE BIOSCIENCES, INC.

SHARES OF COMMON STOCK
ISSUABLE UPON EXERCISE OF SUBSCRIPTION RIGHTS

NOMINEE HOLDER CERTIFICATION

The undersigned, a bank, broker, trustee, depository or other nominee holder of subscription rights (the "Subscription Rights") to purchase shares of common stock, par value \$0.001 per share ("Common Stock"), of Pulse Biosciences, Inc., a Delaware corporation (the "Company"), pursuant to the rights offering described in the Company's prospectus dated [•], 2020 (the "Prospectus"), hereby certifies to the Company and Broadridge Corporate Issuer Solutions, Inc., as subscription agent for the rights offering, that (1) the undersigned has exercised on behalf of the beneficial owners thereof (which may include the undersigned), the number of Subscription Rights specified below pursuant to the basic subscription right (as defined in the Prospectus), and on behalf of beneficial owners of Subscription Rights who have subscribed for the purchase of additional shares of Common Stock pursuant to the over-subscription right (as defined in the Prospectus), listing separately below each such exercised basic subscription right and the corresponding over-subscription right (without identifying any such beneficial owner), and (2) each such beneficial owner's basic subscription right has been exercised in full:

| | NUMBER OF SHARES OWNED ON RECORD DATE | NUMBER OF SHARES SUBSCRIBED FOR PURSUANT TO BASIC SUBSCRIPTION RIGHT | NUMBER OF SHARES SUBSCRIBED FOR PURSUANT TO OVER-SUBSCRIPTION RIGHT |
|----|---|--|---|
| 1. | _____ | _____ | _____ |
| 2. | _____ | _____ | _____ |
| 3. | _____ | _____ | _____ |
| 4. | _____ | _____ | _____ |
| 5. | _____ | _____ | _____ |

Name of Bank, Broker, Trustee, Depository or Other Nominee:

By: _____
Authorized Signature

Name: _____
(Please print or type)

Title: _____
(Please print or type)

Provide the following information if applicable:

Depository Trust Company (“DTC”) Participant Number

Participant: _____

By: _____
Authorized Signature

Name: _____
(Please print or type)

Title: _____
(Please print or type)

DTC Subscription Confirmation Number(s)

THE TERMS AND CONDITIONS OF THE RIGHTS OFFERING ARE SET FORTH IN THE COMPANY'S PROSPECTUS DATED [•], 2020 (THE "PROSPECTUS") AND ARE INCORPORATED HEREIN BY REFERENCE. COPIES OF THE PROSPECTUS ARE AVAILABLE UPON REQUEST FROM BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE SUBSCRIPTION AGENT, BY CALLING (888) 789-8409.

PULSE BIOSCIENCES, INC.

BENEFICIAL OWNER ELECTION FORM

I (We), the beneficial owner(s) of shares of common stock, par value \$0.001 per share (the "Common Stock"), of Pulse Biosciences, Inc., a Delaware corporation (the "Company"), acknowledge receipt of your letter, the prospectus dated [•], 2020 (the "Prospectus"), and the other enclosed materials relating to the offering of shares of Common Stock issuable upon the exercise of subscription rights ("Subscription Rights") as described in the Prospectus.

In this form, I (we) instruct you whether to exercise Subscription Rights to purchase shares of Common Stock distributed with respect to the Common Stock held by you for my (our) account, pursuant to the terms and subject to the conditions set forth in the Prospectus and the related "Form of Instructions as to use of Pulse Biosciences, Inc. Non-Transferable Subscription Rights Certificates."

I (We) hereby instruct you as follow:

(CHECK THE APPLICABLE BOXES AND PROVIDE ALL REQUIRED INFORMATION)

Box 1. Please DO NOT EXERCISE SUBSCRIPTION RIGHTS for shares of Common Stock.
If you checked Box 1, please sign and date this form and mail it to your broker, custodian bank or your other nominee that holds your shares.

Box 2. Please EXERCISE SUBSCRIPTION RIGHTS for shares of Common Stock as set forth below.
If you checked Box 2, please fill out the table shown below. Next, please check Box 3 and/or Box 4, as applicable, and fill out the information indicated under Box 3 and/or Box 4, as applicable. Please then sign and date this form and mail it to your broker, custodian bank or other nominee that holds your shares.

The number of Subscription Rights for which the undersigned gives instructions for exercise under the subscription privilege should not exceed the number of Subscription Rights that the undersigned is entitled to exercise.

| | Number of Shares Owned | | Initial Ratio | = | Number of Shares of Common Stock Subscribed For | | Per Share Initial Subscription Price (the "Initial Price") | = | Payment |
|---------------------------|---------------------------------|---|------------------|---|--|---|---|---|---------|
| Basic Subscription Right: | | x | [•] | = | | x | \$ [•] | = | |
| Over-Subscription Right: | | | | | | x | \$ [•] | = | |
| Total Payment Required: | | | | | | | | | |

Box 3. Payment in the following amount is enclosed: \$_____.

Box 4. Please deduct payment of \$_____ from the following account maintained by you:
The total of Box 3 and 4, together, must equal the sum of lines 1 and 2 from Box 2 above.

Type of Account: _____ Account No.: _____

I (We) on my (our) behalf, or on behalf of any other person(s) on whose behalf, or under whose directions, I am (we are) signing this form:

- irrevocably elect to purchase the number of shares of Common Stock indicated above upon the terms and conditions specified in the Prospectus;
- understands that if the [•] on 5:00 p.m., Eastern Time, on [•], 2020 (the "Alternate Price") is lower than the Initial Price, any excess subscription amounts paid by me (us) will be put towards the purchase of additional shares in the rights offering (either towards my (our) Basic Subscription Right, if available, or towards the Over-Subscription Right if I (we) have already exercised my (our) Basic Subscription Right in full); and
- agree that if I (we) fail to pay for the shares of Common Stock I (we) have elected to purchase, you may exercise any remedies available to you under law.

Name of beneficial owner(s): _____

Signature of beneficial owner(s): _____

Date: _____

If you are signing in your capacity as a trustee, executor, administrator, guardian, attorney-in-fact, agent, officer of a corporation or another acting in a fiduciary or representative capacity, please provide the following information:

Name: _____

Capacity: _____

Address (including Zip Code):

Telephone Number: _____

PLEASE MAKE SURE THAT YOU USE THE CORRECT ADDRESS. You may want to check this address with your broker.