

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

SCHEDULE TO
Tender Offer Statement Under Section 14(d)(1) or 13(e)(1)
of the Securities Exchange Act of 1934

SPARK THERAPEUTICS, INC.
(Name of Subject Company)
022019 MERGER SUBSIDIARY, INC.

(Offeror)
A Wholly Owned Subsidiary of
ROCHE HOLDINGS, INC.

(Parent of Offeror)
(Names of Filing Persons—Offeror)
Common Stock, Par Value \$0.001 Per Share
(Title of Class of Securities)

84652J103
(Cusip Number of Class of Securities)

Dr. Sean A. Johnston
Roche Holdings, Inc.
1 DNA Way, MS #24,
South San Francisco, CA 94080
Telephone: (650) 225-1000

(Name, Address and Telephone Number of Person Authorized to Receive Notices and Communications on Behalf of Filing Persons)

Copies to:

Marc O. Williams, Esq.
Brian Wolfe, Esq.
Davis Polk & Wardwell LLP
450 Lexington Avenue
New York, New York 10017
Telephone: (212) 450-4000

CALCULATION OF FILING FEE

Transaction Valuation*	Amount of Filing Fee**
\$4,805,265,563.50	\$582,398.19

* Estimated solely for purposes of calculating the filing fee pursuant to Rule 0-11(d) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). The Transaction Value was calculated by adding (i) the product of (A) 38,053,350 outstanding shares ("Shares") of common stock of Spark Therapeutics, Inc., of which 8,750 were restricted shares and (B) \$114.50 (the "Offer Price"); (ii) the product of (A) 4,157,775 Shares subject to issuance pursuant to Spark Stock Options granted and outstanding under the Spark Equity Incentive Plans and (B) \$71.74, which is the difference between the \$114.50 per share tender offer price and \$42.76, the average weighted exercise price of such options (all of which are "in-the-money"); (iii) the product of (A) outstanding restricted stock units in respect of 1,287,829 Shares subject to such restricted stock units (with any applicable performance conditions deemed to be achieved at maximum performance) and (B) the Offer Price; and (iv) the product of (A) 21,151 Shares which are estimated to be subject to outstanding purchase rights under the 2015 Employee Stock Purchase Plan (assuming that the closing price per Share as reported on the NASDAQ Global Select Market on the last day of the offering period in effect under the 2015 Employee Stock Purchase Plan on May 31, 2019 was equal to the Offer Price) and (B) the Offer Price.

The foregoing figures have been provided by Spark Therapeutics, Inc. to the Offeror and Parent of Offeror and are as of February 28, 2019, the most recent practicable date.

** The amount of the filing fee was calculated in accordance with Rule 0-11 of the Securities Exchange Act, by multiplying the Transaction Valuation by 0.0001212.

Check box if any part of the fee is offset as provided by Rule 0-11(a)(2) and identify the filing with which the offsetting fee was previously paid. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.

Amount Previously Paid:
Form or Registration No.:

Not applicable.
Not applicable

Filing Party:
Date Filed:

Not applicable.
Not applicable.

Check the box if the filing relates solely to preliminary communications made before the commencement of a tender offer.

Check the appropriate boxes below to designate any transactions to which the statement relates:

third-party tender offer subject to Rule 14d-1.

issuer tender offer subject to Rule 13e-4.

going-private transaction subject to Rule 13e-3.

amendment to Schedule 13D under Rule 13d-2.

Check the following box if the filing is a final amendment reporting the results of the tender offer.

Items 1 through 9 and Item 11.

This Tender Offer Statement on Schedule TO (the “**Schedule TO**”) relates to the offer by 022019 Merger Subsidiary, Inc., a Delaware corporation and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation, to purchase all outstanding shares of common stock, par value \$0.001 per share (the “Shares”) of Spark Therapeutics, Inc., a Delaware corporation (the “**Company**”), at \$114.50 per Share, net to the seller in cash, without interest and less applicable withholding taxes, upon the terms and subject to the conditions set forth in the Offer to Purchase, dated March 7, 2019 (the “**Offer to Purchase**”), and in the related Letter of Transmittal, copies of which are attached hereto as Exhibits (a)(1)(i) and (a)(1)(ii), respectively (which, together with any amendments or supplements thereto, collectively constitute the “**Offer**”).

The information set forth in the Offer to Purchase, including all schedules thereto, is hereby expressly incorporated herein by reference in response to all of the items of this Schedule TO, except as otherwise set forth below.

Item 10. Financial Statements.

Not applicable.

Item 12. Exhibits.

<u>Exhibit No.</u>	<u>Description</u>
(a)(1)(i)*	Offer to Purchase, dated as of March 7, 2019.
(a)(1)(ii)*	Letter of Transmittal (including Guidelines for Certification of Taxpayer Identification Number on IRS Form W-9).
(a)(1)(iii)*	Notice of Guaranteed Delivery.
(a)(1)(iv)*	Letter to Brokers, Dealers, Commercial Banks, Trust Companies and Other Nominees.
(a)(1)(v)*	Letter to Clients for use by Brokers, Dealers, Commercial Banks, Trust Companies and Other Nominees.
(a)(1)(vi)*	Summary Advertisement as published in the Wall Street Journal on March 7, 2019.
(a)(5)(i)	Media Release issued by Spark Therapeutics, Inc. dated February 25, 2019 (incorporated by reference to Exhibit 99.1 of the Spark Therapeutics, Inc. Current Report on Form 8-K (File No. 001-36819) filed with the Commission on February 25, 2019).
(a)(5)(ii)	Email sent to Spark Therapeutics, Inc. employees from Jeffrey Marrazzo, CEO of Spark Therapeutics, Inc., dated February 25, 2019 (incorporated by reference to the Spark Therapeutics, Inc. Solicitation/Recommendation Statement on Form 14D-9 (File No. 005-88577) filed with the Commission on February 25, 2019).
(a)(5)(iii)	Spark Therapeutics, Inc. Current Report on Form 8-K dated February 25, 2019 (incorporated by reference to the Spark Therapeutics, Inc. Current Report on Form 8-K (File No. 001-36819) filed with the Commission on February 25, 2019).
(a)(5)(iv)	Social media post by Spark Therapeutics, Inc. on www.twitter.com (incorporated by reference to the Company’s Solicitation/Recommendation Statement on Schedule 14D-9 filed on February 25, 2019).
(a)(5)(v)	Social media post by Jeffrey D. Marrazzo, the Company’s Chief Executive Officer, on www.twitter.com (incorporated by reference to the Company’s Solicitation/Recommendation Statement on Schedule 14D-9 filed on February 25, 2019).
(a)(5)(vi)	Q&A provided to employees of Spark Therapeutics, Inc. on February 25, 2019 (incorporated by reference to the Company’s Solicitation/Recommendation Statement on Schedule 14D-9 filed on February 25, 2019).

<u>Exhibit No.</u>	<u>Description</u>
(a)(5)(vii)	<u>Media Release issued by Roche Holdings, Inc. dated February 25, 2019 (incorporated by reference to Exhibit 99.1 of the first Roche Holdings, Inc. Pre-Commencement Communication on Schedule TO filed with the Commission on February 25, 2019).</u>
(a)(5)(viii)	<u>Key Messages and Q&A dated February 25, 2019 (incorporated by reference to Exhibit 99.2 of the first Roche Holdings, Inc. Pre-Commencement Communication on Schedule TO filed with the Commission on February 25, 2019).</u>
(b)	Not applicable
(c)	Not applicable.
(d)(1)	<u>Agreement and Plan of Merger, dated as of February 22, 2019, by and among Spark Therapeutics, Inc., Roche Holdings, Inc. and 022019 Merger Subsidiary, Inc. (incorporated by reference to Exhibit 2.1 of the Spark Therapeutics, Inc. Current Report on Form 8-K (File No. 001-36819) filed with the Commission on February 25, 2019).</u>
(d)(2)*	<u>Confidentiality Agreement, dated as of October 9, 2018, between Roche Holdings, Inc. and Spark Therapeutics, Inc.</u>
(e)	Not applicable.
(f)	<u>Section 262 of the Delaware General Corporation Law (included as Schedule II to the Offer to Purchase filed herewith as Exhibit (a)(1)(i)).</u>
(g)	Not applicable.
(h)	Not applicable.

* Filed herewith

SIGNATURES

After due inquiry and to the best knowledge and belief of the undersigned, each of the undersigned certify that the information set forth in this statement is true, complete and correct.

Date: March 7, 2019

022019 MERGER SUBSIDIARY, INC.

By: /s/ Bruce Resnick

Name: Bruce Resnick

Title: President

ROCHE HOLDINGS, INC.

By: /s/ Bruce Resnick

Name: Bruce Resnick

Title: Vice President

Offer to Purchase for Cash
All Outstanding Shares of Common Stock
of
Spark Therapeutics, Inc.
at
\$114.50 Net Per Share
by
022019 Merger Subsidiary, Inc.
a wholly owned subsidiary of
Roche Holdings, Inc.

THE OFFER AND WITHDRAWAL RIGHTS EXPIRE AT 12:00 MIDNIGHT, NEW YORK CITY TIME, AT THE END OF THE DAY ON APRIL 3, 2019, UNLESS THE OFFER IS EXTENDED OR EARLIER TERMINATED.

THIS OFFER IS BEING MADE PURSUANT TO THE AGREEMENT AND PLAN OF MERGER, DATED AS OF FEBRUARY 22, 2019, (TOGETHER WITH ANY AMENDMENTS OR SUPPLEMENTS THERETO, THE "MERGER AGREEMENT") BY AND AMONG SPARK THERAPEUTICS, INC., A DELAWARE CORPORATION ("SPARK"), ROCHE HOLDINGS, INC., A DELAWARE CORPORATION ("PARENT") AND 022019 MERGER SUBSIDIARY, INC., A DELAWARE CORPORATION AND A WHOLLY OWNED SUBSIDIARY OF PARENT ("PURCHASER"). PURCHASER IS OFFERING TO PURCHASE ALL OF THE OUTSTANDING SHARES OF COMMON STOCK (THE "SHARES"), PAR VALUE \$0.001 PER SHARE, OF SPARK FOR \$114.50 PER SHARE, NET TO THE SELLER IN CASH, WITHOUT INTEREST AND LESS ANY REQUIRED WITHHOLDING TAXES, UPON THE TERMS AND SUBJECT TO THE CONDITIONS SET FORTH IN THIS OFFER TO PURCHASE AND THE RELATED LETTER OF TRANSMITTAL (WHICH, TOGETHER WITH ANY AMENDMENTS OR SUPPLEMENTS HERETO AND THERETO, COLLECTIVELY CONSTITUTE THE "OFFER"). UNDER NO CIRCUMSTANCES WILL WE PAY INTEREST ON THE CONSIDERATION PAID FOR SHARES PURSUANT TO THE OFFER, REGARDLESS OF ANY EXTENSION OF THE OFFER OR ANY DELAY IN MAKING SUCH PAYMENT. THE MERGER AGREEMENT PROVIDES, AMONG OTHER THINGS, THAT AS SOON AS POSSIBLE (AND IN NO EVENT LATER THAN TWO BUSINESS DAYS) FOLLOWING THE CONSUMMATION OF THE OFFER, PURCHASER WILL BE MERGED WITH AND INTO SPARK (THE "MERGER"), WITHOUT A VOTE OF THE STOCKHOLDERS OF SPARK IN ACCORDANCE WITH SECTION 251(H) OF THE DELAWARE GENERAL CORPORATION LAW (THE "DGCL").

THE BOARD OF DIRECTORS OF SPARK HAS DULY AND UNANIMOUSLY (I) APPROVED, ADOPTED AND DECLARED ADVISABLE THE MERGER AGREEMENT AND THE TRANSACTIONS CONTEMPLATED THEREBY, INCLUDING THE OFFER AND THE MERGER; (II) DETERMINED THAT THE TRANSACTIONS CONTEMPLATED BY THE MERGER AGREEMENT, INCLUDING THE OFFER AND THE MERGER, ARE IN THE BEST INTERESTS OF SPARK AND ITS STOCKHOLDERS; (III) AGREED THAT THE MERGER AGREEMENT WILL BE EFFECTED UNDER SECTION 251(H) OF THE DGCL; AND (IV) RESOLVED TO RECOMMEND THAT THE HOLDERS OF THE SHARES ACCEPT THE OFFER AND TENDER THEIR SHARES TO PURCHASER PURSUANT TO THE OFFER. SPARK HAS BEEN ADVISED THAT ALL OF ITS DIRECTORS AND EXECUTIVE OFFICERS INTEND TO TENDER ALL OF THEIR TRANSFERRABLE SHARES PURSUANT TO THE OFFER.

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THE OFFER IS NOT CONDITIONED ON OBTAINING FINANCING OR THE FUNDING THEREOF. HOWEVER, THE OFFER IS SUBJECT TO VARIOUS OTHER CONDITIONS, INCLUDING, AMONG OTHER THINGS, THERE BEING VALIDLY TENDERED AND NOT WITHDRAWN PRIOR TO THE EXPIRATION OF THE OFFER A NUMBER OF SHARES (EXCLUDING ANY SHARES THAT HAVE NOT BEEN “RECEIVED” (AS DEFINED IN SECTION 251(H) OF THE DGCL), AS FURTHER DESCRIBED IN THIS OFFER TO PURCHASE) OF COMMON STOCK OF SPARK THAT REPRESENT AT LEAST A MAJORITY OF THE OUTSTANDING SHARES. A SUMMARY OF THE PRINCIPAL TERMS OF THE OFFER, INCLUDING THE CONDITIONS, APPEARS ON PAGES (1) THROUGH (8).

THIS OFFER TO PURCHASE AND THE RELATED LETTER OF TRANSMITTAL CONTAIN IMPORTANT INFORMATION, AND YOU SHOULD READ BOTH CAREFULLY BEFORE DECIDING WHETHER TO TENDER YOUR SHARES.

QUESTIONS, REQUESTS FOR ASSISTANCE AND REQUESTS FOR ADDITIONAL COPIES OF THIS OFFER TO PURCHASE, THE LETTER OF TRANSMITTAL AND THE NOTICE OF GUARANTEED DELIVERY MAY BE DIRECTED TO THE INFORMATION AGENT AT THE ADDRESS AND TELEPHONE NUMBER SET FORTH ON THE BACK COVER OF THIS OFFER TO PURCHASE. STOCKHOLDERS ALSO MAY CONTACT THEIR BROKERS, DEALERS, BANKS, TRUST COMPANIES OR OTHER NOMINEES FOR ASSISTANCE CONCERNING THE OFFER.

March 7, 2019

IMPORTANT

If you desire to tender all or any portion of your Shares in the Offer, this is what you must do:

- If you are a record holder (i.e., a stock certificate or uncertificated stock has been issued to you), you must complete and sign the enclosed Letter of Transmittal, in accordance with the instructions provided therein, and send it with your stock certificate and any other documents required in the Letter of Transmittal to Citibank, N.A., the depository for the Offer (the “Depository”), or follow the procedures for book-entry transfer set forth in Section 3 of this Offer to Purchase. These materials must reach the Depository prior to the expiration of the Offer. Detailed instructions are contained in the Letter of Transmittal and in “The Offer—Section 3—Procedures for Tendering Shares” of this Offer to Purchase.
- If you are a record holder and your stock is certificated but your stock certificate is not available or you cannot deliver it to the Depository prior to the expiration of the Offer, you may be able to tender your Shares using the enclosed Notice of Guaranteed Delivery. Please call MacKenzie Partners, Inc., the information agent for the Offer, toll free, at (800) 322-2885 for assistance. See “The Offer—Section 3—Procedures for Tendering Shares” for further details.
- If you hold your Shares through a broker, dealer, commercial bank, trust company or other nominee, you must contact your broker, dealer, commercial bank, trust company or other nominee and give instructions that your Shares be tendered.

The Letter of Transmittal, the certificates for the Shares and any other required documents must reach the Depository prior to the expiration of the Offer (currently scheduled for 12:00 midnight, New York City time, at the end of the day on April 3, 2019, unless extended or earlier terminated), unless the procedures for guaranteed delivery described in “The Offer—Section 3—Procedure for Tendering Shares” of this Offer to Purchase are followed.

This transaction has not been approved or disapproved by the U.S. Securities and Exchange Commission (the “SEC”) or any state securities commission nor has the SEC or any state securities commission passed upon the fairness or merits of this transaction or upon the accuracy or adequacy of the information contained in this Offer to Purchase or the Letter of Transmittal. Any representation to the contrary is unlawful.

* * *

Questions and requests for assistance may be directed to the information agent at the address and telephone number set forth on the back cover of this Offer to Purchase. Additional copies of this Offer to Purchase, the Letter of Transmittal, the Notice of Guaranteed Delivery and other related materials may be obtained from the information agent or from your broker, dealer, commercial bank, trust company or other nominee. Copies of these materials may also be found at the website maintained by the SEC at www.sec.gov. You may also contact your broker, dealer, commercial bank, trust company or other nominee for assistance.

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SUMMARY TERM SHEET

022019 Merger Subsidiary, Inc. (“**Purchaser**”), a wholly owned subsidiary of Roche Holdings, Inc. (“**Parent**”), is offering to purchase all of the outstanding shares of common stock, par value \$0.001 per share, of Spark Therapeutics, Inc. (“**Spark**”) for \$114.50 per share (the “**Offer Price**”), net to the seller of such Shares in cash, without interest and less any required withholding taxes, upon the terms and subject to the conditions set forth in this Offer to Purchase, the related Letter of Transmittal, and pursuant to the Agreement and Plan of Merger, dated as of February 22, 2019, by and among Spark, Parent and Purchaser (the “**Merger Agreement**”). The following are some of the questions you, as a Spark stockholder, may have, and answers to those questions. **This summary term sheet is not meant to be a substitute for the more detailed information contained in the remainder of this Offer to Purchase, and you should carefully read this Offer to Purchase and the accompanying Letter of Transmittal in their entirety because the information in this summary term sheet is not complete and additional important information is contained in the remainder of this Offer to Purchase and the related Letter of Transmittal.** This summary term sheet includes cross-references to other sections of this Offer to Purchase to direct you to the sections of the Offer to Purchase containing a more complete description of the topics covered in this summary term sheet. Unless the context otherwise requires, the terms “we,” “our” and “us” refer to Purchaser. The information concerning Spark contained herein and elsewhere in the Offer to Purchase has been provided to Parent and Purchaser by Spark or has been taken from or is based upon publicly available documents or records of Spark on file with the SEC or other public sources at the time of the Offer. Parent and Purchaser have not independently verified the accuracy or completeness of such information.

Securities Sought	All of the outstanding shares of common stock, par value \$0.001 per share (the “ Shares ”), of Spark.
Price Offered Per Share	\$114.50, net to the seller in cash, without interest, but subject to any required withholding of taxes.
Scheduled Expiration of Offer	12:00 midnight, New York City time, at the end of the day on April 3, 2019, unless the Offer is extended or earlier terminated.
Purchaser	022019 Merger Subsidiary, Inc., a Delaware corporation and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation.

Who is offering to buy my securities?

Our name is 022019 Merger Subsidiary, Inc. We are a Delaware corporation formed for the purpose of making this tender offer for all of the outstanding Shares and completing the process by which we will be merged with and into Spark. We are a wholly owned subsidiary of Parent, a Delaware corporation and an indirect subsidiary of Roche Holding Ltd, a Swiss joint-stock company (“**Roche**”). See the “Introduction” to this Offer to Purchase and “The Offer—Section 9—Certain Information Concerning Purchaser and Parent.”

What securities are you offering to purchase?

We are offering to purchase all of the outstanding Shares, on the terms and subject to the conditions set forth in this Offer to Purchase and the related Letter of Transmittal. We refer to each share of Spark common stock as a “Share.” See the “Introduction” to this Offer to Purchase and “The Offer—Section 1—Terms of the Offer.”

Why are you making the Offer?

We are making the Offer to acquire the entire equity interest in Spark. If the Offer is consummated, pursuant to the Merger Agreement, Parent intends immediately thereafter to cause Purchaser to consummate the Merger (as described below). Upon consummation of the Merger, Spark will cease to be a publicly traded company and will become a wholly owned subsidiary of Parent.

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How much are you offering to pay for my securities and what is the form of payment? Will I have to pay any fees or commissions?

We are offering to pay \$114.50 per Share, net to the seller in cash, without interest and less any required withholding taxes. If you are the record holder of your Shares (i.e., a stock certificate or uncertificated stock has been issued to you) and you directly tender your Shares to us in the Offer, you will not have to pay brokerage fees or similar expenses. If you own your Shares through a broker, dealer, commercial bank, trust company or other nominee, and your broker, dealer, commercial bank, trust company or other nominee tenders your Shares on your behalf, then they may charge you a fee for doing so. You should consult your broker, dealer, commercial bank, trust company or other nominee to determine whether any charges will apply. See the “Introduction” to this Offer to Purchase and “The Offer—Section 2—Acceptance for Payment and Payment for Shares.”

Do you have the financial resources to pay for the Shares?

Yes. We have sufficient resources available to us to make the payment for your Shares. Based upon Spark’s filings with the SEC and more recent information provided to us by Spark, we estimate that we will need approximately \$4.8 billion to acquire Spark pursuant to the Offer and the Merger (as defined below), to pay amounts payable in respect of certain stock options and restricted stock units, to pay related fees and expenses and to pay all other amounts that may become due and payable as a result of the Offer and the Merger. Roche and its controlled affiliates expect to contribute or otherwise advance to us the funds necessary to consummate the Offer and the Merger and to pay related fees and expenses. It is anticipated that all of such funds will be obtained from Roche’s or its controlled affiliates’ general corporate funds and commercial paper lines of credit.

The Offer is not conditioned upon any financing arrangements or the funding thereof. See “The Offer—Section 10—Source and Amount of Funds.”

Is your financial condition relevant to my decision to tender in the Offer?

No. We do not think our financial condition is relevant to your decision whether to tender Shares and accept the Offer because:

- the Offer is being made for all outstanding Shares solely for cash;
- as described above, we, through Roche and its controlled affiliates, have sufficient funds to purchase all Shares validly tendered, and not withdrawn, in the Offer and to provide funding for the Merger, which is expected to occur as promptly as practicable (and in any event within two business days) following the completion of the Offer;
- consummation of the Offer is not subject to any financing condition; and
- if we consummate the Offer, we expect to acquire any remaining Shares for the same cash per Share price in the Merger.

See “The Offer—Section 10—Source and Amount of Funds.”

What are the most significant conditions to the Offer?

The Offer is conditioned upon, among other things:

- there being validly tendered in accordance with the terms of the Offer (and “received” as defined in Section 251(h) of the General Corporation Law of the State of Delaware (the “DGCL”), and not validly withdrawn, that number of Shares that, considered together with all other Shares (if any) owned by Parent and its affiliates (excluding any Shares tendered pursuant to guaranteed delivery procedures that have not yet been “received”), represent at least one more than 50% of the total number of Shares outstanding immediately after the consummation of the Offer (which we refer to as the “**Minimum Condition**”); and

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- the expiration or termination of the waiting period (and any extension thereof) or receipt of clearance under (A) the Hart-Scott-Rodino Antitrust Improvement Act of 1976, as amended (the “**HSR Act**”), and (B) any other competition, merger control, trade regulation, antitrust or similar laws applicable to the Offer and the Merger, in either case, without the imposition of any requirement that Parent or Purchaser, except solely with respect to Spark and its subsidiaries, and solely with respect to (and limited to) Spark’s developmental products and programs (other than any Hemophilia A programs or products, including SPK-8011 and SPK-8016) that are or would be competitive with the products and programs of Parent and its affiliates or in which Parent and its affiliates own or control any interest (w) sell, divest, license, hold separate or otherwise dispose of any asset, interest or business of Parent or its affiliates or Spark or its subsidiaries, (x) permit Spark or its subsidiaries to sell, divest, license, hold separate or otherwise dispose of any of their assets, interests, or businesses prior to the effective time of the Merger (the “**Merger Effective Time**”), (y) terminate, relinquish, modify, transfer, assign, restructure or waive existing agreements, collaborations, relationships, ventures, contractual rights, obligations or other arrangements of Parent, Spark or their respective subsidiaries and (z) undertake any other behavioral remedy or commitment whatsoever including but not limited to creating or consenting to create any relationships, ventures, contractual rights, obligations, or other arrangements of Parent or Spark or their respective subsidiaries and, in each case, to enter, or to offer to enter, into agreements and stipulate to the entry of an order or decree or file appropriate applications with any governmental entity in connection with any of the foregoing and in the case of actions by or with respect to Spark or its subsidiaries or their businesses or assets, by consenting to such action by any of Spark or its subsidiaries (such requirements collectively, the “**Regulatory Condition**”).

Other conditions to the Offer are described in “The Offer—Section 15—Conditions to the Offer.” See also “The Offer—Section 16—Certain Legal Matters; Regulatory Approvals.” Consummation of the Offer is not conditioned on obtaining financing or the funding thereof.

Is there an agreement governing the Offer?

Yes. Spark, Parent and Purchaser have entered into the Agreement and Plan of Merger, dated as of February 22, 2019. Pursuant to the Merger Agreement, the parties have agreed on, among other things, the terms and conditions of the Offer and, following consummation of the Offer, the Merger of Purchaser with and into Spark. See the “Introduction” to this Offer to Purchase and “The Offer—Section 13—The Transaction Documents—The Merger Agreement.”

What does Spark’s board of directors think about the Offer?

Spark’s board of directors, (the “**Spark Board**”) has duly and unanimously:

- approved, adopted and declared advisable the Merger Agreement and the transactions contemplated thereby, including the Offer and the Merger;
- determined that the transactions contemplated by the Merger Agreement, including the Offer and the Merger, are in the best interests of Spark and its stockholders;
- agreed that the Merger Agreement will be effected under Section 251(h) of the DGCL; and
- resolved to recommend that Spark’s stockholders accept the Offer and tender their Shares to Purchaser pursuant to the Offer.

Spark will file a Tender Offer Solicitation/Recommendation Statement on Schedule 14D-9 with the SEC indicating the approval of the Merger Agreement, the Offer, the Merger and the other transactions contemplated by the Merger Agreement by the Spark Board and recommending that Spark’s stockholders tender their Shares in the Offer.

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See “The Offer—Section 11—Background of the Offer; Contacts with Spark” and “The Offer—Section 13—The Transaction Documents—The Merger Agreement.” We expect that a more complete description of the reasons for the Spark Board’s approval of the Offer and the Merger will be set forth in a Solicitation/Recommendation Statement on Schedule 14D-9 to be prepared by Spark and filed with the SEC and mailed to all Spark stockholders.

How long do I have to decide whether to tender my Shares in the Offer?

You have until 12:00 midnight, New York City time, at the end of the day on April 3, 2019, to decide whether to tender your Shares in the Offer. See “The Offer—Section 1—Terms of the Offer.” If you cannot deliver everything required to make a valid tender to Citibank, N.A., the depository for the Offer (the “**Depository**”), prior to such time, you may be able to use a guaranteed delivery procedure, which is described in “The Offer—Section 3—Procedures for Tendering Shares.” In addition, if we extend the Offer as described below under “Introduction” to this Offer to Purchase, you will have an additional opportunity to tender your Shares. Please be aware that if your Shares are held by a broker, dealer, commercial bank, trust company or other nominee, they may require advance notification before the expiration time of the Offer.

When and how will I be paid for my tendered Shares?

If the conditions to the Offer set forth in “The Offer—Section 15—Conditions of the Offer” are satisfied or waived as of the expiration of the Offer, we will pay for all validly tendered and not validly withdrawn Shares as soon as practicable after the date of expiration of the Offer (but in no event more than three business days thereafter).

We will pay for your validly tendered and not withdrawn Shares by depositing the purchase price with the Depository, which will act as your agent for the purpose of receiving payments from us and transmitting such payments to you. In all cases, payment for tendered Shares will be made only after timely receipt by the Depository of certificates for such Shares (or of a confirmation of a book-entry transfer of such Shares as described in “The Offer—Section 3—Procedures for Tendering Shares”), a properly completed and duly executed Letter of Transmittal (or manually signed facsimile thereof) and any other required documents for such Shares.

Can the Offer be extended and under what circumstances?

Yes. If at the scheduled expiration date of the Offer, including following a prior extension, any condition to the Offer has not been satisfied or waived, we will extend the Offer for one or more consecutive periods of not more than ten business days (or for such longer period as may be agreed to by Parent and Spark) until such time as such conditions shall have been satisfied or waived, provided that we will not be required to extend the Offer beyond December 31, 2019 (but if on such date all conditions to the Offer have been satisfied or waived other than the Regulatory Condition or certain other conditions related to governmental challenges to the Offer or the Merger based on the antitrust laws of certain jurisdictions, either Spark or Parent can extend such date until January 31, 2020). In addition, we will extend the Offer for any period required by any rule, regulation, interpretation or position of the SEC or its staff or NASDAQ or its staff that is applicable to the Offer. See “The Offer—Section 1—Terms of the Offer.”

Will you provide a subsequent offering period?

We do not presently intend to offer a subsequent offering period.

How will I be notified if the Offer is extended?

If we extend the Offer, we will inform the Depository of that fact and will make a public announcement of the extension no later than 9:00 a.m., New York City time, on the business day after the day on which the Offer was scheduled to expire.

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How do I tender my Shares?

If you wish to accept the Offer, this is what you must do:

- If you are a record holder (i.e., a stock certificate or uncertificated stock has been issued to you), you must complete and sign the enclosed Letter of Transmittal, in accordance with the instructions provided therein, and send it with your stock certificates and any other documents required in the Letter of Transmittal to the Depository or follow the procedures for book-entry transfer set forth in Section 3 of this Offer to Purchase. These materials must reach the Depository prior to the expiration of the Offer. Detailed instructions are contained in the Letter of Transmittal and in “The Offer—Section 3—Procedures for Tendering Shares.”
- If you are a record holder and your stock is certificated, but your stock certificate is not available or you cannot deliver it to the Depository prior to the expiration of the Offer, you may be able to tender your Shares using the enclosed Notice of Guaranteed Delivery. Please call MacKenzie Partners, Inc., the Information Agent, toll free, at (800) 322-2885 or by email at tenderoffer@mackenziepartners.com for assistance. See “The Offer—Section 3—Procedures for Tendering Shares” for further details.
- If you hold your Shares through a broker, dealer, commercial bank, trust company or other nominee, you must contact your broker, dealer, commercial bank, trust company or other nominee and give instructions that your Shares be tendered.

How do I tender Shares that are not represented by a certificate?

If you directly hold uncertificated Shares in an account with Spark’s transfer agent, American Stock Transfer & Trust Company, LLC, you should follow the instructions for book-entry transfer of your Shares as described in Section 3 of this Offer to Purchase and in the attached Letter of Transmittal. If you hold your uncertificated Spark Shares through a broker, dealer, commercial bank, trust company or other nominee, you must contact your broker, dealer, commercial bank, trust company or other nominee and give instructions that your Spark Shares be tendered.

Until what time can I withdraw tendered Shares?

You can withdraw some or all of the Shares that you previously tendered in the Offer at any time prior to the expiration time of the Offer (as it may be extended from time to time). Further, if we have not accepted your Shares for payment by May 6, 2019, you may withdraw them at any time after May 6, 2019. Once we accept your tendered Shares for payment upon expiration of the Offer, however, you will no longer be able to withdraw them. See “The Offer—Section 4—Withdrawal Rights.”

How do I withdraw tendered Shares?

To withdraw Shares that you previously tendered in the offer, you must deliver a written notice of withdrawal, or a facsimile of one, which includes the required information, to the Depository while you have the right to withdraw such Shares. If you tendered Shares by giving instructions to a broker, dealer, commercial bank, trust company or other nominee, then you must instruct the broker, dealer, commercial bank, trust company or other nominee to arrange to withdraw the Shares. See “The Offer—Section 4—Withdrawal Rights.”

Can holders of stock options and/or restricted stock units participate in the Offer?

The Offer is only for the outstanding shares of common stock of Spark that are not subject to vesting conditions and not for any options to purchase shares (“**Spark Stock Options**”), restricted stock units (“**Spark RSUs**”) or restricted stock awards (“**Spark Restricted Stock Awards**”). If you hold unexercised stock options and you wish to participate in the Offer, you must exercise your stock options (to the extent they are exercisable) in accordance with the terms of the award agreement and tender such Shares received upon the exercise in

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accordance with the terms of the Offer. Holders of unexercisable stock options will be unable to exercise such stock options and are not eligible to participate in the Offer with respect to the Shares underlying such stock options unless they become exercisable by their terms prior to the time at which such Shares are first accepted for payment under the Offer (the “**Acceptance Time**”).

Immediately prior to the Merger Effective Time, each Spark Stock Option, whether vested or unvested, that is outstanding and unexercised immediately prior to the Merger Effective Time, shall be cancelled and automatically converted into the right to receive from Parent or the surviving corporation an amount in cash (subject to any applicable withholding tax) equal to the product obtained by multiplying (i) the excess, if any, of the Offer Price over the per share exercise price of such Spark Stock Option, by (ii) the aggregate number of Shares issuable upon exercise of such Spark Stock Option immediately prior to the Merger Effective Time (such product, the “**Option Payment**”). From and after the Merger Effective Time, the holder of any cancelled Spark Stock Option shall only be entitled to receive the Option Payment in respect of such cancelled Spark Stock Option. See “The Offer—Section 13—The Transaction Documents—The Merger Agreement—Spark Stock Options.”

Immediately prior to the Merger Effective Time, each Spark RSU that is outstanding immediately prior to the Effective Time, whether vested or unvested, shall be cancelled and automatically converted into the right to receive from Parent or the surviving corporation an amount in cash (subject to any applicable withholding tax) equal to the Offer Price (such amounts payable hereunder, the “**RSU Award Payment**”). From and after the Merger Effective Time, the holder of any cancelled Spark RSU shall only be entitled to receive the RSU Award Payment in respect of such cancelled Spark RSU. See “The Offer—Section 13—The Transaction Documents—The Merger Agreement—Spark Restricted Stock Units.”

Immediately prior the Merger Effective Time, each Spark Restricted Stock Award that is outstanding shall be deemed fully vested and shall be treated the same as other Spark Shares outstanding immediately prior to the Merger Effective Time. To the extent payable to a current or former employee of Spark or a subsidiary, such payments (the “**Restricted Stock Payment**”) shall be made by the surviving corporation through its payroll system and shall be subject to applicable tax withholdings. See “The Offer—Section 13—The Transaction Documents—The Merger Agreement—Spark Restricted Stock Awards.”

Prior to the Merger Effective Time, Spark shall take any and all such actions as are necessary (under the Spark 2014 Stock Incentive Plan (as amended from time to time) and the Spark 2015 Stock Incentive Plan (as amended from time to time) (together the “**Spark Equity Incentive Plans**”), applicable award agreements, applicable law or otherwise) to effect the foregoing, including by amending the applicable Spark Equity Incentive Plans. At or prior to the Merger Effective Time, Parent shall deposit, or cause to be deposited, funds sufficient to pay the aggregate Option Payment, the RSU Award Payment and the Restricted Stock Payment to an account identified by Spark prior to the Merger Effective Time. The Option Payments, RSU Award Payments and Restricted Stock Payments shall, except as may otherwise be required by Section 409A of the Code, be made by the surviving corporation at, or within five (5) business days of, the Merger Effective Time, without interest. All payments provided by the foregoing shall be made through the surviving corporation’s payroll and/or equity award maintenance systems, subject to withholding in accordance with applicable Tax Law.

As soon as practicable following the date hereof, Spark shall take all actions with respect to the 2015 Employee Stock Purchase Plan (the “**Spark ESPP**”) to provide that with respect to any offering periods in effect as of the date hereof (the “**Current Purchase Period**”), (i) no employee who is not a participant in the Spark ESPP as of the date hereof may become a participant in the Spark ESPP and (ii) each individual participating in the Current Purchase Period in progress on the date of this Agreement shall not be permitted to increase his or her payroll contribution rate pursuant to the Spark ESPP from the rate in effect immediately prior to the date of this Agreement, except as may be required by applicable law. In addition, (A) the Current Purchase Period will end on May 31, 2019; provided that if the Merger Effective Time is prior to May 31, 2019, Spark will end the Current Purchase Period on a specified trading day occurring at least ten (10) days prior to the date on which the consummation of the Merger is expected to occur and treat the Current Purchase Period as a fully effective and

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completed offering period for all purposes of the Spark ESPP, and all outstanding purchase rights under the Spark ESPP shall automatically be exercised, in accordance with the terms of the Spark ESPP, upon the last day of the Current Purchase Period, and any Shares purchased under the Spark ESPP shall be treated the same as other Spark Shares outstanding immediately prior to the Merger Effective Time; (B) there will be no offering periods following the Current Purchase Period and (C) in all events, Spark shall terminate the Spark ESPP prior to the Merger Effective Time. Prior to the Merger Effective Time, Spark shall take all actions (including, if appropriate, amending the terms of the Spark ESPP) that are necessary to give effect to the transactions contemplated by the foregoing. See “The Offer—Section 13—The Transaction Documents—The Merger Agreement—Spark Employee Stock Purchase Plan.”

Will the Offer be followed by a Merger if not all of the Shares are tendered in the Offer? If the Offer is completed, will Spark continue as a public company?

If the Minimum Condition is satisfied and the Offer is consummated, assuming certain statutory requirements are met, we will effect the Merger of us into Spark as promptly as practicable in accordance with the terms of the Merger Agreement without a vote or any further action by the stockholders of Spark pursuant to Section 251(h) of the DGCL. Pursuant to the Merger Agreement, if the Minimum Condition is not satisfied, we are not required to (nor are we permitted without Spark’s consent to) accept Shares for purchase in the Offer nor will we be able to consummate the Merger.

However, if the Offer is consummated, we expect to complete the Merger pursuant to the applicable provisions of the DGCL, after which the surviving corporation will be a wholly owned subsidiary of Parent and the Shares will no longer be publicly traded. If the Merger takes place, all remaining stockholders (other than Spark, its subsidiaries, Parent, us or any subsidiary of Parent, or any stockholders who have properly exercised their appraisal rights under Delaware law) will receive the price per share paid in the Offer. See the “Introduction” to this Offer to Purchase and “The Offer—Section 12—Purpose of the Offer; Plans for Spark; Stockholder Approval; Appraisal Rights” and “The Offer—Section 13—The Transaction Documents—The Merger Agreement.”

If I decide not to tender, how will the Offer affect my Shares?

If the Merger is consummated between Spark and Purchaser, Spark stockholders not tendering their Shares in the Offer (other than Spark, any of its subsidiaries, Parent, us or any subsidiary of Parent, or any stockholders who have properly exercised their appraisal rights under Delaware law) will receive cash in an amount equal to the price per Share paid in the Offer, less any required withholding taxes. If we accept and purchase Shares in the Offer, we will consummate the Merger as soon as practicable without a vote of or any further action by the stockholders of Spark, pursuant to Delaware law. Therefore, if the Merger takes place and you do not validly exercise your appraisal rights under Section 262 of the DGCL, the only difference to you between tendering your Shares and not tendering your Shares is that you will be paid earlier if you tender your Shares.

While we intend to consummate the Merger as soon as practicable after we consummate the Offer, if the Merger does not take place and the Offer is consummated, there may be so few remaining stockholders and publicly traded Shares that there will no longer be an active or liquid public trading market (or, possibly, any public trading market) for Shares held by stockholders other than us. We cannot predict whether the reduction in the number of Shares that might otherwise trade publicly would have an adverse or beneficial effect on the market price for, or marketability of, the Shares. Also, Spark may no longer be required to make filings with the SEC or otherwise may no longer be required to comply with the SEC rules relating to publicly held companies. See “The Offer—Section 7—Possible Effects of the Offer on the Market for the Shares; Stock Exchange Listing; Registration under the Exchange Act; Margin Regulations” and “The Offer—Section 13—The Transaction Documents—The Merger Agreement.”

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Assuming the Minimum Condition is satisfied and we purchase the tendered Shares in the Offer, no stockholder vote will be required to consummate the Merger, and we do not expect there to be a significant period of time between the consummation of the Offer and the consummation of the Merger. See “The Offer—Section 12—Purpose of the Offer; Plans for Spark; Stockholder Approval; Appraisal Rights—No Stockholder Approval.”

Are appraisal rights available in either the Offer or the Merger?

No appraisal rights are available in connection with the Offer. However, pursuant to the DGCL, if the Merger is consummated, any stockholder who does not tender their Shares in the Offer will have the right, by fully complying with the applicable provisions of Section 262 of the DGCL, to choose not to accept the consideration payable for their Shares pursuant to the Merger, and instead to demand an appraisal of their Shares by the Court of Chancery of the State of Delaware and receive a cash payment of the “fair value” of their Shares as of the Merger Effective Time as determined by the Court of Chancery of the State of Delaware. The “fair value” of such Shares as of the Merger Effective Time may be more than, less than, or equal to the Offer Price. See “The Offer—Section 12—Purpose of the Offer; Plans for Spark; Stockholder Approval; Appraisal Rights—Appraisal Rights.”

What is the market value of my Shares as of a recent date?

On February 22, 2019, the last full trading day before we announced our intention to commence the Offer, the highest intraday sale price of the Shares on the NASDAQ Global Select Market (“NASDAQ”) was \$52.99 per share. On March 6, 2019, the last full trading day before the date of this Offer to Purchase, the closing price of the Shares on NASDAQ was \$113.70. Please obtain a recent quotation for the Shares before deciding whether or not to tender your Shares.

What are the material U.S. federal income tax consequences of exchanging my Shares pursuant to the Offer?

In general, your exchange of Shares for cash pursuant to the Offer will be a taxable transaction for U.S. federal income tax purposes and may also be a taxable transaction under applicable state, local or foreign income or other tax laws. You should consult your tax advisor about the tax consequences to you of exchanging your Shares pursuant to the Offer in light of your particular circumstances. See “The Offer—Section 5—Certain U.S. Federal Income Tax Consequences.”

Who can I talk to if I have questions about the Offer?

You can call MacKenzie Partners, Inc., the Information Agent, toll free, at (800) 322-2885 or by email at tenderoffer@mackenziepartners.com. See the back cover of this Offer to Purchase.

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To the Stockholders of Spark Therapeutics, Inc.:

INTRODUCTION

022019 Merger Subsidiary, Inc., a Delaware corporation (“**Purchaser**”) and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation (“**Parent**”), is offering to purchase all outstanding shares (the “**Shares**”) of common stock, par value \$0.001 per share, of Spark Therapeutics, Inc., a Delaware corporation (“**Spark**”), for \$114.50 per Share (the “**Offer Price**”), net to the seller of such Shares in cash, without interest and less any required withholding taxes, upon the terms and subject to the conditions set forth in this Offer to Purchase and the related Letter of Transmittal (which, as amended or supplemented from time to time, together constitute the “**Offer**”). Unless the context requires otherwise, the terms “we,” “our” and “us” refer to Purchaser.

If you are the record holder of your Shares (i.e., a stock certificate or uncertificated stock has been issued to you), you will not be required to pay brokerage fees, commissions or, except as set forth in Instruction 6 of the Letter of Transmittal, stock transfer taxes on the exchange of Shares for cash pursuant to the Offer. However, if you do not complete and sign the IRS Form W-9 that is included in the Letter of Transmittal (or other applicable form), you may be subject to backup withholding at a current rate of 24% on the gross proceeds payable to you. See “The Offer—Section 3—Procedures for Tendering Shares—Backup Withholding.” Backup withholding is not an additional tax and any amounts withheld under the backup withholding rules will be refunded or credited against your U.S. federal income tax liability, provided the required information is timely furnished to the Internal Revenue Service. Stockholders with Shares held in street name by a broker, dealer, commercial bank, trust company or other nominee should consult with their nominee to determine if they will be charged any transaction fees. We will pay all charges and expenses of Citibank, N.A., the depository for the Offer (the “**Depository**”) and MacKenzie Partners, Inc., the information agent for the Offer (the “**Information Agent**”) incurred in connection with the Offer. See “The Offer—Section 17—Fees and Expenses.”

We are making the Offer pursuant to the Agreement and Plan of Merger, dated as of February 22, 2019 (the “**Merger Agreement**”), among Spark, Parent and Purchaser. The Merger Agreement provides, among other things, that as soon as practicable after consummation of the Offer and subject to the satisfaction or waiver of the other conditions set forth in the Merger Agreement, Purchaser will merge with and into Spark (the “**Merger**”), with Spark continuing as the surviving corporation and a wholly owned subsidiary of Parent. At the effective time of the Merger (the “**Merger Effective Time**”), each outstanding Share (other than Shares held by Spark, any of its subsidiaries, Parent, us or any subsidiary of Parent, or any stockholders who have properly exercised their appraisal rights under Section 262 of the Delaware General Corporation Law (the “**DGCL**”)) will be converted into the right to receive the Offer Price in cash, without interest and less any required withholding taxes. The Merger is subject to the satisfaction or waiver of certain conditions described in “The Offer—Section 13—The Transaction Documents—The Merger Agreement—Conditions to the Merger.” “The Offer—Section 13—The Transaction Documents—The Merger Agreement” contains a more detailed description of the Merger Agreement. “Section 5—Certain U.S. Federal Income Tax Consequences” describes certain U.S. federal income tax consequences of the sale of Shares in the Offer and the Merger.

The Offer is being made only for Shares that are not subject to vesting conditions and is not made for any options to purchase Spark Shares (the “**Spark Stock Options**”), Spark restricted stock units (the “**Spark RSUs**”) or Spark restricted stock awards (the “**Spark Restricted Stock Awards**”). The Merger Agreement provides that:

- Immediately prior to the Merger Effective Time, each Spark Stock Option, whether vested or unvested, that is outstanding and unexercised immediately prior to the Merger Effective Time, shall be cancelled and automatically converted into the right to receive from Parent or the surviving corporation an amount in cash (subject to any applicable withholding tax) equal to the product obtained by multiplying (i) the excess, if any, of the Offer Price over the per share exercise price of such Spark Stock Option, by (ii) the aggregate number of Shares issuable upon exercise of such Spark Stock Option immediately prior to the Merger Effective Time (such product, the “**Option Payment**”);

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- Immediately prior to the Merger Effective Time, each Spark RSU that is outstanding immediately prior to the Merger Effective Time, whether vested or unvested, shall be cancelled and automatically converted into the right to receive from Parent or the surviving corporation an amount in cash (subject to any applicable withholding tax) equal to the Offer Price (such amounts payable hereunder, the “**RSU Award Payment**”);
- Immediately prior to the Merger Effective Time, each Spark Restricted Stock Award that is outstanding shall be deemed fully vested and shall be treated the same as other Spark Shares outstanding immediately prior to the Merger Effective Time. To the extent payable to a current or former employee of Spark or a subsidiary, such payments (the “**Restricted Stock Payment**”) shall be made by the surviving corporation through its payroll system and shall be subject to applicable tax withholdings;
- As soon as practicable as of the date of the Merger Agreement, Spark shall take all actions with respect to any offering periods in effect as of the date hereof (the “**Current Purchase Period**”), (i) no employee who is not a participant in the 2015 Employee Stock Purchase Plan (the “**Spark ESPP**”) as of the date hereof may become a participant in the Spark ESPP and (ii) each individual participating in the Current Purchase Period in progress on the date of this Agreement shall not be permitted to increase his or her payroll contribution rate pursuant to the Spark ESPP from the rate in effect immediately prior to the date of this Agreement, except as may be required by applicable law. In addition, (A) the Current Purchase Period will end on May 31, 2019; provided that if the Merger Effective Time is prior to May 31, 2019, Spark will end the Current Purchase Period on a specified trading day occurring at least ten (10) days prior to the date on which the consummation of the Merger is expected to occur and treat the Current Purchase Period as a fully effective and completed offering period for all purposes of the Spark ESPP, and all outstanding purchase rights under the Spark ESPP shall automatically be exercised, in accordance with the terms of the Spark ESPP, upon the last day of the Current Purchase Period, and any Shares purchased under the Spark ESPP shall be treated the same as other Company Shares outstanding immediately prior to the Merger Effective Time; (B) there will be no offering periods following the Current Purchase Period and (C) in all events, Spark shall terminate the Spark ESPP prior to the Merger Effective Time. Prior to the Merger Effective Time, Spark shall take all actions (including, if appropriate, amending the terms of the Spark ESPP) that are necessary to give effect to the transactions contemplated by the foregoing.

The Spark board of directors (the “Spark Board”) has duly and unanimously (i) approved, adopted and declared advisable the Merger Agreement and the transactions contemplated thereby, including the Offer and the Merger; (ii) determined that the transactions contemplated by the Merger Agreement, including the Offer and the Merger, are in the best interests of Spark and its stockholders; (iii) agreed that the Merger Agreement will be effected under Section 251(h) of the DGCL; and (iv) resolved to recommend that the stockholders of Spark accept the Offer and tender their Shares to Purchaser pursuant to the Offer.

Spark will file its Tender Offer Solicitation/Recommendation Statement on Schedule 14D-9 (the “**Schedule 14D-9**”) with the SEC and disseminate the Schedule 14D-9 to holders of Shares, in connection with the Offer. The Schedule 14D-9 will include a more complete description of the Spark Board’s reasons for authorizing and approving the Merger Agreement and the transactions contemplated thereby and therefore stockholders are encouraged to review the Schedule 14D-9 carefully and in its entirety.

The Offer is conditioned upon, among other things, (1) there being validly tendered in accordance with the terms of the Offer (and “received” as defined in Section 251(h) of the DGCL), and not validly withdrawn, that number of Shares that, considered together with all other Shares (if any) owned by Parent and its affiliates (excluding any Shares tendered pursuant to guaranteed delivery procedures that have not yet been “received”), represent at least one more than 50% of the total number of Shares outstanding immediately after the consummation of the Offer (referred to as the “**Minimum Condition**”); and (2) the expiration or termination of the waiting period (and any extension thereof) or receipt of clearance under (A) the Hart-Scott-Rodino Antitrust

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Improvement Act of 1976, as amended, and (B) any other competition, merger control, trade regulation, antitrust or similar laws applicable to the Offer and the Merger, in either case, without the imposition of any requirement that Parent or Purchaser, except solely with respect to Spark and its subsidiaries, and solely with respect to (and limited to) Spark's developmental products and programs (other than any Hemophilia A programs or products, including SPK-8011 and SPK-8016) that are or would be competitive with the products and programs of Parent and its affiliates or in which Parent and its affiliates own or control any interest (w) sell, divest, license, hold separate or otherwise dispose of any asset, interest or business of Parent or its affiliates or Spark or its subsidiaries, (x) permit Spark or its subsidiaries to sell, divest, license, hold separate or otherwise dispose of any of their assets, interests, or businesses prior to the effective time of the Merger, (y) terminate, relinquish, modify, transfer, assign, restructure or waive existing agreements, collaborations, relationships, ventures, contractual rights, obligations or other arrangements of Parent, Spark or their respective subsidiaries and (z) undertake any other behavioral remedy or commitment whatsoever including but not limited to creating or consenting to create any relationships, ventures, contractual rights, obligations, or other arrangements of Parent or Spark or their respective subsidiaries and, in each case, to enter, or to offer to enter, into agreements and stipulate to the entry of an order or decree or file appropriate applications with any governmental entity in connection with any of the foregoing and in the case of actions by or with respect to Spark or its subsidiaries or their businesses or assets, by consenting to such action by any of Spark or its subsidiaries (such requirements collectively, the "**Regulatory Condition**"). The Offer is not conditioned upon Parent or Purchaser obtaining financing or the funding thereof. These and other conditions to the Offer are described in "The Offer—Section 15—Conditions to the Offer" and "The Offer—Section 16—Certain Legal Matters; Regulatory Approvals."

According to Spark, as of the close of business on February 28, 2019, the most recent practicable date, there were (i) 38,053,350 Shares issued and outstanding (which includes 8,750 Spark restricted Shares), (ii) 4,157,775 Shares subject to outstanding Spark Stock Options, (iii) Spark RSUs respecting 1,287,829 Shares, and (iv) 1,497,821 Shares reserved for issuance under the Spark ESPP, including 21,151 Shares, which are estimated to be subject to outstanding purchase rights under the Spark ESPP at the end of the Current Purchase Period.

Assuming no additional Shares are issued prior to the expiration of the Offer and based on the Shares outstanding as of February 28, 2019, we anticipate that the Minimum Condition would be satisfied if approximately 19,026,676 Shares are validly tendered pursuant to the Offer and not withdrawn (excluding any Shares that have not been "received" (as defined in Section 251(h) of the DGCL)).

We currently intend, as soon as practicable after consummation of the Offer and the satisfaction or waiver of the other conditions set forth in the Merger Agreement, to consummate the Merger pursuant to the Merger Agreement. Following the Merger, the directors of Purchaser will be the directors of Spark.

Section 251(h) of the DGCL provides that, if following consummation of a tender offer for any and all shares of a public Delaware corporation that would otherwise be entitled to vote on a merger (other than shares held by the acquiring entity and its affiliates), the stock irrevocably accepted for purchase pursuant to such offer and received by Citibank, N.A., the Depositary for the Offer, prior to expiration of such offer, plus the stock otherwise owned by the acquiring entity equals at least the amount of shares of each class of stock of the target corporation that would otherwise be required for the stockholders of the target corporation to adopt a merger agreement with the acquiring entity, and each share of each class or series of stock of the target corporation not irrevocably accepted for purchase in the offer is converted into the right to receive the same consideration as was payable in the tender offer, the target corporation can effect a merger without the vote of the stockholders of the target corporation. Therefore, the parties have agreed, and the Merger Agreement requires, that, subject to the conditions specified in the Merger Agreement, the Merger will become effective as soon as practicable after the consummation of the Offer, without a vote of Spark stockholders, in accordance with Section 251(h) of the DGCL. See "The Offer—Section 12—Purpose of the Offer; Plans for Spark; Stockholder Approval; Appraisal Rights."

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The Offer is conditioned upon the fulfillment of the conditions described in “The Offer—Section 15—Conditions to the Offer.” The Offer will expire at 12:00 midnight, New York City time, at the end of the day on April 3, 2019, unless we extend the Offer. See “The Offer—Section 13—The Transaction Documents— The Merger Agreement—Extensions of the Offer.”

This Offer to Purchase does not constitute a solicitation of proxies, and Purchaser is not soliciting proxies in connection with the Offer or the Merger. If the Minimum Condition is satisfied and Purchaser consummates the Offer, Purchaser will consummate the Merger pursuant to Section 251(h) of the DGCL without the approval of Spark’s stockholders.

THIS OFFER TO PURCHASE AND THE RELATED LETTER OF TRANSMITTAL CONTAIN IMPORTANT INFORMATION, AND YOU SHOULD CAREFULLY READ BOTH IN THEIR ENTIRETY BEFORE YOU MAKE A DECISION WITH RESPECT TO THE OFFER.

THE OFFER

1. Terms of the Offer

Upon the terms and subject to the conditions of the Offer, we will accept for payment and pay for all Shares that are validly tendered and not validly withdrawn in accordance with the procedures set forth in “—Section 3—Procedures for Tendering Shares” at or prior to the Expiration Time. “**Expiration Time**” means 12:00 midnight, New York City time, at the end of the day on April 3, 2019, unless extended or earlier terminated, in which event “Expiration Time” means the latest time and date at which the Offer, as so extended, expires. No “subsequent offering period” in accordance with Rule 14d-11 of the Securities Exchange Act of 1934, as amended (together with the rules and regulations promulgated thereunder, the “**Exchange Act**”) will be available.

The Offer is subject to the conditions set forth in “—Section 15—Conditions to the Offer,” which include, among other things, satisfaction of the Minimum Condition and Regulatory Condition. See “—Section 16—Certain Legal Matters; Regulatory Approvals.” Subject to the satisfaction and waiver of the conditions to the Offer, we will accept and pay for all Shares validly tendered and not validly withdrawn pursuant to the Offer promptly after the Expiration Time.

Pursuant to the terms of the Merger Agreement, if at the scheduled expiration date of the Offer, including following a prior extension, any condition to the Offer has not been satisfied or waived, we will extend the Offer for one or more consecutive periods of not more than ten business days (or for such longer period as may be agreed to by Parent and Spark) until such time as such conditions shall have been satisfied or waived, provided that we will not be required to extend the Offer beyond December 31, 2019 (but if on such date all conditions to the Offer have been satisfied or waived other than the Regulatory Condition or certain other conditions related to governmental challenges to the Offer or the Merger based on the antitrust laws of certain jurisdictions, either Spark or Parent can extend such date until January 31, 2020). In addition, we will extend the Offer for any period required by any rule, regulation, interpretation or position of the SEC or its staff that is applicable to the Offer. See “—Section 4—Withdrawal Rights.”

To the extent permitted by law, Purchaser also reserves the right to waive any of the conditions to the Offer and to make any change in the terms of the Offer, provided that Spark’s consent is required for Purchaser to (i) amend, modify or waive the Minimum Condition, (ii) decrease the number of Shares subject to the Offer; (iii) reduce the Offer Price, except in connection with a stock split or other recapitalization; (iv) increase the Offer Price, except in response to a notice of a Change in Circumstance, Change in Recommendation or Superior Proposal as described under “—Section 13—The Transaction Documents—The Merger Agreement—Spark Board Recommendation”; (v) extend or otherwise change the expiration date of the Offer, except as described under “—Section 13—The Transaction Documents—The Merger Agreement—Extensions of the Offer”; (vi) change the form of consideration payable in the Offer; (vii) impose any additional condition to the Offer; (viii) amend, modify or supplement any of the terms of the Offer in any manner adversely affecting, or that would reasonably be expected to have an adverse effect on, any of the holders of Shares; or (ix) take any action (or fail to take any action) that would result in the Merger not being permitted to be effected pursuant to Section 251(h) of the DGCL.

If we make a material change to the terms of the Offer or waive a material condition to the Offer, we will extend the Offer and disseminate additional tender offer materials, in each case, to the extent required by applicable law. The minimum period during which a tender offer must remain open following material changes in the terms of the offer, other than a change in price or a change in percentage of securities sought, depends upon the facts and circumstances, including the materiality of the changes. In a published release, the SEC has stated that in its view an offer must remain open for a minimum period of time following a material change in the terms of such offer and that the waiver of a condition such as the Minimum Condition is a material change in the terms of an offer. The release states that an offer should remain open for a minimum of five business days from the date the material change is first published, sent or given to stockholders, and that if material changes are made with respect to information that approaches the significance of price and the percentage of securities sought (including, for the avoidance of doubt, a change in price or percentage of securities sought), a minimum of ten

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business days generally is required to allow adequate dissemination and investor response. **If, prior to the Expiration Time, Purchaser increases the consideration being paid for Shares accepted for payment pursuant to the Offer, such increased consideration will be paid to all stockholders whose Shares are purchased pursuant to the Offer, whether or not such Shares were tendered prior to the announcement of the increase in consideration.**

Any extension, termination or amendment of the Offer will be followed as promptly as practicable by a public announcement thereof. Without limiting the manner in which we may choose to make any public announcement, we will have no obligation (except as otherwise required by applicable law) to publish, advertise or otherwise communicate any such public announcement other than by issuing a press release to a national news service. In the case of an extension of the Offer, we will make a public announcement of such extension no later than 9:00 a.m., New York City time, on the next business day after the previously scheduled Expiration Time.

The Merger Agreement does not contemplate a subsequent offering period for the Offer.

As soon as practicable after the closing of the Offer (and in any event within two business days), Purchaser and Parent expect to complete the Merger without a vote of the stockholders of Spark pursuant to Section 251(h) of the DGCL. We do not expect there to be a significant period of time between the consummation of the Offer and the consummation of the Merger.

Spark has provided us with its stockholder list, security position listings and certain other information regarding the beneficial owners of Shares for the purpose of disseminating the Offer to holders of Shares. We will send this Offer to Purchase, the related Letter of Transmittal and other related documents to record holders of Shares and to brokers, dealers, commercial banks, trust companies and other nominees whose names appear on the stockholder list or, if applicable, who are listed as participants in a clearing agency's security position listing for subsequent transmittal to beneficial owners of Shares.

2. Acceptance for Payment and Payment for Shares

Upon the terms and subject to the conditions to the Offer, we will accept for payment and pay for, promptly after the Expiration Time, all Shares validly tendered and not validly withdrawn prior to the Expiration Time. For information with respect to approvals or other actions that we are or may be required to obtain prior to the completion of the Offer, including under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 and the rules that have been promulgated thereunder (together, the "**HSR Act**") or any other competition, merger control, trade regulation, antitrust or similar laws applicable to the Offer and the Merger, see "**—Section 16—Certain Legal Matters; Regulatory Approvals.**"

We will pay for Shares accepted for payment pursuant to the Offer by depositing the purchase price with the Depository, which will act as your agent for the purpose of receiving payments from us and transmitting such payments to you. Upon the deposit of such funds with the Depository, Purchaser's obligation to make such payment will be satisfied in full, and tendering stockholders must thereafter look solely to the Depository for payment of amounts owed to them by reason of the acceptance for payment of Shares pursuant to the Offer.

In all cases, payment for Shares accepted for payment will be made only after timely receipt by the Depository of (i) certificates for such Shares (or of a confirmation of a book-entry transfer of such Shares into the Depository's account at the Book-Entry Transfer Facility (as defined below)), (ii) a properly completed and duly executed Letter of Transmittal (or a manually signed facsimile thereof), with any required signature guarantees, or in connection with a book-entry transfer, an Agent's Message (defined in "**—Section 3—Procedures for Tendering Shares—Book-Entry Delivery**") and (iii) any other required documents. For a description of the procedures for tendering Shares pursuant to the Offer, see "**—Section 3—Procedures for Tendering Shares.**" Accordingly, payment may be made to tendering stockholders at different times if delivery of the Shares and other required documents occurs at different times.

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For the purposes of the Offer, we will be deemed to have accepted for payment tendered Shares when, as and if we give oral or written notice of our acceptance to the Depository.

Under no circumstances will we pay interest on the consideration paid for Shares pursuant to the Offer, regardless of any extension of the Offer or any delay in making such payment.

If we do not accept for payment any tendered Shares pursuant to the Offer for any reason, or if you submit certificates for more Shares than are tendered, we will return certificates (or cause to be issued new certificates) representing unpurchased or untendered Shares, without expense to you (or, in the case of Shares delivered by book-entry transfer into the Depository's account at the Book-Entry Transfer Facility pursuant to the procedures set forth in "Section 3—Procedures for Tendering Shares," the Shares will be credited to an account maintained at the Depository Trust Company (the "**Book-Entry Transfer Facility**")), promptly following the expiration, termination or withdrawal of the Offer.

We reserve the right to transfer or assign, in whole or from time to time in part, to one or more of our affiliates the right to purchase Shares tendered pursuant to the Offer, but any such transfer or assignment will not relieve us of our obligations under the Offer or prejudice your rights to receive payment for Shares validly tendered and accepted for payment.

3. Procedures for Tendering Shares

Valid Tender of Shares

Except as set forth below, in order for you to tender Shares in the Offer, the Depository must receive the Letter of Transmittal (or a manually signed facsimile thereof), properly completed and signed, together with any required signature guarantees, or an Agent's Message in connection with a book-entry delivery of Shares, and any other required documents, at one of its addresses set forth on the back cover of this Offer to Purchase on or prior to the Expiration Time and either (i) you must deliver certificates for the Shares representing tendered Shares to the Depository or you must cause your Shares to be tendered pursuant to the procedure for book-entry transfer set forth below and the Depository must receive timely confirmation of the book-entry transfer of the Shares into the Depository's account at the Book-Entry Transfer Facility or (ii) you must comply with the guaranteed delivery procedures set forth below.

The method of delivery of Shares, including through the Book-Entry Transfer Facility, and all other required documents, is at your election and sole risk, and delivery will be deemed made only when actually received by the Depository. If certificates for Shares are sent by mail, we recommend that you use registered mail with return receipt requested, properly insured, in time to be received on or prior to the Expiration Time. In all cases, you should allow sufficient time to ensure timely delivery.

The tender of Shares pursuant to any one of the procedures described above will constitute your acceptance of the Offer, as well as your representation and warranty that (i) you own the Shares being tendered, (ii) you have the full power and authority to tender, sell, assign and transfer the Shares tendered, as specified in the Letter of Transmittal and (iii) when the Shares are accepted for payment by us, we will acquire good and unencumbered title thereto, free and clear of any liens, restrictions, charges or encumbrances and not be subject to any adverse claims. Our acceptance for payment of Shares tendered by you pursuant to the Offer will constitute a binding agreement between us with respect to such Shares, upon the terms and subject to the conditions to the Offer.

Book-Entry Delivery

The Depository has established or will establish an account with respect to the Shares for the purposes of the Offer at the Book-Entry Transfer Facility. Any financial institution that is a participant in the system of the Book-Entry Transfer Facility may deliver Shares by causing the Book-Entry Transfer Facility to transfer such Shares into the Depository's account in accordance with the procedures of the Book-Entry Transfer Facility.

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However, although delivery of Shares may be effected through book-entry transfer, either the Letter of Transmittal (or a manually signed facsimile thereof) properly completed and duly executed together with any required signature guarantees or an Agent's Message in lieu of the Letter of Transmittal and any other required documents must, in any case, be received by the Depository at one of its addresses set forth on the back cover of this Offer to Purchase by the Expiration Time, or the guaranteed delivery procedure described below must be complied with.

“**Agent's Message**” means a message transmitted by the Book-Entry Transfer Facility to, and received by, the Depository and forming a part of a book-entry confirmation stating that the Book-Entry Transfer Facility has received an express acknowledgment from the participant in the Book-Entry Transfer Facility tendering the Shares that are the subject of such book-entry confirmation that such participant has received and agrees to be bound by the terms of the Letter of Transmittal and that we may enforce that agreement against the participant.

Required documents must be transmitted to and received by the Depository at one of its addresses set forth on the back cover page of this Offer to Purchase prior to the Expiration Time. **Delivery of the enclosed Letter of Transmittal and any other required documents to the Book-Entry Transfer Facility does not constitute delivery to the Depository.**

Signature Guarantees

All signatures on a Letter of Transmittal must be guaranteed by a financial institution (including most banks, savings and loan associations and brokerage houses) that is a member of a recognized Medallion Program approved by The Securities Transfer Association, Inc., including the Securities Transfer Agents Medallion Program (STAMP), the Stock Exchange Medallion Program (SEMP) and the New York Stock Exchange, Inc. Medallion Signature Program (MSP) or any other “eligible guarantor institution” (as such term is defined in Rule 17Ad-15 under the Exchange Act) (each, an “**Eligible Institution**”), unless the Shares tendered are tendered (i) by a registered holder of Shares who has not completed either the box labeled “Special Payment Instructions” or the box labeled “Special Delivery Instructions” on the Letter of Transmittal or (ii) for the account of an Eligible Institution. See Instructions 1 and 5 of the Letter of Transmittal.

If the Shares are certificated and are registered in the name of a person other than the signer of the Letter of Transmittal, or if payment is to be made to, or certificates for the Shares for unpurchased Shares are to be issued or returned to, a person other than the registered holder, then the tendered certificates for the Shares must be endorsed or accompanied by appropriate stock powers, signed exactly as the name or names of the registered holder or holders appear on the certificates for the Shares, with the signatures on the certificates for the Shares or stock powers guaranteed by an Eligible Institution as provided in the Letter of Transmittal. See Instructions 1 and 5 of the Letter of Transmittal.

If the Shares are certificated and the certificates representing the Shares are forwarded separately to the Depository, a properly completed and duly executed Letter of Transmittal (or a manually signed facsimile thereof) must accompany each delivery of certificates for the Shares.

Guaranteed Delivery

If you wish to tender Shares pursuant to the Offer and cannot deliver such Shares and all other required documents to the Depository or cannot complete the procedure for delivery by book-entry transfer prior to the Expiration Time, you may nevertheless tender such Shares if all of the following conditions are met:

- such tender is made by or through an Eligible Institution;
- a properly completed and duly executed Notice of Guaranteed Delivery in the form provided by us with this Offer to Purchase is received by the Depository by the Expiration Time; and

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- the certificates for all such tendered Shares (or a confirmation of a book-entry transfer of such Shares into the Depository's account at the Book-Entry Transfer Facility), together with a properly completed and duly executed Letter of Transmittal (or a manually signed facsimile thereof) together with any required signature guarantee (or an Agent's Message) and any other required documents, are received by the Depository within two NASDAQ trading days after the date of execution of the Notice of Guaranteed Delivery.

The Notice of Guaranteed Delivery may be transmitted by facsimile transmission or mailed to the Depository and must include a guarantee by an Eligible Institution in the form set forth in such Notice.

Backup Withholding

Under the U.S. federal income tax laws, the Depository generally will be required to withhold at the applicable backup withholding rate (currently 24%) from any payments made to U.S. persons pursuant to the Offer, unless you provide the Depository with your correct taxpayer identification number and certify that you are not subject to such backup withholding by completing the IRS Form W-9 included in the Letter of Transmittal or otherwise establish an exemption from backup withholding. If you are a non-U.S. person, you generally will not be subject to backup withholding if you certify your foreign status on the appropriate Internal Revenue Service Form W-8.

Appointment of Proxy

By executing a Letter of Transmittal, you irrevocably appoint our designees as your attorneys-in-fact and proxies, with full power of substitution, in the manner set forth in the Letter of Transmittal to the full extent of your rights with respect to the Shares tendered and accepted for payment by us (and any and all other Shares or other securities issued or issuable in respect of such Shares on or after the date of this Offer to Purchase). All such powers of attorney and proxies are irrevocable and coupled with an interest in the tendered Shares. Such appointment is effective only upon our acceptance for payment of such Shares in accordance with the terms of the Offer. Upon such acceptance for payment, all prior powers of attorney and proxies and consents granted by you with respect to such Shares and other securities will, without further action, be revoked, and no subsequent powers of attorney or proxies may be given nor subsequent written consents executed (and, if previously given or executed, will cease to be effective). Upon such acceptance for payment, our designees will be empowered to exercise all of your voting and other rights as they, in their sole discretion, may deem proper at any annual, special or adjourned meeting of Spark's stockholders, by written consent or otherwise. We reserve the right to require that, in order for Shares to be validly tendered, immediately upon our acceptance for payment of such Shares, we are able to exercise full voting rights with respect to such Shares and other securities (including voting at any meeting of stockholders then scheduled or acting by written consent without a meeting).

The foregoing powers of attorney and proxies are effective only upon acceptance for payment of Shares pursuant to the Offer. The Offer does not constitute a solicitation of proxies, absent a purchase of Shares, for any meeting of Spark's stockholders.

Determination of Validity

We will determine, in our sole discretion, all questions as to the form of documents and the validity, eligibility (including time of receipt) and acceptance for payment of any tender of Shares, and our determination will be final and binding. We reserve the absolute right to reject any or all tenders of Shares that we determine not to be in proper form or the acceptance for payment of or payment for which may, in the opinion of our counsel, be unlawful. We also reserve the absolute right to waive any defect or irregularity in any tender of Shares. No tender of Shares will be deemed to have been validly made until all defects and irregularities with respect to such tender have been cured or waived. None of Purchaser, the Depository, the Information Agent or

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any other person will be under any duty to give notification of any defect or irregularity in tenders or waiver of any such defect or irregularity or incur any liability for failure to give any such notification. Subject to applicable law as applied by a court of competent jurisdiction, our interpretation of the terms and conditions of the Offer (including the Letter of Transmittal and the instructions thereto) will be final and binding. Tendering stockholders have the right to challenge our determination with respect to their Shares.

4. Withdrawal Rights

Except as described in this Section 4, tenders of Shares made in the Offer are irrevocable. You may withdraw some or all of the Shares that you have previously tendered in the Offer at any time before the Expiration Time and, if such Shares have not yet been accepted for payment as provided herein, any time after May 5, 2019, which is 60 days from the date of the commencement of the Offer.

If we extend the period of time during which the Offer is open, are delayed in accepting for payment or paying for Shares or are unable to accept for payment or pay for Shares pursuant to the Offer for any reason, then, without prejudice to our rights under the Offer, the Depositary may, on our behalf, retain all Shares tendered, and such Shares may not be withdrawn except to the extent that you duly exercise withdrawal rights as described in this Section 4.

For your withdrawal to be effective, a written or facsimile transmission notice of withdrawal with respect to the Shares must be timely received by the Depositary at one of its addresses set forth on the back cover of this Offer to Purchase, and the notice of withdrawal must specify the name of the person who tendered the Shares to be withdrawn, the number of Shares to be withdrawn and the name of the registered holder of Shares, if different from that of the person who tendered such Shares. If the Shares to be withdrawn have been delivered to the Depositary, a signed notice of withdrawal with (except in the case of Shares tendered by an Eligible Institution) signatures guaranteed by an Eligible Institution must be submitted before the release of such Shares. In addition, such notice must specify, in the case of Shares tendered by delivery of certificates, the serial numbers shown on the specific certificates evidencing the Shares to be withdrawn or, in the case of Shares tendered by book-entry transfer, the name and number of the account at the Book-Entry Transfer Facility to be credited with the withdrawn Shares. Withdrawals may not be rescinded, and Shares withdrawn will thereafter be deemed not validly tendered. However, withdrawn Shares may be retendered at any time before the Expiration Time by again following any of the procedures described in “—Section 3—Procedures for Tendering Shares.”

We will determine, in our sole discretion, all questions as to the form and validity (including time of receipt) of any notice of withdrawal. None of Purchaser, the Depositary, the Information Agent or any other person will be under any duty to give notification of any defect or irregularity in any notice of withdrawal or waiver of any such defect or irregularity or incur any liability for failure to give any such notification. Subject to applicable law as applied by a court of competent jurisdiction, our determination will be final and binding. Tendering stockholders have the right to challenge our determination with respect to their Shares.

5. Certain U.S. Federal Income Tax Consequences

The following discussion summarizes certain U.S. federal income tax consequences to U.S. Holders and Non-U.S. Holders (in each case, as defined below) who tender Shares pursuant to the Offer, and is based upon present law (which may change, possibly with retroactive effect). This summary does not purport to be a comprehensive analysis or description of all potential U.S. federal income consequences of the Offer. Due to the individual nature of tax consequences, you are urged to consult your tax advisor as to the specific tax consequences to you of the tender of Shares pursuant to the Offer, including the effects of applicable state, local, foreign and other tax laws. The following discussion applies only if you hold your Shares as a capital asset (generally, property held for investment) and may not apply if you acquired your Shares pursuant to the exercise of stock options or are a person otherwise subject to special tax treatment under the Internal Revenue Code of 1986, as amended (the “Code”), including stockholders that actually or constructively own more than 5% of the Shares and certain former citizens or residents of the United States.

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U.S. Holders

Except as otherwise set forth below, the following discussion is limited to certain U.S. federal income tax consequences relevant to a beneficial owner of Shares that is a citizen or resident of the United States, a domestic corporation (or any other entity or arrangement treated as a domestic corporation for U.S. federal income tax purposes), an estate that is subject to U.S. federal income tax on its worldwide income from all sources or a trust if (i) a court within the United States is able to exercise primary supervision over the administration of the trust and (ii) one or more U.S. persons have the authority to control all substantial decisions of the trust (a “**U.S. Holder**”). If a partnership (including any entity or arrangement treated as a partnership for U.S. federal income tax purposes) holds Shares, the tax treatment of a partner in the partnership generally will depend upon the status of the partner and the activities of the partnership. Persons holding Shares through a partnership should consult their own tax advisors regarding the tax consequences of tendering the Shares pursuant to the Offer.

Your tender of Shares pursuant to the Offer will be a taxable transaction for U.S. federal income tax purposes and may also be a taxable transaction under applicable state, local, non-U.S. and other tax laws. In general, if you exchange Shares pursuant to the Offer, you will recognize gain or loss equal to the difference between the adjusted tax basis of your Shares and the amount of cash received in exchange therefor (determined before the deduction of backup withholding, if any). Gain or loss will be determined separately for each block of Shares (i.e., Shares acquired for the same cost in a single transaction) tendered pursuant to the Offer. Such gain or loss generally will be capital gain or loss and generally will be long-term capital gain or loss if your holding period for the Shares is more than one year as of the date of the tender of such Shares pursuant to the Offer. Long-term capital gains of noncorporate taxpayers generally are subject to U.S. federal income tax at preferential rates. The deduction of capital losses is subject to limitations.

Non-U.S. Holders

The following is a summary of certain U.S. federal income tax consequences that will apply if you are a Non-U.S. Holder of Shares. The term “**Non-U.S. Holder**” means a beneficial owner of Shares that is not a U.S. Holder or a partnership.

Payments made to a Non-U.S. Holder with respect to Shares tendered in the Offer generally will not be subject to U.S. federal income tax, unless (i) the gain, if any, on Shares is effectively connected with the conduct by the Non-U.S. Holder of a trade or business in the United States (and, if certain income tax treaties apply, is attributable to the Non-U.S. Holder’s permanent establishment in the United States), in which event (x) the Non-U.S. Holder will be subject to U.S. federal income tax as described under “U.S. Holders,” and (y) if the Non-U.S. Holder is a corporation, it may also be subject to a branch profits tax at a rate of 30% (or such lower rate as may be specified under an applicable income tax treaty) or (ii) the Non-U.S. Holder is an individual who was present in the United States for 183 days or more in the taxable year of sale and certain other conditions are met, in which event the Non-U.S. Holder will be subject to tax at a rate of 30% (or such lower rate as may be specified under an applicable income tax treaty) on the gain from the exchange of the Shares net of applicable U.S. losses from sales or exchanges of other capital assets recognized during the year.

Information Reporting and Backup Withholding

Proceeds from the sale of Shares pursuant to the tender generally are subject to information reporting, and may be subject to backup withholding at the applicable rate (currently 24%) if the stockholder or other payee fails to provide a valid taxpayer identification number and comply with certain certification procedures or otherwise establish an exemption from backup withholding. Backup withholding is not an additional federal income tax. Rather, the federal income tax liability of the person subject to backup withholding will be reduced by the amount of tax withheld. If withholding results in an overpayment of taxes, a refund may generally be obtained provided, that the required information is timely furnished to the Internal Revenue Service. See “—Section 3—Procedures for Tendering Shares—Backup U.S. Federal Income Tax Withholding.”

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6. Price Range of Shares; Dividends

The Shares are listed and principally traded on NASDAQ under the symbol “ONCE.” The following table sets forth the high and low sale prices per Share on NASDAQ each quarter during Spark’s fiscal years ended December 31, 2017 and December 31, 2018, as reported in Spark’s Annual Report on Form 10-K for the period ended December 31, 2018 (the “**Spark 10-K**”), and thereafter, as reported in published financial sources:

	<u>High</u>	<u>Low</u>
2017		
First Quarter	\$ 65.79	\$50.39
Second Quarter	65.00	48.26
Third Quarter	91.00	57.00
Fourth Quarter	91.75	41.06
2018		
First Quarter	68.30	48.40
Second Quarter	94.00	60.35
Third Quarter	96.59	51.59
Fourth Quarter	56.32	34.53
2019		
First Quarter (through March 6, 2019)	\$114.20	\$37.77

Spark does not pay cash dividends on the Shares and, under the terms of the Merger Agreement, Spark is not permitted to declare, set aside or pay any dividend or other distribution (whether in cash, stock or property or any combination thereof) in respect of the Shares. If we acquire control of Spark, we currently intend that no dividends will be declared on the Shares prior to the Merger Effective Time.

On February 22, 2019, the last full trading day before the announcement of the Merger Agreement, the Merger and the Offer, the highest reported intraday sale price per Share on NASDAQ was \$52.99 in published financial sources. Between February 22, 2019 and March 6, 2019, the highest daily intraday sale price per Share on NASDAQ ranged between \$52.99 and \$114.20. On March 6, 2019, the last full trading day before the date of this Offer to Purchase, the highest reported intraday sale price per Share on NASDAQ was \$113.89. **Please obtain a recent quotation for the Shares before deciding whether or not to tender.**

7. Possible Effects of the Offer on the Market for the Shares; Stock Exchange Listing; Registration under the Exchange Act; Margin Regulations

Assuming the Minimum Condition is satisfied and we purchase the Shares in the Offer, no stockholder vote will be required to consummate the Merger. Following the consummation of the Offer and subject to the satisfaction or waiver of the remaining conditions contained in the Merger Agreement, we intend to consummate the Merger as soon as practicable. We do not expect there to be a significant period of time between consummation of the Offer and consummation of the Merger.

Possible Effects of the Offer on the Market for the Shares

While we intend to consummate the Merger as soon as practicable after consummation of the Offer, if the Offer is consummated but the Merger does not occur, the number of stockholders, and the number of Shares that are still in the hands of the public, may be so small that there will no longer be an active or liquid public trading market (or possibly any public trading market) for Shares held by stockholders other than Purchaser. We cannot

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predict whether the reduction in the number of Shares that might otherwise trade publicly would have an adverse or beneficial effect on the market price for, or marketability of, the Shares or whether such reduction would cause future market prices to be greater or less than the price paid in the Offer. If the Merger is consummated, stockholders not tendering their Shares in the Offer (Spark, any of its subsidiaries, Parent, us or any subsidiary of Parent, or any person who has properly exercised his appraisal rights under Section 262 of the DGCL) will receive cash in an amount equal to the price per Share paid in the Offer.

Stock Exchange Listing

While we intend to consummate the Merger as soon as practicable after consummation of the Offer, if the Offer is consummated but the Merger does not occur, depending upon the number of Shares purchased pursuant to the Offer, the Shares may no longer meet the standards for continued listing on the NASDAQ Global Select Market, the NASDAQ Global Market or the NASDAQ Capital Market. If, as a result of the purchase of Shares pursuant to the Offer, the Shares no longer meet the criteria for continued listing on any such NASDAQ market, the market for the Shares could be adversely affected. According to NASDAQ's published guidelines, the Shares would not meet the criteria for continued listing on any such NASDAQ market if, among other things, (i) the number of publicly held Shares were less than 1,000,000, (ii) the market value of the listed Shares were less than \$8,000,000 or (iii) there were fewer than 300 stockholders.

If NASDAQ were to delist the Shares, it is possible that the Shares would trade on another securities exchange or in the over-the-counter market and that price quotations for the Shares would be reported by such exchange or other sources. The extent of the public market for the Shares and availability of such quotations would, however, depend upon such factors as the number of holders and/or the aggregate market value of the publicly held Shares at such time, the interest in maintaining a market in the Shares on the part of securities firms, the possible termination of registration of the Shares under the Exchange Act and other factors.

Registration under the Exchange Act

The Shares are currently registered under the Exchange Act. While we intend to consummate the Merger as soon as practicable after consummation of the Offer, if the Offer is consummated but the Merger does not occur, the purchase of the Shares pursuant to the Offer may result in the Shares becoming eligible for deregistration under the Exchange Act. Registration may be terminated upon application of Spark to the SEC if the Shares are neither listed on a national securities exchange nor held by 300 or more holders of record. Termination of the registration of the Shares under the Exchange Act, assuming there are no other securities of Spark subject to registration, would substantially reduce the information required to be furnished by Spark to holders of Shares and to the SEC and would make certain of the provisions of the Exchange Act, such as the short-swing profit recovery provisions of Section 16(b) thereof, the requirement to furnish a proxy statement pursuant to Section 14(a) thereof in connection with a stockholder's meeting and the related requirement to furnish an annual report to stockholders, and the requirements of Rule 13e-3 thereof with respect to "going private" transactions, no longer applicable to Spark. Furthermore, "affiliates" of Spark and persons holding "restricted securities" of Spark may be deprived of the ability to dispose of such securities pursuant to Rule 144 promulgated under the Securities Act of 1933, as amended. If registration of the Shares under the Exchange Act were terminated, the Shares would no longer be "margin securities" or eligible for stock exchange listing.

Following the purchase of Shares in the Offer and subject to the satisfaction or waiver of the remaining conditions contained in the Merger Agreement, we will consummate the Merger as soon as practicable, following which the Shares will no longer be publicly owned. Following the consummation of the Merger, we intend to take steps to cause the termination of the registration of Shares under the Exchange Act as promptly as practicable and may in the future take steps to cause the suspension of all of Spark's reporting obligations under the Exchange Act.

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Margin Regulations

The Shares are currently “margin securities” under the regulations of the Board of Governors of the Federal Reserve System (the “**Federal Reserve Board**”), which has the effect, among other things, of allowing brokers to extend credit on the collateral of such Shares. Depending upon factors similar to those described above regarding listing and market quotations, following the purchase of Shares pursuant to the Offer, the Shares might no longer constitute “margin securities” for the purposes of the Federal Reserve Board’s margin regulations and, therefore, could no longer be used as collateral for loans made by brokers.

8. Certain Information Concerning Spark

The information concerning Spark contained in this Offer to Purchase has been taken from or based upon publicly available documents and records on file with the SEC and other public sources and is qualified in its entirety by reference thereto.

According to the Spark 10-K, Spark was incorporated in Delaware in 2013. Spark’s principal executive offices are located at 3737 Market Street, Suite 1300, Philadelphia, PA, 19104. The telephone number of Spark’s principal executive offices is (888) 772-7560.

The following description of Spark and its business has been taken from the Spark 10-K, and is qualified in its entirety by reference to the Spark 10-K. Spark is a leader in the field of gene therapy, seeking to transform the lives of patients suffering from debilitating genetic diseases by developing potentially one-time, life-altering treatments. The goal of gene therapy is to overcome the effects of a malfunctioning, disease-causing gene. Gene therapies have the potential to provide long-lasting effects, dramatically and positively changing the lives of patients with conditions where no, or only palliative, therapies exist. Spark has built a pipeline of gene therapy product candidates that are directed to the retina, the liver and the central nervous system.

Financial Information

The following table sets forth summary historical consolidated financial data for Spark as of and for each of the years ended December 31, 2017 and 2018. The selected financial data and the per Share data set forth below are extracted from, and should be read in conjunction with, the consolidated financial statements and other financial information contained in the Spark 10-K. More comprehensive financial information is included in such report (including management’s discussion and analysis of financial condition and results of operation) and other documents filed by Spark with the SEC, and the following summary is qualified in its entirety by reference to such report and other documents and all of the financial information and notes contained therein. The financial statements included as Item 8 of the Spark 10-K are hereby incorporated by reference in this Offer to Purchase.

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The report may be examined, and copies may be obtained from the SEC in the manner described under “Additional Information” below.

	Year Ended December 31,	
	2018	2017
	(in thousands, except share and per share data)	
Statement of Operations Data:		
Revenues:		
Product sales, net	\$ 26,973	\$ —
Contract revenues	37,752	12,066
Total revenue	64,725	12,066
Costs and expenses:		
Cost of product sales	\$ 1,008	\$ —
Cost of contract revenues	6,907	—
Research and development	125,254	135,160
Acquired in-process research and development	300	8,604
Impairment on in-process research and development	—	15,696
Selling, general and administrative	124,895	111,124
Total operating expenses	258,364	270,584
Loss from operations	(193,639)	(258,518)
Unrealized loss on equity investments	(5,078)	—
Interest (expense) income, net	9,994	4,073
Other income (expense), net	110,000	—
Income tax benefit (expense)	(99)	963
Net loss	(78,822)	(253,482)
Net loss applicable to common stockholders	\$ (78,822)	\$ (253,482)
Net loss per common share, basic and diluted	\$ (2.11)	\$ (7.63)
Weighted average common shares outstanding, basic and diluted	37,366,782	33,242,072
	December 31,	
	2018	2017
	(in thousands)	
Balance Sheet Data:		
Cash, cash equivalents, and restricted cash	148,247	96,748
Marketable securities	453,037	443,454
Working capital	504,786	479,479
Total assets	814,352	616,796
Total stockholders' equity	496,513	513,624

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Additional Information

Spark is subject to the informational and reporting requirements of the Exchange Act and in accordance therewith files and furnishes periodic reports, proxy statements and other information with the SEC relating to its business, financial condition and other matters. You may read and copy any such reports, statements or other information at the SEC's Public Reference Room located at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. Please call 1-800-SEC-0330 for further information on the operation of the Public Reference Room. Spark's filings are also available to the public from commercial document retrieval services and at the SEC's website at <http://www.sec.gov>. The SEC's website address is not intended to function as a hyperlink, and the information contained in the SEC's website is not incorporated by reference in this Offer to Purchase and you should not consider it as part of the Offer to Purchase.

9. Certain Information Concerning Purchaser and Parent

We are a Delaware corporation incorporated on February 21, 2019, with principal executive offices at Tax Department, 1 DNA Way, Bldg. 82—MS24, South San Francisco, California 94080. The telephone number of our principal executive offices is (650) 225-7893. To date, we have engaged in no activities other than those incidental to our formation and the Offer.

Parent is a Delaware corporation, with principal executive offices at Tax Department, 1 DNA Way, Bldg. 82—MS24, South San Francisco, California 94080. The telephone number of its principal executive offices is (650) 225-7893. Parent is an indirect subsidiary of Roche, which through its subsidiaries, engages primarily in the development, manufacture, marketing and sales of pharmaceuticals and diagnostics. Headquartered in Basel, Switzerland, Roche is a leader in research-focused healthcare with combined strengths in pharmaceuticals and diagnostics. Roche is the world's largest biotech company, with truly differentiated medicines in oncology, immunology, infectious diseases, ophthalmology and neuroscience. Roche is also the world leader in in vitro diagnostics and tissue-based cancer diagnostics, and a frontrunner in diabetes management. Roche's personalized healthcare strategy aims at providing medicines and diagnostics that enable tangible improvements in the health, quality of life and survival of patients. Founded in 1896, Roche has been making important contributions to global health for more than a century. Thirty medicines developed by Roche are included in the World Health Organization Model Lists of Essential Medicines, among them life-saving antibiotics, antimalarials and chemotherapy. In 2018, the last year for which data is currently available, Roche employed about 94,000 people worldwide, invested 11.0 billion Swiss francs in R&D and posted sales of 56.8 billion Swiss francs. Genentech, in the United States, is a wholly owned member of Roche. Roche is the majority shareholder in Chugai Pharmaceutical, Japan. For more information, please visit www.roche.com.

The name, business address, current principal occupation or employment, five-year employment history and citizenship of each director and executive officer of Parent and Purchaser and certain other information are set forth on Schedule I hereto. Neither Parent nor Purchaser is an affiliate of Spark.

We do not believe our financial condition or the financial condition of Parent is relevant to your decision whether to tender your Shares and accept the Offer because (i) the Offer is being made for all outstanding Shares solely for cash, (ii) we, through Roche and its controlled affiliates, will have sufficient funds to purchase all Shares validly tendered, and not withdrawn, in the Offer and to provide funding for the Merger, which is expected to follow as promptly as practicable following the closing of the Offer, (iii) consummation of the Offer is not subject to any financing condition, and (iv) if we consummate the Offer, we expect to acquire any remaining Shares for the same cash per Share price in the Merger.

Pursuant to Rule 14d-3 under the Exchange Act, we have filed with the SEC a Tender Offer Statement on Schedule TO (which we refer to as the "**Schedule TO**"), of which this Offer to Purchase forms a part, and exhibits to the Schedule TO. The Schedule TO and the exhibits thereto, as well as other information filed by Parent and Purchaser with the SEC, are available for inspection at the SEC's Public Reference Room at 100 F

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Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room. Copies of such information may be obtainable by mail, upon payment of the SEC's customary charges, by writing to the SEC at the address above. The SEC also maintains a website on the Internet at www.sec.gov that contains the Schedule TO and the exhibits thereto and other information that Parent has filed electronically with the SEC.

The Purchaser and Parent have made no arrangements in connection with the Offer to provide holders of Shares access to our corporate files or to obtain counsel or appraisal services at our expense. For a discussion of appraisal rights, see "The Offer—Section 12—Purpose of the Offer; Plans for Spark; Stockholder Approval; Appraisal Rights."

10. Source and Amount of Funds

We estimate that we will need approximately \$4.8 billion to purchase all Shares pursuant to the Offer and the Merger, to pay all amounts in respect of outstanding Spark Stock Options, Spark RSUs and Spark Restricted Stock Awards held by Spark employees, to pay related fees and expenses and to pay all other amounts that may become due and payable as a result of the Offer and the Merger. Roche and its controlled affiliates expect to contribute or otherwise advance to us the funds necessary to consummate the Offer and the Merger and to pay the related fees and expenses. It is anticipated that all of such funds will be obtained from Roche's or its controlled affiliates' general corporate funds and/or commercial paper lines. Neither we nor Roche has any alternative financing plans or arrangements.

The Offer is not conditioned upon any financing arrangements or subject to a financing condition.

11. Background of the Offer; Contacts with Spark

The information set forth below regarding Spark not involving Parent or Purchaser was provided by Spark, and none of Parent, Purchaser or any of their affiliates or representatives assumes any responsibility for the accuracy or completeness of any information regarding meetings or discussions in which none of Parent, Purchaser or any of their affiliates or representatives participated.

As part of the continuous evaluation of its businesses and plans, Parent regularly considers a variety of strategic options and potential transactions. In recent years, Parent has evaluated various alternatives for expanding its pharmaceutical business, including acquisitions of pharmaceutical or biotechnology companies.

In May 2018, Spark management and the Spark Board began actively considering ways in which Spark could optimize the global success of its hemophilia A gene therapies, potentially de-risk its investment in those programs and raise capital and/or decrease its expenses in an effort to offset Spark's future cash needs, including a potential collaboration transaction for the co-development and co-promotion of Spark's hemophilia A programs and product candidates, including SPK-8011 and SPK-8016 (a "**Hem A Collaboration**").

Between May and August 2018, Spark and Parent engaged in discussions regarding a potential Hem A Collaboration.

Spark executed a confidentiality agreement with Parent on October 9, 2018, which included a standstill provision that prohibited Parent, for 12 months from the date of the agreement, from offering to acquire or acquiring Spark, and from taking certain other actions, including soliciting proxies, without the prior written consent of Spark and which included provisions providing for the termination of the standstill on customary terms, including upon Spark's entry into a definitive agreement with a third-party providing for a sale of Spark.

Thereafter, Jeffrey D. Marrazzo, Spark's Chief Executive Officer, and other members of Spark's senior management met (via telephone or in-person) from time to time with representatives of Parent to discuss a potential Hem A Collaboration.

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On December 11, 2018, Mr. Marrazzo and Dr. Severin Schwan, Chief Executive Officer of Parent, met in Teterboro, New Jersey. At this meeting, Dr. Schwan informed Mr. Marrazzo of Parent's interest in exploring a potential acquisition of Spark and intent to send a proposal letter to this effect. Neither party made any proposals during this meeting or otherwise discussed the specific terms of a potential acquisition transaction.

On December 14, 2018, Parent sent to Spark an unsolicited letter containing a non-binding proposal to acquire all of the outstanding Shares for \$70.00 per Share in cash (the "**December 14 Proposal**"), subject to the completion of due diligence and the negotiation and execution of definitive agreements. The letter also proposed that all equity awards would be cashed out for the applicable "in-the-money" amounts based on the per Share price being offered. The letter further noted Parent's intent for Spark to remain an independent gene therapy specialist unit in Philadelphia, Pennsylvania with the Roche Group after the proposed transaction.

On December 21, 2018, Mr. Marrazzo spoke telephonically with Dr. Schwan and conveyed the Spark Board's views that the December 14 Proposal was insufficient for the Spark Board to permit Parent to conduct due diligence with respect to a potential acquisition of Spark and that Spark would be discontinuing discussions with Parent regarding the Hem A Collaboration.

On December 23, 2018, Dr. Schwan sent an e-mail to Mr. Marrazzo indicating that Parent did not intend to submit a revised proposal without guidance from the Spark Board as to value, requesting access to due diligence, and communicating Parent's interest in exploring a potential Hem A Collaboration in parallel.

On January 4, 2019, Mr. Marrazzo sent an e-mail to Dr. Schwan suggesting that they talk after the 2019 J.P. Morgan Annual Healthcare Conference.

On January 15, 2019, Mr. Marrazzo spoke telephonically with Dr. Schwan. During this conversation, Mr. Marrazzo advised Dr. Schwan that the Spark Board continued to consider Parent's December 14 Proposal inadequate and indicated that Spark would likely not consider a sale unless the offer value was well into the \$80s. Mr. Marrazzo further indicated that Spark would not permit Parent to conduct due diligence until Parent provided an improved proposal but that senior management of Spark would meet with Parent to provide limited due diligence information if it would help Parent to re-evaluate its position on value.

Also on January 15, 2019, Daniel R. Faga, Spark's Chief Business Officer, spoke telephonically with James Sabry, Global Head and Executive Vice President of Roche Partnering, who reconfirmed Parent's interest in exploring a potential transaction.

On January 19, 2019, Mr. Marrazzo spoke telephonically with Dr. Schwan. Dr. Schwan reaffirmed Parent's continuing interest in a transaction with Spark and desired access to due diligence, as well as a preference to execute a transaction in an expeditious manner. Dr. Schwan also indicated that Parent did not intend to raise its proposed offer price prior to the suggested meeting with Spark's senior management.

On January 24, 2019, representatives of Parent, including Dr. Schwan, met with Spark's senior management, including Mr. Marrazzo, at the New York offices of Davis Polk & Wardwell LLP ("**Davis Polk**"), counsel to Parent, for all-day management presentations about Spark. Also in attendance were representatives of Centerview Partners LLC ("**Centerview**"), Spark's financial advisor, and representatives of Citigroup Global Markets Inc. ("**Citi**"), financial advisor to Parent. During the day, Mr. Marrazzo and Dr. Schwan had a separate meeting to further discuss Spark and a potential due diligence process. Neither party made any proposals during these meetings or otherwise discussed the specific terms of a potential transaction.

On January 26, 2019, Mr. Marrazzo spoke telephonically with Dr. Schwan. Dr. Schwan made a verbal, non-binding proposal on behalf of Parent to acquire all of the outstanding Shares of Spark for \$73.00 per Share in cash (the "**January 26 Proposal**"). Dr. Schwan indicated that Parent could conduct the remainder of its due diligence expeditiously in parallel with merger agreement negotiations. Later that day, Dr. Schwan sent Mr. Marrazzo a letter confirming the January 26 Proposal in writing, subject to the completion of due diligence and the negotiation and execution of definitive agreements.

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On January 27, 2019, representatives of Centerview had a telephone call with representatives from Citi during which the representatives from Citi reiterated Parent's interest in proceeding with a potential transaction expeditiously.

On January 30, 2019, representatives of Centerview, at the direction of the Spark Board, spoke telephonically with representatives of Citi and indicated that the January 26 Proposal from Parent continued to be inadequate and that Parent would not be given access to due diligence at that time.

On February 3, 2019, Parent sent a letter to Spark referencing its January 26 Proposal reiterating its preference to execute a transaction expeditiously and again requesting access to due diligence, indicating that it could likely provide an improved proposal following due diligence. In the letter, Parent also indicated that they understood from the market that Spark had decided to reach out and meet with other parties to gauge their interest in acquiring Spark.

On February 6, 2019, Spark provided Parent with access to a virtual data room in order for Parent to perform its due diligence investigation.

Following access to the virtual data room, Parent conducted its due diligence investigations of Spark and representatives of Spark met telephonically with Parent to discuss certain diligence items on diligence request lists provided by Parent.

On February 7, 2019, Centerview sent an instruction letter to Parent setting forth the timing and procedures for submitting a final definitive offer to acquire Spark. The letter requested that proposals be submitted by 12:00 p.m. Eastern Time on February 22, 2019, with comments to the draft merger agreement to be provided by 12:00 p.m. Eastern Time on February 19, 2019.

On February 9, 2019, representatives of Centerview on behalf of Spark sent a draft merger agreement to Parent. The draft merger agreement included customary terms and conditions for such an agreement including, among other things, for (1) the transaction to be structured as a cash tender offer followed immediately by a back-end merger, (2) exceptions to the definition of "Company Material Adverse Effect", which generally defines the standard for closing risk, including for the results of clinical studies of Spark or its competitors, (3) the obligation of the buyer to obtain all antitrust approvals, (4) Spark's ability to provide due diligence to, and negotiate a merger agreement with, a party making an unsolicited acquisition proposal that constitutes or could reasonably be expected to lead to a superior proposal, (5) Spark's ability to accept a superior proposal after providing the buyer with a right to match such proposal and (6) a termination fee equal to 2.0% of the equity value of the transaction.

On February 17, 2019, Mr. Marrazzo spoke with Dr. Schwan regarding the general status of the transaction process, including Parent's due diligence review. Neither party made any proposals during this meeting or otherwise discussed the specific terms of a potential transaction.

On February 18, 2019, Parent submitted a revised draft of the merger agreement. On February 19, 2019, Citi spoke telephonically with representatives of Centerview to confirm receipt of the revised draft agreement.

On February 20, 2019, representatives of Goodwin Procter LLP ("**Goodwin**"), Spark's outside counsel, had a telephone call with Davis Polk to discuss open issues in Parent's revised draft merger agreement, and thereafter provided a further revised draft merger agreement to Davis Polk on behalf of Parent.

On February 21, 2019, Mr. Marrazzo spoke telephonically with Dr. Schwan at Dr. Schwan's request regarding employee retention (without any discussion as to Mr. Marrazzo) and the proposed treatment in the transaction of all outstanding Spark equity awards. Neither party made any other proposals during this meeting or otherwise discussed the specific terms of a potential acquisition transaction.

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Later on February 21, 2019, representatives of Davis Polk sent a revised draft merger agreement to representatives of Goodwin and subsequently spoke telephonically regarding certain outstanding contractual terms primarily related to potential execution risk to Spark of completing a transaction.

Early in the morning of February 22, 2019, representatives of Goodwin provided a revised draft of the merger agreement to Davis Polk on behalf of Parent.

Later in the morning of February 22, 2019, representatives of Davis Polk sent a revised draft merger agreement to representatives of Goodwin.

At approximately noon on February 22, 2019, Parent submitted a proposal pursuant to the previously-distributed instruction letter, which had been approved by the Spark Board. Parent submitted a revised proposal, that it designated as its best and final proposal, to acquire Spark for \$91.00 per Share in cash.

Later that afternoon, Centerview communicated to Citi on behalf of Parent that best and final proposals would be due on that evening, by 6:00 p.m. Eastern Time, and that the Spark Board intended to review the proposals promptly after the deadline, with the intention of identifying a successful bidder and executing a merger agreement promptly following the completion of that meeting, subject to the following conditions: (1) the highest final bid being at least \$2.00 per Share higher than the other bid and (2) the merger agreement being in a form satisfactory to Spark and its representatives. Centerview also informed Citi on behalf of Parent that Parent should assume that it would not receive a call or other notification following the Spark Board's determination if its proposal was not the highest, and, accordingly, Parent was urged to put forward its best proposal at that time. Also later that afternoon, representatives of Goodwin sent a revised draft of the merger agreement to Davis Polk on behalf of Parent.

Throughout the course of the afternoon, representatives of Goodwin and representatives of Davis Polk discussed and exchanged comments to the draft merger agreement. At the conclusion of these discussions, the representatives of Parent indicated that Parent was prepared to accept and enter into a merger agreement substantially in the form last proposed by Spark.

Later on February 22, 2019, at approximately 6:00 p.m. Eastern Time, Parent submitted a proposal that it designated as its best and final proposal. Parent submitted a revised final proposal to acquire Spark for \$114.50 per Share in cash.

Following a meeting of the Spark Board, Mr. Marrazzo called Dr. Schwan to inform him that the Spark Board had unanimously approved the proposed transaction with Parent and, thereafter, in the evening of February 22, 2019, Spark, Parent and Purchaser executed the Merger Agreement.

Before the opening of trading of the European and U.S. stock markets on February 25, 2019, Spark and Parent each issued a press release announcing the execution of the Merger Agreement and the forthcoming commencement of a tender offer by Purchaser to acquire all of the outstanding Shares at the Offer Price.

On March 7, 2019, Purchaser commenced the Offer and Spark filed the Schedule 14D-9.

12. Purpose of the Offer; Plans for Spark; Stockholder Approval; Appraisal Rights

Purpose of the Offer; Plans for Spark

The purpose of the Offer and the Merger is for Parent to acquire the entire equity interest in Spark. The Offer, as the first of two steps in the acquisition of Spark, is intended to facilitate the acquisition of all of the Shares. The purpose of the Merger is to acquire all capital stock of Spark not purchased pursuant to the Offer or otherwise and to cause Spark to become a wholly owned subsidiary of Parent.

We currently intend, as soon as practicable after consummation of the Offer and the satisfaction or waiver of the other conditions set forth in the Merger Agreement, to consummate the Merger pursuant to the Merger Agreement. As described in “—Section 13—The Transaction Documents—The Merger Agreement—The Merger”, the Shares acquired in the Offer will be canceled in the Merger and the capital stock of Spark as the surviving corporation will be the capital stock of Purchaser. Following the Merger, Parent, Purchaser and Spark will use their commercially reasonable efforts to ensure that the directors of Purchaser immediately prior to the

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Merger Effective Time will be the directors of Spark as the surviving corporation, and the officers of Spark immediately prior to the Merger Effective Time will be the officers of Spark as the surviving corporation. See “—Section 13—The Transaction Documents—The Merger Agreement—The Merger.” Upon completion of the Merger, the Shares currently listed on the NASDAQ will cease to be listed on the NASDAQ and will subsequently be deregistered under the Exchange Act.

If you sell your Shares in the Offer, you will cease to have any equity interest in Spark or any right to participate in its earnings and future growth. If you do not tender your Shares, but the Merger is consummated, you also will no longer have an equity interest in Spark. Similarly, after selling your Shares in the Offer or the subsequent Merger, you will not bear the risk of any decrease in the value of Spark.

Roche and Parent intend to conduct a comprehensive review of Spark’s business, operations, capitalization and management. Accordingly, we are not in a position to discuss specific plans and timelines at this time. However, we do plan for Spark to remain an autonomous company within the Roche Group, maintaining its own organization. We will work through the governance structure of Spark after closing of the transactions contemplated by the Merger Agreement, collaboratively with Spark’s leadership. Roche and Parent expect Spark to leverage our innovation network, global development expertise and commercial capabilities to accelerate and maximize the value of Spark’s portfolio.

If, for any reason following completion of the Offer, the Merger is not consummated, Parent, Purchaser and their affiliates reserve the right to acquire additional Shares through private purchases, market transactions, tender or exchange offers or otherwise on terms and at prices that may be more or less favorable than those of the Offer, or, subject to any applicable legal restrictions, to dispose of any or all Shares acquired by them.

Except as described above or elsewhere in this Offer to Purchase and except for the transactions contemplated in the Merger Agreement, Purchaser has no present plans or proposals that would relate to or result in (i) any extraordinary corporate transaction involving Spark or any of its subsidiaries (such as a merger, reorganization, liquidation, relocation of any operations or sale or other transfer of a material amount of assets), (ii) any change in the Spark Board or management, (iii) any material change in Spark’s capitalization or dividend policy, (iv) any other material change in Spark’s corporate structure or business, (v) any class of equity securities of Spark being delisted from a national securities exchange or ceasing to be authorized to be quoted in an automated quotation system operated by a national securities association or (vi) any class of equity securities of Spark becoming eligible for termination of registration pursuant to Section 12(g) of the Exchange Act.

No Stockholder Approval

If the Offer is consummated, we do not anticipate seeking the approval of Spark’s remaining public stockholders before effecting the Merger. Section 251(h) of the DGCL provides that, subject to certain statutory provisions, if following consummation of a tender offer for any and all shares of a public Delaware corporation that would otherwise be entitled to vote on the merger (other than shares held by the acquiring entity and its affiliates), the stock irrevocably accepted for purchase pursuant to such offer and received by the Depository prior to the expiration of such offer, plus the stock otherwise owned by the acquirer equals at least the amount of shares of each class of stock of the target corporation that would otherwise be required for the stockholders of the target corporation to adopt a merger agreement with the acquiring entity, and each share of each class or series of stock of the target corporation not irrevocably accepted for purchase in the offer is converted into the right to receive the same consideration for their stock in the merger as was payable in the tender offer, the target corporation can effect a merger without the vote of the stockholders of the target corporation. Therefore, the parties have agreed, and the Merger Agreement requires, that, subject to the conditions specified in the Merger Agreement, the Merger will become effective as soon as practicable after the consummation of the Offer, without a vote of Spark stockholders, in accordance with Section 251(h) of the DGCL.

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Appraisal Rights

No appraisal rights are available in connection with the Offer. However, if the Merger is consummated, pursuant to the DGCL, stockholders who do not tender their Shares in the Offer will have the right, by fully complying with the applicable provisions of Section 262 of the DGCL, to choose not to accept the consideration payable for their Shares pursuant to the Merger, and instead to demand an appraisal of their Shares by the Court of Chancery of the State of Delaware and to receive a cash payment of the “fair value” of their Shares as of the Merger Effective Time of the Merger as determined by the Court of Chancery of the State of Delaware. The “fair value” of such Shares may be more than, less than, or equal to the Offer Price.

Under Section 262 of the DGCL, where a merger is approved under Section 251(h), either a constituent corporation before the effective date of the merger, or the surviving corporation within 10 days thereafter, will notify each of the holders of any class or series of stock of such constituent corporation who are entitled to seek appraisal of the approval of the merger or consolidation and that appraisal rights are available for any or all shares of such class or series of stock of such constituent corporation, and will include in such notice a copy of Section 262 of the DGCL. **The Schedule 14D-9 will constitute the formal notice of appraisal rights under Section 262 of the DGCL.**

As will be described more fully in the Schedule 14D-9, in order to exercise appraisal rights under Section 262 of the DGCL in connection with the Merger, a stockholder must do all of the following:

- within the later of the consummation of the Offer and 20 days after the mailing of the Schedule 14D-9, deliver to Spark a written demand for appraisal of Shares held, which demand must reasonably inform Spark of the identity of the stockholder and that the stockholder is demanding appraisal;
- not tender their Shares in the Offer;
- continuously hold of record the Shares from the date on which the written demand for appraisal is made through the Merger Effective Time; and
- strictly follow the statutory procedures for perfecting appraisal rights under Section 262 of the DGCL.

Any holder of Shares who wishes to exercise such appraisal rights or who wishes to preserve his, her or its right to do so in connection with the Merger, should review the Schedule 14D-9 and Section 262 of the DGCL carefully because failure to timely and properly comply with the procedures specified will result in the loss of appraisal rights under the DGCL.

The foregoing summary of the rights of Spark’s stockholders to appraisal rights under the DGCL in connection with the Merger does not purport to be a complete statement of the procedures to be followed by the stockholders of Spark desiring to exercise appraisal rights in connection with the Merger and is qualified in its entirety by reference to Section 262 of the DGCL. The proper exercise of appraisal rights in connection with the Merger requires strict adherence to the applicable provisions of the DGCL. A copy of Section 262 of the DGCL is set forth in Schedule II hereto.

13. The Transaction Documents

The Merger Agreement

The following summary description of the Merger Agreement does not purport to be complete and is qualified in its entirety by reference to the Merger Agreement, a copy of which Purchaser has included as Exhibit (d)(1) to the Tender Offer Statement on Schedule TO and is incorporated herein by reference. Stockholders and other interested parties should read the Merger Agreement for a more complete description of the provisions summarized below. Capitalized terms used herein and not otherwise defined have the respective meanings set forth in the Merger Agreement. The summary description has been included in this Offer to Purchase to provide you with information regarding the terms of the Merger Agreement and is not intended to modify or supplement any factual disclosures

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about Parent, Purchaser, Spark or their respective affiliates. The representations, warranties and covenants contained in the Merger Agreement were made only for the purposes of the Merger Agreement, were made as of specific dates, were made solely for the benefit of the parties to the Merger Agreement and may not have been intended to be statements of fact, but rather, as a method of allocating risk and governing the contractual rights and relationships among the parties to the Merger Agreement. In addition, such representations, warranties and covenants may have been qualified by certain disclosures not reflected in the text of the Merger Agreement and may apply standards of materiality and other qualifications and limitations in a way that is different from what may be viewed as material by Roche's or Spark's stockholders or under federal securities laws. In reviewing the representations, warranties and covenants contained in the Merger Agreement or any descriptions thereof in this summary, it is important to bear in mind that investors are not third-party beneficiaries under the Merger Agreement and that such representations, warranties, covenants or descriptions were not intended by the parties to the Merger Agreement to be characterizations of the actual state of facts or conditions of Parent, Purchaser, Spark or their respective affiliates. Moreover, information concerning the subject matter of the representations and warranties may have changed or may change after the date of the Merger Agreement, which subsequent information may or may not be fully reflected in public disclosures. For the foregoing reasons, the representations, warranties, covenants or descriptions of those provisions should not be read alone and should instead be read in conjunction with the other information contained in the reports, statements and filings that Parent, its affiliates and Spark publicly file.

The Offer

Upon the terms and subject to the conditions set forth in the Merger Agreement, Purchaser has agreed to commence a cash tender offer (as promptly as practicable, but in no event later than March 8, 2019) for all of the Shares at a purchase price of \$114.50 per Share, net to the seller of such Shares in cash, without interest and less any required withholding taxes. Purchaser's obligation to accept for payment and pay for Shares validly tendered and not validly withdrawn pursuant to the Offer is subject to the satisfaction of the Minimum Condition, the Regulatory Condition and the satisfaction or waiver of the other conditions set forth in "—Section 15—Conditions to the Offer." To the extent permitted by law, Purchaser expressly reserves the right to waive any of the conditions to the Offer or modify the terms of the Offer, except that, without the consent of Spark, it will not:

- amend, modify or waive the Minimum Condition;
- decrease the number of Shares subject to the Offer;
- reduce the Offer Price, except in connection with a stock split or other recapitalization;
- increase the Offer Price, except in response to notice of a Change in Circumstance, Change in Recommendation or Superior Proposal as described under "—Spark Board Recommendation";
- extend or otherwise change the expiration date of the Offer, except as described under "—Extensions of the Offer";
- change the form of consideration payable in the Offer;
- impose any condition to the Offer in addition to the Offer Conditions;
- amend, modify or supplement any of the terms of the Offer in any manner adversely affecting, or that would reasonably be expected to have an adverse effect on, any of the holders of Spark Shares; or
- take any action (or fail to take any action) that would result in the Merger not being permitted to be effected pursuant to Section 251(h) of the DGCL.

Extensions of the Offer

The Merger Agreement requires that Purchaser extend the Offer for one or more consecutive periods of not more than ten business days (or for such longer period as may be agreed to by the Parent and Spark) until such time as such conditions shall have been satisfied or waived, provided that Purchaser will not be required to

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extend the Offer beyond December 31, 2019 (but if on such date all conditions to the Offer have been satisfied or waived other than the Regulatory Condition or certain other conditions related to governmental challenges to the Offer or the Merger based on the antitrust laws of certain jurisdictions, either Spark or Parent can extend such date until January 31, 2020). In addition, Purchaser will extend the Offer for any period required by any rule, regulation, interpretation or position of the SEC or its staff that is applicable to the Offer.

The Merger Agreement obligates Purchaser, subject to the satisfaction or waiver of the conditions set forth in “—Section 15—Conditions to the Offer,” to accept for payment and pay for all Shares validly tendered and not validly withdrawn pursuant to the Offer promptly after the Expiration Time.

The Merger

As soon as practicable following the consummation of the Offer, subject to the satisfaction or waiver of certain conditions set forth in the Merger Agreement and unless applicable law prohibits or makes illegal the consummation of the Merger, Purchaser will merge with and into Spark, and Spark will survive as a wholly owned subsidiary of Parent. At the Merger Effective Time, any Shares not purchased pursuant to the Offer (other than Shares owned by Spark, any of its subsidiaries, Parent, us or any subsidiary of Parent, or any stockholders who have properly exercised their appraisal rights under Section 262 of the DGCL) will be automatically converted into the right to receive, in cash and without interest, less any required withholding taxes, an amount equal to the Offer Price.

The certificate of incorporation of Spark as in effect immediately prior to the Merger Effective Time will be amended and restated by virtue of the Merger at the effective time of the Merger to be identical to the certificate of incorporation included as Exhibit A to the Merger Agreement. The bylaws of Spark as in effect immediately prior to the Merger Effective Time will be amended and restated at the effective time of the Merger to be identical to the bylaws included as Exhibit B to the Merger Agreement. The directors of Purchaser immediately prior to the Merger Effective Time will be the directors of Spark as the surviving corporation until their respective successors are duly elected or appointed and qualified, as the case may be. The officers of Spark immediately prior to the Merger Effective Time will be the officers of Spark as the surviving corporation until their respective successors are duly elected or appointed and qualified, as the case may be.

The Merger Agreement provides the Merger will be governed by Section 251(h) of the DGCL and will be effected without a vote of Spark stockholders.

Spark Stock Options

The Merger Agreement provides that immediately prior to the Merger Effective Time, each Spark Stock Option, whether vested or unvested, that is outstanding and unexercised immediately prior to the Merger Effective Time, shall be cancelled and automatically converted into the right to receive from Parent or the surviving corporation an amount in cash (subject to any applicable withholding tax) equal to the product obtained by multiplying (i) the excess, if any, of the Offer Price over the per share exercise price of such Spark Stock Option, by (ii) the aggregate number of Shares issuable upon exercise of such Spark Stock Option immediately prior to the Merger Effective Time (such product, the “**Option Payment**”). From and after the Merger Effective Time, the holder of any cancelled Spark Stock Option shall only be entitled to receive the Option Payment in respect of such cancelled Spark Stock Option.

Spark Restricted Stock Units

The Merger Agreement provides that immediately prior to the Merger Effective Time, each Spark RSU that is outstanding immediately prior to the Merger Effective Time, whether vested or unvested, shall be cancelled and automatically converted into the right to receive from Parent or the surviving corporation an amount in cash (subject to any applicable withholding tax) equal to the Offer Price (such amounts payable hereunder, the “**RSU Award Payment**”). From and after the Merger Effective Time, the holder of any cancelled Spark RSU shall only be entitled to receive the RSU Award Payment in respect of such cancelled Spark RSU.

Spark Restricted Stock Awards

The Merger Agreement provides that immediately prior the Merger Effective Time, each Spark Restricted Stock Award that is outstanding shall be deemed fully vested and shall be treated the same as other Spark Shares outstanding immediately prior to the Merger Effective Time. To the extent payable to a current or former employee of Spark or a subsidiary, such payments (the “**Restricted Stock Payment**”) shall be made by the surviving corporation through its payroll system and shall be subject to applicable tax withholdings.

Prior to the Merger Effective Time, Spark shall take any and all such actions as are necessary (under the Spark 2014 Stock Incentive Plan (as amended from time to time) and the Spark 2015 Stock Incentive Plan (as amended from time to time) (together the “**Spark Equity Incentive Plans**”), applicable award agreements, applicable law or otherwise) to effect the foregoing, including by amending the applicable Spark Equity Incentive Plans. At or prior to the Merger Effective Time, Parent shall deposit, or cause to be deposited, funds sufficient to pay the aggregate Option Payment, the RSU Award Payment and the Restricted Stock Payment to an account identified by Spark prior to the Merger Effective Time. The Option Payments, RSU Award Payments and Restricted Stock Payments shall, except as may otherwise be required by Section 409A of the Code, be made by the surviving corporation at, or within five (5) business days of, the Merger Effective Time, without interest. All payments provided by the foregoing shall be made through the surviving corporation’s payroll and/or equity award maintenance systems, subject to withholding in accordance with applicable Tax Law.

Spark Employee Stock Purchase Plan

The Merger Agreement provides that as soon as practicable as of the date of the Merger Agreement, Spark shall take all actions with respect to any offering periods in effect as of the date hereof (the “**Current Purchase Period**”), (i) no employee who is not a participant in the 2015 Employee Stock Purchase Plan (the “**Spark ESPP**”) as of the date hereof may become a participant in the Spark ESPP and (ii) each individual participating in the Current Purchase Period in progress on the date of this Agreement shall not be permitted to increase his or her payroll contribution rate pursuant to the Spark ESPP from the rate in effect immediately prior to the date of this Agreement, except as may be required by applicable law. In addition, (A) the Current Purchase Period will end on May 31, 2019; provided that if the Merger Effective Time is prior to May 31, 2019, Spark will end the Current Purchase Period on a specified trading day occurring at least ten (10) days prior to the date on which the consummation of the Merger is expected to occur and treat the Current Purchase Period as a fully effective and completed offering period for all purposes of the Spark ESPP, and all outstanding purchase rights under the ESPP shall automatically be exercised, in accordance with the terms of the Spark ESPP, upon the last day of the Current Purchase Period, and any Shares purchased under the Spark ESPP shall be treated the same as other Spark Shares outstanding immediately prior to the Merger Effective Time; (B) there will be no offering periods following the Current Purchase Period and (C) in all events, Spark shall terminate the Spark ESPP prior to the Merger Effective Time. Prior to the Merger Effective Time, Spark shall take all actions (including, if appropriate, amending the terms of the Spark ESPP) that are necessary to give effect to the transactions contemplated by the foregoing.

Representations and Warranties

In the Merger Agreement, Spark has made customary representations and warranties to Parent and Purchaser that are subject, in some cases, to specified exceptions and qualifications contained in the Merger Agreement or confidential disclosure schedules that Spark delivered to Parent and Purchaser in connection with the execution and delivery of the Merger Agreement. These representations and warranties relate to, among other things: (i) due organization, good standing and subsidiaries and other equity interests; (ii) organizational documents; (iii) capitalization; (iv) SEC filings, financial statements and internal controls; (v) absence of certain changes; (vi) intellectual property rights; (vii) title to assets and real property; (viii) contracts; (ix) compliance with laws and orders; (x) certain business practices; (xi) legal proceedings and orders; (xii) tax matters; (xiii) employee benefit plans; (xiv) labor matters; (xv) environmental matters; (xvi) insurance; (xvii) privacy and data

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security; (xviii) authority and binding nature of the Merger Agreement; (xix) no vote required; (xx) non-contravention, required filings and consents; (xxi) Section 203 of the DGCL; (xxii) opinion of financial advisor; (xxiii) brokers' and finders' fees; (xxiv) Schedule 14D-9; and (xxv) Offer documents.

In the Merger Agreement, Purchaser and Parent have made customary representations and warranties to Spark that are subject, in some cases, to specified exceptions and qualifications contained in the Merger Agreement. These representations and warranties relate to, among other things: (i) due organization and good standing; (ii) legal proceedings and orders; (iii) authority and binding nature of the Merger Agreement; (iv) non-contravention and consents; (v) not an interested stockholders; (vi) financing; (vii) Offer documents; (viii) Schedule 14D-9; (ix) brokers' and finders' fees; (x) Purchaser; and (xi) stockholder, labor and employee matters.

The representations and warranties will not survive consummation of the Merger.

Operating Covenants

Pursuant to the Merger Agreement, from the date of the Merger Agreement until the Acceptance Time, except (i) to the extent Parent otherwise consents in writing (such consent not be unreasonably withheld, conditioned or delayed), (ii) as disclosed in the confidential disclosure schedules that Spark delivered to Parent and Purchaser in connection with the execution of the Merger Agreement, (iii) as expressly required by the Merger Agreement, (iv) as required by law or (iv) as required by the rules or regulations of NASDAQ, Spark has agreed to, and has agreed to cause each of its subsidiaries to, use commercially reasonable efforts to conduct its business in the ordinary course in all material respects, preserve intact its present business organization in all material respects, maintain in effect all material permits and insurance policies and keep available, in all material respects, the services of its directors, officers and key employees.

Spark has also agreed not to, and has agreed to cause its subsidiaries not to:

- amend Spark's certificate of incorporation or bylaws or other comparable organizational documents of any of Spark's subsidiaries;
- declare, set aside or pay any dividend or other distribution in respect of any capital stock of Spark or any of its subsidiaries;
- split, combine or reclassify any capital stock of Spark or any of its subsidiaries;
- purchase, redeem or otherwise acquire any securities of Spark or any of its subsidiaries;
- issue, deliver or otherwise sell any securities of Spark or any subsidiary of Spark, other than the issuance of Shares upon the exercise or settlement of Spark compensatory awards that are outstanding as of the date of the Merger Agreement or pursuant to participation in the Spark ESPP with respect to an offering period that began before the date of the Merger Agreement;
- adopt a plan or agreement of, or resolutions providing for or authorizing, complete or partial liquidation, dissolution, merger, consolidation, restructuring, recapitalization or other reorganization, each with respect to Spark and its subsidiaries;
- amend any term of any security of Spark or of any subsidiary of Spark;
- increase the salary, wages, benefits, bonuses or other compensation payable or to become payable to Spark's or any of its subsidiaries' current or former directors, officers or employees, except for increases for employees of Spark employed on the date of the Merger Agreement who earn \$275,000 or less in annual salary and wages in the ordinary course of business consistent with past practice;
- grant or increase any severance, retention or termination pay (or amend any existing severance pay, retention or termination arrangement);
- enter into any employment, consulting, bonus, change in control, deferred compensation or other similar agreement (or amend any such existing agreement);

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- establish, adopt or amend, or otherwise increase benefits payable under, any Spark employee plan or collective bargaining agreement;
- establish, adopt or enter into any plan, agreement or arrangement, or otherwise commit to gross-up, indemnify or otherwise reimburse any current or former Spark service provider for any tax incurred by such service provider, including under Section 409A or 4999 of the Code;
- issue any equity award, or amend or modify the terms of any outstanding equity award, under Spark's equity incentive plans or accelerate the vesting of any such award except as required by their terms on the date of the Merger Agreement, except that Spark may implement a severance policy as described in the disclosure schedules;
- acquire any business, assets or capital stock of any person, other than one or more acquisitions in the ordinary course of business consistent with past practice that, individually, involve a purchase price of not more than \$1,000,000;
- sell, lease, license, pledge, transfer, subject to any encumbrance, abandon or permit to lapse, fail to take any action necessary to maintain, enforce or protect, or otherwise dispose of any material Spark intellectual property, material intellectual property licensed to Spark or any of its subsidiaries under any Spark inbound license, material assets or material properties except, in each case, (i) sales of inventory or used equipment in the ordinary course of business, or (ii) permitted encumbrances incurred in the ordinary course of business consistent with past practice;
- change any of the accounting methods used by Spark affecting its assets, liabilities or business, except for such changes that are required by concurrent changes to GAAP or Regulation S-X promulgated under the Exchange Act;
- incur or assume any long-term or short-term indebtedness except (x) for borrowings not in excess of \$3,000,000 under Spark's credit facilities in the ordinary course of business (including with respect to equipment leasing) or (y) in respect of indebtedness owing by any wholly owned subsidiary of Spark to Spark or another wholly owned subsidiary of Spark;
- assume, guarantee, endorse or otherwise become liable or responsible (whether directly, contingently or otherwise) for the obligations of any other person (other than Spark or any subsidiary of Spark);
- enter into, modify in any material respect, amend in any material respect or voluntarily terminate certain material contracts, or otherwise waive or release any material rights, claims or benefits thereunder; provided that Spark or any subsidiary of Spark may enter into certain material contracts in the ordinary course of business;
- enter into any collective bargaining or similar labor agreement;
- incur any capital expenditures other than capital expenditures in an amount not to exceed \$1,000,000 in the aggregate and certain capital expenditures described in the disclosure schedules;
- settle or compromise (or offer to settle or compromise) any legal proceeding other than a settlement solely for monetary damages of no more than \$1,000,000 individually or \$3,000,000 in the aggregate (excluding monetary obligations that are funded by an indemnity obligation to, or an insurance policy of, Spark and subsidiaries of Spark);
- hire or promote any employees of Spark or any subsidiary of Spark earning a base salary of \$275,000 or more other than to fill vacancies arising due to terminations of employment of employees or terminate (without cause) any employee or service provider of Spark and subsidiaries of Spark other than for cause or performance-related reasons;
- make or change any material tax election, change any accounting period, adopt or change any material method of tax accounting, file any material amended tax return, enter into any closing agreement or settlement of any material tax claim or assessment, surrender any right to claim a material tax refund,

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- offset or other reduction in tax liability, or consent to any extension or waiver of the limitation period applicable to any material tax; or
- authorize, commit or agree to take any of the foregoing actions.

No Solicitation

Pursuant to the Merger Agreement, Spark has agreed that it will not, and will cause its subsidiaries and its and their respective officers and directors not to, and will not authorize any of its or their employees, investment bankers, attorneys, accountants, consultants and other agents, advisors and representatives (collectively with officers and directors, "**Representatives**") to, among other things:

- solicit, initiate, or knowingly encourage the submission or announcement of any Acquisition Proposal or Acquisition Inquiry (including by approving any transaction, or approving any person becoming an "interested stockholder," for purposes of Section 203 of the DGCL) (as each term is defined below);
- furnish any non-public information regarding Spark or any subsidiary of Spark to any person for the purpose of encouraging, or in response to, an Acquisition Proposal or Acquisition Inquiry; or
- engage in discussions or negotiations with any person with respect to any Acquisition Proposal or Acquisition Inquiry.

Spark has agreed that it will, and will ensure that its Representatives, immediately cease and cause to be terminated any existing solicitation of, or discussions or negotiations with, any third party relating to any Acquisition Proposal or Acquisition Inquiry.

Notwithstanding the restrictions described above, Spark and its Representatives may engage in discussions or negotiations and provide information in response to a *bona fide* written Acquisition Proposal first made after the date of the Merger Agreement if:

- prior to providing any material non-public information regarding Spark or any of its subsidiaries to any third party in response to such an Acquisition Proposal, Spark receives from such third party an executed Acceptable Confidentiality Agreement (as that term is defined below); provided that all such information, to the extent not previously made available to Parent or its Representatives, must also be made available to Parent prior to or concurrently with the time it is provided to such third party; and
- the Spark Board determines in good faith, after consultation with Spark's outside legal counsel and financial advisor, that such Acquisition Proposal constitutes a superior proposal or could reasonably be expected to lead to a superior proposal.

Prior to the Acceptance Time, Spark will not be required to enforce, and will be permitted to waive, any provision of any standstill or confidentiality agreement that prohibits or purports to prohibit an Acquisition Proposal being made to the Spark Board if the Spark Board determines in good faith, after consultation with Spark's outside legal counsel, that the failure to take such action would reasonably be expected to be inconsistent with the Spark Board's fiduciary obligations to Spark's stockholders under applicable law.

Spark is required to notify Parent promptly (but in no event later than 48 hours) in writing after Spark or any of its Representatives receives any Acquisition Proposal or an Acquisition Inquiry that would reasonably be expected to lead to an Acquisition Proposal. Spark is required to keep Parent reasonably informed of any material change to the terms of such Acquisition Proposal or Acquisition Inquiry.

The term "**Acquisition Proposal**" means any proposal or offer relating to (i) the acquisition of twenty percent (20%) or more of Spark common stock by any third party, (ii) any merger, consolidation, business combination, reorganization, sale of assets, recapitalization, liquidation, dissolution or other similar transaction that would result in any third party acquiring assets (including capital stock of or interest in Spark or any of its

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subsidiaries) representing, directly or indirectly, twenty percent (20%) or more of the assets of Spark and its subsidiaries, taken as a whole, (iii) any tender offer or exchange offer, as such terms are defined under the Exchange Act, that, if consummated, would result in any third party beneficially owning twenty percent (20%) or more of the Shares (or instruments convertible to or exchangeable for twenty percent (20%) or more of such outstanding shares), (iv) any merger, consolidation, business combination, reorganization, recapitalization, liquidation, dissolution or other similar transaction involving Spark that would result in any third party (or the stockholders of such third party) holding twenty percent (20%) or more of the equity interests in the surviving or resulting entity of such transaction or (v) any combination of the foregoing.

The term “**Acquisition Inquiry**” means an inquiry, indication of interest or request for information (other than an inquiry, indication of interest or request for information made or submitted by or on behalf of Parent or any of its subsidiaries) that could reasonably be expected to result in an Acquisition Proposal.

The term “**Superior Proposal**” means a *bona fide* written Acquisition Proposal (with all of the references to 20% included in the definition of Acquisition Proposal increased to 50%) that the Spark Board (or a committee thereof) determines in good faith, after consultation with Spark’s financial advisor and outside legal counsel, and taking into consideration, among other things, any legal, financial, regulatory and other aspects of such Acquisition Proposal and the Merger Agreement that the Spark Board (or a committee thereof) deems relevant (in each case taking into account any revisions to the Merger Agreement made in writing by Parent prior to the time of determination), would result in a transaction more favorable to the holders of Spark common stock than the transactions provided for in this Agreement.

The term “**Acceptable Confidentiality Agreement**” means a confidentiality agreement containing terms not materially less restrictive in the aggregate to the counterparty thereto than the terms of the confidentiality agreement between Spark and Parent dated as of October 9, 2018 (provided that such confidentiality agreement need not prohibit the making of an Acquisition Proposal or otherwise contain any standstill or similar provision). Notwithstanding the foregoing, a person who has previously entered into a confidentiality agreement with Spark on or after September 25, 2018 but prior to the date of the Merger Agreement will not be required to enter into a new or revised confidentiality agreement, and such existing confidentiality agreement will be deemed to be an Acceptable Confidentiality Agreement.

Spark Board Recommendation

Spark has represented to Purchaser and Parent in the Merger Agreement that the Spark Board has unanimously adopted resolutions:

- approving, adopting and declaring advisable the Merger Agreement and the transactions contemplated thereby (including the Offer and the Merger);
- determining that the transactions contemplated by the Merger Agreement (including the Offer and the Merger) are in the best interests of Spark and its stockholders;
- agreeing that the Merger Agreement will be effected under Section 251(h) of the DGCL; and
- resolving to recommend that the stockholders of Spark accept the Offer and tender their Shares to Purchaser pursuant to the Offer (the “**Spark Board Recommendation**”).

Spark has also agreed that it will not permit either the Spark Board or any of its committees to (i) fail to make, withdraw, modify, amend or qualify, in a manner adverse to Parent and Purchaser, the Spark Board Recommendation, or propose publicly to take such action; (ii) approve, recommend or declare advisable any Acquisition Proposal, or propose publicly to take such action (any such action described in (i) or (ii), a “**Change in Recommendation**”); or (iii) permit Spark to enter into any letter of intent, agreement in principle, agreement or contract (other than certain permitted confidentiality agreements) contemplating an Acquisition Proposal (any such contract, an “**Alternative Acquisition Agreement**”). However, notwithstanding the foregoing, at any time

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prior to the Acceptance Time, after complying with the obligations described in the “—Last Look” section below, the Spark Board may make a Change in Recommendation (i) if Spark has received a Superior Proposal or (ii) if there is a Change in Circumstances (as defined below), in each case if the Spark Board determines in good faith, after consultation with outside legal counsel, that the failure to take such action would reasonably be expected to be inconsistent with its fiduciary duties under applicable law.

The Merger Agreement does not prevent the Spark Board from (i) complying with Rule 14d-9 (including Item 1012(a) of Regulation M-A) or Rule 14e-2(a) promulgated under the Exchange Act with regard to an Acquisition Proposal, or from issuing a “stop, look and listen” statement pending disclosure of its position thereunder (or any substantially similar communication) so long as any such disclosure does not contain an express Change in Recommendation; (ii) disclosing to Spark’s stockholders any factual information regarding the business of Spark or Spark’s receipt of an Acquisition Proposal and material terms with respect thereto (and no such disclosure will, taken by itself, be deemed to be a Change in Recommendation); or (iii) communicating with any person (or the representatives of such person) that makes any Acquisition Proposal or Acquisition Inquiry to direct such person to comply with the no solicitation requirements in the Merger Agreement and/or to understand the terms and conditions of such Acquisition Proposal.

The term “**Change in Circumstances**” means any change in circumstances that arises affecting Spark that does not relate to any Acquisition Proposal and was not known to (or reasonably foreseeable by) the Spark Board on or prior to the date of the Merger Agreement.

Last Look

However, the Spark Board may not make a Change in Recommendation or terminate the Merger Agreement as described below unless:

- Spark has provided Parent with written notice at least three business days (or two business days in the case of material amendments to any Acquisition Proposal) before taking that action setting forth Spark’s intention to take such action and containing (x) if such action is intended to be taken in response to a Superior Proposal, a copy of the Alternative Acquisition Agreement and the identity of the counterparty to such Alternative Acquisition Agreement, or (y) if such action is intended to be taken in response to a Change in Circumstances, reasonable details regarding the reasons to take such action; and
- during any such three-business day period (or two-business day period, as applicable), (i) if Spark intends to take action in response to a Superior Proposal, Spark will make its Representatives reasonably available to negotiate with Parent regarding a possible amendment of the Merger Agreement or the Offer or a possible alternative transaction so that the Acquisition Proposal ceases to be a Superior Proposal and (ii) if Spark intends to take action in response to a Change in Circumstances, Spark will engage in good faith negotiations with Parent to amend the Merger Agreement or the Offer or enter into an alternative transaction.

Regulatory Undertaking

See “Section 16—Certain Legal Matters; Regulatory Approvals—Regulatory Undertakings.”

Access to Information

Other than as prohibited by law and subject to certain confidentiality and other exceptions, Spark has agreed to give Parent’s representatives, during normal business hours and upon reasonable prior notice, reasonable access to the books and records of Spark and its subsidiaries and furnish promptly to Parent all readily available information concerning its business as Parent may reasonably request and Spark will instruct its counsel, lenders, advisors, auditors and other Representatives to reasonably cooperate with Parent’s investigation of Spark and its subsidiaries.

Director and Officer Indemnification and Insurance

The Merger Agreement provides for certain indemnification and insurance rights in favor of any person who is or prior to the Acceptance Time is, or at any time prior to the date of the Merger Agreement was, a director or officer of Spark or any of its subsidiaries (each an “**Indemnified Party**”). Specifically, Parent has agreed to fulfill and honor in all respects the obligations of Spark pursuant to: (i) each indemnification agreement in effect as of the date of the Merger Agreement between Spark and any Indemnified Party; and (ii) any indemnification provision (including advancement of expenses) and any exculpation provision set forth in Spark’s certificate of incorporation and bylaws.

For a period of six years after the Acceptance Time, Parent has agreed to cause the surviving corporation, to the fullest extent permitted by applicable law, to indemnify and hold harmless each such Indemnified Party for any and all costs and expenses (including fees and expenses of legal counsel, which will be advanced as they are incurred) by reason of the fact that an Indemnified Party is or has been a director, officer or employee or agent of Spark or any of its subsidiaries or otherwise in connection with any action taken or not taken at the request of Spark or any subsidiary of Spark or, arising out of such Indemnified Party’s service in connection with any other corporation or organization for which he or she serves or has served as a director, officer, employee, agent, trustee or fiduciary at the request of Spark (including in any capacity with respect to any employee benefit plan).

The Merger Agreement requires Parent to cause the surviving corporation to maintain after the Acceptance Time, directors’ and officers’ liability insurance policies in respect of acts, errors or omissions occurring on or before to the Acceptance Time for the period ending six years from the Acceptance Time, covering each such person currently covered by Spark’s officers’ and directors’ liability insurance policy on terms with respect to coverage and amount no less favorable than those of such policy in effect. In the event Spark does not maintain such insurance policies, then, Parent will obtain prepaid “tail” or “runoff” directors’ and officers’ liability insurance policies prior to the Acceptance Time. Notwithstanding the foregoing, regardless of whether Spark obtains the “tail” policy, neither the maximum aggregate annual premiums for such insurance policies paid by Parent nor the maximum aggregate annual premium for such “tail” policy shall exceed 300% of the annual premium currently paid by Spark for such insurance.

Employee Benefits

The Merger Agreement provides that, until December 31, 2020 (or the date the applicable Continuing Employee’s employment terminates, if sooner), Parent shall, or shall cause the surviving corporation to, provide to each employee of Spark and its subsidiaries who is employed as of immediately prior to the Merger Effective Time (each, a “**Continuing Employee**”) with (i) base salary or base hourly wage rate (as applicable), in an amount at least equal to the level that was provided to each such Continuing Employee as of immediately prior to the Merger Effective Time, (ii) cash incentive compensation opportunities (including bonuses and commissions but not including equity incentive compensation) in an amount at least equal to the level that was provided to each such Continuing Employee as of immediately prior to the Merger Effective Time, and (iii) employee benefits that are comparable in the aggregate to such compensation and benefits as in effect immediately prior to the Merger Effective Time.

For a period of not less than twenty-four (24) months after the consummation of the Merger, Parent shall or shall cause the surviving corporation to provide each Continuing Employee, upon a qualifying termination of employment, severance and outplacement benefits equal to the benefits provided under any severance plan or outplacement arrangement maintained or provided by Spark and its subsidiaries as of the date hereof (the “**Spark Severance Benefits**”); provided that any non-U.S. Continuing Employee shall be entitled to severance and outplacement benefits in an amount equal to the greater of (x) the severance benefits set forth in his or her individual employment Contract and (y) without duplication with any remaining unearned notice payments and statutory redundancy payment applicable to such non-U.S. employee, the Spark Severance Benefits.

As of the Merger Effective Time, each Continuing Employee will receive full credit (for all purposes, including eligibility to participate, vesting, benefit accrual, vacation entitlement and severance benefits) for

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service with Spark and its subsidiaries (or predecessor employers to the extent Spark provides such past service credit) under the comparable employee benefit plans, programs and policies of Parent or the surviving corporation, as applicable, in which such employees became participants; *provided, however*, that the foregoing shall not apply (i) with respect to any equity or long-term incentive plan, (ii) with respect to benefit accrual under any defined benefit pension plan or (iii) to the extent that its application would result in a duplication of benefits. As of the Merger Effective Time, Parent shall, or shall cause the surviving corporation to, credit to Continuing Employees the amount of vacation time that such employees had accrued under any applicable Spark Benefit Plan as of the Merger Effective Time.

From and after the Merger Effective Time, with respect to each benefit plan maintained by Parent or the surviving corporation that is an “employee welfare benefit plan” as defined in Section 3(1) of ERISA (each, a “**Parent Welfare Plan**”) in which any Continuing Employee is or becomes eligible to participate, the Merger Agreement provides that Parent shall use reasonable best efforts to cause each such Parent Welfare Plan to (i) waive all limitations as to pre-existing conditions, waiting periods, required physical examinations and exclusions with respect to participation and coverage requirements applicable under such Parent Welfare Plan for such Continuing Employees and their eligible dependents to the same extent that such pre-existing conditions, waiting periods, required physical examinations and exclusions would not have applied or would have been waived under the corresponding Spark Benefit Plan in which such Continuing Employee was a participant immediately prior to his or her commencement of participation in such Parent Welfare Plan but, with respect to long-term disability and life insurance benefits and coverage, solely to the extent permitted under the terms and conditions of Parent’s applicable insurance contracts in effect as of the Merger Effective Time; *provided, however*, that for purposes of clarity, to the extent such benefit coverage includes eligibility conditions based on periods of employment, the Merger Agreement shall control; and (ii) provide each Continuing Employee and their eligible dependents with credit for any co-payments and deductibles paid in the calendar year that, and prior to the date that, such Continuing Employee commences participation in such Parent Welfare Plan in satisfying any applicable co-payment or deductible requirements under such Parent Welfare Plan for the applicable calendar year, to the extent that such expenses were recognized for such purposes under the comparable Spark Benefit Plan.

Parent shall, or shall cause the surviving corporation to, assume and honor in accordance with their terms all deferred compensation plans, agreements and arrangements, severance and separation pay plans, agreements and arrangements, and all written employment, severance, retention, incentive, change in control and termination agreements (including any change in control provisions therein) applicable to employees of Spark and its subsidiaries and in effect immediately prior to the Merger Effective Time.

If directed by Parent in writing at least ten (10) business days prior to the Acceptance Time, the Merger Agreement provides that Spark shall terminate any and all Spark benefit plans intended to qualify under Section 401(k) of the Code, effective not later than the business day immediately preceding the Acceptance Time. In the event that Parent requests that such 401(k) plan(s) be terminated, Spark shall provide Parent with evidence that such 401(k) plan(s) have been terminated pursuant to resolutions of the Spark Board (the form and substance of which shall be subject to review and reasonable approval by Parent).

The Merger Agreement provides that nothing within that agreement is intended, nor shall be construed to (i) be treated as an amendment to any particular Spark Benefit Plan, (ii) prevent Parent from amending or terminating any of its benefit plans in accordance with their terms, (iii) create a right in any employee to employment with Parent, the surviving corporation or Spark or any of its subsidiaries, or (iv) create any third-party beneficiary rights in any person with respect to the compensation, terms and conditions of employment and/or benefits that may be provided to any Continuing Employee by Parent, the surviving corporation or Spark or any of its subsidiaries or under any benefit plan which Parent, Spark or any of its subsidiaries or the surviving corporation may maintain.

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Approval of Compensation Arrangements

Pursuant to the Merger Agreement, prior to the Acceptance Time, the compensation committee of the Spark Board (the “**Compensation Committee**”) will cause each Spark Benefit Plan and Spark employment agreement pursuant to which consideration is payable to any officer, director or employee who is a holder of any security of Spark to be approved by the Compensation Committee (comprised solely of “independent directors”) in accordance with the requirements of Rule 14d-10(d)(2) under the Exchange Act and the instructions thereto as an “employment compensation, severance or other employee benefit arrangement” within the meaning of Rule 14d-10(d)(2) under the Exchange Act and satisfy the requirements of the non-exclusive safe harbor set forth in Rule 14d-10(d) of the Exchange Act.

Conditions to the Offer

See “—Section 15—Conditions to the Offer.”

Conditions to the Merger

The obligations of each party to consummate the Merger are subject to the satisfaction or waiver of the following conditions:

- Purchaser (or Parent on Purchaser’s behalf) will have accepted for payment all Shares validly tendered pursuant to the Offer and not withdrawn; and
- No temporary restraining order, preliminary or permanent injunction or other governmental order preventing the consummation of the Merger will have been issued by any governmental entity of competent jurisdiction and remain in effect, and there will not be any law enacted or deemed applicable to the Merger that makes consummation of the Merger illegal.

Termination

The Merger Agreement may be terminated and the Offer and the Merger may be abandoned:

- by mutual written consent of Parent and Spark at any time prior to the Acceptance Time;
- by either Parent or Spark, if:
 - the Acceptance Time has not occurred on or before December 31, 2019 (the “**End Date**”); *provided, however*, that either Parent or Spark may extend the End Date to January 31, 2020 if either of the following have not been satisfied by the initial End Date (with respect to the first bullet, including as a result of a government shutdown, and with respect to the second bullet, if such injunction or other order relates to antitrust laws) (“**End Date Termination Right**”):
 - the waiting period(s) (and any extension thereof) applicable to the consummation of the Offer and the Merger under the HSR Act or other applicable antitrust laws will have expired or been terminated, and if the parties have entered into any arrangement with any governmental entity regarding the consummation of the Offer or the Merger, then the Offer and the Merger will have been granted clearance to be consummated from such governmental entity, in each case without the imposition of a Burdensome Condition (as defined below); or
 - any governmental entity of competent jurisdiction will have enacted, issued, promulgated, enforced or entered any law that is in effect and restrains, enjoins or otherwise prohibits consummation of the Offer, the Merger or the other transactions contemplated by the Merger Agreement, or any governmental entity has instituted any legal proceeding that seeks to or that would do any of the foregoing, or that imposes (or seeks to impose) a Burdensome Condition;

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However, this right to terminate the Merger Agreement or extend the End Date will not be available to any party (or any affiliate of such party) whose breach of any representation, warranty, covenant or agreement set forth in the Merger Agreement has been the proximate cause of, or resulted in, the failure of the Acceptance Time to have occurred on or before the End Date.

- there is any law in effect that makes the acceptance for payment of, or the payment for, the Shares tendered pursuant to the Offer or the Merger illegal or that prohibits the consummation of the Offer or the Merger, or any final and nonappealable order or any other court action having the effect of permanently restraining, enjoining or otherwise prohibiting the consummation of the Offer or the Merger. However, this right to terminate the Merger Agreement will not be available to any party (or any affiliate of such party) whose breach of any representation, warranty, covenant or agreement set forth in the Merger Agreement has been the proximate cause of, or resulted in, the issuance, promulgation, enforcement or entry of any such order; or
- the Offer expires as a result of the non-satisfaction of one or more Offer Conditions, or is terminated or withdrawn prior to the Acceptance Time, without Purchaser having accepted for payment any Shares tendered pursuant to the Offer. However, this right to terminate the Merger Agreement will not be available to any party if the non-satisfaction of any Offer Condition or the termination or withdrawal of the Offer results from the failure of such party (or any affiliate of such party) to perform any covenant required to be performed by such party (or any affiliate of such party) at or prior to the Acceptance Time (“**Offer Condition Termination Right**”).
- by Parent, if, prior to the Acceptance Time:
 - a Change in Recommendation has occurred (“**Parent Change in Recommendation Termination Right**”);
 - Spark breaches any of its representations or warranties or fails to perform any of its covenants or obligations contained in the Merger Agreement that would cause any of the conditions set forth in clause (c)(iii) or (c)(iv) of “—Section 15—Conditions to the Offer” to exist and such breach or failure cannot be cured prior to the End Date, or if curable by the End Date, is not cured within 20 business days after receipt by Spark of written notice of such breach; *provided, however*, that this right will not be available to Parent if Purchaser or Parent is in material breach of the Merger Agreement that entitles Spark to terminate the Merger Agreement; or
 - Spark knowingly and intentionally breaches any of its obligations described above under “No Solicitation” in any material respect (“**Spark Intentional Breach Termination Right**”).”
- by Spark, if, prior to the Acceptance Time:
 - the Spark Board has made a Change in Recommendation in compliance with the terms of the Merger Agreement in order to enter into an Alternative Acquisition Agreement with respect of a Superior Proposal in accordance with the Merger Agreement and Spark has paid the fee described in “—Spark Termination Fee (“**Spark Change in Recommendation Termination Right**”);”
 - Parent breaches any of its representations or warranties or fails to perform in any material respect any of its covenants or obligations contained in the Merger Agreement that would reasonably be expected to prevent Parent or Purchaser from consummating the Offer, the Merger or any other transactions contemplated by the Merger Agreement and such breach or failure is incapable of being cured by the End Date or, if curable by the End Date, is not cured within 20 business days after receipt by Parent of written notice of such breach; *provided, however*, that this right will not be available to Spark if Spark is in material breach of the Merger Agreement that entitles Parent to terminate the Merger Agreement; or
 - if Purchaser fails to (i) consummate the Offer on or prior to the latest time permissible under the Merger Agreement or (ii) accept for payment the Shares when required to do so in accordance with the terms of the Merger Agreement.

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If the Merger Agreement is terminated pursuant to its terms, the Merger Agreement will be of no further force or effect without liability of any party to the Merger Agreement (or any representative of such party) to each other party; *provided* that, the termination of the Merger Agreement will not relieve any party from any liabilities or damages arising out of its knowing and intentional material breach of any provision of the Merger Agreement or any other agreement delivered in connection with the Merger Agreement or any fraud.

Spark Termination Fee

Spark has agreed to pay Purchaser a termination fee of \$144,000,000 in cash (the “**Spark Termination Fee**”) in the event that:

- (i) the Merger Agreement is terminated by Parent or Purchaser pursuant to the End Date Termination Right or Offer Condition Termination Right, in each case, as a result of the failure to satisfy the Minimum Condition, (ii) following the date of the Merger Agreement and prior to the time of the termination of the Merger Agreement, an Acquisition Proposal has been publicly announced (and such Acquisition Proposal has not been publicly withdrawn prior to the time of the termination of the Merger Agreement) and (iii) Spark consummates an Acquisition Proposal (with all references to 20% in the definition of Acquisition Proposal being treated as 50% for purposes of this clause) within nine months after such termination or Spark enters into a definitive agreement within nine months after such termination to effect an Acquisition Proposal, which Acquisition Proposal is subsequently consummated;
- the Merger Agreement is terminated by Parent pursuant to the Parent Change in Recommendation Termination Right;
- the Merger Agreement is terminated by Spark pursuant to the Spark Change in Recommendation Termination Right; or
- the Merger Agreement is terminated by Parent pursuant to the Spark Intentional Breach Termination Right.

Payment of the Spark Termination Fee will be deemed to be liquidated damages for any and all losses or damages suffered or incurred by Parent, Purchaser, any of their respective affiliates or any other person in connection with the Merger Agreement (and the termination of the Merger Agreement), the Offer and the Merger (and the abandonment of the Merger) or any matter forming the basis for such termination, and none of Parent, Purchaser, any of their respective affiliates or any other person will be entitled to bring or maintain any claim, action or proceeding against Spark or any of its affiliates for damages or any equitable relief arising out of or in connection with the Merger Agreement, any of the transactions contemplated under the Merger Agreement or any matters forming the basis for such termination

Fees and Expenses

Subject to certain exceptions and subject to the provisions described in “—Spark Termination Fee,” all fees and expenses incurred in connection with the Merger Agreement, the Offer, the Merger and the other transactions contemplated by the Merger Agreement will be paid by the party incurring such expenses, whether or not the Offer or the Merger is consummated.

No failure on the part of any party to exercise any power under the Merger, and no delay on the part of any party in exercising any such power, will operate as a waiver of such power; and no single or partial exercise of any such power will preclude any other or further exercise thereof or of any other power. No party will be deemed to have waived any claim arising out of the Merger, unless the waiver of such claim is expressly set forth in a written instrument duly executed and delivered on behalf of such party; and any such waiver will not be applicable or have any effect except in the specific instance in which it is given.

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The Confidentiality Agreement

Parent and Spark entered into a confidentiality agreement dated as of October 9, 2018 (the “**Confidentiality Agreement**”). Under the terms of the Confidentiality Agreement, Parent and Spark agreed that, subject to certain exceptions, certain non-public, confidential and/or proprietary information each may make available to the other in connection with discussions concerning a possible transaction between the parties will not be disclosed or used for any other purpose. The Confidentiality Agreement also includes a standstill provision with a term of 12 months that is subject to certain exceptions.

The foregoing summary description of the Confidentiality Agreement does not purport to be complete and is qualified in its entirety by reference to the Confidentiality Agreement, a copy of which Purchaser has filed as Exhibit (d)(2) to the Tender Offer Statement on Schedule TO and is incorporated herein by reference.

14. Dividends and Distributions

As discussed in “—Section 13—The Transaction Documents—The Merger Agreement—Operating Covenants,” pursuant to the Merger Agreement, from the date of the Merger Agreement until the Acceptance Time, except (i) to the extent Parent otherwise consented in writing (which consent will not be unreasonably withheld, conditioned or delayed), (ii) as disclosed in the confidential disclosure schedules that Spark delivered to Parent and Purchaser in connection with the execution of the Merger Agreement, (iii) as expressly required by the Merger Agreement, (iv) as required by law or (v) as required by the rules or regulations of NASDAQ, Spark has agreed to, and has agreed to cause each of its subsidiaries not to, subject to certain exceptions:

- declare, set aside or pay any dividend or other distribution in respect of any capital stock of Spark or any of its subsidiaries;
- split, combine or reclassify any capital stock of Spark or any of its subsidiaries; or
- purchase, redeem or otherwise acquire any securities of Spark or any of its subsidiaries;

15. Conditions to the Offer

Notwithstanding any other term of the Offer or the Merger Agreement, Purchaser will not be obligated to, and Parent will not be required to cause Purchaser to, irrevocably accept for payment, or, subject to the rules and regulations of the SEC, purchase any Shares validly tendered (and not validly withdrawn) pursuant to the Offer (and not theretofore accepted for payment or paid for), unless (the following, the “**Offer Conditions**”):

- (a) the Minimum Condition is satisfied; and
- (b) the waiting period(s) (and any extension thereof) applicable to the consummation of the Offer and the Merger under the HSR Act or other applicable antitrust laws will have expired or been terminated, and if the parties have entered into any arrangement with any governmental entity regarding the consummation of the Offer or the Merger, then the Offer and the Merger will have been granted clearance to be consummated from such governmental entity, in each case without the imposition of a Burdensome Condition.
- (c) immediately prior to the Acceptance Time, none of the following conditions exists:
 - (i) the Merger Agreement has been terminated in accordance with its terms;
 - (ii) any governmental entity of competent jurisdiction will have enacted, issued, promulgated, enforced or entered any law that is in effect and restrains, enjoins or otherwise prohibits consummation of the Offer, the Merger or the other transactions contemplated by the Merger Agreement, or any governmental entity has instituted any legal proceeding that seeks to or that would do any of the foregoing, or that imposes (or seeks to impose) a Burdensome Condition;

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- (iii) (A) any of the representations and warranties of Spark are not true and correct and such failure, individually or in the aggregate, will have resulted in a Spark Material Adverse Effect (as defined below), (B) any of the representations and warranties of Spark relating to due organization and good standing; subsidiaries, capitalization, authority; binding nature of agreement, no vote required, compliance with organizational documents, Section 203 of the DGCL, opinion of financial advisor, or brokers that are qualified as to materiality or Spark Material Adverse Effect are not true and correct in all respects and any such representations and warranties that are not so qualified will not be true and correct in all material respects, or (C) the representations and warranties of Spark relating to capitalization or no Spark Material Adverse Effect will not have been true and correct in all respects, except for *de minimis* inaccuracies;
- (iv) Spark will have failed to perform or comply in all material respects with its obligations or covenants under the Merger Agreement and such failure to perform or comply will not have been cured as of immediately prior to the expiration of the Offer;
- (v) since the date of the Merger Agreement, there will have occurred and be continuing any event, change, effect, occurrence, circumstance or development that, individually or in the aggregate, has had or would reasonably be expected to have, a Spark Material Adverse Effect; or
- (vi) Spark will not have delivered to Parent, dated as of the expiration date of the Offer, a certificate signed on behalf of Spark by a senior executive officer of Spark to the effect that the conditions set forth in the foregoing clauses (c)(iii), (c)(iv) and (c)(v) have been satisfied as of immediately prior to the expiration of the Offer.

The Offer Conditions set forth above (other than the Minimum Condition and conditions set forth in the foregoing clauses (b), (c)(i) and (c)(ii)) are for the sole benefit of Parent and Purchaser and, subject to the terms of the Merger Agreement and the applicable rules and regulations of the SEC, may be waived by Parent and Purchaser, in whole or in part, at any time, in the sole discretion of Parent and Purchaser (except for the Minimum Condition, which cannot be waived without the prior written consent of Spark).

The term “**Spark Material Adverse Effect**” means with respect to Spark, any effect that, individually or in the aggregate with all other effects, (1) has had, or would reasonably be expected to have, a material adverse effect on the business, financial condition, results of operations or assets of Spark and its subsidiaries taken as a whole, or (2) would reasonably be expected to prevent or materially impair or delay Spark from consummating the Offer or the Merger; provided, however, that none of the following (alone or in combination), or any effect to the extent arising out of or resulting from any of the following (alone or in combination), will be taken into account in determining whether a Spark Material Adverse Effect has occurred or may, would or could occur:

- (i) changes in Spark’s stock price or trading volume (but not any effect underlying such failures);
- (ii) any failure by Spark to meet, or changes to, published revenue, earnings or other financial projections, or any failure by Spark to meet any internal budgets, plans or forecasts of revenue, earnings or other financial projections (but not any effect underlying such failures);
- (iii) general business, economic or political conditions in the United States or any other country or region in the world, or changes therein;
- (iv) conditions in the financial, credit, banking, capital or currency markets in the United States or any other country or region in the world, or changes therein, including (A) changes in interest rates in the United States or any other country and changes in exchange rates for the currencies of any countries and (B) any suspension of trading in securities (whether equity, debt, derivative or hybrid securities) generally on any securities exchange or over-the-counter market operating in the United States or any other country or region in the world;
- (v) changes in general conditions in an industry in which Spark and its subsidiaries operate or in any specific jurisdiction or geographical area in the United States or elsewhere in the world;

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- (vi) changes in political conditions in the United States or any other country or region in the world;
- (vii) acts of hostilities, war, sabotage, cyberterrorism, terrorism or military actions (including any outbreak, escalation or general worsening of any such acts of hostilities, war, sabotage, cyberterrorism, terrorism or military actions) in the United States or any other country or region in the world;
- (viii) earthquakes, hurricanes, tsunamis, tornadoes, naturally occurring floods, mudslides, wild fires or other natural disasters or acts of God or weather conditions in the United States or any other country or region in the world, or any escalation of the foregoing;
- (ix) the execution or public announcement of the Merger Agreement or the pendency or consummation of the transactions contemplated thereby, including the impact thereof on the relationships, contractual or otherwise, of Spark and its subsidiaries with employees, customers, investors, contractors, lenders, suppliers, vendors, partners, licensors, licensees, payors, governmental entities or other third parties related thereto, including as a result of the identity of Parent or any of its affiliates as the acquiror of Spark or any facts or circumstances concerning Parent or any of its affiliates;
- (x) (A) any action taken at the written request of Parent that is not expressly required to be taken by the Merger Agreement, (B) the taking of any action required by the Merger Agreement or (C) the failure to take any action expressly prohibited by the Merger Agreement (if Spark has timely requested a waiver from Parent);
- (xi) changes or proposed changes in law, regulation or other legal or regulatory conditions (or the enforcement or interpretation of any of the foregoing);
- (xii) changes or proposed changes in GAAP or other accounting standards (or the enforcement or interpretation of any of the foregoing);
- (xiii) the availability or cost of equity, debt or other financing to Parent, Purchaser or the surviving corporation;
- (xiv) any transaction litigation or any demand or legal proceeding for appraisal of the fair value of any Shares pursuant to the DGCL in connection herewith;
- (xv) any regulatory, preclinical, clinical, pricing or reimbursement changes, effects, developments or occurrences arising after the date hereof and relating to or affecting any Spark product (including (A) any suspension, rejection, refusal of, request to refile or any delay in obtaining or making any regulatory application or filing relating to any Spark product, (B) any negative regulatory actions, requests, recommendations or decisions of any governmental entity relating to any Spark product or the manufacture thereof, or any other regulatory or preclinical or clinical development relating to any Spark product, (C) any preclinical or clinical studies, trials, tests, results or adverse events, or announcements of any of the foregoing, with respect to any Spark product, (D) any delay, hold or termination of any preclinical or clinical study, trial or test or any delay, hold or termination of any planned application for investigational new drug application or application for marketing approval with respect to any Spark product, (E) any preclinical or clinical studies, trials, tests, results or adverse events, or announcements of any of the foregoing, with respect to any product or product candidate competitive with or related to any Spark product, (F) FDA approval (or other preclinical or clinical or regulatory developments), market entry or threatened market entry of any product or product candidate competitive with or related to any Spark product or (G) any recommendations, statements, decisions or other pronouncements made, published or proposed by professional medical organizations, payors, governmental entities or representatives of the foregoing, or any panel or advisory body empowered or appointed thereby, relating to any Spark product or any products or product candidates of any competitors of Spark), in each case, as applicable, to the extent not resulting from any fraud by Spark;
- (xvi) any actual or potential sequester, stoppage, shutdown, default or similar event or occurrence by or involving any governmental entity affecting a national or federal government as a whole; and
- (xvii) any matters to the extent expressly set forth in the confidential disclosure schedules;

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However, the Merger Agreement provides that in the case of clauses (iii), (iv), (v), (vi), (vii), (xi) and (xii) above, such effects referred to therein may be taken into account to the extent that any of Spark and its subsidiaries is disproportionately affected relative to other similarly-situated companies in the industry in which Spark and its subsidiaries operate, in which case only the incremental disproportionate impact or impacts may be taken into account in determining whether or not there has been a Spark Material Adverse Effect.

16. Certain Legal Matters; Regulatory Approvals

Regulatory Matters

General

Based on our examination of publicly available information filed by Spark with the SEC and a review of certain information furnished by Spark to us, we are not aware of any governmental license or regulatory permit that appears to be material to Spark's business that might be adversely affected by our acquisition of Shares pursuant to the Offer or, except as set forth below, of any approval or other action by any government or governmental authority or agency, domestic, foreign or supernational, that would be required for our acquisition or ownership of Shares pursuant to the Offer. Should any such approval or other action be required or desirable, we currently contemplate that such approval or other action will be sought. Except as described below, there is no current intent to delay the purchase of Shares tendered pursuant to the Offer pending the outcome of any such matter. We are unable to predict whether we will determine that we are required to delay the acceptance for payment of or payment for Shares tendered pursuant to the Offer pending the outcome of any approval or other action not described below. There can be no assurance that any such approval or other action, if needed, would be obtained (with or without substantial conditions) or that if such approvals were not obtained or such other actions were not taken adverse consequences might not result to Spark's business or certain parts of Spark's business might not have to be disposed of, any of which could cause us to elect to terminate the Offer without the purchase of Shares thereunder. Our obligation under the Offer to accept for payment and pay for Shares is subject to the conditions set forth in "—Section 15—Conditions to the Offer."

State Takeover Statutes

As a Delaware corporation, Spark is subject to Section 203 of the DGCL. In general, Section 203 of the DGCL prevents a Delaware corporation from engaging in a "business combination" (defined to include mergers and certain other actions) with an "interested stockholder" (including a person who owns or has the right to acquire 15% or more of a corporation's outstanding voting stock) for a period of three years following the date such person became an "interested stockholder" unless, among other things, the "business combination" is approved by the board of directors of such corporation before such person became an "interested stockholder." Spark has represented to us in the Merger Agreement that, assuming the accuracy of certain representations and warranties made by Purchaser, the Spark Board has taken all action necessary to render Section 203 of the DGCL inapplicable to the Offer and the Merger and the other transactions contemplated by the Merger Agreement.

In addition to Section 203 of the DGCL, a number of other states have adopted laws which purport, to varying degrees, to apply to attempts to acquire corporations that are incorporated in, or which have substantial assets, stockholders, principal executive offices or principal places of business or whose business operations otherwise have substantial economic effects in, such states. Spark, directly or through subsidiaries, conducts business in a number of states throughout the United States, some of which may have enacted such laws. Except as described herein, we do not know whether any of these laws will, by their terms, apply to the Offer or the Merger, and we have not attempted to comply with any such laws. To the extent that certain provisions of these laws purport to apply to the Offer or the Merger, we believe that there are reasonable bases for contesting the application of such laws.

In 1982, in *Edgar v. MITE Corp.*, the Supreme Court of the United States invalidated on constitutional grounds the Illinois Business Takeover Statute which, as a matter of state securities law, made takeovers of

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corporations meeting certain requirements more difficult. However, in 1987, in *CTS Corp. v. Dynamics Corp. of America*, the Supreme Court held that the State of Indiana could, as a matter of corporate law, constitutionally disqualify a potential acquirer from voting shares of a target corporation without the prior approval of the remaining stockholders where, among other things, the corporation is incorporated, and has a substantial number of stockholders, in the state. Subsequently, in *TLX Acquisition Corp. v. Telex Corp.*, a U.S. federal district court in Oklahoma ruled that the Oklahoma statutes were unconstitutional as applied to corporations incorporated outside Oklahoma in that they would subject such corporations to inconsistent regulations. Similarly, in *Tyson Foods, Inc. v. McReynolds*, a U.S. federal district court in Tennessee ruled that four Tennessee takeover statutes were unconstitutional as applied to corporations incorporated outside Tennessee. This decision was affirmed by the United States Court of Appeals for the Sixth Circuit. In December 1988, a U.S. federal district court in Florida held in *Grand Metropolitan PLC v. Butterworth* that the provisions of the Florida Affiliated Transactions Act and the Florida Control Share Acquisition Act were unconstitutional as applied to corporations incorporated outside of Florida.

If any government official or third party seeks to apply any state takeover law to the Offer or the Merger, we will take such action as then appears desirable, which action may include challenging the applicability or validity of such statute in appropriate court proceedings. If it is asserted that one or more state takeover statutes is applicable to the Offer or the Merger and an appropriate court does not determine that it is inapplicable or invalid as applied to the Offer or the Merger, we may be required to file certain information with, or to receive approvals from, the relevant state authorities or holders of Shares, and we may be unable to accept for payment or pay for Shares tendered pursuant to the Offer, or be delayed in continuing or consummating the Offer or the Merger. In such case, we may not be obligated to accept for payment or pay for any tendered Shares. See “—Section 15—Conditions to the Offer.”

U.S. Antitrust

Under the HSR Act and the rules that have been promulgated thereunder, certain acquisition transactions may not be consummated unless Premerger Notification and Report Forms have been filed with the Federal Trade Commission (the “FTC”) and the Antitrust Division of the United States Department of Justice (the “Antitrust Division”) and certain waiting period requirements have been satisfied. The purchase of Shares pursuant to the Offer and the Merger is subject to such requirements.

Each of Parent and Spark filed a Premerger Notification and Report Form under the HSR Act with respect to the Offer and the Merger with the Antitrust Division and the FTC on March 1, 2019. The waiting period applicable to the purchase of Shares pursuant to the Offer will expire at 11:59 p.m., New York City time, on March 18, 2019, but this period may be shortened if the FTC or the Antitrust Division, as applicable, grants “early termination” of the waiting period, or it may change if Parent voluntarily withdraws and refiles its Premerger Notification and Report Form in order to restart the 15-day waiting period, or if the reviewing agency issues a formal request for additional information and documentary material. If such a request is made, the waiting period will be extended until 11:59 p.m., New York City time, ten calendar days after substantial compliance with such request. Thereafter, such waiting period can be extended only by court order or agreement of Parent, Spark, Purchaser and the Antitrust Division or the FTC, as applicable. See “—Section 15—Conditions to the Offer” for certain conditions to the Offer, including conditions with respect to certain governmental actions and “—Section 13—The Transaction Documents—The Merger Agreement—Termination” for certain termination rights pursuant to the Merger Agreement with respect to certain governmental actions. It is also possible that Parent and Spark could enter into a timing agreement with the reviewing agency that could affect the timing of the closing of the transactions contemplated by the Merger Agreement.

Other Antitrust Approvals

Spark and its subsidiaries transact business in a number of additional countries outside of the United States. Under the antitrust or merger control statutes or regulations of certain of these foreign countries, certain

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acquisition transactions require the filing of information with, or the obtaining of the approval of, antitrust or competition authorities therein. We do not believe that the purchase of Shares by us in the Offer or the Merger is subject to such requirements.

Regulatory Undertakings

The parties to the Merger Agreement have agreed to (i) promptly (and, in the case of the notification and report form pursuant to the HSR Act, unless otherwise agreed by the parties hereto, in no event later than March 1, 2019) use reasonable best efforts to make and effect all registrations, filings and submissions required to be made or effected by it or otherwise advisable pursuant to the HSR Act, other applicable antitrust laws, the Exchange Act and other applicable law with respect to the Offer and the Merger; (ii) use commercially reasonable efforts to obtain all consents and approvals required from third parties in connection with the transactions contemplated by the Merger Agreement; and (iii) use reasonable best efforts to cause to be taken, on a timely basis, all other actions necessary or appropriate for the purpose of consummating and effectuating the transactions contemplated by the Merger Agreement; provided, however, that in no event will Spark be required to pay, prior to the Merger Effective Time, any fee, penalty or other consideration to any person for any consent or approval required for the consummation of any of the transactions contemplated by the Merger Agreement. Notwithstanding the foregoing, each of the parties to the Merger Agreement has agreed to (A) promptly use its best efforts to provide all information requested by any governmental entity in connection with the Offer, the Merger or any of the other transactions contemplated by the Merger Agreement and (B) use its best efforts to promptly take, and cause its affiliates to take, all actions and steps necessary to obtain and secure the expiration or termination of any applicable waiting periods under the HSR Act or other applicable antitrust laws and obtain any clearance or approval required to be obtained from the FTC, the Antitrust Division, any state attorney general, any foreign competition authority or any other governmental entity in connection with the transactions contemplated by the Merger Agreement.

However, the parties have agreed that the best efforts, reasonable best efforts, commercially reasonable efforts or other obligations of Parent and Purchaser will not include, and Parent and Purchaser will not be obligated to (and, without Parent's prior written consent, none of Spark or any of its subsidiaries will) take, except solely with respect to Spark and its subsidiaries, and solely with respect to (and limited to) Spark's developmental products and programs (other than any Hemophilia A programs or products, including SPK-8011 and SPK-8016) that are or would be competitive with the products and programs of Parent and its affiliates or in which Parent and its affiliates own or control any interest, any of the following actions: (i) proposing, negotiating, committing to and effecting, by consent decree, hold separate order or otherwise (A) the sale, divesture, license, hold separate or other disposition of any asset, interest or business of Parent, Purchaser or any of their affiliates or (B) the sale, divesture, license, hold separate or other disposition, contemporaneously with or subsequent to the Merger Effective Time, of any asset, interest or business of Spark or any of its subsidiaries; (ii) permitting Spark and its subsidiaries to sell, divest, license, hold separate or otherwise dispose any of its or their assets, interests or businesses prior to the Merger Effective Time; (iii) terminating, relinquishing, modifying, transferring, assigning, restructuring, or waiving existing agreements, collaborations, relationships, ventures, contractual rights, obligations or other arrangements of Parent, Purchaser or Spark or their respective subsidiaries; and (iv) any other behavioral undertakings and commitments whatsoever including but not limited to creating or consenting to create any relationships, ventures, contractual rights, obligations, or other arrangements of Parent, Purchaser or Spark or their respective subsidiaries and, in each case, to enter, or offer to enter, into agreements and stipulate to the entry of an order or decree or file appropriate applications with any governmental entity in connection with any of the foregoing and in the case of actions by or with respect to Spark or any of its subsidiaries or its or their businesses or assets, by consenting to such action by Spark or any of its subsidiaries in any such case of (i)-(iv) (any of the foregoing actions, a "**Burdensome Condition**"). Parent and its affiliates will not be required to take any actions (including any of the actions described in clauses (i) through (iv) of the definition of Burdensome Condition) with respect to any of the assets, interests or businesses of Parent, Purchaser or any of their respective affiliates.

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Furthermore, the parties have agreed to (i) give the other parties prompt written notice of the making or commencement of any request, inquiry, investigation, action or legal proceeding by or before any governmental entity with respect to the Offer or the Merger or any of the other transactions contemplated by the Merger Agreement; (ii) keep the other parties reasonably informed as to the status of any such request, inquiry, investigation, action or legal proceeding; and (iii) promptly inform the other parties of any substantive or other material communication to or from the FTC, the Antitrust Division or any other governmental entity regarding the Offer or the Merger. The parties have agreed to consult and cooperate with the other parties and consider in good faith the views of the other parties in connection with any analysis, appearance, presentation, memorandum, brief, argument, opinion or proposal made or submitted in connection with any such request, inquiry, investigation, action or legal proceeding. In addition, except as may be prohibited by any governmental entity or by any law, in connection with any such request, inquiry, investigation, action or legal proceeding, each party has agreed to permit authorized representatives of the other parties to be present at each substantive or other material meeting or conference relating to such request, inquiry, investigation, action or legal proceeding and to have reasonable access to and be consulted in connection with any document, opinion or proposal made or submitted to any governmental entity in connection with such request, inquiry, investigation, action or legal proceeding.

In the event that any litigation or other administrative or judicial action or legal proceeding is commenced challenging the Offer or the Merger or any of the other transactions contemplated by the Merger Agreement and such litigation, action or legal proceeding seeks, or would reasonably be expected to seek, to prevent the consummation of the Offer or the Merger or the other transactions contemplated by the Merger Agreement, Parent and Purchaser have agreed to use best efforts to take any and all action to resolve any such litigation, action or legal proceeding and each of Spark, Parent and Purchaser have agreed to cooperate with each other and use its respective best efforts to contest any such litigation, action or legal proceeding and to have vacated, lifted, reversed or overturned any decree, judgment, injunction or other order, whether temporary, preliminary or permanent, that is in effect and that prohibits, prevents or restricts consummation of the Offer or the Merger or the other transactions contemplated by the Merger Agreement.

Parent and Purchaser have agreed not to, and have agreed not to permit their respective subsidiaries or affiliates to, acquire or agree to acquire any rights, interests, assets, business, person or division thereof, if such action would reasonably be expected to increase in any material respect the risk of not obtaining prior to the End Date any applicable clearance, consent, approval or waiver under antitrust laws with respect to the Offer or the Merger or the other transactions contemplated by the Merger Agreement.

Subject to Parent's obligations described above, Parent will have the right to direct all matters with any governmental entity consistent with its obligations under the Merger Agreement, and Spark will not settle or compromise or offer to settle or compromise any request, inquiry, investigation, action or other legal proceeding by or before any governmental entity with respect to the Offer, the Merger or the other transactions contemplated by the Merger Agreement without the prior written consent of Parent and, at the written request of Parent, Spark and its subsidiaries will take (or agree to take) any of the actions described in the definition of Burdensome Condition or otherwise (so long as such action is conditioned upon the occurrence of the closing of the Merger).

Litigation Related to the Merger

Lawsuits arising out of or relating to the Offer, the Merger or any other transactions referenced herein may be filed in the future.

17. Fees and Expenses

Citigroup Global Markets Inc. ("**Citigroup Global Markets**") is acting as dealer manager to Parent in connection with the Offer and has provided certain financial advisory services to Parent in connection with the transactions contemplated by the Merger Agreement, for which financial advisory services Citigroup Global Markets will receive reasonable and customary compensation. We have also agreed to reimburse Citigroup

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Global Markets for certain reasonable out-of-pocket expenses and to indemnify Citigroup Global Markets against certain liabilities, including certain liabilities under the U.S. federal securities laws. In the ordinary course of business, Citigroup Global Markets and their respective successors and affiliates may trade Shares for their own accounts and accounts of customers, and, accordingly, may at any time hold a long or short position in the Shares.

We have retained MacKenzie Partners, Inc. to act as the Information Agent and Citibank, N.A., to act as the Depositary in connection with the Offer. The Information Agent may contact holders of Shares by mail, telephone and personal interviews and may request brokers, dealers, commercial banks, trust companies and other nominees to forward materials relating to the Offer to beneficial owners. The Information Agent and the Depositary each will receive reasonable and customary compensation for their respective services, will be reimbursed for certain reasonable out-of-pocket expenses and will be indemnified against certain liabilities in connection therewith, including certain liabilities under the U.S. federal securities laws.

We will not pay any fees or commissions to any broker or dealer or any other person (other than the Information Agent and the Depositary) for soliciting tenders of Shares pursuant to the Offer. Brokers, dealers, commercial banks, trust companies and other nominees will, upon request, be reimbursed by us for reasonable and necessary costs and expenses incurred by them in forwarding materials to their customers.

18. Miscellaneous

The Offer is not being made to, nor will tenders be accepted from or on behalf of, holders of Shares in any U.S. or foreign jurisdiction in which the making of the Offer or acceptance thereof would not be in compliance with the laws of such jurisdiction. In those jurisdictions where the applicable laws require that the Offer be made by a licensed broker or dealer, the Offer will be deemed to be made on behalf of Purchaser by Citigroup Global Markets or one or more registered brokers or dealers licensed under the laws of such jurisdiction to be designated by Purchaser. We are not aware of any jurisdiction where the making of the Offer is prohibited by any administrative or judicial action pursuant to any valid state statute. If we become aware of any valid state statute prohibiting the making of the Offer or the acceptance of the Shares, we will make a good faith effort to comply with that state statute. If, after a good faith effort, we cannot comply with the state statute, we will not make the Offer to, nor will we accept tenders from or on behalf of, the holders of Shares in that state.

No person has been authorized to give any information or make any representation on behalf of Purchaser, Parent or any of their respective affiliates, or on behalf of Citigroup Global Markets, not contained in this Offer to Purchase or in the related Letter of Transmittal and, if given or made, such information or representation must not be relied upon as having been authorized.

We have filed with the SEC a Schedule TO, together with exhibits thereto, furnishing certain additional information with respect to the Offer, and may file amendments to our Schedule TO. In addition, Spark has filed the Schedule 14D-9, together with the exhibits thereto, setting forth the Spark Board Recommendation and furnishing certain additional related information. Our Schedule TO, the Schedule 14D-9 and any exhibits or amendments thereto may be examined and copies may be obtained from the SEC in the manner described in “—Section 8—Certain Information Concerning Spark” and “—Section 9—Certain Information Concerning Purchaser and Parent” above.

022019 Merger Subsidiary, Inc.

March 7, 2019

DIRECTORS AND EXECUTIVE OFFICERS OF CONTROLLING SHAREHOLDER OF ROCHE

The name, age, country of citizenship, current principal occupation or employment and material occupations, positions, offices or employment for the past five years of each director and executive officer of Roche Holding Ltd, of which Parent is a subsidiary, are set forth below. Unless otherwise indicated, each occupation set forth opposite an individual's name refers to a position with Roche Holding Ltd. The business address of each director, executive officer and controlling shareholder is Grenzacherstrasse 124, CH-4070, Basel, Switzerland. Directors are identified by an asterisk and controlling shareholders are identified with a cross.

<u>Name</u>	<u>Age</u>	<u>Current Principal Occupation or Employment and Five-Year Employment History</u>	<u>Country of Citizenship</u>
Dr. Christoph Franz*	59	Dr. Franz has served as director since 2011 and Chairman of the Board since March 2014. He also serves as Vice-Chairman of the Board of Zurich Insurance Group Ltd., Member of the Board of Stadler Rail Ltd. and Member of the Assembly of the International Committee of the Red Cross. From 2011 until April 30, 2014, he was Chairman of the Executive Board of Lufthansa and Chief Executive Officer of Deutsche Lufthansa AG.	Germany and Switzerland
André Hoffmann*†	61	Mr. Hoffmann has served as director since 1996 and is Non-Executive Vice-President. He has been President of Massellaz SA since November 1999. From March 2000 to 2016, Mr. Hoffmann served as Non-Executive Vice-President of Givaudan Ltd.	Switzerland
Dr. Andreas Oeri*†	70	Dr. Oeri has served as director since 1996. He is an orthopedic surgeon.	Switzerland
Prof. Sir John Irving Bell*	67	Prof. Sir John Bell is a director and has served as the Regius Professor at the University of Oxford since 2002, where he has been a Professor since 1987.	United Kingdom and Canada
Julie Brown*	57	Ms. Brown is a director and was interim Group Chief Financial Officer and VP Group Finance of AstraZeneca plc, London from 2012-2013. From 2013 until January 2017 she was Group Financial Officer of Smith & Nephew plc in London. Since 2017, she has served as Chief Operating and Financial Officer of Burberry Group plc, UK.	United Kingdom
Paul Bulcke*	65	Mr. Bulcke is a director and was Chief Executive Officer of Nestlé S.A. from April 2008 to 2016, and has served as Chairman of the Board of Directors of Nestlé SA since 2017.	Belgium and Switzerland

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<u>Name</u>	<u>Age</u>	<u>Current Principal Occupation or Employment and Five-Year Employment History</u>	<u>Country of Citizenship</u>
Anita Hauser*	50	Ms. Hauser is a director and was Managing Director of Magenta Management AG, Zürich from 2012 until 2017. Since 2007 she has been a Member of the Board of Bucher Industries, Zürich, and has served as Vice Chairwoman since 2011.	Switzerland
Prof. Dr. Richard P. Lifton*	66	Prof. Lifton is a director and was Executive Director of the Yale Center for Genome Analysis at Yale University School of Medicine between 2009 and 2016. Since 2016 he has been Adjunct Professor of Genetics and Internal Medicine at Yale University School of Medicine, and President of The Rockefeller University New York City.	USA
Bernard Poussot*	67	Mr. Poussot is a director, serves as Member of the Board, Max Planck Institute, USA, and is a retiree.	France and USA
Dr. Severin Schwan*	52	Dr. Schwan is a director and has served as Chief Executive Officer since 2008, and is also a member of the Corporate Executive Committee. Dr. Schwan has also served as President of Parent since 2014 and as director of Parent since 2008.	Austria and Germany
Dr. Claudia Suessmuth Dyckerhoff*	52	Dr. Dyckerhoff has been a Senior External Advisor to McKinsey & Company since 2016. From 2012 to 2016 she was at McKinsey & Company, China as Sector Leader of Asia Health Services and Systems.	Germany
Peter R. Voser*	61	Mr. Voser is a director. He has served as Chairman of the Board of ABB, Ltd. since 2015 and served as Chief Executive Officer of Royal Dutch Shell plc. from July 2009 to March 2014.	Switzerland
William N. Anderson	52	Mr. Anderson is Chief Executive Officer of Roche Pharmaceuticals and serves on the Corporate Executive Committee. From 2017 to 2018, he served as Chief Executive Officer of Genentech, Inc.	USA
Michael Heuer	65	Mr. Heuer is Chief Executive Officer of Roche Diagnostics and serves on the Corporate Executive Committee. From 2008 to 2018, he served as head of Europe, Middle East, Africa and Latin America at Roche Diagnostics.	Germany
Dr. Alan Hippe	52	Dr. Hippe serves as Chief Financial Officer and Chief Information Officer, as a member of the Corporate Executive Committee and as director and Vice President of Parent.	Germany

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<u>Name</u>	<u>Age</u>	<u>Current Principal Occupation or Employment and Five-Year Employment History</u>	<u>Country of Citizenship</u>
Cristina A. Wilbur	52	Ms. Wilbur has served as Head of Group Human Resources and has been a member of the Corporate Executive Committee since 2016. She previously served as Global Head of Human Resources at the Diagnostics Divisions in Basel from 2010 until 2016.	USA
Dr. Gottlieb Keller	65	Dr. Keller has served as General Counsel since 2008. He also serves as a member of the Corporate Executive Committee.	Switzerland
Dr. Michael D. Varney	61	Dr. Varney has served as Head of Genentech Research and Early Development since 2015. He is a member of the Roche Enlarged Corporate Executive Committee. He previously served as Co-Head of Research and Head of Small Molecule Discovery from 2010 to 2015.	USA
Dr. William Pao	52	Dr. Pao has served as Head of Roche Pharma Research & Early Development since 2018 and is a member of the Roche Enlarged Corporate Executive Committee. He served as Global Head of Oncology Discovery and Translational Area, Pharma Research and Development at Roche from 2014 to 2018.	USA
James H. Sabry	61	Mr. Sabry serves as Head of Roche Partnering and as a member of the Roche Enlarged Corporate Executive Committee. From 2013 to 2018, he was Global Head and Senior Vice President of Genentech Partnering, USA.	Canada and USA
Dr. Stephan Feldhaus	57	Dr. Feldhaus serves as Head of Group Communications and as a member of the Roche Enlarged Corporate Executive Committee since 2010.	Germany
Vera Michalski-Hoffmann†	65	Ms. Michalski-Hoffmann has served as Head of Libella SA, a publishing group, since 2000.	Switzerland
Marie-Anne (Maja) Hoffmann†	63	Ms. Hoffmann is President of the Board of Foundation, LUMA Foundation.	Switzerland
Sabine Duschmalé-Oeri†	69	Ms. Duschmalé-Oeri engages in volunteer work and is involved in a number of cultural and social foundations.	Switzerland
Catherine Oeri Kessler†	64	Ms. Oeri is a therapist. She has also served as Chairman of Foundation Board of Stiftung Wolf and as a Member of the Board of the Basel Zoo.	Switzerland
Dr. Jörg Duschmalé†	35	Mr. Duschmalé is a Doctor in Chemistry, currently pursuing postgraduate education.	Switzerland
Lukas Duschmalé†	33	Mr. Duschmalé is currently a full-time student.	Switzerland

[Table of Contents](#)**DIRECTORS AND EXECUTIVE OFFICERS OF PARENT**

The name, age, current principal occupation or employment and material occupations, positions, offices or employment for the past five years of each director and executive officer of Parent are set forth below. Unless otherwise indicated, each occupation set forth opposite an individual's name refers to a position with Parent. Unless otherwise indicated, the business address of each director and executive officer of Parent is 1 DNA Way, MS #24, South San Francisco, CA 94080. Directors are identified by an asterisk.

<u>Name</u>	<u>Age</u>	<u>Current Principal Occupation or Employment and Five-Year Employment History</u>	<u>Country of Citizenship</u>
Dr. Severin Schwan*	52	Dr. Schwan has served as director since 2008 and President since 2014. He has also served as Chief Executive Officer of Roche Holding Ltd since 2008, and is a member of the Corporate Executive Committee of Roche Holding Ltd. Grenzacherstrasse 124, CH-4070, Basel, Switzerland.	Austria and Germany
Dr. Alan Hippe*	52	Dr. Hippe has served as director and Vice President since 2011. Dr. Hippe has also served as Chief Financial Officer and Chief Information Officer of Roche Holding Ltd since 2011, and is a member of its Corporate Executive Committee. Grenzacherstrasse 124, CH-4070, Basel, Switzerland.	Germany
Roger Brown*	57	Mr. Brown has served as director since 2011 and serves as Vice President, Tax and Assistant Secretary. He has also served as Senior Director of Tax for Genentech, Inc. since 2011.	USA
Dr. Sean A. Johnston, J.D., Ph.D.*	60	Dr. Johnston has served as director, General Counsel, Vice President and Secretary since 2017. Dr. Johnston has served as General Counsel and Senior Vice President at Genentech, Inc. since 2007, where he has also served as Chief Compliance Officer, Head of Legal Affairs—Pharma North America and Corporate Secretary since 2017. He has served as director, Vice President, Treasurer and Secretary at Purchaser since 2019.	USA
David P. McDede*	62	Mr. McDede has served as director since 2008. He also serves as Vice President and Treasurer of Hoffmann-La Roche Inc. and as Vice President and Treasurer at Genentech, Inc. 150 Clove Road, Suite 8, Little Falls, NJ 07424.	USA
Bruce Resnick*	56	Mr. Resnick has served as director since 2008. He has also served as Vice President, General Manager, Treasurer, Assistant Secretary and Senior Tax Counsel since 2012 and as director and President of Purchaser since 2019.	USA

DIRECTORS AND EXECUTIVE OFFICERS OF PURCHASER

The name, age, current principal occupation or employment and material occupations, positions, offices or employment for the past five years of each director and executive officer of Purchaser are set forth below. Unless otherwise indicated, each occupation set forth opposite an individual's name refers to a position with us. Unless otherwise indicated, the business address of each director and executive officer of Purchaser is 1 DNA Way, MS #24, South San Francisco, CA 94080. All directors and executive officers are citizens of the United States. Directors are identified by an asterisk.

<u>Name</u>	<u>Age</u>	<u>Current Principal Occupation or Employment and Five-Year Employment History</u>	<u>Country of Citizenship</u>
Bruce Resnick*	56	Mr. Resnick has served as director and President since 2019. He has also served as director of Parent since 2008 and as Vice President, General Manager, Treasurer, Assistant Secretary and Senior Tax Counsel of Parent since 2012.	USA
Dr. Sean A. Johnston, J.D., Ph.D.*	60	Dr. Johnston has served as director, Vice President, Treasurer and Secretary since 2019. He has served as General Counsel and Senior Vice President at Genentech, Inc. since 2007, where he has also served as Chief Compliance Officer, Head of Legal Affairs—Pharma North America, and Corporate Secretary since 2017. He serves as director, General Counsel, Vice President and Secretary of Parent.	USA

**GENERAL CORPORATION LAW OF DELAWARE
SECTION 262 APPRAISAL RIGHTS**

(a) Any stockholder of a corporation of this State who holds shares of stock on the date of the making of a demand pursuant to subsection (d) of this section with respect to such shares, who continuously holds such shares through the effective date of the merger or consolidation, who has otherwise complied with subsection (d) of this section and who has neither voted in favor of the merger or consolidation nor consented thereto in writing pursuant to § 228 of this title shall be entitled to an appraisal by the Court of Chancery of the fair value of the stockholder's shares of stock under the circumstances described in subsections (b) and (c) of this section. As used in this section, the word "stockholder" means a holder of record of stock in a corporation; the words "stock" and "share" mean and include what is ordinarily meant by those words; and the words "depository receipt" mean a receipt or other instrument issued by a depository representing an interest in 1 or more shares, or fractions thereof, solely of stock of a corporation, which stock is deposited with the depository.

(b) Appraisal rights shall be available for the shares of any class or series of stock of a constituent corporation in a merger or consolidation to be effected pursuant to § 251 (other than a merger effected pursuant to § 251(g) of this title), § 252, §254, § 255, § 256, § 257, § 258, § 263 or § 264 of this title:

(1) Provided, however, that, except as expressly provided in § 363(b) of this title, no appraisal rights under this section shall be available for the shares of any class or series of stock, which stock, or depository receipts in respect thereof, at the record date fixed to determine the stockholders entitled to receive notice of the meeting of stockholders to act upon the agreement of merger or consolidation (or, in the case of a merger pursuant to § 251(h), as of immediately prior to the execution of the agreement of merger), were either: (i) listed on a national securities exchange or (ii) held of record by more than 2,000 holders; and further provided that no appraisal rights shall be available for any shares of stock of the constituent corporation surviving a merger if the merger did not require for its approval the vote of the stockholders of the surviving corporation as provided in § 251(f) of this title.

(2) Notwithstanding paragraph (b)(1) of this section, appraisal rights under this section shall be available for the shares of any class or series of stock of a constituent corporation if the holders thereof are required by the terms of an agreement of merger or consolidation pursuant to §§ 251, 252, 254, 255, 256, 257, 258, 263 and 264 of this title to accept for such stock anything except:

a. Shares of stock of the corporation surviving or resulting from such merger or consolidation, or depository receipts in respect thereof;

b. Shares of stock of any other corporation, or depository receipts in respect thereof, which shares of stock (or depository receipts in respect thereof) or depository receipts at the effective date of the merger or consolidation will be either listed on a national securities exchange or held of record by more than 2,000 holders;

c. Cash in lieu of fractional shares or fractional depository receipts described in the foregoing paragraphs (b)(2)a. and b. of this section; or

d. Any combination of the shares of stock, depository receipts and cash in lieu of fractional shares or fractional depository receipts described in the foregoing paragraphs (b)(2)a., b. and c. of this section.

(3) In the event all of the stock of a subsidiary Delaware corporation party to a merger effected under § 253 or § 267 of this title is not owned by the parent immediately prior to the merger, appraisal rights shall be available for the shares of the subsidiary Delaware corporation.

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(4) In the event of an amendment to a corporation's certificate of incorporation contemplated by § 363(a) of this title, appraisal rights shall be available as contemplated by § 363(b) of this title, and the procedures of this section, including those set forth in subsections (d) and (e) of this section, shall apply as nearly as practicable, with the word "amendment" substituted for the words "merger or consolidation," and the word "corporation" substituted for the words "constituent corporation" and/or "surviving or resulting corporation."

(c) Any corporation may provide in its certificate of incorporation that appraisal rights under this section shall be available for the shares of any class or series of its stock as a result of an amendment to its certificate of incorporation, any merger or consolidation in which the corporation is a constituent corporation or the sale of all or substantially all of the assets of the corporation. If the certificate of incorporation contains such a provision, the provisions of this section, including those set forth in subsections (d), (e), and (g) of this section, shall apply as nearly as is practicable.

(d) Appraisal rights shall be perfected as follows:

(1) If a proposed merger or consolidation for which appraisal rights are provided under this section is to be submitted for approval at a meeting of stockholders, the corporation, not less than 20 days prior to the meeting, shall notify each of its stockholders who was such on the record date for notice of such meeting (or such members who received notice in accordance with §255(c) of this title) with respect to shares for which appraisal rights are available pursuant to subsection (b) or (c) of this section that appraisal rights are available for any or all of the shares of the constituent corporations, and shall include in such notice a copy of this section and, if 1 of the constituent corporations is a nonstock corporation, a copy of § 114 of this title. Each stockholder electing to demand the appraisal of such stockholder's shares shall deliver to the corporation, before the taking of the vote on the merger or consolidation, a written demand for appraisal of such stockholder's shares. Such demand will be sufficient if it reasonably informs the corporation of the identity of the stockholder and that the stockholder intends thereby to demand the appraisal of such stockholder's shares. A proxy or vote against the merger or consolidation shall not constitute such a demand. A stockholder electing to take such action must do so by a separate written demand as herein provided. Within 10 days after the effective date of such merger or consolidation, the surviving or resulting corporation shall notify each stockholder of each constituent corporation who has complied with this subsection and has not voted in favor of or consented to the merger or consolidation of the date that the merger or consolidation has become effective; or

(2) If the merger or consolidation was approved pursuant to § 228, § 251(h), § 253, or § 267 of this title, then either a constituent corporation before the effective date of the merger or consolidation or the surviving or resulting corporation within 10 days thereafter shall notify each of the holders of any class or series of stock of such constituent corporation who are entitled to appraisal rights of the approval of the merger or consolidation and that appraisal rights are available for any or all shares of such class or series of stock of such constituent corporation, and shall include in such notice a copy of this section and, if 1 of the constituent corporations is a nonstock corporation, a copy of § 114 of this title. Such notice may, and, if given on or after the effective date of the merger or consolidation, shall, also notify such stockholders of the effective date of the merger or consolidation. Any stockholder entitled to appraisal rights may, within 20 days after the date of mailing of such notice or, in the case of a merger approved pursuant to § 251(h) of this title, within the later of the consummation of the offer contemplated by § 251(h) of this title and 20 days after the date of mailing of such notice, demand in writing from the surviving or resulting corporation the appraisal of such holder's shares. Such demand will be sufficient if it reasonably informs the corporation of the identity of the stockholder and that the stockholder intends thereby to demand the appraisal of such holder's shares. If such notice did not notify stockholders of the effective date of the merger or consolidation, either (i) each such constituent corporation shall send a second notice before the effective date of the merger or consolidation notifying each of the holders of any class or series of stock of such constituent corporation that are entitled to appraisal rights of the effective date of the merger or consolidation or (ii) the surviving or resulting corporation shall send such a second notice to all such holders on or within 10 days after such effective date; provided, however, that if such second notice is sent more than 20 days following the sending of the first notice or, in the case of a merger approved pursuant to § 251(h) of this

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title, later than the later of the consummation of the offer contemplated by § 251(h) of this title and 20 days following the sending of the first notice, such second notice need only be sent to each stockholder who is entitled to appraisal rights and who has demanded appraisal of such holder's shares in accordance with this subsection. An affidavit of the secretary or assistant secretary or of the transfer agent of the corporation that is required to give either notice that such notice has been given shall, in the absence of fraud, be prima facie evidence of the facts stated therein. For purposes of determining the stockholders entitled to receive either notice, each constituent corporation may fix, in advance, a record date that shall be not more than 10 days prior to the date the notice is given, provided, that if the notice is given on or after the effective date of the merger or consolidation, the record date shall be such effective date. If no record date is fixed and the notice is given prior to the effective date, the record date shall be the close of business on the day next preceding the day on which the notice is given.

(e) Within 120 days after the effective date of the merger or consolidation, the surviving or resulting corporation or any stockholder who has complied with subsections (a) and (d) of this section hereof and who is otherwise entitled to appraisal rights, may commence an appraisal proceeding by filing a petition in the Court of Chancery demanding a determination of the value of the stock of all such stockholders. Notwithstanding the foregoing, at any time within 60 days after the effective date of the merger or consolidation, any stockholder who has not commenced an appraisal proceeding or joined that proceeding as a named party shall have the right to withdraw such stockholder's demand for appraisal and to accept the terms offered upon the merger or consolidation. Within 120 days after the effective date of the merger or consolidation, any stockholder who has complied with the requirements of subsections (a) and (d) of this section hereof, upon written request, shall be entitled to receive from the corporation surviving the merger or resulting from the consolidation a statement setting forth the aggregate number of shares not voted in favor of the merger or consolidation (or, in the case of a merger approved pursuant to § 251(h) of this title, the aggregate number of shares (other than any excluded stock (as defined in § 251(h)(6)d. of this title)) that were the subject of, and were not tendered into, and accepted for purchase or exchange in, the offer referred to in § 251(h)(2)), and, in either case, with respect to which demands for appraisal have been received and the aggregate number of holders of such shares. Such written statement shall be mailed to the stockholder within 10 days after such stockholder's written request for such a statement is received by the surviving or resulting corporation or within 10 days after expiration of the period for delivery of demands for appraisal under subsection (d) of this section hereof, whichever is later. Notwithstanding subsection (a) of this section, a person who is the beneficial owner of shares of such stock held either in a voting trust or by a nominee on behalf of such person may, in such person's own name, file a petition or request from the corporation the statement described in this subsection.

(f) Upon the filing of any such petition by a stockholder, service of a copy thereof shall be made upon the surviving or resulting corporation, which shall within 20 days after such service file in the office of the Register in Chancery in which the petition was filed a duly verified list containing the names and addresses of all stockholders who have demanded payment for their shares and with whom agreements as to the value of their shares have not been reached by the surviving or resulting corporation. If the petition shall be filed by the surviving or resulting corporation, the petition shall be accompanied by such a duly verified list. The Register in Chancery, if so ordered by the Court, shall give notice of the time and place fixed for the hearing of such petition by registered or certified mail to the surviving or resulting corporation and to the stockholders shown on the list at the addresses therein stated. Such notice shall also be given by 1 or more publications at least 1 week before the day of the hearing, in a newspaper of general circulation published in the City of Wilmington, Delaware or such publication as the Court deems advisable. The forms of the notices by mail and by publication shall be approved by the Court, and the costs thereof shall be borne by the surviving or resulting corporation.

(g) At the hearing on such petition, the Court shall determine the stockholders who have complied with this section and who have become entitled to appraisal rights. The Court may require the stockholders who have demanded an appraisal for their shares and who hold stock represented by certificates to submit their certificates of stock to the Register in Chancery for notation thereon of the pendency of the appraisal proceedings; and if any stockholder fails to comply with such direction, the Court may dismiss the proceedings as to such stockholder. If immediately before the merger or consolidation the shares of the class or series of stock of the constituent

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corporation as to which appraisal rights are available were listed on a national securities exchange, the Court shall dismiss the proceedings as to all holders of such shares who are otherwise entitled to appraisal rights unless (1) the total number of shares entitled to appraisal exceeds 1% of the outstanding shares of the class or series eligible for appraisal, (2) the value of the consideration provided in the merger or consolidation for such total number of shares exceeds \$1 million, or (3) the merger was approved pursuant to § 253 or § 267 of this title.

(h) After the Court determines the stockholders entitled to an appraisal, the appraisal proceeding shall be conducted in accordance with the rules of the Court of Chancery, including any rules specifically governing appraisal proceedings. Through such proceeding the Court shall determine the fair value of the shares exclusive of any element of value arising from the accomplishment or expectation of the merger or consolidation, together with interest, if any, to be paid upon the amount determined to be the fair value. In determining such fair value, the Court shall take into account all relevant factors. Unless the Court in its discretion determines otherwise for good cause shown, and except as provided in this subsection, interest from the effective date of the merger through the date of payment of the judgment shall be compounded quarterly and shall accrue at 5% over the Federal Reserve discount rate (including any surcharge) as established from time to time during the period between the effective date of the merger and the date of payment of the judgment. At any time before the entry of judgment in the proceedings, the surviving corporation may pay to each stockholder entitled to appraisal an amount in cash, in which case interest shall accrue thereafter as provided herein only upon the sum of (1) the difference, if any, between the amount so paid and the fair value of the shares as determined by the Court, and (2) interest theretofore accrued, unless paid at that time. Upon application by the surviving or resulting corporation or by any stockholder entitled to participate in the appraisal proceeding, the Court may, in its discretion, proceed to trial upon the appraisal prior to the final determination of the stockholders entitled to an appraisal. Any stockholder whose name appears on the list filed by the surviving or resulting corporation pursuant to subsection (f) of this section and who has submitted such stockholder's certificates of stock to the Register in Chancery, if such is required, may participate fully in all proceedings until it is finally determined that such stockholder is not entitled to appraisal rights under this section.

(i) The Court shall direct the payment of the fair value of the shares, together with interest, if any, by the surviving or resulting corporation to the stockholders entitled thereto. Payment shall be so made to each such stockholder, in the case of holders of uncertificated stock forthwith, and the case of holders of shares represented by certificates upon the surrender to the corporation of the certificates representing such stock. The Court's decree may be enforced as other decrees in the Court of Chancery may be enforced, whether such surviving or resulting corporation be a corporation of this State or of any state.

(j) The costs of the proceeding may be determined by the Court and taxed upon the parties as the Court deems equitable in the circumstances. Upon application of a stockholder, the Court may order all or a portion of the expenses incurred by any stockholder in connection with the appraisal proceeding, including, without limitation, reasonable attorney's fees and the fees and expenses of experts, to be charged pro rata against the value of all the shares entitled to an appraisal.

(k) From and after the effective date of the merger or consolidation, no stockholder who has demanded appraisal rights as provided in subsection (d) of this section shall be entitled to vote such stock for any purpose or to receive payment of dividends or other distributions on the stock (except dividends or other distributions payable to stockholders of record at a date which is prior to the effective date of the merger or consolidation); provided, however, that if no petition for an appraisal shall be filed within the time provided in subsection (e) of this section, or if such stockholder shall deliver to the surviving or resulting corporation a written withdrawal of such stockholder's demand for an appraisal and an acceptance of the merger or consolidation, either within 60 days after the effective date of the merger or consolidation as provided in subsection (e) of this section or thereafter with the written approval of the corporation, then the right of such stockholder to an appraisal shall cease. Notwithstanding the foregoing, no appraisal proceeding in the Court of Chancery shall be dismissed as to any stockholder without the approval of the Court, and such approval may be conditioned upon such terms as the Court deems just; provided, however that this provision shall not affect the right of any stockholder who has not

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commenced an appraisal proceeding or joined that proceeding as a named party to withdraw such stockholder's demand for appraisal and to accept the terms offered upon the merger or consolidation within 60 days after the effective date of the merger or consolidation, as set forth in subsection (e) of this section.

(l) The shares of the surviving or resulting corporation to which the shares of such objecting stockholders would have been converted had they assented to the merger or consolidation shall have the status of authorized and unissued shares of the surviving or resulting corporation.

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Manually signed facsimile copies of the Letter of Transmittal will be accepted. The Letter of Transmittal and certificates for Shares and any other required documents should be sent to the Depository at one of the addresses set forth below:

The Depository for the Offer is:



Citibank, N.A.

By Mail:
Citibank, N.A.
P.O. Box 219287
Kansas City, MO 64121-9287
Ref: Spark Therapeutics, Inc.

By Overnight Mail:
Citibank, N.A.
430 W 7th Street, Suite 219287
Kansas City, MO 64105-1407
Ref: Spark Therapeutics, Inc.

If you have questions or need additional copies of this Offer to Purchase and the Letter of Transmittal, you can call the Information Agent at their respective addresses and telephone numbers set forth below. You may also contact your broker, dealer, commercial bank, trust company or other nominee for assistance concerning the Offer.

The Information Agent for the Offer is:



1407 Broadway
New York, New York 10018

(212) 929-5500 (Call Collect)

or

Call Toll Free (800) 322-2885

Email: tenderoffer@mackenziepartners.com

THE INSTRUCTIONS ACCOMPANYING THIS LETTER OF TRANSMITTAL SHOULD BE READ CAREFULLY BEFORE THIS LETTER OF TRANSMITTAL IS COMPLETED. REQUESTS FOR ASSISTANCE OR ADDITIONAL COPIES OF THE OFFER TO PURCHASE AND THIS LETTER OF TRANSMITTAL MAY BE MADE TO OR OBTAINED FROM THE INFORMATION AGENT AT ITS ADDRESS OR TELEPHONE NUMBER SET FORTH BELOW.

If the certificate(s) representing Shares (as defined below) to be tendered have been mutilated, lost, stolen or destroyed, stockholders should contact Spark Therapeutics, Inc.'s transfer agent, American Stock Transfer & Trust Company, LLC, immediately by calling 1-800-937-5449 (toll-free). This Letter of Transmittal and related documents cannot be processed until the procedures for replacing such certificate(s) have been followed. You may be required to post a bond to secure against the risk that the Share certificate(s) may be subsequently recirculated. See Instruction 9.

You must sign this Letter of Transmittal in the appropriate space provided below, with signature guarantee if required, and complete the enclosed W-9 or provide the appropriate IRS form.

The Offer (as defined below) is not being made to, nor will tenders be accepted from or on behalf of, holders of Shares in any jurisdiction in which the making of the Offer or acceptance thereof would not be in compliance with the laws of such jurisdiction.

This Letter of Transmittal is to be used by stockholders of Spark Therapeutics, Inc. (i) if certificates are to be forwarded herewith, (ii) if uncertificated Shares are being tendered, or (iii) unless an Agent's Message (as defined in the Offer to Purchase) is utilized, if delivery of Shares is to be made by book-entry transfer to the Depository's (as defined below) account at The Depository Trust Company (the "**Book-Entry Transfer Facility**" or "**DTC**") pursuant to the procedures set forth in Section 3 of the Offer to Purchase.

Holders of outstanding Shares, whose certificates for such Shares are not immediately available or who cannot deliver such certificates and all other required documents to the Depository at or prior to the Expiration Time (as defined below) or who cannot complete the procedure for book-entry transfer at or prior to the Expiration Time, must tender their Shares according to the guaranteed delivery procedure set forth in Section 3 of the Offer to Purchase. See Instruction 2. **Delivery of documents to the Book-Entry Transfer Facility does not constitute delivery to the Depository.**

**NOTE: SIGNATURES MUST BE PROVIDED BELOW
PLEASE READ ACCOMPANYING INSTRUCTIONS CAREFULLY**

- CHECK HERE IF TENDERED SHARES ARE BEING DELIVERED BY BOOK-ENTRY TRANSFER TO THE DEPOSITARY'S ACCOUNT AT THE BOOK-ENTRY TRANSFER FACILITY AND COMPLETE THE FOLLOWING:**

Name of Tendering Institution _____
Account Number _____
Transaction Code Number _____

- CHECK HERE IF TENDERED SHARES ARE BEING DELIVERED PURSUANT TO A NOTICE OF GUARANTEED DELIVERY PREVIOUSLY SENT TO THE DEPOSITARY AND COMPLETE THE FOLLOWING:**

Name(s) of Tendering Stockholder(s) _____
Date of Execution of Notice of Guaranteed Delivery _____, 20____
Name of Institution which Guaranteed Delivery _____
If delivery is by book-entry transfer: _____
Name of Tendering Institution _____
Account Number _____
Transaction Code Number _____

Ladies and Gentlemen:

The undersigned hereby tenders to 022019 Merger Subsidiary, Inc., a Delaware corporation (“**Purchaser**”) and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation, the above-described shares of common stock, par value \$0.001 per share (the “**Shares**”), of Spark Therapeutics, Inc., a Delaware corporation (“**Spark**”), pursuant to Purchaser’s offer to purchase all outstanding Shares at \$114.50 per Share, in cash, without interest, subject to any required withholding of taxes and upon the terms and subject to the conditions set forth in the Offer to Purchase dated March 7, 2019 (together with any amendments or supplements thereto, the “**Offer to Purchase**”), receipt of which is hereby acknowledged, and in this Letter of Transmittal (which, together with any amendments or supplements thereto, collectively constitute the “**Offer**”). The Offer expires at 12:00 Midnight, New York City time, at the end of the day on April 3, 2019, unless extended by Purchaser as described in the Offer to Purchase (as it may be extended, the “**Expiration Time**”). To the extent permitted under the Merger Agreement (as defined below), Purchaser reserves the right to transfer or assign, in whole or from time to time in part, to one or more of its affiliates the right to purchase Shares tendered pursuant to the Offer, but any such transfer or assignment will not relieve Purchaser of its obligations under the Offer or prejudice the undersigned’s rights to receive payment for Shares validly tendered and accepted for payment.

Upon the terms and subject to the conditions of the Offer (including, if the Offer is extended or amended, the terms and conditions of such extension or amendment), and effective upon acceptance for payment for the Shares validly tendered herewith in accordance with the terms of the Offer, the undersigned hereby sells, assigns and transfers to, or upon the order of, Purchaser all right, title and interest in and to all of the Shares that are being tendered hereby. In addition, the undersigned hereby irrevocably appoints Citibank, N.A. as the depositary for the Offer (the “**Depositary**”) and the true and lawful agent and attorney-in-fact and proxy of the undersigned with respect to such Shares, with full power of substitution (such proxy and power of attorney being deemed to be an irrevocable power coupled with an interest in the Shares tendered by this Letter of Transmittal), to (i) deliver certificates for such Shares, or transfer ownership of such Shares on the account books maintained by the Book-Entry Transfer Facility, together, in any such case, with all accompanying evidences of transfer and authenticity, to or upon the order of the Purchaser, (ii) present such Shares for transfer on the books of Spark and (iii) receive all benefits and otherwise exercise all rights of beneficial ownership of such Shares, all in accordance with the terms of the Offer.

The undersigned hereby irrevocably appoints Bruce Resnick and Sean A. Johnston, in their respective capacities as officers of Purchaser, and each of them, the attorneys-in-fact and proxies of the undersigned, each with full power of substitution, to exercise all voting and other rights of the undersigned in such manner as each such attorney-in-fact and proxy or his substitute shall in his sole discretion deem proper, with respect to all of the Shares tendered hereby which have been accepted for payment by the Purchaser prior to the time of any vote or other action, at any meeting of stockholders of Spark (whether annual or special and whether or not an adjourned meeting), by written consent or otherwise. This proxy and power of attorney is irrevocable and is granted in consideration of, and is effective upon, the acceptance for payment of such Shares by Purchaser in accordance with the terms of the Offer. Such acceptance for payment shall revoke any other proxies, powers of attorney, or written consent granted by the undersigned at any time with respect to such Shares, and no subsequent proxies or powers of attorney will be given, or written consents will be executed by the undersigned (and if given or executed, will not be deemed to be effective). Purchaser reserves the right to require that, in order for Shares to be deemed validly tendered, immediately upon Purchaser’s acceptance for payment of such Shares, Purchaser or its designees must be able to exercise full voting, consent and other rights with respect to such Shares, including voting at any meeting of Spark’s stockholders.

The undersigned hereby represents and warrants that the undersigned has full power and authority to tender, sell, assign and transfer the Shares tendered herein and that when the same are accepted for payment by Purchaser, Purchaser will acquire good, marketable and unencumbered title thereto, free and clear of all liens, restrictions, charges and encumbrances and that the same will not be subject to any adverse claims. The undersigned hereby represents and warrants that the undersigned is the registered owner of the Shares, or the Share certificate(s) have been endorsed to the undersigned in blank, or the undersigned is a participant in the Book-Entry Transfer Facility whose name appears on a security position listing as the owner of the Shares. The undersigned will, upon request, execute and deliver any additional documents deemed by the Depositary or Purchaser to be necessary or desirable to complete the sale, assignment and transfer of the Shares tendered hereby.

All authority herein conferred or agreed to be conferred shall not be affected by, and shall survive, the death or incapacity of the undersigned, and any obligation of the undersigned hereunder shall be binding upon the heirs, executors, administrators, personal representatives, trustees in bankruptcy, successors and assigns of the undersigned. Except as stated in the Offer, this tender is irrevocable.

The undersigned hereby acknowledges that delivery of any Share certificate(s) shall be effected, and risk of loss and title to such Share certificate(s) shall pass, only upon the proper delivery of such Share certificate(s) or transfer of the uncertificated Shares represented by book entry to the Depository.

The undersigned understands that tenders of Shares pursuant to any one of the procedures described in Section 3 of the Offer to Purchase and in the Instructions hereto will constitute an agreement between the undersigned and Purchaser upon the terms and subject to the conditions of the Offer. Without limiting the foregoing, if the price to be paid in the Offer is amended in accordance with the terms of the Agreement and Plan of Merger dated as of February 22, 2019 among Roche Holdings, Inc., Purchaser and Spark (the "**Merger Agreement**") pursuant to which the Offer is being made, the price to be paid to the undersigned will be the amended price notwithstanding the fact that a different price is stated in this Letter of Transmittal.

Unless otherwise indicated under "Special Payment Instructions," please issue the check for the purchase price of any Shares purchased, and, if appropriate, return any certificates evidencing Shares not tendered or not accepted for payment in the name(s) of the undersigned (and, in the case of Shares tendered by book-entry transfer, by credit to the account at the Book-Entry Transfer Facility). Similarly, unless otherwise indicated under "Special Delivery Instructions," please mail the check for the purchase price of any Shares purchased and any certificates evidencing Shares not tendered or not accepted for payment (and accompanying documents, as appropriate) to the undersigned at the address shown below the undersigned's signature(s). In the event that both "Special Payment Instructions" and "Special Delivery Instructions" are completed, please issue the check for the purchase price of any Shares purchased and return any Shares not tendered or not accepted for payment in the name(s) of, and mail said check and any certificates to, the person(s) so indicated. The undersigned recognizes that Purchaser has no obligation, pursuant to the "Special Payment Instructions," to transfer any Shares from the name of the registered holder(s) thereof if Purchaser does not accept for payment any of the Shares so tendered.

SPECIAL PAYMENT INSTRUCTIONS
(See Instructions 6, 7 and 8)

To be completed ONLY if the check for the purchase price of Shares purchased (less the amount of any federal income and backup withholding tax required to be withheld) is to be issued in the name of someone other than the undersigned.

Issue to:

Name _____
(Please Print)

Address _____

(Include Zip Code)

Taxpayer Identification Number

SPECIAL DELIVERY INSTRUCTIONS
(See Instructions 6, 7 and 8)

To be completed ONLY if the check for the purchase price of Shares purchased (less the amount of any federal income and backup withholding tax required to be withheld) is to be mailed to someone other than the undersigned or to the undersigned at an address other than that shown below the undersigned's signature(s).

Mail to:

Name _____
(Please Print)

Address _____

(Include Zip Code)

IMPORTANT

STOCKHOLDER: SIGN HERE

**(U.S. Holders: Please complete and return the Form W-9 included herein)
(Non-U.S. Holders: Please obtain, complete and return appropriate IRS Form W-8)**

(Must be signed by registered holder(s) exactly as name(s) appear(s) on stock certificate(s) or on a security position listing or by person(s) authorized to become registered holder(s) by certificates and documents transmitted herewith. If signature is by a trustee, executor, administrator, guardian, attorney-in-fact, agent, officer of a corporation or other person acting in a fiduciary or representative capacity, please set forth full title and see Instruction 5.)

Signature(s) of Stockholder(s)

Dated _____, 20__

Name(s) _____
(Please Print)

Capacity (full title) (See Instruction 5): _____

Address _____
(Include Zip Code)

Area Code and Telephone Number _____

Tax Identification or Social Security No. (See Form W-9 included below): _____

Guarantee of Signature(s)

**(If required; see Instructions 1 and 5)
(For use by Eligible Institutions only. Place
medallion guarantee in space below)**

Name of Firm _____

Address _____
(Include Zip Code)

Authorized Signature _____

Name _____
(Please Print)

Area Code and Telephone Number _____

Dated _____, 20__

Form **W-9**

(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

**Request for Taxpayer
Identification Number and Certification**

► Go to www.irs.gov/FormW9 for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

Print or type
See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
2 Business name/disregarded entity name, if different from above	
3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes. <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► _____ Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner. <input type="checkbox"/> Other (see instructions) ►	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <i>(Applies to accounts maintained outside the U.S.)</i>
5 Address (number, street, and apt. or suite no.) See instructions.	Requester's name and address (optional)
6 City, state, and ZIP code	
7 List account number(s) here (optional)	

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number									
				-				-	
or									
Employer identification number									
				-					

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here

Signature of U.S. person ►

Date ►

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to

report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)

- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
 - Form 1099-C (canceled debt)
 - Form 1099-A (acquisition or abandonment of secured property)
- Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting*, later, for further information.

Note: If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the instructions for Part II for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships*, earlier.

What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a

C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note: ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or “doing business as” (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity’s name as shown on the entity’s tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a “disregarded entity.” See Regulations section 301.7701-2(c)(2)(iii). Enter the owner’s name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner’s name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity’s name on line 2, “Business name/disregarded entity name.” If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys’ fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 5 ²
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note: See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at www.SSA.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/Businesses and clicking on Employer Identification Number (EIN) under Starting a Business. Go to www.irs.gov/Forms to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to www.irs.gov/OrderForms to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct

TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLÉ accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor ²
5. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee ¹
b. So-called trust account that is not a legal or valid trust under state law	The actual owner ¹
6. Sole proprietorship or disregarded entity owned by an individual	The owner ³
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor [*]
For this type of account:	Give name and EIN of:
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity ⁴
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships*, earlier.

***Note:** The grantor also must provide a Form W-9 to trustee of trust.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at spam@uce.gov or report them at www.ftc.gov/complaint. You can contact the FTC at www.ftc.gov/idtheft or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see www.IdentityTheft.gov and Pub. 5027.

Visit www.irs.gov/IdentityTheft to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and

criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

INSTRUCTIONS

Forming Part of the Terms and Conditions of the Offer

1. *Guarantee of Signatures.* Except as otherwise provided below, all signatures on this Letter of Transmittal must be guaranteed by a financial institution (including most banks, savings and loan associations and brokerage houses) that is a member of a recognized Medallion Program approved by The Securities Transfer Association, Inc., including the Securities Transfer Agents Medallion Program (STAMP), the Stock Exchange Medallion Program (SEMP) and the New York Stock Exchange, Inc. Medallion Signature Program (MSP) or any other “eligible guarantor institution” (as such term is defined in Rule 17Ad-15 under the Securities Exchange Act of 1934, as amended) (each, an “Eligible Institution”). Signatures on this Letter of Transmittal need not be guaranteed (i) if this Letter of Transmittal is signed by the registered holder(s) of the Shares (which term, for purposes of this document, shall include any participant in the Book-Entry Transfer Facility whose name appears on a security position listing as the owner of Shares; trustees, executors, administrators, guardians, attorney-in-fact, officers of a corporation or other persons acting in a fiduciary or representative capacity see Instruction 5) tendered herewith and such holder(s) have not completed the box entitled “Special Payment Instructions” on this Letter of Transmittal or (ii) if such Shares are tendered for the account of an Eligible Institution. See Instruction 5.

2. *Delivery of Letter of Transmittal and Shares.* This Letter of Transmittal is to be used either if certificates are to be forwarded herewith or, unless an Agent’s Message is utilized, if delivery of Shares is to be made by book-entry transfer pursuant to the procedures set forth in Section 3 of the Offer to Purchase. Certificates for all physically delivered Shares, or a confirmation of a book-entry transfer into the Depository’s account at the Book-Entry Transfer Facility of all Shares delivered electronically, as well as a properly completed and duly executed Letter of Transmittal, together with any required signature guarantees (or a manually signed facsimile thereof or, in the case of a book-entry transfer, an Agent’s Message) and any other documents required by this Letter of Transmittal, must be received by the Depository at one of its addresses set forth on the front page of this Letter of Transmittal by the Expiration Time.

Stockholders whose certificates for Shares are not immediately available or stockholders who cannot deliver their certificates and all other required documents to the Depository or who cannot comply with the procedures for book-entry transfer by the Expiration Time may tender their Shares pursuant to the guaranteed delivery procedure set forth in Section 3 of the Offer to Purchase. Under the guaranteed delivery procedure:

(i) such tender must be made by or through an Eligible Institution;

(ii) a properly completed and duly executed Notice of Guaranteed Delivery substantially in the form provided by Purchaser with the Offer to Purchase must be received by the Depository by the Expiration Time; and

(iii) the certificates for all physically delivered Shares, or a confirmation of a book-entry transfer into the Depository’s account at the Book-Entry Transfer Facility of all Shares delivered electronically, as well as a properly completed and duly executed Letter of Transmittal with any required signature guarantee (or a manually signed facsimile thereof or, in the case of a book-entry delivery, an Agent’s Message) and any other documents required by this Letter of Transmittal, must be received by the Depository within two NASDAQ Global Select Market trading days after the date of execution of such Notice of Guaranteed Delivery, all as provided in Section 3 of the Offer to Purchase.

The method of delivery of Shares, this Letter of Transmittal and all other required documents is at the election and sole risk of the tendering stockholder. Shares will be deemed delivered only when actually received by the Depository (including, in the case of a book-entry transfer, by Book-Entry Confirmation). If certificates for Shares are sent by mail, we recommend registered mail with return receipt requested, properly insured, in time to be received on or prior to the Expiration Time. In all cases, sufficient time should be allowed to ensure timely delivery.

No alternative, conditional or contingent tenders will be accepted and no fractional shares will be purchased. By executing this Letter of Transmittal (or a manually signed facsimile thereof), the tendering stockholder waives any right to receive any notice of the acceptance for payment of the Shares.

3. *Inadequate Space.* If the space provided herein is inadequate, the certificate numbers and/or the number of Shares should be listed on a separate signed schedule attached hereto.

4. *Partial Tenders (not applicable to stockholders who tender by book-entry transfer).* If fewer than all of the Shares represented by any certificate delivered to the Depository are to be tendered, fill in the number of Shares which are to be tendered in the box entitled "Number of Shares Tendered." In such case, a new certificate for the remainder of the Shares represented by the old certificate will be issued and sent to the person(s) signing this Letter of Transmittal, unless otherwise provided in the appropriate box on this Letter of Transmittal, as promptly as practicable following the expiration or termination of the Offer. All Shares represented by certificates delivered to the Depository will be deemed to have been tendered unless otherwise indicated. In the case of Shares tendered by book-entry transfer at DTC (or Shares held in a direct registration account maintained by Spark's transfer agent), any tendered but unpurchased Shares (including as a result of any necessary proration) will be credited to the appropriate account maintained by the tendering stockholder at DTC (or by Spark's transfer agent). In each case, Shares will be returned or credited without expense to the stockholder.

5. *Signatures on Letter of Transmittal; Stock Powers and Endorsements.* If this Letter of Transmittal is signed by the registered holder(s) of the Shares tendered hereby, the signature(s) must correspond with the name(s) as written on the face of the certificates without alteration or any change whatsoever.

If any of the Shares tendered hereby are held of record by two or more persons, all such persons must sign this Letter of Transmittal.

If any of the Shares tendered hereby are registered in different names on different certificates, it will be necessary to complete, sign and submit as many separate Letters of Transmittal as there are different registrations of certificates.

If this Letter of Transmittal is signed by the registered holder(s) of the Shares tendered hereby, no endorsements of certificates or separate stock powers are required unless payment of the purchase price is to be made, or Shares not tendered or not accepted for payment are to be returned, in the name of any person other than the registered holder(s). Signatures on any such certificates or stock powers must be guaranteed by an Eligible Institution.

If this Letter of Transmittal is signed by a person other than the registered holder(s) of the Shares tendered hereby, certificates must be endorsed or accompanied by appropriate stock powers, in either case, signed exactly as the name(s) of the registered holder(s) appear(s) on the certificates for such Shares. Signature(s) on any such certificates or stock powers must be guaranteed by an Eligible Institution.

If this Letter of Transmittal or any certificate or stock power is signed by a trustee, executor, administrator, guardian, attorney-in-fact, officer of a corporation or other person acting in a fiduciary or representative capacity, such person should so indicate when signing, and proper evidence satisfactory to Purchaser of the authority of such person so to act must be submitted, or in lieu of evidence, a Guarantee of Signature (see Instruction 1).

6. *Stock Transfer Taxes.* Purchaser will pay any stock transfer taxes with respect to the sale and transfer of any Shares to it or its order pursuant to the Offer. If, however, payment of the purchase price is to be made to, or Shares not tendered or not accepted for payment are to be returned in the name of, any person other than the registered holder(s), or if a transfer tax is imposed for any reason other than the sale or transfer of Shares to Purchaser pursuant to the Offer, then the amount of any stock transfer taxes (whether imposed on the registered holder(s), such other person or otherwise) will be deducted from the purchase price unless satisfactory evidence of the payment of such taxes, or exemption therefrom, is submitted herewith.

7. *Special Payment and Delivery Instructions.* If the check for the purchase price of any Shares purchased is to be issued in the name of a person other than the person(s) signing this Letter of Transmittal or if the check is to be mailed to someone other than the person(s) signing this Letter of Transmittal or to the person(s) signing this Letter of Transmittal at an address other than that shown above, the appropriate boxes on this Letter of Transmittal should be completed.

8. *Backup Withholding.* Under the U.S. federal income tax laws, unless certain certification requirements are met, the Depository generally will be required to withhold at the applicable backup withholding rate (currently 24%) from any payments made to a stockholder pursuant to the Offer. In order to avoid such backup withholding, each tendering stockholder, and, if applicable, each other payee, must provide the Depository with such stockholder's or payee's correct taxpayer identification number and certify that such stockholder or payee is not subject to such backup withholding by completing the Form W-9 set forth above. In general, if a stockholder or payee is an individual, the taxpayer identification number is the social security number of such individual. If the stockholder or payee does not provide the Depository with its correct taxpayer identification number, the stockholder or payee may be subject to a \$50 penalty imposed by the Internal Revenue Service. Certain stockholders or payees (including, generally, domestic corporations and foreign stockholders) are not subject to these backup withholding and reporting requirements. In order to satisfy the Depository that a foreign stockholder is exempt, such stockholder or payee must submit to the Depository a properly completed Internal Revenue Service Form W-8, signed under penalties of perjury, attesting to that stockholder's foreign status. Such Form W-8 can be obtained from the Depository or the Internal Revenue Service (www.irs.gov/formspubs/index.html). The instructions to the enclosed IRS Form W-9 contain further information concerning backup withholding and instructions for completing the Form W-9 (including how to obtain a taxpayer identification number if you do not have one and how to complete the Form W-9 if Shares are held in more than one name).

Failure to provide a Form W-9 or the appropriate Form W-8 will not, by itself, cause Shares to be deemed invalidly tendered, but may require the Depository to withhold 24% of the amount of any payments made pursuant to the Offer. Backup withholding is not an additional U.S. federal income tax. Rather, the U.S. federal income tax liability of a person subject to backup withholding will be reduced by the amount of tax withheld. If withholding results in an overpayment of taxes, a refund may be obtained provided that the required information is furnished to the Internal Revenue Service. **Failure to complete and provide a Form W-9 or the appropriate Form W-8 may result in backup withholding of 24% of any payments made to you pursuant to the Offer.**

9. *Mutilated, Lost, Stolen or Destroyed Certificates.* If any certificate(s) representing Shares to be tendered have been mutilated, lost, stolen or destroyed, stockholders should contact Spark's transfer agent, American Stock Transfer & Trust Company, LLC, immediately by calling 1-800-937-5449 (toll-free). With respect to Shares represented by certificates, the stockholder will then be instructed as to the steps that must be taken in order to replace the certificate(s). This Letter of Transmittal and related documents cannot be processed until the procedures for replacing lost, mutilated, destroyed or stolen certificate(s) have been followed.

10. *Requests for Assistance or Additional Copies.* Requests for assistance or additional copies of the Offer to Purchase and this Letter of Transmittal may be obtained from the Information Agent at its address or telephone numbers set forth below.

11. *Waiver of Conditions.* Subject to applicable law, Purchaser reserves the right to waive any of the specified conditions of the Offer in the case of any Shares tendered, subject in certain cases to the prior written consent of Spark.

12. *Irregularities.* All questions as to Offer Price, the form of documents and the validity, eligibility (including time of receipt) and acceptance for payment of any tender of Shares will be determined by Purchaser in its sole discretion, which determination shall be final and binding on you. Purchaser reserves the absolute right to reject any or all tenders of Shares it determines not to be in proper form or the acceptance of which or payments for which may, in the opinion of Purchaser, be unlawful. Purchaser also reserves the absolute right to waive any defect or irregularity in the tender of any Shares by any particular stockholder, whether or not similar defects or irregularities are waived in the case of other stockholders. No tender of shares will be deemed to have been validly made until all defects and irregularities have been cured or waived to the satisfaction of Purchaser. None of Spark, Purchaser, Parent, the Depository, the Dealer Manager (as defined in the Offer to Purchase), the Information Agent (as defined in the Offer to Purchase) or any other person will be under any duty to give notification of any defects of irregularities in tenders or incur any liability or failure to give any such notifications.

IMPORTANT: This Letter of Transmittal (or a manually signed facsimile thereof) together with any signature guarantees, or, in the case of a book-entry transfer, an Agent's Message, and any other required documents, must be received by the Depository on or prior to the Expiration Time and either certificates for tendered Shares must be received by the Depository or Shares must be delivered pursuant to the procedures for book-entry transfer, in each case on or prior to the Expiration Time, or the tendering stockholder must comply with the procedures for guaranteed delivery.

The Information Agent for the Offer is:



1407 Broadway New York, New York 10018
(212) 929-5500 (Call Collect)

or

Call toll-free: (800) 322-2885

Email: tenderoffer@mackenziepartners.com

NOTICE OF GUARANTEED DELIVERY

to Tender Shares of Common Stock
of

Spark Therapeutics, Inc.

at
\$114.50 Net per Share
Pursuant to the Offer to Purchase
Dated March 7, 2019
by

022019 Merger Subsidiary, Inc.

a wholly owned subsidiary of
Roche Holdings, Inc.

**THE OFFER AND WITHDRAWAL RIGHTS EXPIRE AT 12:00 MIDNIGHT,
NEW YORK CITY TIME, AT THE END OF THE DAY ON APRIL 3, 2019, UNLESS THE OFFER IS EXTENDED OR EARLIER
TERMINATED.**

This Notice of Guaranteed Delivery, or one substantially in the form hereof, must be used to accept the Offer (as defined below) if the certificates for shares of common stock, par value \$0.001 per share (the “**Shares**”), of Spark Therapeutics, Inc., a Delaware corporation (“**Spark**”) and any other documents required by the Letter of Transmittal (as defined below) cannot be delivered to Citibank, N.A., the depository for the Offer (the “**Depository**”), or the procedure for delivery by book-entry transfer cannot be completed, in each case prior to the expiration of the Offer. Such form may be delivered by facsimile transmission or mail to the Depository. See Section 3 of the Offer to Purchase (as defined below).

The Depository for the Offer is:



Citibank, N.A.

By Mail:
Citibank, N.A.

P.O. Box 219287
Kansas City, MO 64121-9287
Ref: Spark Therapeutics, Inc.

By Overnight Mail:
Citibank, N.A.

430 W 7th Street, Suite 219287
Kansas City, MO 64105-1407
Ref: Spark Therapeutics, Inc.

By Facsimile Transmission:
(For Eligible Institutions Only)
(816) 374-7427

Confirm Facsimile Transmission:
(By Telephone Only)
(844) 460-9413

DELIVERY OF THIS NOTICE OF GUARANTEED DELIVERY TO AN ADDRESS OR FACSIMILE NUMBER OTHER THAN AS SET FORTH ABOVE WILL NOT CONSTITUTE A VALID DELIVERY TO THE DEPOSITORY.

This Notice of Guaranteed Delivery is not to be used to guarantee signatures. If a signature on a Letter of Transmittal is required to be guaranteed by an “eligible guarantor institution” (as such term is defined in Rule 17Ad-15 under the Securities Exchange Act of 1934, as amended (the “**Exchange Act**”) under the instructions thereto, such signature guarantee must appear in the applicable space provided in the signature box on the Letter of Transmittal. **Do not send share certificates with this notice. Share certificates should be sent with your Letter of Transmittal.**

Ladies and Gentlemen:

The undersigned hereby tenders to 022019 Merger Subsidiary, Inc., a Delaware corporation and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation, upon the terms and subject to the conditions set forth in the Offer to Purchase dated March 7, 2019 (as it may be amended or supplemented from time to time, the **“Offer to Purchase”**) and the related Letter of Transmittal (as it may be amended or supplemented from time to time, the **“Letter of Transmittal”**) and, together with the Offer to Purchase, the **“Offer”**), receipt of which is hereby acknowledged, shares of common stock, par value \$0.001 per share, of Spark Therapeutics, Inc., a Delaware corporation, pursuant to the guaranteed delivery procedure set forth in Section 3 of the Offer to Purchase.

Certificate Numbers (if available)

SIGN HERE

Signature(s)

(Name(s)) (Please Print)

If delivery will be by book-entry transfer:

Name of Tendering Institution

(Addresses)

(Zip Code)

Account

Number

(Area Code and Telephone Number)

GUARANTEE

(Not to be used for signature guarantee)

The undersigned, a financial institution that is a member in good standing of a recognized Medallion Program approved by The Securities Transfer Association, Inc., including the Securities Transfer Agents Medallion Program (STAMP), the Stock Exchange Medallion Program (SEMP) and the New York Stock Exchange, Inc. Medallion Signature Program (MSP), or any other "eligible guarantor institution" (as such term is defined in Rule 17Ad-15 under the Securities Exchange Act of 1934, as amended (the "**Exchange Act**")), guarantees (i) that the above named person(s) "own(s)" the Shares tendered hereby within the meaning of Rule 14e-4 under the Exchange Act, (ii) that such tender of Shares complies with Rule 14e-4 and (iii) the delivery to the Depository of the certificates for all such tendered Shares (or a confirmation of a book-entry transfer of such Shares into the Depository's account at the Book-Entry Transfer Facility (as defined in the Offer to Purchase) in the case of a book-entry delivery), together with a properly completed and duly executed Letter of Transmittal (or a manually signed facsimile thereof) and with any required signature guarantee (or an Agent's Message (as defined in the Offer to Purchase) in the case of a book-entry delivery) and any other required documents, all within two NASDAQ Global Select Market trading days of the date hereof.

(Name of Firm)

(Address)

(Zip Code)

(Authorized Signature)

(Name) (Please Print)

(Area Code and Telephone Number)

Dated: _____

**DO NOT SEND CERTIFICATES FOR SHARES WITH THIS NOTICE.
CERTIFICATES FOR SHARES SHOULD BE SENT WITH YOUR LETTER OF TRANSMITTAL.**

Offer to Purchase for Cash
All Outstanding Shares of Common Stock
of

Spark Therapeutics, Inc.

at

\$114.50 Net per Share

Pursuant to the Offer to Purchase Dated March 7, 2019

by

022019 Merger Subsidiary, Inc.

a wholly owned subsidiary of
Roche Holdings, Inc.

**THE OFFER AND WITHDRAWAL RIGHTS EXPIRE AT 12:00 MIDNIGHT, NEW YORK CITY TIME, AT THE END OF THE DAY ON
APRIL 3, 2019, UNLESS THE OFFER IS EXTENDED OR EARLIER TERMINATED.**

March 7, 2019

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

We have been engaged by 022019 Merger Subsidiary, Inc., a Delaware corporation (“**Purchaser**”) and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation (“**Parent**”), to act as the dealer manager (the “**Dealer Manager**”) in connection with Purchaser’s offer to purchase all outstanding shares of common stock, par value \$0.001 per share (the “**Shares**”), of Spark Therapeutics, Inc., a Delaware corporation (“**Spark**”), at a purchase price of \$114.50 per Share (the “**Offer Price**”), net to the seller in cash, without interest, subject to any required withholding of taxes and upon the terms and subject to the conditions set forth in the Offer to Purchase dated March 7, 2019 (as it may be amended or supplemented from time to time, the “**Offer to Purchase**”) and the related Letter of Transmittal (as it may be amended or supplemented from time to time, the “**Letter of Transmittal**”) and, together with the Offer to Purchase, the “**Offer**”) enclosed herewith.

Please furnish copies of the enclosed materials to those of your clients for whose accounts you hold Shares registered in your name or in the name of your nominee.

Enclosed herewith for your information and forwarding to your clients for whose accounts you hold Shares registered in your name or in the name of your nominee are copies of the following documents:

1. The Offer to Purchase.
2. The related Letter of Transmittal for your use in accepting the Offer and tendering Shares and for the information of your clients. Facsimile copies of the Letter of Transmittal may be used to tender Shares.
3. IRS Form W-9 and instructions providing information relating to federal income tax backup withholding.
4. Notice of Guaranteed Delivery to be used to accept the Offer if certificates for Shares and all other required documents cannot be delivered to Citibank, N.A., the depository for the Offer (the “**Depository**”), or if the procedures for book-entry transfer cannot be completed, prior to the expiration of the Offer.
5. A form of letter which may be sent to your clients for whose accounts you hold Shares registered in your name or in the name of your nominee, with space provided for obtaining such clients’ instructions with regard to the Offer.
6. Spark’s Solicitation/Recommendation Statement on Schedule 14D-9 dated March 7, 2019.
7. A return envelope addressed to the Depository.

YOUR PROMPT ACTION IS REQUESTED. WE URGE YOU TO CONTACT YOUR CLIENTS AS PROMPTLY AS POSSIBLE. PLEASE NOTE THAT THE OFFER AND WITHDRAWAL RIGHTS EXPIRE AT 12:00 MIDNIGHT, NEW YORK CITY TIME, AT THE END OF THE DAY ON APRIL 3, 2019, UNLESS THE OFFER IS EXTENDED.

The Offer is being made pursuant to the Agreement and Plan of Merger, dated as of February 22, 2019 (the “**Merger Agreement**”), among Spark, Parent and Purchaser. The Merger Agreement provides, among other things, that as soon as practicable after consummation of the Offer and subject to the satisfaction or waiver of the other conditions set forth in the Merger Agreement, Purchaser will merge with and into Spark (the “**Merger**”), with Spark continuing as the surviving corporation and a wholly owned subsidiary of Parent. At the effective time of the Merger, each outstanding Share (other than Shares held by Spark, any of its subsidiaries, Parent, us or any subsidiary of Parent, or any stockholders who have properly exercised their appraisal rights under Section 262 of the Delaware General Corporation Law (the “**DGCL**”)) will be converted into the right to receive the Offer Price, net to the seller in cash, without interest, subject to any required withholding of taxes. No appraisal rights are available in connection with the Offer. However, pursuant to the DGCL, if the Merger is consummated, stockholders who do not tender their Shares in the Offer will have the right, by fully complying with the applicable provisions of Section 262 of the DGCL, to choose not to accept the consideration payable for their Shares pursuant to the Merger, and instead to demand an appraisal of their Shares by the Court of Chancery of the State of Delaware and receive a cash payment of the “fair value” of their Shares as of the effective time of the Merger as determined by the Court of Chancery of the State of Delaware. The “fair value” of such Shares as of the effective time of the Merger may be more than, less than, or equal to the Offer Price. The Merger Agreement is more fully described in Section 13 of the Offer to Purchase.

The board of directors of Spark (the “Spark Board”) has duly and unanimously (i) approved, adopted and declared advisable the Merger Agreement and the transactions contemplated thereby, including the Offer and the Merger; (ii) determined that the transactions contemplated by the Merger Agreement, including the Offer and the Merger, are in the best interests of Spark and its stockholders; (iii) agreed that the Merger Agreement will be effected under Section 251(h) of the DGCL; and (iv) resolved to recommend that the holders of the Shares accept the Offer and tender their Shares to Purchaser pursuant to the Offer. Spark has been advised that all of its directors and executive officers intend to tender all of their transferrable Shares pursuant to the Offer.

The Offer is conditioned upon, among other things, (1) there being validly tendered in accordance with the terms of the Offer (and “received” as defined in Section 251(h) of the DGCL), and not validly withdrawn, that number of Shares that, considered together with all other Shares (if any) owned by Parent and its affiliates (excluding any Shares tendered pursuant to guaranteed delivery procedures that have not yet been “received”), represent at least one more than 50% of the total number of Shares outstanding immediately after the consummation of the Offer (referred to as the “**Minimum Condition**”); and (2) the expiration or termination of the waiting period (and any extension thereof) or receipt of clearance under (A) the Hart-Scott-Rodino Antitrust Improvement Act of 1976, as amended, and (B) any other competition, merger control, trade regulation, antitrust or similar laws applicable to the Offer and the Merger, in either case, without the imposition of any requirement that Parent or Purchaser, except solely with respect to Spark and its subsidiaries, and solely with respect to (and limited to) Spark’s developmental products and programs (other than any Hemophilia A programs or products, including SPK-8011 and SPK-8016) that are or would be competitive with the products and programs of Parent and its affiliates or in which Parent and its affiliates own or control any interest (w) sell, divest, license, hold separate or otherwise dispose of any asset, interest or business of Parent or its affiliates or Spark or its subsidiaries, (x) permit Spark or its subsidiaries to sell, divest, license, hold separate or otherwise dispose of any of their assets, interests, or businesses prior to the effective time of the Merger, (y) terminate, relinquish, modify, transfer, assign, restructure or waive existing agreements, collaborations, relationships, ventures, contractual rights, obligations or other arrangements of Parent, Spark or their respective subsidiaries and (z) undertake any other behavioral remedy or commitment whatsoever including but not limited to creating or consenting to create any relationships, ventures, contractual rights, obligations, or other arrangements of Parent or Spark or their respective subsidiaries and, in each case, to enter, or to offer to enter, into agreements and stipulate to the entry of an order or decree or file appropriate applications with any governmental entity in connection with any of the

foregoing and in the case of actions by or with respect to Spark or its subsidiaries or their businesses or assets, by consenting to such action by any of Spark or its subsidiaries. These and other conditions to the Offer are described in Sections 15 and 16 of the Offer to Purchase.

Purchaser will not pay any fees or commissions to any broker, dealer or any other person (other than to Mackenzie Partners, Inc. (the “**Information Agent**”) and the Depositary as described in the Offer to Purchase) for soliciting tenders of Shares pursuant to the Offer. Purchaser will, however, upon request, reimburse brokers, dealers, commercial banks, trust companies and other nominees for reasonable and necessary costs and expenses incurred by them in forwarding the enclosed materials to their clients.

Purchaser will pay all stock transfer taxes applicable to its purchase of Shares pursuant to the Offer, subject to Instruction 6 of the Letter of Transmittal.

In order to take advantage of the Offer, a duly executed and properly completed Letter of Transmittal (or a manually signed facsimile thereof), or an Agent’s Message (as defined in the Offer to Purchase) in connection with a book-entry transfer of Shares, and any other required documents, should be sent to the Depositary, and certificates representing the tendered Shares should be delivered or such Shares should be tendered by book-entry transfer, all in accordance with the instructions contained in the Letter of Transmittal and the Offer to Purchase.

If holders of Shares wish to tender, but it is impracticable for them to forward their certificates or other required documents or to complete the procedures for delivery by book-entry transfer prior to the expiration of the Offer, a tender may be effected by following the guaranteed delivery procedures described in Section 3 of the Offer to Purchase.

Any inquiries you may have with respect to the Offer should be addressed to, and additional copies of the enclosed materials may be obtained from, the undersigned or the Information Agent at their respective addresses and telephone numbers set forth on the back cover of the Offer to Purchase.

Very truly yours,

NOTHING CONTAINED HEREIN OR IN THE ENCLOSED DOCUMENTS SHALL RENDER YOU THE AGENT OF PARENT, PURCHASER, THE DEALER MANAGER, THE INFORMATION AGENT OR THE DEPOSITARY, OR ANY AFFILIATE OF ANY OF THEM, OR AUTHORIZE YOU OR ANY OTHER PERSON TO USE ANY DOCUMENT OR MAKE ANY STATEMENT ON BEHALF OF ANY OF THEM IN CONNECTION WITH THE OFFER OTHER THAN THE DOCUMENTS ENCLOSED HERewith AND THE STATEMENTS CONTAINED THEREIN.

Offer to Purchase for Cash
All Outstanding Shares of Common Stock
of

Spark Therapeutics, Inc.

at

\$114.50 Net per Share

Pursuant to the Offer to Purchase Dated March 7, 2019

by

022019 Merger Subsidiary, Inc.

a wholly owned subsidiary of
Roche Holdings, Inc.

**THE OFFER AND WITHDRAWAL RIGHTS EXPIRE AT 12:00 MIDNIGHT, NEW YORK CITY TIME, AT THE END OF THE DAY ON
APRIL 3, 2019, UNLESS THE OFFER IS EXTENDED OR EARLIER TERMINATED.**

To Our Clients:

Enclosed for your consideration are the Offer to Purchase dated March 7, 2019 (the “**Offer to Purchase**”) and the related Letter of Transmittal (as it may be amended or supplemented from time to time, the “**Letter of Transmittal**”) and, together with the Offer to Purchase, collectively the “**Offer**”) in connection with the offer by 022019 Merger Subsidiary, Inc., a Delaware corporation (“**Purchaser**”) and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation (“**Parent**”), to purchase all outstanding shares of common stock, par value \$0.001 per share (the “**Shares**”), of Spark Therapeutics, Inc., a Delaware corporation (“**Spark**”), for \$114.50 per Share (the “**Offer Price**”), net to the seller in cash, without interest, subject to any withholding of taxes required by applicable law and upon the terms and subject to the conditions set forth in the Offer. Also enclosed is Spark’s Solicitation/Recommendation Statement on Schedule 14D-9.

We or our nominees are the holder of record of Shares held for your account. A tender of such Shares can be made only by us or our nominees as the holder of record and pursuant to your instructions. The enclosed Letter of Transmittal is furnished to you for your information only and cannot be used by you to tender Shares held by us or our nominees for your account.

We request instructions as to whether you wish us to tender any or all of the Shares held by us or our nominees for your account, upon the terms and subject to the conditions set forth in the Offer.

Your attention is directed to the following:

1. The Offer Price is \$114.50 per Share, net to the seller in cash, without interest, subject to any required withholding of taxes and upon the terms and subject to the conditions set forth in the Offer.
2. The Offer is being made for all outstanding Shares.
3. The Offer is being made pursuant to the Agreement and Plan of Merger, dated as of February 22, 2019 (the “**Merger Agreement**”), among Spark, Parent and Purchaser. The Merger Agreement provides, among other things, that as soon as practicable after consummation of the Offer and subject to the satisfaction or waiver of the other conditions set forth in the Merger Agreement, Purchaser will merge with and into Spark (the “**Merger**”), with Spark continuing as the surviving corporation and a wholly owned subsidiary of Parent. At the effective time of the Merger, each outstanding Share (other than shares held by Spark, any of its subsidiaries, Parent, Purchaser or any other subsidiary of Parent, or any stockholders who have properly exercised their appraisal rights under Section 262 of the Delaware General Corporation Law (the “**DGCL**”)) will be converted into the right to receive the Offer Price, net

to the seller in cash, without interest, subject to any required withholding of taxes. No appraisal rights are available in connection with the Offer. However, pursuant to the DGCL, if the Merger is consummated, stockholders who do not tender their Shares in the Offer will have the right, by fully complying with the applicable provisions of Section 262 of the DGCL, to choose not to accept the consideration payable for their Shares pursuant to the Merger, and instead to demand an appraisal of their Shares by the Court of Chancery of the State of Delaware and receive a cash payment of the “fair value” of their Shares as of the effective time of the Merger as determined by the Court of Chancery of the State of Delaware. The “fair value” of such Shares as of the effective time of the Merger may be more than, less than, or equal to the Offer Price. The Merger Agreement is more fully described in Section 13 of the Offer to Purchase.

4. **The board of directors of Spark (the “Spark Board”) has duly and unanimously (i) approved, adopted and declared advisable the Merger Agreement and the transactions contemplated thereby, including the Offer and the Merger; (ii) determined that the transactions contemplated by the Merger Agreement, including the Offer and the Merger, are in the best interests of Spark and its stockholders; (iii) agreed that the Merger Agreement will be effected under Section 251(h) of the DGCL; and (iv) resolved to recommend that the holders of the Shares accept the Offer and tender their Shares to Purchaser pursuant to the Offer. Spark has been advised that all of its directors and executive officers intend to tender all of their transferrable Shares pursuant to the Offer.**
5. The Offer and withdrawal rights expire at 12:00 midnight, New York City time, at the end of the day on April 3, 2019, unless the Offer is extended (as it may be extended, the “**Expiration Time**”).
6. The Offer is conditioned upon, among other things, (1) there being validly tendered in accordance with the terms of the Offer (and “received” as defined in Section 251(h) of the DGCL), and not validly withdrawn, that number of Shares that, considered together with all other Shares (if any) owned by Parent and its affiliates (excluding any Shares tendered pursuant to guaranteed delivery procedures that have not yet been “received”), represent at least one more than 50% of the total number of Shares outstanding immediately after the consummation of the Offer (referred to as the “**Minimum Condition**”); and (2) the expiration or termination of the waiting period (and any extension thereof) or receipt of clearance under (A) the Hart-Scott-Rodino Antitrust Improvement Act of 1976, as amended, and (B) any other competition, merger control, trade regulation, antitrust or similar laws applicable to the Offer and the Merger, in either case, without the imposition of any requirement that Parent or Purchaser, except solely with respect to Spark and its subsidiaries, and solely with respect to (and limited to) Spark’s developmental products and programs (other than any Hemophilia A programs or products, including SPK-8011 and SPK-8016) that are or would be competitive with the products and programs of Parent and its affiliates or in which Parent and its affiliates own or control any interest (w) sell, divest, license, hold separate or otherwise dispose of any asset, interest or business of Parent or its affiliates or Spark or its subsidiaries, (x) permit Spark or its subsidiaries to sell, divest, license, hold separate or otherwise dispose of any of their assets, interests, or businesses prior to the effective time of the Merger, (y) terminate, relinquish, modify, transfer, assign, restructure or waive existing agreements, collaborations, relationships, ventures, contractual rights, obligations or other arrangements of Parent, Spark or their respective subsidiaries and (z) undertake any other behavioral remedy or commitment whatsoever including but not limited to creating or consenting to create any relationships, ventures, contractual rights, obligations, or other arrangements of Parent or Spark or their respective subsidiaries and, in each case, to enter, or to offer to enter, into agreements and stipulate to the entry of an order or decree or file appropriate applications with any governmental entity in connection with any of the foregoing and in the case of actions by or with respect to Spark or its subsidiaries or their businesses or assets, by consenting to such action by any of Spark or its subsidiaries. These and other conditions to the Offer are described in Sections 15 and 16 of the Offer to Purchase.
7. Any stock transfer taxes applicable to the sale of Shares to the Purchaser pursuant to the Offer will be paid by the Purchaser, except as otherwise set forth in Instruction 6 of the Letter of Transmittal. However, federal income tax backup withholding at a current rate of 24% may be required, unless the

required taxpayer identification information is provided and certain certification requirements are met, or unless an exemption is established. See Instruction 8 of the Letter of Transmittal.

If you wish to have us or our nominees tender any or all of your Shares, please complete, sign, detach and return the instruction form below. An envelope to return your instructions to us is enclosed. If you authorize tender of your Shares, all such Shares will be tendered unless otherwise specified on the instruction form. Your prompt action is requested. Your instructions should be forwarded to us in ample time to permit us to submit a tender on your behalf by the Expiration Time.

The Offer is not being made to, nor will tenders be accepted from or on behalf of, holders of Shares in any jurisdiction in which the making of the Offer or acceptance thereof would not be in compliance with the laws of such jurisdiction. In those jurisdictions where the applicable laws require that the Offer be made by a licensed broker or dealer, the Offer will be deemed to be made on behalf of Purchaser by one or more registered brokers or dealers licensed under the laws of such jurisdiction to be designated by Purchaser.

Instruction Form with Respect to
Offer to Purchase for Cash
All Outstanding Shares of Common Stock
of
Spark Therapeutics, Inc.

at
\$114.50 Net per Share
Pursuant to the Offer to Purchase Dated March 7, 2019
by

022019 Merger Subsidiary, Inc.
a wholly owned subsidiary of
Roche Holdings, Inc.

The undersigned acknowledge(s) receipt of your letter and the enclosed Offer to Purchase dated March 7, 2019 and the related Letter of Transmittal (collectively, as may be amended or supplemented from time to time, the "**Offer**"), in connection with the offer by 022019 Merger Subsidiary, Inc., a Delaware corporation ("**Purchaser**") and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation ("**Parent**"), to purchase all outstanding shares of common stock, par value \$0.001 per share (the "**Shares**"), of Spark Therapeutics, Inc., a Delaware corporation ("**Spark**"), at a purchase price of \$114.50 per Share, net to the seller in cash, without interest, subject to any required withholding and upon the terms and subject to the conditions set forth in the Offer.

The undersigned hereby instruct(s) you to tender to Purchaser the number of Shares indicated below (or if no number is indicated below, all Shares) held by you or your nominees for the account of the undersigned, upon the terms and subject to the conditions set forth in the Offer furnished to the undersigned. The undersigned understands and acknowledges that all questions as to the validity, form and eligibility (including time of receipt) and acceptance for payment of any tender of Shares made on my behalf will be determined by Purchaser in its sole discretion.

The method of delivery of this Instruction Form is at the election and risk of the tendering stockholder. This Instruction Form should be delivered to us in ample time to permit us to submit the tender on your behalf prior to the expiration of the Offer.

Number of Shares to be Tendered:

SIGN HERE

_____	Shares*	_____
Dated _____		Signature(s)

		Name(s) (Please Print)

		Address(es)

		(Zip Code)

		Area Code and Telephone Number

		Taxpayer Identification or Social Security Number

* Unless otherwise indicated, it will be assumed that all Shares held for the undersigned's account are to be tendered.

This announcement is neither an offer to purchase nor a solicitation of an offer to sell Shares (as defined below). The Offer (as defined below) is made solely pursuant to the Offer to Purchase dated March 7, 2019 and the related Letter of Transmittal and any amendments or supplements thereto and is being made to all holders of Shares. The Offer is not being made to, nor will tenders be accepted from or on behalf of, holders of Shares in any jurisdiction in which the making of the Offer or acceptance thereof would not be in compliance with the laws of such jurisdiction. In those jurisdictions where the applicable laws require that the Offer be made by a licensed broker or dealer, the Offer shall be deemed to be made on behalf of Purchaser (as defined below) by one or more registered brokers or dealers licensed under the laws of such jurisdiction to be designated by Purchaser.

Notice of Offer to Purchase for Cash
All Outstanding Shares of Common Stock
of
Spark Therapeutics, Inc.
at
\$114.50 Net per Share
Pursuant to the Offer to Purchase Dated March 7, 2019
by
022019 Merger Subsidiary, Inc.
a wholly owned subsidiary of
Roche Holdings, Inc.

022019 Merger Subsidiary, Inc. a Delaware corporation (“**Purchaser**”) and a wholly owned subsidiary of Roche Holdings, Inc., a Delaware corporation (“**Parent**”), is offering to purchase all outstanding shares of common stock, par value \$0.001 per share (the “**Shares**”), of Spark Therapeutics, Inc., a Delaware corporation (“**Spark**”), at a purchase price of \$114.50 per Share, net to the seller in cash, without interest (the “**Offer Price**”), and subject to deduction for any required withholding taxes, upon the terms and subject to the conditions set forth in the Offer to Purchase dated March 7, 2019 (as it may be amended or supplemented from time to time, the “**Offer to Purchase**”), and in the related letter of transmittal (as amended or supplemented from time to time, the “**Letter of Transmittal**” and which, together with the Offer to Purchase, constitutes the “**Offer**”). Tendering stockholders whose Shares are registered in their names and who tender directly to Purchaser will not be charged brokerage fees or similar expenses on the sale of Shares for cash pursuant to the Offer. Tendering stockholders whose Shares are registered in the name of their broker, bank or other nominee should consult such nominee to determine if any fees may apply. The Offer is being made pursuant to the Agreement and Plan of Merger, dated as of February 22, 2019 (the “**Merger Agreement**”), among Spark, Parent and Purchaser. Following the consummation of the Offer, and under the terms of the Merger Agreement as described in the Offer to Purchase, Purchaser intends to effect the Merger (defined below) as described below.

**THE OFFER AND WITHDRAWAL RIGHTS EXPIRE AT 12:00 MIDNIGHT, NEW YORK CITY TIME, AT THE END OF THE DAY ON
APRIL 3, 2019, UNLESS THE OFFER IS EXTENDED OR EARLIER TERMINATED.**

The Merger Agreement provides, among other things, that as soon as practicable after the consummation of the Offer and subject to the satisfaction or waiver of the other conditions set forth in the Merger Agreement, Purchaser will merge with and into Spark (the “**Merger**”), with Spark continuing as the surviving corporation and a wholly owned subsidiary of Parent. At the effective time of the Merger, each outstanding Share (other than any Shares held by Spark, its subsidiaries, Parent, Purchaser or any other subsidiary of Parent, or any stockholders who have properly exercised their appraisal rights under Section 262 of the Delaware General Corporation Law (the “**DGCL**”)) will be converted into the right to receive the Offer Price, net to the seller in cash, without interest and subject to deduction for any required withholding taxes. The Merger Agreement is more fully described in “The Offer—Section 13—The Transaction Documents—The Merger Agreement” of the Offer to Purchase.

If the Offer is consummated, Purchaser does not anticipate seeking the approval of Spark's remaining public stockholders before effecting the Merger. The parties to the Merger Agreement have agreed that, subject to the conditions specified in the Merger Agreement, the Merger will become effective as soon as practicable after the consummation of the Offer, without a vote of Spark's stockholders, in accordance with Section 251(h) of the DGCL.

The board of directors of Spark (the "Spark Board") has duly and unanimously (i) approved, adopted and declared advisable the Merger Agreement and the transactions contemplated thereby, including the Offer and the Merger; (ii) determined that the transactions contemplated by the Merger Agreement, including the Offer and the Merger, are in the best interests of Spark and its stockholders; (iii) agreed that the Merger Agreement will be effected under Section 251(h) of the DGCL; and (iv) resolved to recommend that the holders of the Shares accept the Offer and tender their Shares to Purchaser pursuant to the Offer. Spark has been advised that all of its directors and executive officers intend to tender all of their transferrable Shares pursuant to the Offer.

On the date of the Offer to Purchase, Spark will file its Tender Offer Solicitation/Recommendation Statement on Schedule 14D-9 (the "**Schedule 14D-9**") with the United States Securities and Exchange Commission (the "**SEC**") and disseminate the Schedule 14D-9 to Spark stockholders with the Offer to Purchase. The Schedule 14D-9 will include a more complete description of the Spark Board's reasons for authorizing and approving the Merger Agreement and the transactions contemplated thereby and therefore stockholders are encouraged to review the Schedule 14D-9 carefully and in its entirety.

The Offer is conditioned upon, among other things, (1) there being validly tendered in accordance with the terms of the Offer (and "received" as defined in Section 251(h) of the DGCL), and not validly withdrawn, that number of Shares that, considered together with all other Shares (if any) owned by Parent and its affiliates (excluding any Shares tendered pursuant to guaranteed delivery procedures that have not yet been "received"), represent at least one more than 50% of the total number of Shares outstanding immediately after the consummation of the Offer (referred to as the "**Minimum Condition**"); and (2) the expiration or termination of the waiting period (and any extension thereof) or receipt of clearance under (A) the Hart-Scott-Rodino Antitrust Improvement Act of 1976, as amended, and (B) any other competition, merger control, trade regulation, antitrust or similar laws applicable to the Offer and the Merger, in either case, without the imposition of any requirement that Parent or Purchaser, except solely with respect to Spark and its subsidiaries, and solely with respect to (and limited to) Spark's developmental products and programs (other than any Hemophilia A programs or products, including SPK-8011 and SPK-8016) that are or would be competitive with the products and programs of Parent and its affiliates or in which Parent and its affiliates own or control any interest (w) sell, divest, license, hold separate or otherwise dispose of any asset, interest or business of Parent or its affiliates or Spark or its subsidiaries, (x) permit Spark or its subsidiaries to sell, divest, license, hold separate or otherwise dispose of any of their assets, interests, or businesses prior to the effective time of the Merger, (y) terminate, relinquish, modify, transfer, assign, restructure or waive existing agreements, collaborations, relationships, ventures, contractual rights, obligations or other arrangements of Parent, Spark or their respective subsidiaries and (z) undertake any other behavioral remedy or commitment whatsoever including but not limited to creating or consenting to create any relationships, ventures, contractual rights, obligations, or other arrangements of Parent or Spark or their respective subsidiaries and, in each case, to enter, or to offer to enter, into agreements and stipulate to the entry of an order or decree or file appropriate applications with any governmental entity in connection with any of the foregoing and in the case of actions by or with respect to Spark or its subsidiaries or their businesses or assets, by consenting to such action by any of Spark or its subsidiaries (such requirements collectively, the "**Regulatory Condition**"). These and other conditions to the Offer are described in Sections 15 and 16 of the Offer to Purchase.

To the extent permitted by law, Purchaser also reserves the right to waive any of the conditions to the Offer and to make any change in the terms of the Offer, provided that Spark's consent is required for Purchaser to (i) amend, modify or waive the Minimum Condition, (ii) decrease the number of Shares subject to the Offer; (iii) reduce the Offer Price, except in connection with a stock split or other recapitalization; (iv) increase the Offer Price, except in response to a notice of a Change in Circumstance, Change in Recommendation or Superior

Proposal as described under “—Section 13—The Transaction Documents—The Merger Agreement—Spark Board Recommendation” of the Offer to Purchase; (v) extend or otherwise change the expiration date of the Offer, except as described under “—Section 13—The Transaction Documents—The Merger Agreement—Extensions of the Offer” of the Offer to Purchase; (vi) change the form of consideration payable in the Offer; (vii) impose any additional condition to the Offer; (viii) amend, modify or supplement any of the terms of the Offer in any manner adversely affecting, or that would reasonably be expected to have an adverse effect on, any of the holders of Shares; or (ix) take any action (or fail to take any action) that would result in the Merger not being permitted to be effected pursuant to Section 251(h) of the DGCL.

Upon the terms and subject to the conditions set forth in the Offer, Purchaser will accept for payment and pay for all Shares that are validly tendered and not validly withdrawn on or prior to 12:00 midnight, New York City time, at the end of the day on April 3, 2019 or, in the event the Offer is extended or earlier terminated, the latest time and date at which the Offer, as so extended, will expire (the “Expiration Time”).

Pursuant to the terms of the Merger Agreement, if at the scheduled expiration date of the Offer, including following a prior extension, any condition to the Offer has not been satisfied or waived, Purchaser will extend the Offer for one or more consecutive periods of not more than ten business days (or for such longer period as may be agreed to by Parent and Spark) until such time as such conditions shall have been satisfied or waived, provided that we will not be required to extend the Offer beyond December 31, 2019 (but if on such date all conditions to the Offer have been satisfied or waived other than the Regulatory Condition or certain other conditions related to governmental challenges to the Offer or the Merger based on the antitrust laws of certain jurisdictions, either Spark or Parent can extend such date until January 31, 2020). In addition, Purchaser will extend the Offer for any period required by any rule, regulation, interpretation or position of the SEC or its staff or NASDAQ or its staff that is applicable to the Offer. See “The Offer—Section 1—Terms of the Offer.”

Any extension, termination or amendment of the Offer will be followed as promptly as practicable by a public announcement thereof, but no later than 9:00 a.m., New York City time, on the next business day after the day of the previously scheduled Expiration Time.

In order to take advantage of the Offer, you must either (i) complete and sign the Letter of Transmittal in accordance with the instructions in the Letter of Transmittal, have your signature guaranteed (if required by Instruction 1 to the Letter of Transmittal), mail or deliver the Letter of Transmittal (or a manually signed facsimile copy) and any other required documents to Citibank, N.A., the depository for the Offer (the “**Depository**”), and either deliver the certificates for your Shares along with the Letter of Transmittal to the Depository or tender your Shares pursuant to the procedures for book-entry transfer set forth in “The Offer—Section 3—Procedures for Tendering Shares” of the Offer to Purchase or (ii) request your broker, dealer, commercial bank, trust company or other nominee to effect the transaction for you. If your Shares are registered in the name of a broker, dealer, commercial bank, trust company or other nominee, you must contact such broker, dealer, commercial bank, trust company or other nominee to tender your Shares. If you desire to tender your Shares, and certificates evidencing your Shares are not immediately available or you cannot deliver such certificates and all other required documents to the Depository or you cannot comply with the procedures for book-entry transfer described in “The Offer—Section 3—Procedures for Tendering Shares” of the Offer to Purchase, in each case prior to the Expiration Time, you may tender your Shares by following the procedures for guaranteed delivery set forth in “The Offer—Section 3—Procedures for Tendering Shares” of the Offer to Purchase.

For purposes of the Offer, Purchaser will be deemed to have accepted for payment Shares tendered when, as and if Purchaser gives oral or written notice of Purchaser’s acceptance to the Depository. Purchaser will pay for Shares accepted for payment pursuant to the Offer by deposit of the purchase price therefor with the Depository, which will act as agent for tendering stockholders for the purpose of receiving payments and transmitting such payments to tendering stockholders. Under no circumstances will Purchaser pay interest on the consideration paid for Shares pursuant to the Offer, regardless of any extension of the Offer or any delay in making such payment.

Except as otherwise provided in “The Offer—Section 4—Withdrawal Rights” of the Offer to Purchase, tenders of Shares pursuant to the Offer are irrevocable. However, you may withdraw Shares tendered pursuant to the Offer at any time prior to the Expiration Time as explained below. For your withdrawal to be effective, a written or facsimile transmission notice of withdrawal with respect to the applicable Shares must be timely received by the Depository at one of its addresses set forth on the back cover of the Offer to Purchase, and the notice of withdrawal must specify the name of the person who tendered the Shares to be withdrawn, the number of Shares to be withdrawn and, if different from that of the person who tendered such Shares, the name of the registered holder of the Shares. If the Shares to be withdrawn have been delivered to the Depository (except in the case of Shares tendered by an Eligible Institution (as defined in the Offer to Purchase)), a signed notice of withdrawal with signatures guaranteed by an Eligible Institution must be submitted before the release of such Shares. In addition, such notice must specify, in the case of Shares tendered by delivery of certificates, the serial numbers shown on the specific certificates evidencing the Shares to be withdrawn or, in the case of Shares tendered by book-entry transfer, the name and number of the account at the Book-Entry Transfer Facility (as defined in the Offer to Purchase) to be credited with the withdrawn Shares. Withdrawals may not be rescinded, and Shares withdrawn will thereafter be deemed not validly tendered. However, withdrawn Shares may be retendered at any time before the Expiration Time by again following any of the procedures described in the Offer to Purchase.

Subject to applicable law as applied by a court of competent jurisdiction, Purchaser will determine, in its sole discretion, all questions as to the form of documents and the validity, eligibility (including time of receipt) and acceptance for payment of any tender of Shares, and its determination will be final and binding.

In general, your exchange of shares for cash pursuant to the Offer will be a taxable transaction for U.S. federal income tax purposes and may also be a taxable transaction under applicable state, local or foreign income or other tax laws. You should consult your tax advisor about the specific tax consequences to you of exchanging your shares for cash pursuant to the Offer in light of your particular circumstances. See “The Offer—Section 5—Certain U.S. Federal Income Tax Consequences” of the Offer to Purchase for a more detailed discussion of the tax consequences of the Offer and the Merger.

The information required to be disclosed by paragraph (d)(1) of Rule 14d-6 promulgated under the Exchange Act is contained in the Offer to Purchase and is incorporated herein by reference.

Spark has provided to Purchaser its list of stockholders and security position listings for the purpose of disseminating the Offer to holders of Shares. The Offer to Purchase, the related Letter of Transmittal and other related materials will be mailed to record holders of Shares and will be furnished to brokers, dealers, commercial banks, trust companies and other nominees whose names appear on Spark’s stockholder list or, if applicable, who are listed as participants in a clearing agency’s security position listing for subsequent transmittal to beneficial owners of Shares.

The Offer to Purchase and the related Letter of Transmittal contain important information that should be read carefully before any decision is made with respect to the Offer.

Questions and requests for assistance and copies of the Offer to Purchase, the Letter of Transmittal and all other tender offer materials may be directed to the Information Agent, at its address and telephone numbers set forth below and will be furnished promptly at Purchaser’s expense. Neither Parent nor Purchaser will pay any fees or commissions to any broker or dealer or any other person (other than to the Information Agent and the Depository, as described in the Offer to Purchase) in connection with the solicitation of tenders of Shares pursuant to the Offer. Brokers, dealers, commercial banks, trust companies and other nominees will, upon

request, be reimbursed by Purchaser for reasonable and necessary costs and expenses incurred by them in forwarding materials to their customers.

The Information Agent for the Offer is:

**MACKENZIE
PARTNERS, INC.**

1407 Broadway
New York, New York 10018
(212) 929-5500

or

CALL TOLL FREE (800) 322-2885

Email: tenderoffer@mackenziepartners.com

March 7, 2019

MUTUAL NON-DISCLOSURE AGREEMENT

THIS MUTUAL NON-DISCLOSURE AGREEMENT (this “**Agreement**”), entered into as of October 9, 2018 (the “**Effective Date**”), governs the disclosure of information by and between **Spark Therapeutics, Inc.**, a Delaware corporation, having an address at 3737 Market Street, Suite 1300, Philadelphia, PA (“**Spark**”), and **Roche Holdings Inc.**, a Delaware company having an address at 1 DNA Way, South San Francisco, CA 94080 (“**Company**”). For purposes of this Agreement, references to each of Spark and Company, and corresponding references to disclosing party and receiving party herein, shall include the respective subsidiaries and other entities controlled, directly or indirectly by Spark or Company, as the case may be; provided, however, with respect to Company, the foregoing provision shall exclude Chugai Pharmaceutical Co., Ltd, 1-1 Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo, 103-8324 (“**Chugai**”) unless the Company opts for such inclusion of Chugai and their respective subsidiaries by giving written notice to the Company.

1. **Purpose.** This Agreement is made in order for each party to disclose to the other, during the term of this Agreement, such scientific, technical, business and financial information as the disclosing party may elect to disclose so that the receiving party may use the same solely for the purpose of evaluating the Confidential Information internally in connection with evaluating a possible transaction between the parties relating to one, more or all of Spark’s gene therapy product candidates and/or assets (the “**Purpose**”) under terms that will protect the confidential and proprietary nature of such information.
2. **Confidential Information.** As used herein, “**Confidential Information**” will mean any and all scientific, technical, business and financial information, including third party information, that is furnished or disclosed, in whatever form or medium (regardless of whether tangible, intangible, visual, or oral), to the receiving party, before or after the Effective Date. “Confidential Information” includes but is not limited to: (a) patent and patent applications; (b) manufacturing, including process and know-how; (c) clinical trial design or results; (d) vendors; (e) trade secrets; and (f) other proprietary information, ideas, gene sequences, cell lines, samples, chemical compounds, assays, biological materials, techniques, sketches, drawings, works of authorship, models, inventions, know-how, processes, apparatuses, equipment, and formulae related to the current, future, and proposed products and services of each of the parties, and including without limitation, their respective information concerning research, experimental work, development, design details and specifications, engineering, financial information, procurement requirements, purchasing, manufacturing, customer lists, investors, employees, business and contractual relationships, business forecasts, analyst reports, sales and merchandising, marketing plans and any additional non-public information the disclosing party provides.
3. **Obligations.** Each receiving party agrees: (a) to use the disclosing party’s Confidential Information solely for the Purpose stated above and for no other reason; (b) to protect the confidentiality of the disclosing party’s Confidential Information; (c) not to disclose any of the disclosing party’s Confidential Information to anyone, except those employees, consultants or representatives of the receiving party or its

Affiliates who have a “need to know” the information for the Purpose and who have signed confidentiality agreements or are otherwise bound by confidentiality and non-use obligations at least as restrictive as those contained herein; and (d) to notify appropriately such employees, consultants and representatives of the receiving party or its Affiliates that the disclosure is made in confidence and under the applicable confidentiality obligations. The receiving party agrees to be responsible for any breaches of any of the provisions of this Agreement by any of its employees, consultants or representatives. Each receiving party agrees that in the event permission is granted by the disclosing party to copy Confidential Information, each such copy will contain and state the same confidential or proprietary notices or legends, if any, that appear on the original.

4. **Exceptions.** The obligations and restrictions imposed by this Agreement will not apply to any Confidential Information that the receiving party can establish by competent evidence acceptable under applicable law and as deemed appropriate by the competent court: (a) is already known to the receiving party prior to the disclosing party’s disclosure; (b) is or becomes publicly available through no fault of the receiving party; (c) is obtained by the receiving party from a third party; or (d) is independently developed by the receiving party without use of or reference to any Confidential Information. Notwithstanding the foregoing, (i) any Confidential Information shall not be deemed to be within the foregoing exceptions merely because such information is embraced by more general information in the public domain or in the possession of the receiving party, and (ii) any combination of features shall not be deemed to be within the foregoing exceptions merely because individual features are in the public domain or in the possession of the receiving party, but only if the combination itself and its principle of operation are in the public domain or in the possession of the receiving party. Notwithstanding anything contained in this Agreement, other than in the case of an External Demand (as defined below), the receiving party may disclose either the fact that discussions or negotiations are taking place concerning the Purpose or any of the terms, conditions or other facts with respect to the Purpose, including the status thereof or that Confidential Information has been made available to the receiving party (such information, “**Transaction Information**”) if but only if (i) such disclosure is required under applicable securities or antitrust laws or under applicable stock exchange rules as determined based on advice of legal counsel and (ii) such disclosure requirement does not arise from a breach of this Agreement. In the event the receiving party receives a request or is required by deposition, interrogatory, request for documents, subpoena, civil investigative demand or similar process or pursuant to a formal request from a regulatory examiner (any such requested or required disclosure, an “**External Demand**”) to disclose all or any part of the Confidential Information of the disclosing party or the Transaction Information, the receiving party shall (1) immediately notify the disclosing party of the existence, terms and circumstances surrounding such External Demand, (2) consult with the disclosing party on the advisability of taking legally available steps to resist or narrow such request or disclosure, and (3) assist the disclosing party, at the disclosing party’s expense, in seeking a protective order or other appropriate remedy to the extent available under the circumstances. In the event that such protective order or other remedy is not obtained or that the disclosing party waives compliance with the provisions hereof, (x) the receiving party may disclose only that portion of the Confidential Information or Transaction Information which the receiving party is advised by counsel is legally

required to be disclosed and to only those persons to whom the receiving party is advised by counsel are legally required to receive such information, and the receiving party shall exercise commercially reasonable efforts to obtain assurance that confidential treatment will be accorded such Confidential Information or Transaction Information, and (y) the receiving party shall not be liable for such disclosure, unless such disclosure was caused by or resulted from a previous disclosure by the receiving party not permitted by this Agreement.

5. **Handling of Information and Materials.** Confidential Information will not be reproduced in any form except as required to accomplish the Purpose of this Agreement. Any reproduction of any Confidential Information of the disclosing party will remain the property of the disclosing party and will contain and state any and all confidential or proprietary notices or legends that appear on the original, unless otherwise authorized in writing by the disclosing party. Upon termination or expiration of this Agreement, or upon written request of the disclosing party, each receiving party will promptly destroy (to the extent reasonably practicable in case of electronic files) or return to the other all documents and other tangible materials representing the disclosing party's Confidential Information and all copies thereof. Notwithstanding the forgoing the receiving party may retain one copy of all Confidential Information in its legal department solely for archival and compliance purposes and its external advisors, if any, may keep one copy of their Confidential Information in accordance with the laws and professional standards applicable to them.

6. **No Other Rights.** The parties recognize and agree that nothing contained in this Agreement will be construed as granting any property rights, by license or otherwise, to any Confidential Information of the disclosing party disclosed pursuant to this Agreement, or to any invention or any patent, copyright, trademark, or other intellectual property right that has issued or that may issue, based on such Confidential Information. Each receiving party will not make, have made, use or sell for any purpose any product or other item using, incorporating or derived from any Confidential Information of the disclosing party.

7. **Standstill.** Company hereby acknowledges that, unless otherwise agreed in writing by Spark, for a period of twelve (12) months from the date of this Agreement (the "Restricted Period") none of Company, nor any of its Affiliates (as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended) who are provided with Confidential Information or become aware of Company's discussions with Spark, will:

(a) propose (i) any merger, consolidation, business combination, tender or exchange offer, purchase of Spark's assets or businesses, or similar transactions involving Spark or (ii) any recapitalization, restructuring, liquidation or other extraordinary transaction with respect to Spark; (b) (i) acquire beneficial ownership of any voting securities (including in derivative form) of Spark (collectively, a transaction specified in (a)(i), (a)(ii) and (b)(i) involving a majority of Spark's outstanding voting securities or consolidated assets, is referred to as a "**Business Combination**"), (ii) propose or seek, whether alone or in concert with others, any "solicitation" (as such term is used in the rules of the Securities and Exchange Commission) of proxies or consents to vote any securities (including in derivative form) of Spark, (iii) nominate any person as a director of Spark, or (iv)

propose any matter to be voted upon by the stockholders of Spark; (c) directly or indirectly, form, join or in any way participate in a third party "group" (as such term is used in the rules of the Securities and Exchange Commission) (or discuss with any third party the potential formation of a group) with respect to any voting securities (including in derivative form) of Spark or a Business Combination involving Spark; (d) request Spark (or any of its officers, directors or representatives), directly or indirectly, to amend or waive any provision of this paragraph (including this sentence) in a way which would require Spark to publicly disclose the same; or (d) take any action that could require Spark to make a public announcement regarding a potential Business Combination; provided, however, that nothing in this paragraph shall prohibit Company from making a confidential proposal to Spark or Spark's Chairman of the Board of Directors for a transaction involving a Business Combination at any time for a transaction involving a Business Combination. Notwithstanding the foregoing provisions of this paragraph to the contrary, the foregoing restrictions set forth in this paragraph shall immediately and automatically terminate and cease to apply with respect to Company and its Affiliates without any further action in the event that (A) Spark's board of directors (or a committee thereof) approves, or Spark enters into a definitive agreement providing for, a Business Combination, (B) a third party commences, or announces an intention to commence, a tender or exchange offer, the consummation of which would constitute a Business Combination and (i) the board of directors (or a committee thereof) of Spark at any time recommends, or publicly discloses an intention to recommend, that Spark's shareholders tender their shares into such tender or exchange offer (as it may have been amended), or (ii) the board of directors (or a committee thereof) of Spark does not, within ten business days from the date such offer is first published, sent or given to shareholders, recommend that Spark's shareholders not tender their shares into such tender or exchange offer (as it may have been amended) or at any time thereafter changes its recommendation with respect to such tender or exchange offer (as it may have been amended) or takes any similar action that results in such board of directors no longer recommending that Spark's shareholders not tender their shares into such tender or exchange offer, (C) any person or "group" (as such term is used under the Exchange Act) commences, or announces an intention to commence, any "solicitation" of "proxies" (as such terms are used under the Exchange Act) or consents with respect to the voting securities of Spark in which such person or group would, if successful, elect or acquire the ability to elect a majority of the members of the board of directors of Spark or result in a majority of the seats of the board of directors of Spark becoming vacant, or (D) with respect to any pending tender offer or exchange offer for shares of Spark, the consummation of which would constitute a Business Combination, Spark's board of directors (or any committee thereof) no longer recommends that its shareholders tender their shares into such tender or exchange offer (as it may have been amended). The parties further acknowledge that Spark may enter into additional standstill agreements similar to the provision in this paragraph with third parties in connection with such third parties evaluating a possible transaction with Spark ("Other Standstill Agreement"), and the parties hereby agree that, to the extent that any such Other Standstill Agreement contains provisions that are more favorable to the third party than the provisions in this paragraph, this Agreement shall be deemed automatically amended to incorporate such more favorable terms as set forth in the Other Standstill Agreement. Following the expiration of the Restricted Period, no provision of this

agreement shall restrict Company or its Affiliates, directly or indirectly, from taking any action described in this paragraph 7 (including using for the purpose of such action, but not otherwise disclosing any Confidential Information). For the avoidance of doubt, nothing in this paragraph 7 shall prevent the Company from entering into license, collaboration or other similar agreements in the ordinary course of business.

8. **Passive Investments.** The provisions of paragraph 7 shall not prohibit, Company or its Affiliates from owning and/or acquiring voting shares or other ownership interests in Spark provided that Company together with its Affiliates owns, in the aggregate, not more 5% of such voting securities. The provisions of paragraph 7 shall not prohibit passive investments by a pension or employee benefit plan or trust for Company's or its Affiliates employees so long as such investments are directed by independent trustees, administrators or employees to whom no Confidential Information has been disclosed.

9. **Term and Termination.** This Agreement will terminate one (1) year after the Effective Date, or may be terminated by either party at any time upon thirty (30) days written notice to the other party. The receiving party's obligations under this Agreement will survive termination or expiration of this Agreement for a period of five (5) years after the termination or expiration hereof and will be binding upon the receiving party's heirs, successors and assigns after such termination or expiration; provided that the rights and obligations in Section 7 shall expire as set forth therein.

10. **Notice.** Any notice to be given hereunder by either party to the other will be in writing addressed to the address set forth in the opening paragraph above (unless either provides written notice of a different address) and will be deemed given: (a) upon delivery if sent by overnight courier; or (b) three (3) days after deposit in the mail if sent by pre-paid, certified mail, return receipt requested mail.

11. **General.** This Agreement constitutes the entire agreement between the parties with respect to the subject matter of this Agreement. This Agreement supersedes all previous agreements between the parties relating to the subject matter hereof. The headings to sections of this Agreement are inserted for convenience only and will not be deemed a part hereof or affect the construction or interpretation of any provision hereof. No provision of this Agreement will be deemed waived, amended or modified by either party, unless such waiver, amendment or modification is made in writing and signed by both parties. This Agreement will be governed by and construed in accordance with the laws of the State of Delaware, without reference to conflict of laws principles. Any dispute under this Agreement may be brought in the state courts and the Federal courts located in the State of Delaware, and the parties hereby consent to the personal jurisdiction and venue of these courts. Each party acknowledges and agrees that money damages would not be a sufficient remedy for any breach (or threatened breach) of this Agreement by the receiving party or its Affiliates or representatives and that the disclosing party shall be entitled to equitable relief, including injunction and specific performance, as a remedy for any such breach (or threatened breach), without proof of damages, and each party further agrees to waive, and use its best efforts to cause its Affiliates and representatives to waive any requirement for the securing or posting of any bond in connection with any such remedy. Such remedies shall not be the exclusive

remedies for a breach of this Agreement, but will be in addition to all other remedies available at law or in equity. If any provision of this Agreement is found by a proper authority to be unenforceable or invalid, such unenforceability or invalidity will not render this Agreement unenforceable or invalid as a whole, and such provision will be changed and interpreted so as to best accomplish the objectives of such unenforceable or invalid provision within the limits of applicable law or applicable court decisions. Neither party will assign or transfer any rights or obligations under this Agreement without the prior written consent of the other party, provided that a party may assign this Agreement to an Affiliate or successor without the consent of the other party in connection with a merger, reorganization, consolidation, change of control, sale of substantially all assets or similar transaction of the assigning party. Neither party will export, directly or indirectly, any technical data acquired from the other pursuant to this Agreement or any product utilizing any such data to any country for which the U.S. Government or any agency thereof at the time of export requires an export license or other governmental approval without first obtaining such license or approval. This Agreement may be executed in one (1) or more counterparts, each of which shall be an original and all of which together shall constitute one and the same document. Signatures delivered by facsimile, PDF or electronic mail shall be as effective as original signatures.

* * *

IN WITNESS WHEREOF, duly authorized representatives of the parties have executed this Mutual Non-Disclosure Agreement as of the Effective Date.

SPARK THERAPEUTICS, INC.

By: /s/ Joseph W. LaBarge
Name: Joseph W. LaBarge
Title: Chief Legal Officer

ROCHE HOLDINGS INC.

By: /s/ Bruce Resnick
Name: Bruce Resnick
Title: Vice President