

Recro Pharma, Inc.
Form 424B5
August 16, 2016
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Filed Pursuant to Rule 424(b)(5)
Registration No. 333-206492

The information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus are not offers to sell these securities, and we are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to completion, dated August 15, 2016

PROSPECTUS SUPPLEMENT

To Prospectus dated September 1, 2015

Shares

RECRO PHARMA, INC.

Common Stock

\$ per share

Recro Pharma, Inc. is offering shares of common stock. Trading Symbol: Nasdaq Capital Market REPH.

The last reported sale price of our common stock on the Nasdaq Capital Market on August 12, 2016 was \$8.91 per share.

We are an emerging growth company as defined by the Jumpstart Our Business Startups Act of 2012 and, as such, we are eligible for reduced public company reporting requirements. Please see Summary Implications of Being an Emerging Growth Company.

Investing in our common stock involves a high degree of risk. See **Risk Factors** beginning ~~page~~ **page S-10** of this prospectus supplement, page 5 of the accompanying prospectus and under similar headings in the documents incorporated by reference into this prospectus

supplement and the accompanying prospectus.

	Per Share	Total
Public offering price	\$	\$
Underwriting discounts and commissions ⁽¹⁾	\$	\$
Proceeds, before expenses, to us	\$	\$

⁽¹⁾ See Underwriting for additional disclosure regarding underwriting discounts, commissions and estimated offering expenses, including expenses for which we have agreed to reimburse the underwriters.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the shares to purchasers on August , 2016.

Sole Book-Running Manager

Piper Jaffray

Co-Manager

Janney Montgomery Scott

The date of this prospectus supplement is August , 2016.

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You should rely only on the information contained in or incorporated by reference into this prospectus supplement or the accompanying prospectus. We have not, and the underwriters have not, authorized any other person to provide you with different information. This prospectus supplement and the accompanying prospectus are not an offer to sell, nor are they seeking an offer to buy, these securities in any state where the offer or sale is not permitted. The information in this prospectus supplement and the accompanying prospectus are complete and accurate as of the date the information is presented, but the information may have changed since that date.

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus form part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission, or SEC, utilizing a shelf registration process. This document contains two parts. The first part consists of this prospectus supplement, which provides you with specific information about this offering. The second part, the accompanying prospectus, provides more general information, some of which may not apply to this offering. Generally, when we refer only to the prospectus supplement, we are referring to both parts combined. This prospectus supplement may add, update or change information contained in the accompanying prospectus. To the extent that any statement we make in this prospectus supplement is inconsistent with statements made in the accompanying prospectus or any documents incorporated by reference herein or therein, the statements made in this prospectus supplement will be deemed to modify or supersede those made in the accompanying prospectus and such documents incorporated by reference herein and therein. You should read this prospectus supplement and the accompanying prospectus, including the information incorporated by reference herein and therein, and any related free writing prospectus that we have authorized for use in connection with this offering.

You should rely only on the information that we have included or incorporated by reference in this prospectus supplement, the accompanying prospectus and any related free writing prospectus that we may authorize to be provided to you. We have not authorized any dealer, salesman or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or any related free writing prospectus that we may authorize to be provided to you. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or any related free writing prospectus. This prospectus supplement, the accompanying prospectus and any related free writing prospectus do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus supplement, the accompanying prospectus or any related free writing prospectus constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction.

You should not assume that the information contained in this prospectus supplement, the accompanying prospectus or any related free writing prospectus is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference herein or therein is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus supplement, the accompanying prospectus or any related free writing prospectus is delivered, or securities are sold, on a later date.

This prospectus supplement contains or incorporates by reference summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been or will be filed or have been or will be incorporated by reference as exhibits to the registration statement of which this prospectus supplement forms a part, and you may obtain copies of those documents as described in this prospectus supplement under the heading **Where You Can Find More Information**.

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PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained in other parts of this prospectus supplement and the accompanying prospectus and in the documents we incorporate by reference. Because it is only a summary, it does not contain all of the information that you should consider before investing in shares of our common stock and it is qualified in its entirety by, and should be read in conjunction with, the more detailed information appearing elsewhere in this prospectus supplement, the accompanying prospectus, any applicable free writing prospectus and the documents incorporated by reference herein and therein. You should read all such documents carefully, especially the risk factors and our consolidated financial statements and the related notes included or incorporated by reference herein or therein, before deciding to buy shares of our common stock. Unless the context requires otherwise, references in this prospectus supplement to Recro, we, us and our refer to Recro Pharma, Inc. and our subsidiaries.

Company Overview

We are a revenue-generating, specialty pharmaceutical company focused on products for hospitals and ambulatory care settings, and are currently developing non-opioid product candidates for treatment of serious acute pain. As our product candidates are not in the opioid class of drugs, we believe they will overcome many of the issues associated with commonly prescribed opioid therapeutics, including addiction, misuse/diversion, respiratory distress and constipation while maintaining analgesic, or pain relieving, effect. In addition to our focus on developing our current product candidates, we also own and operate a contract manufacturing facility in Gainesville, Georgia.

Product Candidates

Injectable Meloxicam

Our lead product candidate is a proprietary injectable form of meloxicam. Meloxicam is a long-acting preferential COX-2 inhibitor and the oral form of meloxicam has been marketed by Boehringer Ingelheim Pharmaceuticals, Inc. since the 1990s as Mobic®. Intravenous, or IV, meloxicam has successfully completed five clinical trials in the treatment of moderate to severe pain, including a recently completed pivotal Phase III clinical trial. We believe injectable meloxicam compares favorably to competitive therapies in onset of pain relief, duration of pain relief, extent of pain relief and time to peak analgesic effect.

Based on feedback from the U.S. Food and Drug Administration, or FDA, we initiated a Phase III program that includes two pivotal clinical trials, as well as other trials, which began dosing in the first quarter of 2016, and we expect to enroll a total of approximately 1,100 patients in these trials. In July 2016 we announced positive results from one pivotal clinical trial, evaluating pain relief over a 48-hour period in a hard tissue, post-operative pain model (bunionectomy). In the trial, IV meloxicam achieved the primary endpoint of a statistically significant difference in Summed Pain Intensity Difference, or SPID, over the first 48 hours, or SPID48, compared to placebo. In this multicenter, randomized, double-blind, placebo-controlled clinical trial, 201 patients were enrolled and randomly assigned to receive a postoperative regimen of IV meloxicam (30mg bolus injection over 15-30 seconds) or placebo in a 1:1 ratio, once every 24 hours for up to three doses following bunionectomy surgery, a representative hard tissue surgery. The IV meloxicam treatment arm demonstrated a statistically significant reduction in SPID48 (p=0.0034) compared to the placebo arm. The study also achieved 15 of the 19 secondary endpoints, including statistically significant differences in SPID6 (p=0.0153), SPID12 (p=0.0053), SPID24 (p=0.0084), SPID24-48 (p=0.0050), time to first use of rescue medication (p=0.0076), and several other rescue use and pain relief metrics during the first 48 hours, compared to placebo. The safety results demonstrated that IV meloxicam was well tolerated with no serious adverse events or bleeding events in

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the IV meloxicam-treated patients. The most common adverse events, or AEs, occurring in at least 3% of IV meloxicam-treated patients, were nausea, headache, pruritus, constipation vomiting, dizziness, flushing and somnolence, and were comparable to the placebo group. The IV meloxicam-treated patients experienced injection site pain and injection site erythema at a rate comparable to placebo. The majority of treatment emergent AEs, or TEAEs, were mild in nature and there were no discontinuations due to AEs. There were no meaningful differences between treatment groups in vital signs, ECGs or clinical lab assessments.

We are continuing to enroll patients in the other pivotal clinical trial, designed to demonstrate pain relief over a 24-hour period in a soft tissue, post-operative pain model (abdominoplasty). We are also currently enrolling patients following a variety of surgical conditions in additional safety studies of IV meloxicam. The populations selected for inclusion in the safety studies are intended to replicate real world use of injectable meloxicam. We expect to report initial results of the abdominoplasty trial by the end of 2016. If the results of that pivotal trial are positive, and if we continue to observe a favorable safety profile in our additional safety studies, we anticipate filing a new drug application, or NDA, for IV meloxicam approximately mid-summer 2017. We plan to pursue a Section 505(b)(2) regulatory strategy for IV meloxicam.

Dex-IN

Our pipeline also includes Dex-IN, a proprietary intranasal formulation of dexmedetomidine, or Dex, which successfully completed a Phase II clinical trial in post-operative pain in 2015. Based on feedback from the FDA regarding Dex-IN's benefit-risk profile, we have determined not to pursue Dex-IN in post-operative pain due to time, cost and associated risk and we plan to pursue Dex-IN in peri-procedural pain. Dex is a selective alpha-2 adrenergic agonist that has demonstrated analgesic properties in multiple studies. If approved, Dex-IN would also be the first and only approved peri-procedural pain drug in its class of drugs.

Other Product Candidates

In addition to injectable meloxicam and Dex-IN, our pipeline also includes a sublingual formulation of Dex, Dex-SL, which may be appropriate for use in treating chronic pain, and Fadolmidine, or Fado, a selective alpha-2 agonist which has been shown to be effective in a post-bunionectomy Phase II pain study conducted by Orion. Based on preclinical data, we believe Fado also shows promise in neuropathic pain.

We own the worldwide rights to IV meloxicam, which we acquired from Alkermes plc, or Alkermes, in April 2015. Under our license agreement with Orion, upon regulatory approval, we will have commercial rights for Dex-IN and Dex-SL worldwide, except for Europe, Turkey, and the CIS, for use in the treatment of pain in humans, in any dosage form for transdermal, transmucosal (including sublingual and intranasal), topical, enteral or pulmonary (inhalational) delivery, but specifically excluding delivery vehicles for administration by injection or infusion. Similarly, under our license agreement with Orion, upon regulatory approval, we will have commercial rights related to Fado in the same territory for all indications in humans.

Contract Manufacturing

In addition to developing product candidates, we, through our subsidiary, Recro Gainesville, LLC, or Gainesville, own and operate a 97,000 square foot, U.S. Drug Enforcement Administration, or DEA, licensed facility in Gainesville, Georgia, that manufactures five commercial products and receives royalties associated with the sales of these products. We manufacture the following products for our commercial partners: Ritalin LA[®], Focalin XR[®], Verelan PM[®], generic Verapamil and Zohydro ER[®], as well as development stage products.

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Intellectual Property

We own and license patents and patent applications directed to the sale, use, manufacturing and formulating of injectable meloxicam. A licensed and issued patent for manufacturing injectable meloxicam provides protection of injectable meloxicam through 2030, subject to extension.

We own patents and patent applications directed to the composition of, manufacturing of, and formulating of Zohydro ER. The patent protection for Zohydro ER provides for protection through 2034, subject to extension.

We hold patent applications directed to the analgesia indication and formulations of Dex, and we are progressing through the patent application process globally. We believe that the combination of the unique indication and formulations, as well as the significant dosing differences with the routes of administration, will allow us to, with the applications filed, protect our products from other Dex entrants to the analgesia field, regardless of formulation. Our strategy, if successful in obtaining patent protection, could lead to protection of our product candidates through 2030, subject to extension.

Our Strategy

We intend to maximize the value of our product candidates. Our strategy to achieve this goal includes:

Focusing on developing IV meloxicam for the treatment of acute post-operative pain.

Evaluating Dex-IN for use in short clinical procedures associated with pain and discomfort that are performed in settings where IV access is not typically available.

Developing our manufacturing business.

Leveraging our management and development experience for other indications and product candidates.

Entering into strategic partnerships to maximize the potential of our product candidates outside of the United States.

Gainesville Transaction

On April 10, 2015, we completed our acquisition from Alkermes plc, or Alkermes, of certain assets, including the worldwide rights to injectable meloxicam and the contract manufacturing facility, royalty and formulation business now operating through Gainesville. We refer to the acquisition herein as the Gainesville Transaction. The Gainesville Transaction transformed our business through the addition of a revenue-generating business and the increase in our workforce as a result of the addition of the Gainesville employees. The consideration paid in connection with the Gainesville Transaction consisted of \$50.0 million, a \$4.0 million working capital adjustment and a seven-year warrant to purchase 350,000 shares of our common stock at an exercise price of \$19.46 per share. In addition, we may be required to pay up to an additional \$120.0 million in milestone payments (including \$10 million payable upon NDA filing and \$30 million upon regulatory approval, and other revenue target milestones) and royalties on future product net sales related to injectable meloxicam. The up-front payment was funded with \$50.0 million in borrowings under a credit agreement that we entered into with OrbiMed Royalty Opportunities II, LP, or OrbiMed, and cash on hand.

Credit Facility with OrbiMed

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In April 2015, we entered into a credit agreement with OrbiMed. Under the credit agreement, OrbiMed provided us with a term loan in the original principal amount of \$50.0 million. The unpaid principal amount under the credit agreement is due and payable in April 2020. As of June 30, 2016, the outstanding principal balance under the credit agreement was \$31.0 million.

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We made principal payments of approximately \$2.6 million to OrbiMed during the six months ended June 30, 2016. Since our acquisition in April 2015 of the manufacturing business, we have paid down approximately \$19.0 million, or 38%, of the original \$50.0 million of senior secured term loan from the business's excess cash flow generated. In August 2016, we made an additional payment of \$3.7 million which was 50% of the excess cash flow generated during the second quarter of 2016.

The credit agreement also provides for certain mandatory prepayment events, including a quarterly excess cash flow prepayment requirement at OrbiMed's request. We may make voluntary prepayments in whole or in part, subject to the payment of premiums and exit fees set forth in the credit agreement. Each quarter, in the event that we generate excess cash flow, as defined in the credit agreement, from our Gainesville facility, OrbiMed has the option to require us to prepay the unpaid principal amount of the loan in an aggregate principal amount equal to the excess cash flow, or any lesser amount as may be requested by OrbiMed. The interest rate under the credit agreement is equal to LIBOR plus 14.0%, with a 1.0% LIBOR floor. The credit agreement contains certain financial and other covenants, including a minimum liquidity requirement and minimum revenue targets and maximum leverage ratios, and includes limitations on, among other things, the incurrence of additional indebtedness, paying dividends in some circumstances, acquisitions and some investments. Pursuant to the credit agreement, we also issued OrbiMed a warrant to purchase an aggregate of 294,928 shares of our common stock at an exercise price of \$3.28 per share, subject to certain adjustments.

Financial Information

We have a limited operating history. We have funded our operations to date primarily from proceeds received from private placements of convertible preferred stock, convertible notes and common stock and our initial public offering of common stock, or IPO. On March 12, 2014, we announced the closing of the IPO of 4,312,500 shares of common stock, including the full exercise of the underwriters' over-allotment, at a public offering price of \$8.00 per share. Total gross proceeds from the IPO were \$34.5 million before deducting underwriting discounts and commissions and other offering expenses payable by us resulting in net proceeds of \$30.3 million. On July 7, 2015, we closed a Private Placement with certain accredited investors in which we sold 1,379,311 shares of common stock at a price per share of \$11.60, for net proceeds of approximately \$14.8 million. As of June 30, 2016, we have sold 643,940 shares of common stock under a common stock purchase agreement with Aspire Capital Fund, LLC for net proceeds of \$4.2 million.

Corporate Information

We were incorporated under the laws of the Commonwealth of Pennsylvania in November 2007. Our principal executive offices are located at 490 Lapp Road, Malvern, PA 19355, and our telephone number is (484) 395-2470.

Available Information

Our website address is www.recropharma.com. The information contained in, or accessible through, our website does not constitute part of this prospectus supplement. We make available free of charge on our website our annual, quarterly and current reports, including amendments to such reports, as soon as reasonably practicable after we electronically file such material with, or furnish such material to, the Securities and Exchange Commission, or the SEC. Information contained on our website is not incorporated by reference into this prospectus supplement or the accompanying prospectus, and you should not consider information contained on our website as part of this prospectus supplement or the accompanying prospectus.

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Risks Associated With Our Business

Our business is subject to a number of risks of which you should be aware before making an investment decision. These risks are discussed more fully in the Risk Factors section of this prospectus supplement immediately following this prospectus supplement summary and in Part I, Item 1A Risk Factors of our Annual Report on Form 10-K filed with the SEC on March 24, 2016, which is incorporated by reference in this prospectus supplement. These risks include the following:

We have incurred significant losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future.

We have only recently begun to generate revenue through our acquisition of our contract manufacturing facility, royalty and formulation business, but we may never be profitable.

Revenues from our manufacturing business are dependent on a small number of commercial partners, and the loss of one of these partners, or a decline in their orders, may adversely affect our business.

We have incurred significant indebtedness, which could adversely affect our business.

We depend substantially on the successful completion of Phase II and III clinical trials for our product candidates. The positive clinical results obtained for our product candidates in earlier clinical studies may not be repeated in Phase II or III and, thus, we may never receive regulatory approval of our product candidates.

Even if we obtain FDA approval for injectable meloxicam, Dex-IN or our other product candidates in the United States, we may never obtain approval for or commercialize our products outside of the United States, which would limit our ability to realize their full market potential.

We use third parties, including Malvern Consulting Group, Inc., an entity with which our management is affiliated, to assist with conducting, supervising and monitoring portions of our clinical studies, and if those third parties perform in an unsatisfactory manner, it may harm our business.

We are subject to intense competition and, if we are unable to compete effectively, our product candidates may not reach their commercial potential.

Implications of Being an Emerging Growth Company

As a company with less than \$1 billion in revenue during our last fiscal year, we qualify as an emerging growth company as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. As an emerging growth company, we are permitted and intend to take advantage of specified reduced disclosure and other requirements that are otherwise applicable generally to public companies. These provisions include:

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the requirement to provide only two years of audited financial statements in addition to any required unaudited interim financial statements, with correspondingly reduced Management's Discussion and Analysis of Financial Condition and Results of Operations disclosure;

reduced disclosure about our executive compensation arrangements;

no non-binding advisory votes on executive compensation or golden parachute arrangements; and

an exemption from the auditor attestation requirement in the assessment of our internal control over financial reporting under Section 404(b) of the Sarbanes Oxley Act of 2002.

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We have elected to use the extended transition period for complying with new or revised accounting standards under Section 102(b)(1) of the JOBS Act. This election allows us to delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. As a result of this election, our financial statements may not be comparable to companies that comply with public company effective dates.

We will remain an emerging growth company until the earliest of: (1) the last day of the fiscal year in which we have total annual gross revenues of \$1 billion or more; (2) December 31, 2019, which is the last day of our fiscal year following the fifth anniversary of the date of the completion of our IPO in March 2014; (3) the date on which we have issued more than \$1 billion in nonconvertible debt during the previous three years; or (4) the date on which we are deemed to be a large accelerated filer under the rules of the SEC based on the market value of our common stock held by non-affiliates.

To the extent that we continue to qualify as a smaller reporting company, as such term is defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, or the Exchange Act, after we cease to qualify as an emerging growth company, certain of the exemptions available to us as an emerging growth company may continue to be available to us as a smaller reporting company, including: (1) not being required to comply with the auditor attestation requirements of our internal control over financial reporting under Section 404(b) of the Sarbanes Oxley Act of 2002; (2) scaled executive compensation disclosures; and (3) the requirement to provide only two years of audited financial statements, instead of three years.

Summary Financial Data

We derived the consolidated statements of operations data presented below for the years ended December 31, 2015 and 2014 from our audited financial statements. The consolidated statements of operations data for the six months ended June 30, 2016 and 2015, and the consolidated balance sheet data as of June 30, 2016, are derived from our unaudited interim financial statements. We have prepared the unaudited interim financial statements on the same basis as the audited financial statements and have included, in our opinion, all adjustments, consisting only of normal recurring adjustments that we consider necessary for a fair presentation of the financial information set forth in those statements. Our historical results are not necessarily indicative of the results that should be expected in the future, and our interim results are not necessarily indicative of the results that should be expected for the full year or any other period. The following information should be read in conjunction with our consolidated financial statements and related notes incorporated by reference in this prospectus supplement and the accompanying prospectus from our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 and our Quarterly Report on Form 10-Q for the quarter ended June 30, 2016.

The as adjusted balance sheet data as of June 30, 2016 reflects receipt of the estimated net proceeds of \$ million from the sale of the common stock in this offering at the public offering price of \$ per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

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	Year ended December 31,		Six months ended June 30,	
	2015	2014	2016	2015
	(in thousands, except share and per share data)			
Statements of Operations Data:				
Revenue:				
Manufacturing, royalty and profit sharing revenue	\$	49,284	\$	34,072
Research and development revenue		2,668		949
				1,956
Total revenue		51,952		35,021
				18,660
Operating expenses:				
Cost of sales (excluding amortization of intangible assets)		28,054		19,818
Research and development		12,281		7,874
General and administrative		13,017		3,998
Amortization of intangible assets		1,884		1,291
Change in warrant valuation		(1,560)		(354)
Change in contingent consideration		5,246		4,512
				2,000
Total operating expenses		58,922		11,872
				46,817
				22,430
Operating loss		(6,970)		(11,872)
				(11,796)
				(3,770)
Other income (expense):				
Interest income		12		11
Interest expense		(5,560)		(4,273)
				17
				8
Net loss before income taxes		(12,518)		(16,134)
				(14,608)
				(5,450)
Income tax benefit		15,551		184
Net income (loss)		3,033		(16,134)
Accretion of redeemable convertible preferred stock				(1,270)
Net income (loss) applicable to common shareholders		3,033		(17,404)
				(14,424)
				(5,450)
Basic net income (loss) per common share	\$	0.36	\$	(2.79)
			\$	(1.53)
				(0.70)
Diluted net income (loss) per common share	\$	0.21	\$	(2.79)
				(1.53)
				(0.70)
Weighted average basic common share outstanding		8,491,025		6,238,581
				9,398,288
				7,799,282
Weighted average diluted common share outstanding		8,749,234		6,238,581
				9,398,288
				7,799,282

	As of June 30, 2016	
	Actual	As Adjusted ⁽¹⁾
	(in thousands)	
Balance Sheet Data:		
Cash and cash equivalents	\$	14,845

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Working capital	22,870
Total assets	133,683
Debt (including current portion)	31,038
Total shareholders' equity	31,307

(1) As adjusted to reflect the sale of the _____ shares being offered in this offering, and the receipt of the estimated net proceeds of \$ _____ million from the sale of these shares, at the public offering price of \$ _____ per share and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

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THE OFFERING

Common stock offered by us	shares of common stock
Common stock to be outstanding after this offering	shares based on the assumed offering price of \$8.91 per share (the last reported sale price of our common stock on The Nasdaq Capital Market on August 12, 2016).
Use of proceeds	We estimate that the net proceeds to us from this offering, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, will be approximately \$ million. We intend to use the net proceeds of the proposed offering to fund our ongoing Phase III pivotal clinical trial and safety studies of injectable meloxicam and for general corporate purposes. See Use of Proceeds.
Risk factors	An investment in our common stock involves a high degree of risk. See Risk Factors beginning on page S-10 of this prospectus supplement, page 5 of the accompanying prospectus and the similarly titled sections in the documents incorporated by reference into this prospectus supplement and the accompanying prospectus.
Nasdaq Capital Market symbol	REPH
Outstanding Shares	

The number of shares of our common stock to be outstanding after this offering is based on 9,868,255 shares of our common stock outstanding as of June 30, 2016, and excludes:

2,197,143 shares of our common stock issuable upon the exercise of stock options outstanding as of June 30, 2016 at a weighted-average exercise price of \$6.92 per share;

32,200 shares of our common stock issuable upon the settlement of restricted stock units outstanding as of June 30, 2016;

174 shares of our common stock available for future issuance as of June 30, 2016 under our 2008 Stock Option Plan;

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899,698 shares of our common stock available for future issuance as of June 30, 2016 under our Amended and Restated Equity Incentive Plan; and

784,928 shares of our common stock issuable upon the exercise of outstanding warrants as of June 30, 2016 with a weighted average exercise price of \$12.05 per share.

Except as otherwise indicated herein, all information in this prospectus supplement, including the number of shares that will be outstanding after this offering, does not assume or give effect to the exercise of options or warrants outstanding as of June 30, 2016.

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RISK FACTORS

An investment in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should carefully consider the risks described below and those discussed under the Section captioned Risk Factors contained in our Annual Report on Form 10-K for the fiscal year ended December 31, 2015, which is incorporated by reference in this prospectus supplement and the accompanying prospectus, together with other information in this prospectus supplement, the accompanying prospectus, the information and documents incorporated by reference herein and therein, and in any free writing prospectus that we have authorized for use in connection with this offering. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment.

Risks Related to This Offering

Management will have broad discretion as to the use of the proceeds from this offering, and we may not use the proceeds effectively.

Our management will have broad discretion with respect to the use of proceeds of this offering, including for any of the purposes described in the section of this prospectus supplement entitled Use of Proceeds. You will be relying on the judgment of our management regarding the application of the proceeds of this offering. The results and effectiveness of the use of proceeds are uncertain, and we could spend the proceeds in ways that you do not agree with or that do not improve our results of operations or enhance the value of our common stock. Our failure to apply these funds effectively could harm our business, delay the development of our product candidates and cause the price of our common stock to decline.

You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase.

Since the public offering price for our common stock in this offering is substantially higher than the net tangible book value per share of our common stock outstanding prior to this offering, you will suffer immediate and substantial dilution in the net tangible book value of the common stock you purchase in this offering. See the section titled Dilution below for a more detailed discussion of the dilution you will incur if you purchase shares in this offering.

Issuances of shares of common stock or securities convertible into or exercisable for shares of common stock following this offering, as well as the exercise of options and warrants outstanding, will dilute your ownership interests and may adversely affect the future market price of our common stock.

As a development stage company we will need additional capital to fund the development and commercialization of our product candidates. We may seek additional capital through a combination of private and public equity offerings, debt financings, strategic partnerships and alliances and licensing arrangements, which may cause your ownership interest to be diluted. In addition, we have a significant number of options and warrants to purchase shares of our common stock outstanding. If these securities are exercised, you may incur further dilution. Moreover, to the extent that we issue additional options or warrants to purchase, or securities convertible into or exchangeable for, shares of our common stock in the future and those options, warrants or other securities are exercised, converted or exchanged, shareholders may experience further dilution.

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A significant portion of our total outstanding shares are eligible to be sold into the market in the near future, which could cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market, either by us or by our current shareholders, or the perception that these sales could occur, could cause a decline in the market price of our securities. Such sales, along with any other market transactions, could adversely affect the market price of our common stock.

Upon completion of this offering, based on our shares outstanding as of August , 2016, we will have shares of common stock outstanding. Of these shares, are subject to a contractual lock-up with the underwriters for this offering for a period of 90 days following this offering. These shares can be sold, subject to any applicable volume limitations under federal securities laws, after the earlier of the expiration of, or release from, the 90-day lock-up period. The balance of our outstanding shares of common stock, including any shares purchased in this offering, may be resold into the public market immediately without restriction, unless owned or purchased by our affiliates. Moreover, after this offering, some of the holders of our common stock will have the right, subject to specified conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders.

As of August 12, 2016, there were approximately 2.3 million shares subject to outstanding options and restricted stock unit awards or that are otherwise issuable under our equity compensation plans, all of which shares we have registered under the Securities Act of 1933, as amended, on a registration statement on Form S-8. These shares can be freely sold in the public market upon issuance, subject to volume limitations applicable to affiliates and the lock-up agreements described above, to the extent applicable.

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NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein contain forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical fact, contained in this prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words anticipate, believe, estimate, expect, intend, may, plan, predict, project, potential, will, would, could, should, continue, and similar expressions are intended to identify forward-looking statements, although not forward-looking statements contain these identifying words.

The forward-looking statements in this prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein include, among other things, statements about:

the results and timing of our clinical trials of intravenous and intramuscular, or injectable, meloxicam, Dex or our other product candidates, and any future clinical and preclinical studies;

unfavorable new clinical data and additional analyses of existing clinical data;

whether results of early clinical trials will be indicative of the results of future clinical trials and whether interim results from a clinical trial will be predictive of the final results of the clinical trial;

the ability to obtain and maintain regulatory approval of our product candidates, and the labeling under any approval that we may obtain;

regulatory developments in the United States and foreign countries;

our plans to develop and commercialize our product candidates;

our ability to raise future financing for continued development;

the performance of our third-party suppliers and manufacturers;

our ability to obtain patent protection and defend our intellectual property rights;

our ability to successfully implement our strategy;

our ability to maintain our relationships and contracts with our commercial partners;

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our ability to comply with stringent U.S. and foreign government regulation in the manufacture of pharmaceutical products, including Good Manufacturing Practice, or cGMP, compliance and U.S. Drug Enforcement Agency, or DEA, compliance;

our ability to successfully integrate our acquisition of certain assets acquired in the Gainesville Transaction; and

our ability to meet required debt payments and operate under increased leverage and associated lending covenants.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this prospectus supplement, particularly in the **Risk Factors** section, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

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You should read this prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein completely and with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements.

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USE OF PROCEEDS

We estimate that the net proceeds from our issuance and sale of _____ shares of common stock in this offering will be \$ _____ million, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds of the proposed offering to fund our ongoing Phase III pivotal clinical trial and safety studies of injectable meloxicam and for general corporate purposes.

We have not determined the amounts we plan to spend on any of the areas listed above or the timing of these expenditures. As a result, our management will have broad discretion in allocating the net proceeds from this offering. Pending application of the net proceeds as described above, we intend to invest the net proceeds of this offering in short-term, investment-grade, interest-bearing securities.

These expected uses represent our intentions based upon our current plans and business conditions, which could change in the future as our plans and business conditions evolve. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development, the status of and results from clinical trials, as well as any new collaborations that we may enter into with third parties for our product candidates, and any unforeseen cash needs. As a result, our management will have broad discretion in the application of the net proceeds from this offering, and investors will be relying on the judgment of our management regarding the application of the net proceeds from this offering. The timing and amount of our actual expenditures will be based on many factors, including cash flows from operations and the anticipated growth of our business.

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PRICE RANGE OF OUR COMMON STOCK

Our common stock has been listed on the Nasdaq Capital Market under the symbol REPH since our initial public offering on March 12, 2014. Prior to that time, there was no public market for our common stock. The following table sets forth the high and low sale prices per share for our common stock on the Nasdaq Capital Market for the periods indicated:

	HIGH	LOW
2016		
First Quarter	\$ 9.20	\$ 5.59
Second Quarter	\$ 8.78	\$ 5.95
Third Quarter (through August 12, 2016)	\$ 12.50	\$ 7.51
2015		
First Quarter	\$ 9.93	\$ 2.80
Second Quarter	15.40	\$ 6.56
Third Quarter	\$ 18.30	\$ 11.06
Fourth Quarter	12.86	\$ 7.58
2014		
First Quarter (beginning March 12, 2014)	\$ 9.88	\$ 7.00
Second Quarter	\$ 8.49	\$ 5.01
Third Quarter	\$ 8.10	\$ 2.71
Fourth Quarter	\$ 3.39	\$ 2.36

On August 12, 2016, the closing price of our common stock as reported by the Nasdaq Capital Market was \$8.91 per share. As of August 12, 2016, there were approximately 10 holders of record of our common stock. We believe that the number of beneficial owners of our common stock at that date was substantially greater.

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DIVIDEND POLICY

We have never declared or paid any cash dividends on our common stock and our ability to pay cash dividends is currently prohibited by the terms of our credit facility with OrbiMed. We do not anticipate paying cash dividends on our common stock in the foreseeable future. Payment of future dividends, if any, on our common stock will be at the discretion of our board of directors after taking into account various factors, including our financial condition, operating results, anticipated cash needs and plans for expansion.

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Table of Contents**CAPITALIZATION**

The following table sets forth our capitalization as of June 30, 2016:

on an actual basis; and

on an as adjusted basis to further reflect the sale by us of _____ shares of our common stock in this offering at the public offering price of \$ _____ per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

You should read the data set forth in the table below in conjunction with our consolidated financial statements, including the related notes, and Management's Discussion and Analysis of Financial Condition and Results of Operations from our Quarterly Report on Form 10-Q for quarter ended June 30, 2016, which are incorporated by reference into this prospectus supplement.

(amounts in thousands, except share and per share data)	June 30, 2016	June 30, 2016 (as adjusted)
Cash and cash equivalents	\$ 14,845	\$
Debt (including current portion)	31,038	
Stockholders' equity:		
Preferred stock, \$0.01 par value. Authorized, 10,000,000 shares; none issued and outstanding, actual and as adjusted		
Common stock, \$0.01 par value, Authorized, 50,000,000 shares; issued and outstanding, 9,868,255, actual; and _____ shares outstanding, as adjusted	99	
Additional paid-in capital	76,695	
Accumulated deficit	(45,487)	
Total shareholders' equity	31,307	
Total capitalization	\$ 62,345	\$

The foregoing table and calculations are based on 9,868,255 shares of our common stock outstanding as of June 30, 2016, and excludes:

2,197,143 shares of our common stock issuable upon the exercise of stock options outstanding as of June 30, 2016 at a weighted-average exercise price of \$6.92 per share;

32,200 shares of our common stock issuable upon the settlement of restricted stock units outstanding as of June 30, 2016;

174 shares of our common stock available for future issuance as of June 30, 2016 under our 2008 Stock Option Plan;

899,698 shares of our common stock available for future issuance as of June 30, 2016 under our Amended and Restated Equity Incentive Plan; and

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784,928 shares of our common stock issuable upon the exercise of outstanding warrants as of June 30, 2016 with a weighted average exercise price of \$12.05 per share.

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DILUTION

If you invest in our common stock, your interest will be diluted immediately to the extent of the difference between the public offering price per share you will pay in this offering and the as adjusted net tangible book value per share of our common stock after this offering. Net tangible book value per share represents our total tangible assets less total liabilities, divided by the number of shares of our common stock outstanding.

As of June 30, 2016, our net tangible book value was \$(14.2) million, or \$(1.44) per share of common stock. After giving effect to our issuance and sale of _____ shares of common stock in this offering at the public offering price of \$ _____ per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, the as adjusted net tangible book value as of June 30, 2016 would have been \$ _____ million, or \$ _____ per share. This represents an immediate increase in as adjusted net tangible book value to existing shareholders of \$ _____ per share and an immediate dilution to new investors purchasing common stock in this offering of \$ _____ per share.

The following table illustrates this per share dilution to the new investors purchasing shares of common stock in this offering:

Public offering price per share	\$
Net tangible book value per share at June 30, 2016	\$ (1.44)
Increase in net tangible book value per share attributable to new investors purchasing shares in this offering	

As adjusted net tangible book value per share after this offering

Dilution per share to new investors in this offering	\$
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The foregoing table and calculations are based on 9,868,255 shares of our common stock outstanding as of June 30, 2016, and excludes:

2,197,143 shares of our common stock issuable upon the exercise of stock options outstanding as of June 30, 2016 at a weighted-average exercise price of \$6.92 per share;

32,200 shares of our common stock issuable upon the settlement of restricted stock units outstanding as of June 30, 2016;

174 shares of our common stock available for future issuance as of June 30, 2016 under our 2008 Stock Option Plan;

899,698 shares of our common stock available for future issuance as of June 30, 2016 under our Amended and Restated Equity Incentive Plan; and

784,928 shares of our common stock issuable upon the exercise of outstanding warrants as of June 30, 2016 with a weighted average exercise price of \$12.05 per share.

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

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MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following summary describes the material U.S. federal income and estate tax consequences of the acquisition, ownership and disposition of our common stock acquired in this offering by Non-U.S. Holders (as defined below). This discussion does not address all aspects of U.S. federal income and estate taxes and does not deal with foreign, state and local consequences that may be relevant to Non-U.S. Holders in light of their particular circumstances, nor does it address U.S. federal tax consequences other than income and estate taxes. Special rules different from those described below may apply to certain Non-U.S. Holders that are subject to special treatment under the United States Internal Revenue Code of 1986, as amended, or the Code, such as financial institutions, insurance companies, tax-exempt organizations, broker-dealers and traders in securities, U.S. expatriates, controlled foreign corporations, passive foreign investment companies, corporations that accumulate earnings to avoid U.S. federal income tax, persons that hold our common stock as part of a straddle, hedge, conversion transaction, synthetic security or integrated investment or other risk reduction strategy, persons subject to the alternative minimum tax or Medicare contribution tax, partnerships and other pass-through entities, and investors in such pass-through entities. Such Non-U.S. Holders are urged to consult their tax advisors to determine the U.S. federal, state, local and other tax consequences that may be relevant to them. Furthermore, the discussion below is based upon the provisions of the Code, and Treasury regulations, rulings and judicial decisions thereunder as of the date hereof, and such authorities may be repealed, revoked or modified, perhaps retroactively, so as to result in U.S. federal income tax consequences different from those discussed below. We have not requested a ruling from the U.S. Internal Revenue Service, or the IRS, with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS will agree with such statements and conclusions. This discussion assumes that the Non-U.S. Holder holds our common stock as a capital asset within the meaning of Section 1221 of the Code (generally, property held for investment).

The following summary is for general information only and is not tax advice. Persons considering the purchase of our common stock pursuant to this offering should consult their tax advisors concerning the U.S. federal income tax consequences of acquiring, owning and disposing of our common stock in light of their particular situations as well as any consequences arising under the laws of any other taxing jurisdiction, including any state, local or foreign tax consequences.

For the purposes of this discussion, a Non-U.S. Holder is, for U.S. federal income tax purposes, a beneficial owner of common stock that is neither a U.S. Holder, a partnership (or other entity treated as a partnership for U.S. federal income tax purposes regardless of its place of organization or formation), nor an entity that is treated as a disregarded entity for U.S. federal income tax purposes (regardless of its place of organization or formation). A U.S. Holder means a beneficial owner of our common stock that is for U.S. federal income tax purposes (a) an individual who is a citizen or resident of the United States, (b) a corporation or other entity treated as a corporation created or organized in or under the laws of the United States, any state thereof or the District of Columbia, (c) an estate the income of which is subject to U.S. federal income taxation regardless of its source or (d) a trust if it (1) is subject to the primary supervision of a court within the United States and one or more U.S. persons (within the meaning of Section 7701(a)(30) of the Code) have the authority to control all substantial decisions of the trust or (2) has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person for U.S. federal income tax purposes.

Distributions

Distributions, if any, made on our common stock will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits. Distributions in excess of our current and accumulated earnings and profits will first be treated as a return of capital to the extent of a Non-U.S. Holder's adjusted tax basis in the common stock and thereafter as capital gain from the sale or exchange of such common stock as described below under Gain on Disposition of Our Common Stock.

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Dividends paid to a Non-U.S. Holder of our common stock generally will be subject to withholding tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. To obtain a reduced rate of withholding under a treaty, a Non-U.S. Holder generally will be required to provide us with a properly executed applicable IRS Form W-8, or other appropriate form, certifying the Non-U.S. Holder's entitlement to benefits under that treaty. In the case of a Non-U.S. Holder that is an entity, Treasury Regulations and the relevant tax treaty provide rules to determine whether, for purposes of determining the applicability of a tax treaty, dividends will be treated as paid to the entity or to those holding an interest in that entity. If a Non-U.S. Holder holds stock through a financial institution or other agent acting on the holder's behalf, the holder will be required to provide appropriate documentation to such agent. The holder's agent will then be required to provide certification to us or our paying agent, either directly or through other intermediaries. If a Non-U.S. Holder is eligible for a reduced rate of U.S. federal withholding tax under an income tax treaty, such Non-U.S. Holder may be able to obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim with the IRS.

We generally are not required to withhold tax on dividends paid to a Non-U.S. Holder that are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, are attributable to a permanent establishment that such holder maintains in the United States) if a properly executed IRS Form W-8ECI, stating that the dividends are so connected, is furnished to us (or, if stock is held through a financial institution or other agent, to such agent). In general, such effectively connected dividends will be subject to U.S. federal income tax on a net income basis at the regular graduated rates, unless a specific treaty exemption applies. A corporate Non-U.S. Holder receiving effectively connected dividends may also be subject to an additional branch profits tax, which is imposed, under certain circumstances, at a rate of 30% (or such lower rate as may be specified by an applicable treaty) on the corporate Non-U.S. Holder's effectively connected earnings and profits, subject to certain adjustments.

Gain on Disposition of Our Common Stock

Subject to the discussion below regarding backup withholding and FATCA, a Non-U.S. Holder generally will not be subject to U.S. federal income tax with respect to gain realized on a sale or other disposition of our common stock unless (a) the gain is effectively connected with a trade or business of such holder in the United States (and, if required by an applicable income tax treaty, is attributable to a permanent establishment that such holder maintains in the United States), (b) the Non-U.S. Holder is a nonresident alien individual and is present in the United States for 183 or more days in the taxable year of the disposition and certain other conditions are met, or (c) we are or have been a United States real property holding corporation, or USRPHC, within the meaning of Code Section 897(c)(2) at any time within the shorter of the five-year period preceding such disposition or such holder's holding period. In general, we would be a USRPHC if U.S. real property interests comprised (by fair market value) at least half of our business assets. We believe that we are not, and do not anticipate becoming, a USRPHC. Because the determination of whether we are a USRPHC depends on the fair market value of our U.S. real property interests relative to the fair market value of our other business assets and our non-U.S. real property interests, however, there can be no assurance we are not a USRPHC or will not become one in the future. Even if we are treated as a USRPHC, gain realized by a Non-U.S. Holder on a disposition of our common stock will not be subject to U.S. federal income tax so long as (1) the Non-U.S. Holder owned, directly, indirectly and constructively, no more than five percent of our common stock at all times within the shorter of (i) the five-year period preceding the disposition or (ii) the holder's holding period and (2) our common stock is regularly traded on an established securities market. If the foregoing exception does not apply, and if we are or were to become a USRPHC, a purchaser may be required to withhold 15% of the proceeds payable to a Non-U.S. Holder from a sale or other taxable disposition of our common stock and such Non-U.S. Holder generally will be taxed on its net gain derived from the disposition at the graduated U.S. federal income tax rates applicable to United States persons (as defined in the Code).

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A Non-U.S. Holder described in (a) above, will generally be required to pay tax on the net gain derived from the sale at regular graduated U.S. federal income tax rates (unless a specific treaty exemption applies), and corporate Non-U.S. Holders described in (a) above may be subject to the additional branch profits tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. An individual Non-U.S. Holder described in (b) above, will be required to pay a flat 30% tax on the gain derived from the sale, which gain may be offset by U.S. source capital losses (even though the individual is not considered a resident of the United States).

Information Reporting Requirements and Backup Withholding

Generally, payors must report information to the IRS with respect to any dividends paid including the amount of any such dividends, the name and address of the recipient, and the amount, if any, of tax withheld. A similar report is sent to the holder to whom any such dividends are paid. Pursuant to tax treaties or certain other agreements, the IRS may make its reports available to tax authorities in the recipient's country of residence.

Dividends paid by us (or our paying agents) to a Non-U.S. Holder may also be subject to U.S. backup withholding. U.S. backup withholding generally will not apply to a Non-U.S. Holder who provides a properly executed applicable IRS Form W-8 (provided that the payor does not have actual knowledge or reason to know that such holder is a U.S. person) or otherwise establishes an exemption.

Under current U.S. federal income tax law, U.S. information reporting and backup withholding requirements generally will apply to the proceeds of a disposition of our common stock effected by or through a U.S. office of any broker, U.S. or foreign, except that information reporting and such requirements may be avoided if the holder provides a properly executed applicable IRS Form W-8 or otherwise meets documentary evidence requirements for establishing Non-U.S. Holder status or otherwise establishes an exemption. Generally, U.S. information reporting and backup withholding requirements will not apply to a payment of disposition proceeds to a Non-U.S. Holder where the transaction is effected outside the United States through a non-U.S. office of a non-U.S. broker. Information reporting and backup withholding requirements may, however, apply to a payment of disposition proceeds if the broker has actual knowledge, or reason to know, that the holder is, in fact, a U.S. person. For information reporting purposes, certain brokers with substantial U.S. ownership or operations will generally be treated in a manner similar to U.S. brokers.

Backup withholding is not an additional tax. Any amounts of tax withheld under the backup withholding rules may be allowed as a refund or credit against the tax liability of persons subject to backup withholding, provided that the required information is timely furnished to the IRS.

FATCA

The Foreign Account Tax Compliance Act, or FATCA, imposes a 30% withholding tax on certain types of payments made to foreign financial institutions and other specified non-U.S. entities unless certain due diligence, reporting, withholding and certification requirements are satisfied.

The Treasury Department and the IRS have issued final regulations under FATCA. As a general matter, FATCA imposes a 30% withholding tax on dividends on, and gross proceeds from the sale or other disposition of, our common stock if paid to a foreign entity unless:

the foreign entity is a foreign financial institution that undertakes specified due diligence, reporting, withholding and certification obligations or, in the case of a foreign financial institution that is a resident in a jurisdiction that has entered into an intergovernmental agreement to implement FATCA, the entity complies with the diligence and reporting requirements of such an agreement;

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the foreign entity is not a foreign financial institution and identifies certain of its U.S. investors; or

the foreign entity otherwise is exempted under FATCA.

An intergovernmental agreement between the United States and an applicable non-U.S. government may modify these rules. Withholding is required with respect to dividends on our common stock and for dispositions that occur on or after January 1, 2019, with respect to gross proceeds from a sale or other disposition of our common stock.

If withholding is imposed under FATCA on a payment related to our common stock, a beneficial owner that is not a foreign financial institution and that otherwise would not be subject to withholding (or that otherwise would be entitled to a reduced rate of withholding) generally may obtain a refund from the IRS by filing a U.S. federal income tax return (which may entail significant administrative burden). Prospective investors should consult their tax advisors regarding the effect of FATCA in their particular circumstances.

EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS TAX ADVISOR REGARDING THE TAX CONSEQUENCES OF PURCHASING, HOLDING AND DISPOSING OF OUR COMMON STOCK, INCLUDING THE CONSEQUENCES OF ANY PROPOSED CHANGE IN APPLICABLE LAW.

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UNDERWRITING

Piper Jaffray & Co., or Piper Jaffray, is acting as representative of each of the underwriters named below. Subject to the terms and conditions set forth in an underwriting agreement among us and the underwriters, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the number of shares of our common stock set forth opposite its name below.

UNDERWRITER	NUMBER OF SHARES
Piper Jaffray & Co.	
Janney Montgomery Scott LLC	
Total	

Subject to the terms and conditions set forth in the underwriting agreement, the underwriters have agreed, severally and not jointly, to purchase all of the shares sold under the underwriting agreement if any of these shares are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the non-defaulting underwriters may be increased or the underwriting agreement may be terminated.

We have agreed to indemnify the several underwriters against certain liabilities, including liabilities under the Securities Act relating to losses or claims resulting from material misstatements in or omissions from this prospectus supplement, the registration statement of which this prospectus supplement is a part, certain free writing prospectuses that may be used in the offering and in any marketing materials used in connection with this offering and to contribute to payments the underwriters may be required to make in respect of those liabilities.

The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel, including the validity of the shares, and other conditions contained in the underwriting agreement, such as the receipt by the underwriters of officers' certificates and legal opinions. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Commissions and Discounts

The representative has advised us that the underwriters propose initially to offer the shares to the public at the public offering price set forth on the cover page of this prospectus supplement and to dealers at that price less a concession not in excess of \$ per share. After the initial offering, the public offering price, concession or any other term of this offering may be changed.

The following table shows the public offering price, underwriting discounts and commissions and proceeds before expenses to us.

	Per Share	Total
Public offering price	\$	\$
Underwriting discounts and commissions paid by us	\$	\$
Proceeds to us, before expenses	\$	\$

The estimated offering expenses payable by us, exclusive of the underwriting discounts and commissions, are approximately \$. We have also agreed to reimburse the underwriters for certain of their expenses in an amount expected to be no more than \$25,000 in connection with the clearance of this offering with the Financial Industry Regulatory Authority, as set forth in the underwriting agreement.

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Our common stock is listed on The Nasdaq Capital Market under the trading symbol REPH.

No Sales of Similar Securities

We and each of our directors and executive officers and some of our stockholders have agreed that we and they will not, without the prior written consent of Piper Jaffray, subject to certain limited exceptions, directly or indirectly:

offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, make any short sale or otherwise transfer or dispose of, directly or indirectly, any shares of common stock or any securities convertible into, exercisable or exchangeable for or that represent the right to receive common stock (including without limitation, common stock which may be deemed to be beneficially owned by the holder in accordance with the rules and regulations of the SEC and securities which may be issued upon exercise of a stock option or warrant) whether now owned or hereafter acquired;

enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the holder's securities;

make any demand for or exercise any right with respect to, the registration of any common stock or any security convertible into or exercisable or exchangeable for common stock in each case that would require us to file a registration statement with the next 90 days of the date of the lock-up agreement; or

publicly disclose the intention to do any of the foregoing, for a period of 90 days after the public offering date set forth in this prospectus supplement. However, in the case of our directors, executive officers and stockholders subject to the 90-day restricted period, these restrictions will not apply to transfers of our common stock or any security convertible into or exercisable for our common stock: (i) as a bona fide gift or gifts made by the holder, (ii) to any trust for the direct or indirect benefit of the holder or the holder's immediate family, (iii) if the holder is a corporation, partnership, limited liability company, trust or other business entity, (1) to another corporation, partnership, limited liability company, trust or other business entity that is a direct or indirect affiliate (as defined in Rule 405 promulgated under the Securities Act) of the holder or (2) as a distribution to the holder's limited partners, limited liability company members or stockholders, (iv) if the holder is a trust, to the beneficiary of such trust, (v) upon death by will or intestate succession, or (vi) pursuant to a qualified domestic relations order; provided, that (x) such transfers do not involve a disposition for value, (y) the transferee agrees in writing to be bound to the 90-day restricted period for subsequent transfers, and (z) no filing by any party under Section 16(a) of the Exchange Act is required or shall be made voluntarily in connection with such transfer during the 90-day restricted period. In addition the restrictions will also not apply to (i) the exercise, conversion or exchange of any options or other convertible securities outstanding on the date the lockup agreement was signed (including by net or cashless exercise effected by the delivery or sale of the holder's securities to us to the extent permitted by the instruments representing such options or other convertible securities and including the transfer of shares of common stock to us to satisfy tax withholding obligations in connection therewith), provided that no filing under Section 16(a) of the Exchange Act by any party is required or will be voluntarily made in connection with such exercise, conversion or exchange that reports a disposition of shares of common stock, except to report any transfer of shares of common stock to us to finance a cashless exercise or to satisfy tax withholding obligations as described above, and provided further, that such restrictions shall apply to any of the holder's securities issued upon such exercise, conversion or exchange, or (ii) the establishment of any contract, instruction or plan that satisfies all of the requirements of Rule 10b5-1(c)(1)(i)(B) under the Exchange Act; provided, that no sales of the holder's securities shall be made pursuant to such a plan prior to the expiration of the 90-day restricted period,

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and such a plan may only be established if no public announcement of the establishment or existence thereof, and no filing with the SEC or other regulatory authority in respect thereof or transactions thereunder or contemplated thereby, is required or made voluntarily by the holder, us or any other person during the 90-day restricted period. The restrictions also do not apply to any securities acquired by a holder in the open market after the date of the lock-up agreement, provided that no filing under Section 16(a) of the Exchange Act is required or will be voluntarily made in connection with any subsequent sale, transfer, gift or disposition.

During the 90-day restricted period, we may issue securities (a) to our directors, officers, employees and consultants pursuant to our employee benefit plans, equity incentive plans and other employee compensation plans existing on the date of the underwriting agreement and described in this prospectus supplement and the documents incorporated herein; (b) pursuant to the exercise, exchange or conversion of any options, warrants, restricted stock units, rights or convertible securities outstanding on the date of the underwriting agreement, (c) in connection with any joint venture, commercial or collaborative relationship, the acquisition or license by us of the securities, businesses, property or other assets of another person, so long as each recipient of any such shares or other securities agrees to be bound by the terms of the 90-day restricted period, (d) pursuant to the Common Stock Purchase Agreement, dated as of February 2, 2015, between the Company and Aspire Capital Fund, LLC, in connection with an at-the-market equity offering, so long as such issuances and sales occur no earlier than 45 days after the date of the underwriting agreement and do not exceed an aggregate of \$5.0 million in gross proceeds, and (f) to one or more non-financial investors in connection with an equity investment in the Company, as long as such issuances and sales occur no earlier than 45 days after the date of the underwriting agreement and so long as each recipient of any such shares or other securities agrees to be bound by the terms of the 90-day restricted period.

Piper Jaffray may, in its sole discretion and at any time or from time to time before the termination of the 90-day restricted period, release all or any portion of the securities subject to lock-up agreements. There are no existing agreements between the underwriters and any of our stockholders who will execute a lock-up agreement providing consent to the sale of shares prior to the expiration of the 90-day restricted period.

Price Stabilization, Short Positions and Penalty Bids

Until the distribution of the shares is completed, SEC rules may limit underwriters and selling group members from bidding for and purchasing shares of our common stock. However, the representatives may engage in transactions that stabilize the price of our common stock, such as bids or purchases to peg, fix or maintain that price.

In connection with this offering, the underwriters may purchase and sell shares of our common stock in the open market. These transactions may include short sales, purchases on the open market to cover positions created by short sales and stabilizing transactions. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in this offering. Stabilizing transactions consist of various bids for or purchases of shares of our common stock made by the underwriters in the open market prior to the closing of this offering.

The underwriters may also impose a penalty bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it because the representatives have repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or

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retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. The underwriters may conduct these transactions on NASDAQ, in the over-the-counter market or otherwise.

Neither we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. In addition, neither we nor any of the underwriters make any representation that the representatives will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

Electronic Offer, Sale and Distributions of Shares

In connection with this offering, certain of the underwriters or securities dealers may distribute prospectuses by electronic means, such as e-mail. In addition, one or more of the underwriters may facilitate Internet distribution for this offering to certain of their Internet subscription customers. Any such underwriter may allocate a limited number of shares for sale to its online brokerage customers. An electronic prospectus is available on the Internet websites maintained by any such underwriter. Other than the prospectus in electronic format, the information on the websites of any such underwriter is not part of this prospectus.

Other Relationships

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their affiliates have engaged in, and may in the future engage in, investment banking and other commercial dealings in the ordinary course of business with us or our affiliates. They have received, or may in the future receive, customary fees and commissions for these transactions.

In the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of the issuer. The underwriters and their respective affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Selling Restrictions

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a Relevant Member State) an offer to the public of any shares of our common stock may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any shares of our common stock may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- (a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;
- (b) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the representatives for any such offer; or

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- (c) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of shares of our common stock shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an offer to the public in relation to any shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares of our common stock to be offered so as to enable an investor to decide to purchase any shares of our common stock, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression Prospectus Directive means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State, and the expression 2010 PD Amending Directive means Directive 2010/73/EU.

United Kingdom

Each underwriter has represented and agreed that:

- (a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 (the FSMA)) received by it in connection with the issue or sale of the shares of our common stock in circumstances in which Section 21(1) of the FSMA does not apply to us; and
- (b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares of our common stock in, from or otherwise involving the United Kingdom.

Canada

The shares of our common stock may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the shares of our common stock must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if the prospectus supplement or the prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

Hong Kong

The common shares may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies

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Ordinance (Cap. 32, Laws of Hong Kong), or (ii) to professional investors within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a prospectus within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong) and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to common shares which are or are intended to be disposed of only to persons outside Hong Kong or only to professional investors within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the common shares may not be circulated or distributed, nor may the common shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the SFA), (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to compliance with conditions set forth in the SFA.

Where the common shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- (a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

shares, debentures and units of shares and debentures of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the common shares pursuant to an offer made under Section 275 of the SFA except:

- (a) to an institutional investor (for corporations, under Section 274 of the SFA) or to a relevant person defined in Section 275(2) of the SFA, or to any person pursuant to an offer that is made on terms that such shares, debentures and units of shares and debentures of that corporation or such rights and interest in that trust are acquired at a consideration of not less than \$200,000 (or its equivalent in a foreign currency) for each transaction, whether such amount is to be paid for in cash or by exchange of securities or other assets, and further for corporations, in accordance with the conditions specified in Section 275 of the SFA;
- (b) where no consideration is or will be given for the transfer; or
- (c) where the transfer is by operation of law.

Switzerland

The common shares may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (the SIX) or on any other stock exchange or regulated trading facility in Switzerland. This

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document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering or marketing material relating to the common shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, or the common shares have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of common shares will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of common shares has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (CISA). Accordingly, no public distribution, offering or advertising, as defined in CISA, its implementing ordinances and notices, and no distribution to any non-qualified investor, as defined in CISA, its implementing ordinances and notices, shall be undertaken in or from Switzerland, and the investor protection afforded to acquirers of interests in collective investment schemes under CISA does not extend to acquirers of common shares.

United Arab Emirates

This offering has not been approved or licensed by the Central Bank of the United Arab Emirates (the UAE), Securities and Commodities Authority of the UAE and/or any other relevant licensing authority in the UAE including any licensing authority incorporated under the laws and regulations of any of the free zones established and operating in the territory of the UAE, in particular the Dubai Financial Services Authority (DFSA), a regulatory authority of the Dubai International Financial Centre (DIFC). The offering does not constitute a public offer of securities in the UAE, DIFC and/or any other free zone in accordance with the Commercial Companies Law, Federal Law No 8 of 1984 (as amended), DFSA Offered Securities Rules and NASDAQ Dubai Listing Rules, accordingly, or otherwise. The common shares may not be offered to the public in the UAE and/or any of the free zones.

The common shares may be offered and issued only to a limited number of investors in the UAE or any of its free zones who qualify as sophisticated investors under the relevant laws and regulations of the UAE or the free zone concerned.

France

This prospectus (including any amendment, supplement or replacement thereto) is not being distributed in the context of a public offering in France within the meaning of Article L. 411-1 of the French Monetary and Financial Code (Code monétaire et financier).

This prospectus has not been and will not be submitted to the French Autorité des marchés financiers (the AMF) for approval in France and accordingly may not and will not be distributed to the public in France.

Pursuant to Article 211-3 of the AMF General Regulation, French residents are hereby informed that:

- (a) the transaction does not require a prospectus to be submitted for approval to the AMF;
- (b) persons or entities referred to in Point 2°, Section II of Article L.411-2 of the Monetary and Financial Code may take part in the transaction solely for their own account, as provided in Articles D. 411-1, D. 734-1, D. 744-1, D. 754-1 and D. 764-1 of the Monetary and Financial Code; and
- (c) the financial instruments thus acquired cannot be distributed directly or indirectly to the public otherwise than in accordance with Articles L. 411-1, L. 411-2, L. 412-1 and L. 621-8 to L. 621-8-3 of the Monetary and Financial Code.

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This prospectus is not to be further distributed or reproduced (in whole or in part) in France by the recipients of this prospectus. This prospectus has been distributed on the understanding that such recipients will only participate in the issue or sale of our common stock for their own account and undertake not to transfer, directly or indirectly, our common stock to the public in France, other than in compliance with all applicable laws and regulations and in particular with Articles L. 411-1 and L. 411-2 of the French Monetary and Financial Code.

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LEGAL MATTERS

The validity of the common stock being offered in this offering will be passed upon for us by Hogan Lovells US LLP, Philadelphia, Pennsylvania. Cooley LLP, Reston, Virginia, is counsel to the underwriters in connection with this offering.

EXPERTS

The consolidated financial statements of Recro Pharma, Inc. as of December 31, 2015 and 2014, and for the years then ended, have been incorporated by reference herein in reliance upon the report of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

The audited combined historical financial statements of DARA included on page 6 of Recro Pharma, Inc.'s Current Report on Form 8-K/A dated June 2, 2015 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, independent accountants, given on the authority of said firm as experts in auditing and accounting.

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WHERE YOU CAN FIND MORE INFORMATION

This prospectus supplement and the accompanying prospectus form part of a registration statement on Form S-3 that we filed with the SEC. This prospectus supplement and the accompanying prospectus do not contain all of the information set forth in the registration statement and the exhibits to the registration statement or the documents incorporated by reference herein and therein. For further information with respect to us and the securities that we are offering under this prospectus supplement, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement and the documents incorporated by reference herein and therein. You should rely only on the information contained in this prospectus supplement or the accompanying prospectus or incorporated by reference herein or therein. We have not authorized anyone else to provide you with different information. We are not making an offer of these securities in any state where the offer is not permitted. You should not assume that the information in this prospectus supplement is accurate as of any date other than the date on the front page of this prospectus supplement, regardless of the time of delivery of this prospectus supplement or any sale of the securities offered hereby.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any document we file with the SEC at the SEC's public reference room at 100 F Street NE, Room 1580, Washington, D.C. 20549. You may obtain information on the operation of the SEC's public reference facilities by calling the SEC at 1-800-SEC-0330. You can request copies of these documents, upon payment of a duplicating fee, by writing to the SEC at its principal office at 100 F Street NE, Room 1580, Washington, D.C. 20549-1004. The SEC maintains an Internet website at <http://www.sec.gov> that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. Our SEC filings are accessible through the Internet at that website. Our reports on Forms 10-K, 10-Q and 8-K, and amendments to those reports, are also available for download, free of charge, as soon as reasonably practicable after these reports are filed with the SEC, at our website at www.recropharma.com. The content contained in, or that can be accessed through, our website is not a part of this prospectus.

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INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate by reference information into this prospectus supplement, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The SEC file number for the documents incorporated by reference in this prospectus is 001-36329. The documents incorporated by reference into this prospectus supplement contain important information that you should read about us.

The following documents are incorporated by reference into this document:

our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 filed with the SEC on March 24, 2016;

our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2016 and June 30, 2016, filed with the SEC on May 12, 2016 and August 11, 2016, respectively;

those portions of our Definitive Proxy Statement on Schedule 14A for our 2016 Annual Meeting of Shareholders filed with the SEC on April 12, 2016 that are incorporated by reference into our Annual Report on Form 10-K for the fiscal year ended December 31, 2015;

our Current Reports on Form 8-K (other than portions thereof furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits accompanying such reports that relate to such items) filed with the SEC on April 16, 2015 (as amended by Form 8-K/A filed on June 2, 2015, Form 8-K/A filed on June 26, 2015, Form 8-K/A filed on July 21, 2015, Form 8-K/A filed on December 23, 2015 and April 29, 2016), January 6, 2016, January 11, 2016, January 27, 2016, February 1, 2016, February 12, 2016, February 16, 2016, March 14, 2016, May 25, 2016, July 5, 2016, July 14, 2016, July 27, 2016 and August 12, 2016; and

the description of our common stock, which is registered under Section 12 of the Exchange Act, in our registration statement on Form 8-A, filed with the SEC on June 23, 2014, including any amendments or reports filed for the purpose of updating such description.

We also incorporate by reference into this prospectus all documents (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement but prior to the termination of the offering. These documents include periodic reports, such as Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, as well as proxy statements.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference into this document will be deemed to be modified or superseded for purposes of the document to the extent that a statement contained in this document or any other subsequently filed document that is deemed to be incorporated by reference into this document modifies or supersedes the statement.

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PROSPECTUS

\$100,000,000

Common Stock

Preferred Stock

Debt Securities

Warrants

Units

Subscription Rights

1,379,311 Shares of Common Stock

Offered by

Selling Shareholders

We may offer to the public from time to time in one or more series or issuances:

shares of our common stock, par value \$0.01 per share;

shares of preferred stock, par value \$0.01 per share;

warrants to purchase shares of our common stock, preferred stock and/or debt securities;

debt securities consisting of debentures, notes or other evidences of indebtedness;

units consisting of a combination of the foregoing securities;

subscription rights to purchase any of the foregoing securities; or

any combination of these securities.

The aggregate initial offering price of all securities sold by us pursuant to this prospectus will not exceed \$100,000,000.

Selling shareholders may also offer up to 1,379,311 shares of our common stock from time to time in connection with one or more offerings. We will not receive any proceeds from the sale of common stock by the selling shareholders. We have paid the fees and expenses incident to the registration of the shares of common stock for sale by the selling shareholders

This prospectus provides a general description of the securities that we or the selling shareholders may offer. Each time that we offer securities under this prospectus, we will provide the specific terms of the securities offered, including the public offering price, in a supplement to this prospectus. Depending on the method of distribution, a prospectus supplement may also be required in connection with certain sales of common stock by the selling shareholders. Any prospectus supplement may add to, update or change information contained in this prospectus. You should read this prospectus and any applicable prospectus supplement together with additional information described under the heading **Where You Can Find More Information** before you make your investment decision.

The securities may be sold by us or the selling shareholders to or through underwriters or dealers, directly to purchasers or through agents designated from time to time. For additional information on the methods of sale, you should refer to the section entitled **Plan of Distribution** in this prospectus and the comparable section of any applicable prospectus supplement. If any underwriters are involved in the sale of the securities with respect to which this prospectus is being delivered, the names of such underwriters and any applicable discounts or commissions and over-allotment options will be set forth in the applicable prospectus supplement.

Our common stock trades on the NASDAQ Capital Market, or NASDAQ, under the ticker symbol **REPH**. On August 27, 2015, the last reported sale price per share of our common stock was \$13.09 per share.

As of August 27, 2015, the aggregate market value of our outstanding common stock held by non-affiliates was approximately \$50.2 million, based on 9,221,374 shares of outstanding common stock, of which approximately 3,833,302 shares were held by non-affiliates, and a per share price of \$13.09 based on the closing sale price of our common stock on August 27, 2015.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. RISKS ASSOCIATED WITH AN INVESTMENT IN OUR SECURITIES WILL BE DESCRIBED IN THE APPLICABLE PROSPECTUS SUPPLEMENT AND CERTAIN OF OUR FILINGS WITH THE SECURITIES AND EXCHANGE COMMISSION INCORPORATED BY REFERENCE INTO THIS PROSPECTUS, AS DESCRIBED UNDER RISK FACTORS ON PAGE 5.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is September 1, 2015.

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ABOUT THIS PROSPECTUS

This prospectus is a part of a registration statement that we filed with the Securities and Exchange Commission, or the Commission, using a shelf registration process. Under this shelf registration process, we may offer to sell any of the securities, or any combination of the securities, described in this prospectus, in each case in one or more offerings, up to a total dollar amount of \$100,000,000 and the selling shareholders may sell up to 1,376,311 shares of our common stock in one or more offerings.

This prospectus provides you only with a general description of the securities that we and the selling shareholders may offer. Each time securities are sold under the shelf registration statement, we will provide a prospectus supplement that will contain specific information about the terms of those securities and the terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any prospectus supplement, including all documents incorporated by reference herein and therein, together with the additional information described under **Where You Can Find More Information** below.

The information contained in this prospectus is not complete and may be changed. You should rely only on the information provided in or incorporated by reference in this prospectus or in any prospectus supplement, or documents to which we otherwise refer you. We have not authorized anyone else to provide you with different information.

We have filed or incorporated by reference exhibits to the registration statement of which this prospectus forms a part. You should read the exhibits carefully for provisions that may be important to you.

We have not authorized any dealer, agent or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and any accompanying prospectus supplement. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or an accompanying prospectus supplement. This prospectus and the accompanying prospectus supplement, if any, do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and the accompanying prospectus supplement, if any, constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus and the accompanying prospectus supplement, if any, is accurate on any date subsequent to the date set forth on the front of such document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus and any accompanying prospectus supplement is delivered or securities are sold on a later date.

References in this prospectus to the terms **the Company**, **Recro**, **we**, **our** and **us** or other similar terms mean Recro Pharma, Inc. and our wholly owned subsidiary, unless we state otherwise or the context indicates otherwise.

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FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain, and any prospectus supplement and the documents incorporated therein may contain, forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, included in this prospectus, any prospectus supplement or the documents incorporated herein and therein by reference regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management are forward-looking statements. The words anticipate, believe, estimate, expect, intend, may, plan, predict, would and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

The forward-looking statements in this prospectus and the documents incorporated herein by reference include, among other things, statements about:

the results and timing of our clinical trials of Dex-IN, IV/IM meloxicam or our other product candidates, and any future clinical and preclinical studies;

the ability to obtain and maintain regulatory approval of our product candidates, and the labeling under any approval that we may obtain;

regulatory developments in the United States and foreign countries;

our plans to develop and commercialize our product candidates;

our ability to raise future financing for continued development;

the performance of our third-party commercial partners, suppliers and manufacturers;

our ability to obtain patent protection and defend our intellectual property rights;

our ability to successfully implement our strategy;

our ability to successfully manufacture commercial pharmaceuticals for our partners;

our ability to successfully integrate our acquisition of certain assets acquired in the Gainesville Transaction (as defined below); and

our ability to meet required debt payments and operate under increased leverage and associated lending covenants.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this prospectus, particularly under Risk Factors, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures, collaborations or investments we may make.

You should read this prospectus, any prospectus supplement and the documents that we incorporate by reference herein and therein completely and with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements.

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THE COMPANY

Overview

We are a revenue generating specialty pharmaceutical company developing multiple non-opioid therapeutics for the treatment of pain, initially for acute post operative pain. We have two product candidates entering late stage clinical trials for the management of acute post operative pain. Intravenous and intramuscular, or IV/IM, meloxicam, a proprietary, long-acting preferential COX-2 inhibitor for moderate to severe acute pain has successfully completed multiple Phase II clinical trials and are ready to begin pivotal Phase III clinical trials. We believe IV/IM meloxicam compares favorably to competitive therapies in onset of pain relief, duration of pain relief and time to peak analgesic effect. Dex-IN, a proprietary intranasal formulation of dexmedetomidine, or Dex, successfully completed a Phase II clinical trial in patients undergoing bunionectomy surgery. In this Phase II clinical trial, Dex-IN met the primary endpoint of the clinical trial in demonstrating significant pain relief compared with placebo over 48 hours ($p=0.0214$). Dex is a selective alpha-2 adrenergic agonist that has demonstrated analgesic properties in multiple studies. If approved, Dex-IN would also be the first and only approved acute post operative pain drug in its class of drugs. As our product candidates are not in the opioid class of drugs, we believe they will overcome many of the issues associated with commonly prescribed opioid therapeutics, including addiction, misuse/diversion, respiratory distress, and constipation while maintaining analgesic, or pain relieving, effect.

We own and operate an 87,000 square foot, DEA-licensed facility that manufactures five commercial products and receives royalties associated with the sales of these products. We manufacture the following products for our commercial partners: Ritalin LA[®], Focalin XR[®], Verelan PM[®], generic Verapamil and Zohydro ER[®].

We have a limited operating history. We have funded our operations to date primarily from proceeds received from private placements of convertible preferred stock, convertible notes and common stock and our initial public offering of common stock, or IPO. On March 12, 2014, we announced the closing of the IPO of 4,312,500 shares of common stock, including the full exercise of the underwriters' over-allotment option, at a public offering price of \$8.00 per share. Total gross proceeds from the IPO were \$34.5 million before deducting underwriting discounts and commissions and other offering expenses payable by us, and we received net proceeds of \$30.3 million from the IPO. We have incurred losses and generated negative cash flows from operations since inception. As of June 30, 2015, we had an accumulated deficit of \$39.5 million. Substantially all of our operating losses resulted from costs incurred in connection with our development programs, including our non-clinical and formulation development activities, manufacturing and clinical trials. We expect to incur increasing expenses over the next several years to develop IV/IM meloxicam and Dex-IN, including planned Phase III pivotal and safety trials for IV/IM meloxicam and Dex-IN. Based upon additional financial resources, we may commercialize our proprietary formulations of meloxicam and Dex.

We expect that annual operating results of operations will fluctuate for the foreseeable future due to several factors. As a result, we expect to continue to incur significant and increasing operating losses for the foreseeable future.

On April 10, 2015, we completed our acquisition from Alkermes plc, or Alkermes, of certain assets, including the worldwide rights to IV/IM meloxicam and the contract manufacturing facility, royalty and formulation business in Gainesville, Georgia, now operating through our subsidiary, Recro Gainesville LLC, or Gainesville. We refer to the acquisition herein as the Gainesville Transaction. The Gainesville Transaction transformed our business through the addition of a revenue-generating business and increase in our workforce as a result of the addition of the Gainesville employees.

Under the terms of the purchase and sale agreement with Alkermes, we paid Alkermes \$54.0 million at closing, as adjusted for working capital. Alkermes is entitled to receive up to an additional \$120.0 million in

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milestone payments upon the achievement of certain regulatory and net sales milestones and royalties on future product net sales, in each case, related to IV/IM meloxicam. Upon closing, we issued to Alkermes a warrant to purchase an aggregate of 350,000 shares of our common stock at an exercise price of \$19.46 per share. The \$50.0 million up-front payment was funded with \$50.0 million in borrowings under a credit agreement that we entered into with OrbiMed Royalty Opportunities II, LP, or OrbiMed. The interest rate under the credit agreement is equal to LIBOR plus 14.0%, with a 1.0% LIBOR floor. Pursuant to the credit agreement, we issued OrbiMed a warrant to purchase an aggregate of 294,928 shares of our common stock at an exercise price of \$3.28 per share, subject to certain adjustments.

Corporate Information

Our principal executive offices are located at 490 Lapp Road, Malvern, PA 19355, and our telephone number is (484) 395-2470. Our website address is www.recropharma.com. The information contained in, or accessible through, our website does not constitute part of this prospectus. We make available free of charge on our website our annual, quarterly and current reports, including amendments to such reports, as soon as reasonably practicable after we electronically file such material with, or furnish such material to, the SEC. Information contained on our website is not incorporated by reference into this prospectus supplement or the accompanying prospectus, and you should not consider information contained on our website as part of this prospectus supplement or the accompanying prospectus.

Implications of Being an Emerging Growth Company

We qualify as an emerging growth company as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. As an emerging growth company, we may take advantage of specified reduced disclosure and other requirements that are otherwise applicable generally to public companies. These provisions include:

requirement to provide only two years of audited financial statements in addition to any required unaudited interim financial statements with correspondingly reduced Management's Discussion and Analysis of Financial Condition and Results of Operations disclosure;

reduced disclosure about our executive compensation arrangements;

no non-binding advisory votes on executive compensation or golden parachute arrangements; and

exemption from the auditor attestation requirement in the assessment of our internal control over financial reporting under Section 404(b) of the Sarbanes Oxley Act of 2002.

We have elected to use the extended transition period for complying with new or revised accounting standards under Section 102(b)(1) of the JOBS Act. This election allows us to delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. As a result of this election, our financial statements may not be comparable to companies that comply with public company effective dates.

We may take advantage of these provisions for up to five years from the date of the initial public offering, or IPO, or such earlier time that we are no longer an emerging growth company. We would cease to be an emerging growth

company on the date that is the earliest of: (1) the last day of the fiscal year in which we have total annual gross revenues of \$1 billion or more; (2) the last day of our fiscal year following the fifth anniversary of the date of the completion of our IPO, which we completed March 12, 2014; (3) the date on which we have issued more than \$1 billion in nonconvertible debt during the previous three years; or (4) the date on which we are deemed to be a large accelerated filer under the rules of the Securities and Exchange Commission, or the SEC.

To the extent that we continue to qualify as a smaller reporting company, as such term is defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, or the Exchange Act, after we cease to qualify as

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an emerging growth company, certain of the exemptions available to us as an emerging growth company may continue to be available to us as a smaller reporting company, including: (1) not being required to comply with the auditor attestation requirements of our internal control over financial reporting under Section 404(b) of the Sarbanes Oxley Act of 2002; (2) scaled executive compensation disclosures; and (3) the requirement to provide only two years of audited financial statements, instead of three years.

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RISK FACTORS

Our business is influenced by many factors that are difficult to predict, and that involve uncertainties that may materially affect actual operating results, cash flows and financial condition. Before making an investment decision, you should carefully consider these risks, including those set forth in the Risk Factors section of our most recent Annual Report on Form 10-K filed with the SEC, as revised or supplemented by our Quarterly Reports on Form 10-Q filed with the SEC since the filing of our most recent Annual Report on Form 10-K, each of which is incorporated by reference into this prospectus. You should also carefully consider any other information we include or incorporate by reference in this prospectus or include in any applicable prospectus supplement. Each of the risks described in these sections and documents could materially and adversely affect our business, financial condition, results of operations and prospects, and could result in a partial or complete loss of your investment.

USE OF PROCEEDS

Unless otherwise indicated in a prospectus supplement, we anticipate that the net proceeds from our sale of any securities will be used to fund the development of our clinical programs, for other research and development activities and for general corporate purposes, which may include capital expenditures and funding our working capital needs. We expect from time to time to evaluate the acquisition of businesses, products and technologies for which a portion of the net proceeds may be used, although we currently are not planning or negotiating any such transactions. Pending such uses, we may invest the net proceeds in investment grade interest-bearing securities.

The amounts actually expended for each purpose may vary significantly depending upon numerous factors, including the amount and timing of the proceeds from this offering and progress with our clinical development programs. Expenditures will also depend upon the establishment of collaborative arrangements with other companies, the availability of additional financing and other factors. Investors will be relying on the judgment of our management regarding the application of the proceeds of any sale of securities.

We will not receive any of the proceeds from the sales of common stock being offered by the selling shareholders.

SELLING SHAREHOLDERS

On July 7, 2015, pursuant to a securities purchase agreement with certain accredited investors dated July 1, 2015, we sold in a private placement 1,379,311 shares of our common stock at a price per share of \$11.60. The table below sets forth, to our knowledge, information about the selling shareholders as of August 17, 2015.

We do not know when or in what amounts the selling shareholders may offer shares for sale. The selling shareholders might not sell any of the shares registered pursuant to the registration statement of which this prospectus forms a part. Because the selling shareholders may offer all or some of the shares pursuant to the registration statement of which this prospectus forms a part and because there are currently no agreements or understandings with respect to the sale of any shares, we cannot estimate the number of shares that will be held by the selling shareholders after completion of this offering. However, for purposes of this table, we have assumed that, after completion of this offering, none of the shares covered by this prospectus will be held by the selling shareholders.

Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to shares of our common stock. Unless otherwise indicated below, to our

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knowledge, the selling shareholders named in the table have sole voting and investment power with respect to the shares of common stock beneficially owned by them. The number of shares of common stock beneficially owned prior to the offering for each selling shareholder includes (i) all shares of our common stock held by such selling shareholder prior to the private placement plus (ii) all shares of our common stock purchased by such selling shareholder pursuant to the private placement and being offered pursuant to the prospectus, as well as (iii) all options or other derivative securities held by such selling shareholder, which are exercisable within 60 days of August 17, 2015. The percentages of shares owned after the offering are based on 9,221,374 shares of our common stock outstanding as of August 17, 2015, which includes the outstanding shares of common stock offered by this prospectus. The inclusion of any shares in this table does not constitute an admission of beneficial ownership by the person named below.

Throughout this prospectus, when we refer to the shares of our common stock being offered by this prospectus on behalf of the selling shareholders, we are referring to the shares of our common stock sold in the private placement, unless otherwise indicated.

The selling shareholders may have sold or transferred, in transactions exempt from the registration requirements of the Securities Act, some or all of their shares of common stock since the date on which the information in the table below is presented. Information about the selling shareholders may change over time.

Name and Address	Prior to Offering		Number of Shares Offered	After Offering(1)	
	Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned		Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned
Broadfin Capital, LLC (1)					
300 Park Avenue					
New York, NY 10022	2,060,086	22.3%	646,553	1,413,533	15.3%
Tourbillon Capital Partners, L.P. (2)					
444 Madison Ave.					
26 th Floor					
New York, NY 10022	646,552	7.0%	646,552		
Montserrat Global Fund (3)					
60 E. 42 nd Street					
New York, NY 10165	73,275	*	73,275		
Montserrat Healthcare Fund (3)	12,931	*	12,931		
60 E. 42 nd Street					

New York, NY 10165

* Less than 1%

- (1) Based upon information set forth in the Schedule 13D filed on July 15, 2015 by Broadfin Capital, LLC, or Broadfin, Broadfin Healthcare Master Fund, Ltd., or Master Fund, and Kevin Kotler. Broadfin, Master Fund and Mr. Kotler have shared voting and dispositive power over 2,060,086 shares of common stock. Mr. Kotler is the managing manager of Broadfin and has voting and dispositive power over its common units. Broadfin is the investment manager of Master Fund and has voting and dispositive power over its common units. Broadfin and Mr. Kotler each disclaim beneficial ownership of the share reported herein except to the extent of its or his pecuniary interest therein.
- (2) Based upon information set forth in the Schedule 13G filed on July 17, 2015 by Tourbillon Capital Partners, L.P. (Tourbillon) and Jason H. Karp. Mr. Karp is the Chief Investment Officer of Tourbillon and has voting and dispositive power over its common units. Tourbillon and Mr. Karp have shared voting and dispositive power over 646,552 shares of common stock.
- (3) Dr. Raj Mehra is the fund manager of Montserrat Global Fund and Montserrat Healthcare Fund and has voting and dispositive power over their investment decisions.

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Certain Relationships and Related Party Transactions

On July 1, 2015, we entered into a Securities Purchase Agreement, or Purchase Agreement, with each of the selling shareholders, pursuant to which, on July 7, 2015, we sold to the selling shareholders in a private placement an aggregate of 1,379,311 shares of our common stock, at a price per share of \$11.60, for gross proceeds of approximately \$16.0 million. The Private Placement closed on July 7, 2015. Pursuant to the Purchase Agreement we agreed to prepare and file with the SEC within 45 days of the closing of the private placement a registration statement covering the resale of the shares of our common stock sold to the selling shareholders, and to cause the registration statement to become effective within 75 days in the event of no review by the SEC, or 120 days in the event of a review by the SEC, after the closing of the private placement. We agreed to keep the registration statement effective until the earlier of (i) the third anniversary of the closing of the Private Placement or (ii) the date on which all shares sold in the Private Placement could be sold by the selling shareholders under Rule 144 under the Securities Act without being subject to any volume, manner of sale or publicly available information requirements. We are registering the shares to be sold by the selling shareholders under the registration statement of which this prospectus is a part to satisfy our obligation under the Purchase Agreement.

Prior to purchasing shares of our common stock pursuant to the Purchase Agreement, Broadfin was a beneficial owner of approximately 18% of our outstanding common stock and, as of August 17, 2015, is the a beneficial owner of 22.3% of our outstanding common stock.

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PLAN OF DISTRIBUTION

We, and any selling shareholders and their successors, including their permitted transferees, may sell the offered securities in any of the ways described below or in any combination or any other way set forth in an applicable prospectus supplement from time to time:

to or through underwriters or dealers;

through one or more agents; or

directly to purchasers or to a single purchaser.

In addition, the selling shareholders may sell shares of our common stock under Rule 144 of the Securities Act rather than pursuant to this prospectus.

The distribution of the securities may be effected from time to time in one or more transactions:

at a fixed price, or prices, which may be changed from time to time;

at market prices prevailing at the time of sale;

at prices related to such prevailing market prices; or

at negotiated prices.

In connection with each offering by us and certain offerings by the selling shareholders (if applicable), a prospectus supplement will describe the method of distribution of the securities and any applicable restrictions. The prospectus supplement will also describe the specific terms of the offering of the securities, including the following:

the name or names of any underwriters, dealers or agents and the amounts of securities underwritten or purchased by each of them;

the public offering price of the securities and the proceeds to us and any selling shareholders and any discounts, commissions or concessions allowed or reallocated or paid to dealers; and

any securities exchanges on which the securities may be listed.

Any offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time.

In compliance with the guidelines of the Financial Industry Regulatory Authority, the maximum compensation to the underwriters or dealers in connection with the sale by us of our securities pursuant to this prospectus and the accompanying supplement to this prospectus may not exceed 8% of the aggregate offering price of the securities as set forth on the cover page of any prospectus supplement.

Only the agents or underwriters named in each prospectus supplement are agents or underwriters in connection with the securities being offered thereby.

Agents and underwriters may be entitled to indemnification by us or any selling shareholder against certain civil liabilities, including liabilities under the Securities Act, or to contribution from us or any selling shareholder with respect to payments which the agents or underwriters may be required to make in respect thereof. Agents and underwriters may be customers of, engage in transactions with, or perform services for us in the ordinary course of business.

Certain underwriters may use this prospectus and any accompanying prospectus supplement for offers and sales related to market-making transactions in the securities. These underwriters may act as principal or agent in these transactions, and the sales will be made at prices related to prevailing market prices at the time of sale.

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The securities we or any selling shareholders offer may be new issues of securities and may have no established trading market. The securities may or may not be listed on a securities exchange. Underwriters may make a market in these securities, but will not be obligated to do so and may discontinue any market making at any time without notice. We can make no assurance as to the liquidity of, or the existence of trading markets for, any of the securities.

Certain persons participating in an offering may engage in overallotment, stabilizing transactions, short covering transactions and penalty bids in accordance with rules and regulations under the Exchange Act. Overallotment involves sales in excess of the offering size, which create a short position. Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum. Short covering transactions involve purchases of the securities in the open market after the distribution is completed to cover short positions. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a short covering transaction to cover short positions. Those activities may cause the price of the securities to be higher than it would otherwise be. If commenced, the underwriters may discontinue any of the activities at any time.

We also may sell any of the securities through agents designated by us from time to time. We will name any agent involved in the offer or sale of these securities and will list commissions payable by us to these agents in the applicable prospectus supplement. These agents will be acting on a best efforts basis to solicit purchases for the period of its appointment, unless stated otherwise in the applicable prospectuses.

Under the terms of the Purchase Agreement, we have agreed to indemnify the selling shareholders and certain other persons against certain liabilities in connection with the offering of the shares of our common stock offered hereby, including liabilities arising under the Securities Act or, if such indemnity is unavailable, to contribute toward amounts required to be paid in respect of such liabilities.

We or any selling shareholders may sell any of the securities directly to purchasers. In this case, we or any selling shareholders will not engage underwriters or agents in the offer and sale of these securities.

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GENERAL DESCRIPTION OF OUR SECURITIES

We may offer and sell, at any time and from time to time:

shares of our common stock;

shares of preferred stock;

warrants to purchase shares of our common stock, preferred stock and/or debt securities;

debt securities consisting of debentures, notes or other evidences of indebtedness;

units consisting of a combination of the foregoing securities;

subscription rights to purchase any of the foregoing securities; or

any combination of these securities.

The selling shareholders may also offer shares of our common stock from time to time. The terms of any securities we offer or that are offered by the selling shareholders will be determined at the time of sale. We may issue debt securities that are exchangeable for and/or convertible into common stock or any of the other securities that may be sold under this prospectus. When particular securities are offered by us, and in certain cases by the selling shareholders, a supplement to this prospectus will be filed with the SEC, which will describe the terms of the offering and sale of the offered securities.

DESCRIPTION OF OUR CAPITAL STOCK

The following description of our capital stock and provisions of our articles of incorporation, bylaws and the Pennsylvania Business Corporation law are summaries and are qualified in their entirety by reference to the articles of incorporation and the bylaws. We have filed copies of these documents with the SEC as exhibits to our registration statement, of which this prospectus forms a part.

Pursuant to our Second Amended and Restated Articles of Incorporation, our authorized capital stock consists of 50,000,000 shares of common stock, par value of \$0.01 per share, and 10,000,000 shares of preferred stock, par value \$0.01 per share, to be designated from time to time by our board.

Common Stock

As of August 27, 2015, there were 9,221,374 shares of our common stock issued and outstanding. Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of shareholders, including the election of directors, and do not have cumulative voting rights. Accordingly, the holders of a majority of the

outstanding shares of common stock in person or represented by proxies in any election of directors can elect all of the directors standing for election, if they so choose, other than any directors that holders of any preferred stock that we may issue may be entitled to elect.

Subject to preferences that may be applicable to any then-outstanding shares of preferred stock, holders of our common stock are entitled to receive ratably dividends when, as, and if declared by our board of directors out of funds legally available therefor, subject to any preferential dividend rights of outstanding preferred stock. In the event of our liquidation, dissolution, or winding up, holders of our common stock will be entitled to ratably receive the net assets of our company available after the payments of all debts and other liabilities and subject to the prior rights of the holders of any then-outstanding shares of preferred stock.

Holders of our common stock have no preemptive, subscription, redemption or conversion rights. All outstanding shares of our common stock are, and the common stock to be outstanding upon completion of this offering, will be, duly authorized, validly issued, fully paid and non-assessable. The rights and privileges of the holders of the common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

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Preferred Stock

Our board of directors has the authority, without further action by our shareholders, to issue up to 10,000,000 shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the dividend, voting and other rights, preferences and privileges of the shares of each wholly unissued series and any qualifications, limitations or restrictions thereon, and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding. Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in our control and may adversely affect the market price of the common stock and the voting and other rights of the holders of our common stock. We have no current plans to issue any shares of preferred stock.

Common Stock Warrants

We issued to the representatives of the underwriters in our IPO warrants to purchase up to 150,000 shares of our common stock, with a per share exercise price equal to \$12.00, or 150% of the public offering price., or IPO warrants. The IPO warrants provide for certain piggyback registration rights. The IPO warrants are exercisable by the underwriters at any time, in whole or in part, during the four year period commencing one year after the closing of our IPO.

In connection with the Gainesville Transaction, we issued to Alkermes a seven-year warrant to purchase an aggregate of 350,000 shares of our common stock, with a per share exercise price of \$19.46 per share. In addition, we issued to OrbiMed a seven year warrant to purchase an aggregate of 294,928 shares of our common stock, with a per share exercise price of \$3.28 per share, subject to certain adjustments.

Registration Rights

Private Placement

In connection with the Private Placement, we entered into the Purchase Agreement with the selling shareholders. Under the Purchase Agreement, we granted the selling shareholders certain registration rights with respect to the shares sold in the Private Placement. In particular, the Purchase Agreement requires us to file a registration statement with the SEC to register the sale of such shares within 45 days of the consummation of the private placement. This prospectus is being filed pursuant to such registration rights granted to the selling shareholders.

IPO Warrants

As stated above, holders of the IPO warrants have certain piggyback registration rights. If at any time prior to the third anniversary of our IPO we propose to register any shares of our common stock under the Securities Act, subject to certain exceptions, the holders of the IPO warrants will be entitled to notice of the registration and the right to include the shares of common stock issuable upon exercise of their IPO warrants in the registration statement. If our proposed registration involves an underwriting, the underwriter of such offering will have the right to limit the number of shares to be underwritten for reasons related to the marketing of the shares. The holders of IPO Warrants have waived their registration rights with regard to this prospectus.

Prior Holders of Series A Redeemable Convertible Preferred Stock

Holders of our common stock that were issued upon conversion of our Series A Redeemable Convertible Preferred Stock immediately prior to the closing of our IPO are entitled to the following rights with respect to the registration of such shares, or registrable securities, for public resale under the Securities Act, pursuant to an

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Investor Rights Agreement by and among us and certain of our shareholders. The registration of shares of common stock as a result of the following rights being exercised would enable holders to trade these shares without restriction under the Securities Act when the applicable registration statement is declared effective. Such holders have waived their registration rights with regard to this prospectus.

Demand Registration Rights. If at any time the holders of a majority of the registrable securities request in writing that we file a registration statement under the Securities Act for the registration of at least 20% of our common stock then outstanding with an aggregate price of at least \$20 million, we may be required to register their shares. We are obligated to effect no more than two registrations for the holders of registrable securities in response to these demand registration rights. If the holders requesting registration intend to distribute their shares by means of an underwriting, the underwriter of such offering will have the right to limit the numbers of shares to be underwritten on a pro rata basis for reasons related to the marketing of the shares.

Piggyback Registration Rights. If at any time we propose to register any shares of our common stock under the Securities Act, subject to certain exceptions, the holders of registrable securities will be entitled to notice of the registration and the right to include their shares of registrable securities in the registration statement. If our proposed registration involves an underwriting, the underwriter of such offering will have the right to limit the number of shares to be underwritten for reasons related to the marketing of the shares.

Form S-3 Registration Rights. If at any time after we become entitled under the Securities Act to register our shares of common stock on Form S-3, holders of not less than 10% of the registrable securities then outstanding request in writing that we register their shares for public resale on Form S-3 and the reasonably anticipated price to the public is \$10 million or more, we will be required to use commercially reasonable efforts to effect such registration; provided, however, that we will not be required to effect such a registration if (1) we certify in a certificate signed by our Chief Executive Officer that we intend to engage in a registered public offering within 90 days of receiving the Form S-3 request, or (2) we certify in a certificate signed by our Chief Executive Officer stating that in our good faith judgment, it would be detrimental to the Company for such registration on Form S-3 to be effected at such time, in which event we have the right to defer the filing of the Form S-3 registration statement for a period of not more than 120 days.

Expenses. Subject to certain exceptions, and other than underwriting discounts and selling commissions, we will be required to pay all expenses incurred by us related to any registration effected pursuant to the exercise of these registration rights. These expenses may include all registration and filing fees, printing expenses, fees and disbursements of our counsel, blue sky fees and expenses and the expenses of any special audits incident to or required by the registration.

Termination of Registration Rights. These registration rights terminate three years after the completion of an underwritten public offering of our common stock, which generates aggregate proceeds of at least \$10,000,000, at a price per share of not less than four times the original purchase price of the shares of Series A Redeemable Convertible Preferred Stock. In addition, a holder's registration rights will expire if all registrable securities held by and issuable to such holder could be sold under Rule 144 of the Securities Act during any 90-day period.

Anti-Takeover Effects of Pennsylvania Law and Our Articles of Incorporation and Bylaws

Pennsylvania Anti-Takeover Law

Provisions of the Pennsylvania Business Corporation Law of 1988, or the PBCL, applicable to us provide, among other things, that:

we may not engage in a business combination with an interested shareholder, generally defined as a holder of 20% of a corporation's voting stock, during the five-year period after the interested shareholder became such except under certain specified circumstances;

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holders of our common stock may object to a control transaction involving us (a control transaction is defined as the acquisition by a person or group of persons acting in concert of at least 20% of the outstanding voting stock of a corporation), and demand that they be paid a cash payment for the fair value of their shares from the controlling person or group;

holders of control shares will not be entitled to voting rights with respect to any shares in excess of specified thresholds, including 20% voting control, until the voting rights associated with such shares are restored by the affirmative vote of a majority of disinterested shares and the outstanding voting shares of the Company; and

any profit, as defined, realized by any person or group who is or was a controlling person or group with respect to us from the disposition of any equity securities of within 18 months after the person or group became a controlling person or group shall belong to and be recoverable by us.

Pennsylvania-chartered corporations may exempt themselves from these and other anti-takeover provisions. Our articles of incorporation do not provide for exemption from the applicability of these or other anti-takeover provisions in the PBCL.

The provisions noted above may have the effect of discouraging a future takeover attempt that is not approved by our board of directors but which individual shareholders may consider to be in their best interests or in which shareholders may receive a substantial premium for their shares over the then current market price. As a result, shareholders who might wish to participate in such a transaction may not have an opportunity to do so. The provisions may also result in the removal of our board of directors or management more difficult. Furthermore, such provisions could render our company being deemed less attractive to a potential acquiror and/or could result in our shareholders receiving a lesser amount of consideration for their shares of our common stock than otherwise could have been available either in the market generally and/or in a takeover.

Articles of Incorporation and Bylaws

Provisions of our articles of incorporation and bylaws may delay or discourage transactions involving an actual or potential change of control or change in our management, including transactions in which shareholders might otherwise receive a premium for their shares, or transactions that our shareholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our common stock. Among other things, our articles of incorporation and bylaws:

divide our board of directors into three classes with staggered three-year terms;

provide that a special meeting of shareholders may be called only by a majority of our board of directors;

establish advance notice procedures with respect to shareholder proposals to be brought before a shareholder meeting and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors;

provide that shareholders may only act at a duly organized meeting; and

provide that members of our board of directors may be removed from office by our shareholders only for cause by the affirmative vote of 75% of the total voting power of all shares entitled to vote generally in the election of directors.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Broadridge Corporate Issuer Solutions, Inc.

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Stock Market Listing

Our shares of common stock are listed for trading on the NASDAQ Capital Market under the symbol REPH.

DESCRIPTION OF OUR WARRANTS

We may issue warrants to purchase shares of our common stock, preferred stock and/or debt securities in one or more series together with other securities or separately, as described in each applicable prospectus supplement. Below is a description of certain general terms and provisions of the warrants that we may offer. Particular terms of the warrants will be described in the applicable warrant agreements and the applicable prospectus supplement for the warrants.

The applicable prospectus supplement will contain, where applicable, the following terms of and other information relating to the warrants:

the specific designation and aggregate number of, and the price at which we will issue, the warrants;

the currency or currency units in which the offering price, if any, and the exercise price are payable;

the designation, amount and terms of the securities purchasable upon exercise of the warrants;

if applicable, the exercise price for shares of our common stock and the number of shares of common stock to be received upon exercise of the warrants;

if applicable, the exercise price for shares of our preferred stock, the number of shares of preferred stock to be received upon exercise of the warrants, and a description of that series of our preferred stock;

if applicable, the exercise price for our debt securities, the amount of our debt securities to be received upon exercise of the warrants, and a description of that series of debt securities;

the date on which the right to exercise the warrants will begin and the date on which that right will expire or, if the warrants may not be continuously exercised throughout that period, the specific date or dates on which the warrants may be exercised;

whether the warrants will be issued in fully registered form or bearer form, in definitive or global form or in any combination of these forms, although, in any case, the form of a warrant included in a unit will correspond to the form of the unit and of any security included in that unit;

any applicable material U.S. federal income tax consequences;

the identity of the warrant agent for the warrants and of any other depositaries, execution or paying agents, transfer agents, registrars or other agents;

the proposed listing, if any, of the warrants or any securities purchasable upon exercise of the warrants on any securities exchange or market;

if applicable, the date from and after which the warrants and the common stock, preferred stock and/or debt securities will be separately transferable;

if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;

information with respect to book-entry procedures, if any

the anti-dilution provisions of the warrants, if any;

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any redemption or call provisions;

whether the warrants are to be sold separately or with other securities as parts of units; and

any additional terms of the warrants, including terms, procedures and limitations relating to the exchange and exercise of the warrants.

Transfer Agent and Registrar

The transfer agent and registrar for any warrants will be set forth in the applicable prospectus supplement.

Description of Outstanding Warrants

As of August 27, 2015, there were 794,928 warrants to purchase shares of our common stock outstanding. See Description of Our Capital Stock Common Stock Warrants.

DESCRIPTION OF OUR DEBT SECURITIES

This section describes the general terms and provisions of the debt securities that we may offer under this prospectus, any of which may be issued as convertible or exchangeable debt securities. We will set forth the particular terms of the debt securities we offer in a prospectus supplement. The extent, if any, to which the following general provisions apply to particular debt securities will be described in the applicable prospectus supplement. The following description of general terms relating to the debt securities and the indenture under which the debt securities will be issued are summaries only and therefore are not complete. You should read the indenture and the prospectus supplement regarding any particular issuance of debt securities.

We will issue any debt under an indenture to be entered into between us and the trustee identified in the applicable prospectus supplement. The terms of the debt securities will include those stated in the indenture and those made part of the indenture by reference to the Trust Indenture Act of 1939, as in effect on the date of the indenture. We have filed or will file a copy of the form of indenture as an exhibit to the registration statement in which this prospectus is included. The indenture will be subject to and governed by the terms of the Trust Indenture Act of 1939.

We may offer under this prospectus up to an aggregate principal amount of \$100,000,000 in debt securities, or if debt securities are issued at a discount, or in a foreign currency, foreign currency units or composite currency, the principal amount as may be sold for an aggregate initial public offering price of up to \$100,000,000. Unless otherwise specified in the applicable prospectus supplement, the debt securities will represent direct, unsecured obligations of the Company and will rank equally with all of our other unsecured indebtedness.

The following statements relating to the debt securities and the indenture are summaries, qualified in their entirety by reference to the detailed provisions of the indenture and the final form indenture as may be filed with a future prospectus supplement.

The prospectus supplement will set forth, to the extent required, the following terms of the debt securities in respect of which the prospectus supplement is delivered:

the title of the series;

the aggregate principal amount;

the issue price or prices, expressed as a percentage of the aggregate principal amount of the debt securities;

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any limit on the aggregate principal amount;

the date or dates on which principal is payable;

the interest rate or rates (which may be fixed or variable) or, if applicable, the method used to determine such rate or rates;

the date or dates from which interest, if any, will be payable and any regular record date for the interest payable;

the place or places where principal and, if applicable, premium and interest, is payable;

the terms and conditions upon which we may, or the holders may require us to, redeem or repurchase the debt securities;

the denominations in which such debt securities may be issuable, if other than denominations of \$1,000 or any integral multiple of that number;

whether the debt securities are to be issuable in the form of certificated securities (as described below) or global securities (as described below);

the portion of principal amount that will be payable upon declaration of acceleration of the maturity date if other than the principal amount of the debt securities;

the currency of denomination;

the designation of the currency, currencies or currency units in which payment of principal and, if applicable, premium and interest, will be made;

if payments of principal and, if applicable, premium or interest, on the debt securities are to be made in one or more currencies or currency units other than the currency of denomination, the manner in which the exchange rate with respect to such payments will be determined;

if amounts of principal and, if applicable, premium and interest may be determined by reference to an index based on a currency or currencies or by reference to a commodity, commodity index, stock exchange index or financial index, then the manner in which such amounts will be determined;

the provisions, if any, relating to any collateral provided for such debt securities;

any addition to or change in the covenants and/or the acceleration provisions described in this prospectus or in the indenture;

any events of default, if not otherwise described below under Events of Default ;

the terms and conditions, if any, for conversion into or exchange for shares of our common stock or preferred stock;

any depositaries, interest rate calculation agents, exchange rate calculation agents or other agents; and

the terms and conditions, if any, upon which the debt securities shall be subordinated in right of payment to other indebtedness of the Company.

We may issue discount debt securities that provide for an amount less than the stated principal amount to be due and payable upon acceleration of the maturity of such debt securities in accordance with the terms of the indenture. We may also issue debt securities in bearer form, with or without coupons. If we issue discount debt securities or debt securities in bearer form, we will describe material U.S. federal income tax considerations and other material special considerations which apply to these debt securities in the applicable prospectus supplement. We may issue debt securities denominated in or payable in a foreign currency or currencies or a foreign currency unit or units. If we do, we will describe the restrictions, elections, and general tax considerations relating to the debt securities and the foreign currency or currencies or foreign currency unit or units in the applicable prospectus supplement.

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Exchange and/or Conversion Rights

We may issue debt securities which can be exchanged for or converted into shares of our common stock or preferred stock. If we do, we will describe the terms of exchange or conversion in the prospectus supplement relating to these debt securities.

Transfer and Exchange

We may issue debt securities that will be represented by either:

book-entry securities, which means that there will be one or more global securities registered in the name of a depositary or a nominee of a depositary; or

certificated securities, which means that they will be represented by a certificate issued in definitive registered form.

We will specify in the prospectus supplement applicable to a particular offering whether the debt securities offered will be book-entry or certificated securities.

Certificated Debt Securities

If you hold certificated debt securities issued under an indenture, you may transfer or exchange such debt securities in accordance with the terms of the indenture. You will not be charged a service charge for any transfer or exchange of certificated debt securities but may be required to pay an amount sufficient to cover any tax or other governmental charge payable in connection with such transfer or exchange.

Global Securities

The debt securities of a series may be issued in the form of one or more global securities that will be deposited with a depositary or its nominees identified in the prospectus supplement relating to the debt securities. In such a case, one or more global securities will be issued in a denomination or aggregate denominations equal to the portion of the aggregate principal amount of outstanding debt securities of the series to be represented by such global security or securities.

Unless and until it is exchanged in whole or in part for debt securities in definitive registered form, a global security may not be registered for transfer or exchange except as a whole by the depositary for such global security to a nominee of the depositary and except in the circumstances described in the prospectus supplement relating to the debt securities. The specific terms of the depositary arrangement with respect to a series of debt securities will be described in the prospectus supplement relating to such series.

Protection in the Event of Change of Control

Any provision in an indenture that governs our debt securities covered by this prospectus that includes any covenant or other provision providing for a put or increased interest or otherwise that would afford holders of our debt securities additional protection in the event of a recapitalization transaction, a change of control of the Company, or a highly leveraged transaction will be described in the applicable prospectus supplement.

Covenants

Unless otherwise indicated in this prospectus or the applicable prospectus supplement, our debt securities may not have the benefit of any covenant that limits or restricts our business or operations, the pledging of our assets or the incurrence by us of indebtedness. We will describe in the applicable prospectus supplement any material covenants in respect of a series of debt securities.

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Consolidation, Merger and Sale of Assets

We may agree in any indenture that governs the debt securities of any series covered by this prospectus that we will not consolidate with or merge into any other person or convey, transfer, sell or lease our properties and assets substantially as an entirety to any person, unless such person and such proposed transaction meets various criteria, which we will describe in detail in the applicable prospectus supplement.

Defaults and Notice

The debt securities of any series will contain events of default to be specified in the applicable prospectus supplement, which may include, without limitation:

failure to pay the principal of, or premium or make-whole amount, if any, on any debt security of such series when due and payable (whether at maturity, by call for redemption, through any mandatory sinking fund, by redemption at the option of the holder, by declaration or acceleration or otherwise);

failure to make a payment of any interest on any debt security of such series when due;

our failure to perform or observe any other covenants or agreements in the indenture with respect to the debt securities of such series;

certain events relating to our bankruptcy, insolvency or reorganization; and

certain cross defaults, if and as applicable.

If an event of default with respect to debt securities of any series shall occur and be continuing, we may agree that the trustee or the holders of at least 25% in aggregate principal amount of the then outstanding debt securities of such series may declare the principal amount (or, if the debt securities of such series are issued at an original issue discount, such portion of the principal amount as may be specified in the terms of the debt securities of such series) of all debt securities of such series or such other amount or amounts as the debt securities or supplemental indenture with respect to such series may provide, to be due and payable immediately. Any provisions pertaining to events of default and any remedies associated therewith will be described in the applicable prospectus supplement.

Any indenture that governs our debt securities covered by this prospectus may require that the trustee under such indenture shall, within 90 days after the occurrence of a default, give to holders of debt securities of any series notice of all uncured defaults with respect to such series known to it. However, in the case of a default that results from the failure to make any payment of the principal of, premium or make-whole amount, if any, or interest on the debt securities of any series, or in the payment of any mandatory sinking fund installment with respect to debt securities of such series, if any, the trustee may withhold such notice if it in good faith determines that the withholding of such notice is in the interest of the holders of debt securities of such series. Any terms and provisions relating to the foregoing types of provisions will be described in further detail in the applicable prospectus supplement.

Any indenture that governs our debt securities covered by this prospectus will contain a provision entitling the trustee to be indemnified by holders of debt securities before proceeding to exercise any trust or power under the indenture at the request of such holders. Any such indenture may provide that the holders of at least a majority in aggregate principal amount of the then outstanding debt securities of any series may direct the time, method and place of conducting any proceedings for any remedy available to the trustee, or of exercising any trust or power conferred upon the trustee with respect to the debt securities of such series. However, the trustee under any such indenture may decline to follow any such direction if, among other reasons, the trustee determines in good faith that the actions or proceedings as directed may not lawfully be taken, would involve the trustee in personal liability or would be unduly prejudicial to the holders of the debt securities of such series not joining in such direction.

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Any indenture that governs our debt securities covered by this prospectus may endow the holders of such debt securities to institute a proceeding with respect to such indenture, subject to certain conditions, which will be specified in the applicable prospectus supplement and which may include, that the holders of at least a majority in aggregate principal amount of the debt securities of such series then outstanding make a written request upon the trustee to exercise its power under the indenture, indemnify the trustee and afford the trustee reasonable opportunity to act. Even so, such holders may have an absolute right to receipt of the principal of, premium or make-whole amount, if any, and interest when due, to require conversion or exchange of debt securities if such indenture provides for convertibility or exchangeability at the option of the holder and to institute suit for the enforcement of such rights. Any terms and provisions relating to the foregoing types of provisions will be described in further detail in the applicable prospectus supplement.

Modification of the Indenture

We and the trustee may modify any indenture that governs our debt securities of any series covered by this prospectus with or without the consent of the holders of such debt securities, under certain circumstances to be described in a prospectus supplement.

Defeasance; Satisfaction and Discharge

The prospectus supplement will outline the conditions under which we may elect to have certain of our obligations under the indenture discharged and under which the indenture obligations will be deemed to be satisfied.

Regarding the Trustee

We will identify the trustee and any relationship that we may have with such trustee, with respect to any series of debt securities, in the prospectus supplement relating to the applicable debt securities. You should note that if the trustee becomes a creditor of Recro Pharma, Inc., the indenture and the Trust Indenture Act of 1939 limit the rights of the trustee to obtain payment of claims in certain cases, or to realize on certain property received in respect of any such claim, as security or otherwise. The trustee and its affiliates may engage in, and will be permitted to continue to engage in, other transactions with us and our affiliates. If, however, the trustee acquires any conflicting interest within the meaning of the Trust Indenture Act of 1939, it must eliminate such conflict or resign.

Governing Law

The law governing the indenture and the debt securities will be identified in the prospectus supplement relating to the applicable indenture and debt securities.

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DESCRIPTION OF OUR UNITS

The following description, together with the additional information we include in any applicable prospectus supplement, summarizes the material terms and provisions of the units that we may offer under this prospectus. Units may be offered independently or together with common stock, preferred stock, debt securities and/or warrants offered by any prospectus supplement, and may be attached to or separate from those securities. While the terms we have summarized below will generally apply to any future units that we may offer under this prospectus, we will describe the particular terms of any series of units that we may offer in more detail in the applicable prospectus supplement. The terms of any units offered under a prospectus supplement may differ from the terms described below.

We will incorporate by reference into the registration statement of which this prospectus forms a part the form of unit agreement, including a form of unit certificate if any, that describes the terms of the series of units we are offering before the issuance of the related series of units. The following summaries of material provisions of the units, and the unit agreements, are subject to, and qualified in their entirety by reference to, all the provisions of the unit agreement applicable to a particular series of units. We urge you to read the applicable prospectus supplements related to the units that we sell under this prospectus, as well as the complete unit agreements that contain the terms of the units.

General

We may issue units comprised of one or more shares of common stock or preferred stock, debt securities and warrants in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We will describe in the applicable prospectus supplement the terms of the series of units, including:

the designation and terms of the units and of the securities comprising the units, including whether, and under what circumstances, those securities may be held or transferred separately;

the rights and obligations of the unit agent, if any;

any provisions of the governing unit agreement that differ from those described below; and

any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The provisions described in this section, as well as those described under **Description of Our Capital Stock**, **Description of Our Debt Securities** and **Description of Our Warrants**, will apply to each unit and to any common stock, preferred stock, debt securities or warrants included in each unit, respectively.

Issuance in Series

We may issue units in such amounts and in numerous distinct series as we determine.

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DESCRIPTION OF OUR SUBSCRIPTION RIGHTS

As specified in any applicable prospectus supplement, we may issue subscription rights consisting of one or more debt securities, shares of preferred stock, shares of common stock or any combination of such securities.

LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Pepper Hamilton LLP, Philadelphia, Pennsylvania. As appropriate, legal counsel representing the selling shareholders, underwriters, dealers or agents will be named in the accompanying prospectus supplement and may opine to certain legal matters.

EXPERTS

The financial statements of Recro Pharma, Inc. as of December 31, 2013 and 2014, and for the years then ended, have been incorporated by reference herein in reliance upon the report of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

The combined financial statements of DARA incorporated in this prospectus by reference to Recro Pharma, Inc.'s Current Report on Form 8-K/A filed with the SEC on June 2, 2015 have been incorporated by reference in this prospectus in reliance upon the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus.

We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC:

our Annual Report on Form 10-K for the year ended December 31, 2014, filed on March 25, 2015;

our Quarterly Reports on Form 10-Q for the periods ended March 31, 2015 and June 30, 2015, filed on May 12, 2015 and August 14, 2015, respectively;

our Current Reports on Form 8-K (other than portions thereof furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits accompanying such reports that are related to such items) filed on February 3, 2015, February 5, 2015, March 11, 2015, April 10, 2015, April 16, 2015 (as amended by Form 8-K/A filed on June 2, 2015, Form 8-K/A filed on June 26, 2015 and Form 8-K/A filed on July 21, 2015), May 12, 2015, May 28, 2015, June 26, 2015, July 8, 2015, July 16, 2015, July 17, 2015 and July 24, 2015;

The description of our common stock contained in our registration statement on Form 8-A filed on March 4, 2014 (Registration no. 001-36329) with the SEC, including any amendment or report filed for the purpose of updating such description;

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All documents filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, after the date of the initial filing of the registration statement of which this prospectus is a part and prior to the effectiveness of such registration statement; and

All documents filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date of this prospectus and before we stop offering the securities under this prospectus.

You may request, orally or in writing, a copy of any or all of the documents incorporated herein by reference. These documents will be provided to you at no cost, by contacting: Susan Kim, Argot Partners, 767 Third Avenue, 29th Floor, New York, NY 10017, (212) 600-1902, email address: susan@argotpartners.com. In addition, copies of any or all of the documents incorporated herein by reference may be accessed at our website at <http://www.recropharma.com>. The information on such website is not incorporated by reference and is not a part of this prospectus.

You should rely only on information contained in, or incorporated by reference into, this prospectus and any prospectus supplement. We have not authorized anyone to provide you with information different from that contained in this prospectus or incorporated by reference in this prospectus.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any document we file with the SEC at the SEC's public reference room at 100 F Street NE, Room 1580, Washington, D.C. 20549. You may obtain information on the operation of the SEC's public reference facilities by calling the SEC at 1-800-SEC-0330. You can request copies of these documents, upon payment of a duplicating fee, by writing to the SEC at its principal office at 100 F Street NE, Room 1580, Washington, D.C. 20549-1004. The SEC maintains an Internet website at <http://www.sec.gov> that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. Our SEC filings are accessible through the Internet at that website. Our reports on Forms 10-K, 10-Q and 8-K, and amendments to those reports, are also available for download, free of charge, as soon as reasonably practicable after these reports are filed with the SEC, at our website at www.recropharma.com. The content contained in, or that can be accessed through, our website is not a part of this prospectus.

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Shares

RECRO PHARMA, INC.

Common Stock

PROSPECTUS SUPPLEMENT

Piper Jaffray

Janney Montgomery Scott

August , 2016