Ignyta, Inc.
Form 424B3
October 20, 2015
Table of Contents

Filed Pursuant to Rule 424(b)(3)
Registration No. 333-207249

PROSPECTUS

IGNYTA, INC.

3,000,000 Shares of Common Stock

This prospectus relates solely to the resale or other disposition by the selling stockholder identified in the prospectus of up to 3,000,000 shares of our common stock issued by us to the selling stockholder on March 17, 2015 pursuant to the transactions described in Description of Asset Purchase Agreement and Subscription Agreement.

The selling stockholder, or its pledgees, donees, transferees or other successors-in-interest, may, from time to time, sell, transfer, or otherwise dispose of any or all of its shares through public or private transactions at prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices. However, without our consent, the selling stockholder may not sell any shares offered in the prospectus until the earlier of March 17, 2016 and our change of control.

We are not selling any common stock under this prospectus, and will not receive any proceeds from the sale of the shares. The selling stockholder will sell the shares in accordance with the Plan of Distribution set forth in this prospectus. The selling stockholder will bear all commissions and discounts, if any, attributable to the sales of shares. We will bear all costs, expenses and fees in connection with the registration of the shares.

Any brokers or dealers participating in any sales of common stock offered by the selling stockholder may act either as principals or agents, may use block trades to position and resell the shares of common stock, and may be deemed to be underwriters within the meaning of the Securities Act of 1933, as amended, or the Securities Act. Commissions received by any broker-dealer may be deemed to be underwriting commissions under the Securities Act. See Plan of Distribution.

INVESTING IN OUR COMMON STOCK INVOLVES RISKS. YOU SHOULD CONSIDER THE RISKS THAT WE HAVE DESCRIBED IN RISK FACTORS ON PAGE 8, AS UPDATED IN ANY FUTURE FILINGS MADE WITH THE SECURITIES AND EXCHANGE COMMISSION THAT ARE INCORPORATED BY REFERENCE IN THIS PROSPECTUS, BEFORE INVESTING IN OUR COMMON STOCK.

Our common stock is listed on the Nasdaq Capital Market under the symbol RXDX. On October 19, 2015, the last reported sale price of our common stock on the Nasdaq Capital Market was $11.01 per share.

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 October 19, 2015.

Table of Contents

TABLE OF CONTENTS

ABOUT THIS PROSPECTUS	1
WHERE YOU CAN FIND MORE INFORMATION; INCORPORATION BY REFERENCE	2
THE COMPANY	4
THE OFFERING	7
RISK FACTORS	8
CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS	9
DESCRIPTION OF ASSET PURCHASE AGREEMENT AND SUBSCRIPTION AGREEMENT	10
USE OF PROCEEDS	11
SELLING STOCKHOLDER	12
PLAN OF DISTRIBUTION	13
LEGAL MATTERS	16
EXPERTS	16

Table of Contents

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission, or the SEC, using a shelf registration process, pursuant to which a selling stockholder may from time to time offer to sell shares of common stock in one or more offerings. In some cases, the selling stockholder will also be required to provide a prospectus supplement containing specific information about the selling stockholder and the terms on which it is offering and selling our common stock. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to those offerings. Before purchasing any securities, you should carefully read this prospectus, any applicable prospectus supplement and any related free writing prospectus, together with the additional information described under the heading Where You Can Find More Information; Incorporation by Reference. The prospectus supplement and any related free writing prospectus may also add, update or change information contained in this prospectus with respect to that offering. If there is any inconsistency between the information in this prospectus, any applicable prospectus supplement and any related free writing prospectus, you should rely on the prospectus supplement and any related free writing prospectus.

Neither we nor the selling stockholders have authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. The selling stockholders will not make an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus, any applicable prospectus supplement and any related free writing prospectus is accurate only as of the date on its respective cover, and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates.

When we refer to Ignyta, we, our, us and the Company in this prospectus, we mean Ignyta, Inc., unless otherwis specified. When we refer to you, we mean the holders of the applicable series of securities.

We have registered trademarks for Ignyta®, the Ignyta word mark and teardrop design, Methylome®, and Trailblaze®, and have pending trademark applications for Ignyta, the Ignyta word mark and teardrop design, the Ignyta teardrop design, Methylome, Oncolome, Pharos, Trailblaze and Trailblaze Pharos . All other trademarks, trade names and service marks appearing in this prospectus or the documents incorporated by reference herein are the property of their respective owners. Use or display by us of other parties trademarks, trade dress or products is not intended to and does not imply a relationship with, or endorsements or sponsorship of, us by the trademark or trade dress owner. Solely for convenience, trademarks and tradenames referred to in this prospectus appear without the ® and symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or that the applicable owner will not assert its rights, to these trademarks and tradenames.

Table of Contents

WHERE YOU CAN FIND MORE INFORMATION; INCORPORATION BY REFERENCE

Available Information

We file reports, proxy statements and other information with the SEC. Information filed with the SEC by us can be inspected and copied at the Public Reference Room maintained by the SEC at 100 F Street, N.E., Washington, D.C. 20549. You may also obtain copies of this information by mail from the Public Reference Room of the SEC at prescribed rates. Further information on the operation of the SEC s Public Reference Room in Washington, D.C. can be obtained by calling the SEC at 1-800-SEC-0330. The SEC also maintains a web site that contains reports, proxy and information statements and other information about issuers, such as us, who file electronically with the SEC. The address of that website is *http://www.sec.gov*.

Our web site address is *www.ignyta.com*. The information on our web site, however, is not, and should not be deemed to be, a part of this prospectus.

This prospectus, any prospectus supplement and any related free writing prospectus are part of a registration statement that we filed with the SEC and do not contain all of the information in the registration statement. The full registration statement may be obtained from the SEC or us, as provided below. Statements in this prospectus, any prospectus supplement or any related free writing prospectus about these documents are summaries and each statement is qualified in all respects by reference to the document to which it refers. You should refer to the actual documents for a more complete description of the relevant matters. You may inspect a copy of the registration statement at the SEC s Public Reference Room in Washington, D.C. or through the SEC s website, as provided above.

Incorporation by Reference

The SEC s rules allow us to incorporate by reference information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus modifies or replaces that statement.

We incorporate by reference our documents listed below and any future filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, which we refer to as the Exchange Act, in this prospectus, between the date of this prospectus and the termination of the offering of the securities described in this prospectus. We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed below or filed in the future, that are not deemed filed with the SEC, including our Compensation Committee report and performance graph or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K.

This prospectus and any accompanying prospectus supplement incorporate by reference the documents set forth below that have previously been filed with the SEC:

Our Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 12, 2015.

Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2015 and June 30, 2015, filed with the SEC on May 11, 2015 and August 10, 2015, respectively.

Our Definitive Proxy Statement on Schedule 14A, filed with the SEC on April 30, 2015.

Our Current Reports on Form 8-K and Form 8-K/A filed with the SEC on January 9, 2015, February 2, 2015, February 17, 2015, March 2, 2015, March 17, 2015, June 9, 2015, June 12, 2015, July 22, 2015, September 2, 2015, September 17, 2015 and September 30, 2015.

Table of Contents

The description of our Common Stock contained in our registration statement on Form 8-A, filed with the SEC on March 11, 2014, and any amendment or report filed with the SEC for the purpose of updating the description.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of this offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference into this prospectus and deemed to be part of this prospectus from the date of the filing of such reports and documents.

You may request a free copy of any of the documents incorporated by reference in this prospectus (other than exhibits, unless they are specifically incorporated by reference in the documents) by writing or telephoning us at the following address:

Ignyta, Inc.

Attn: Corporate Secretary

11111 Flintkote Avenue

San Diego, California 92121

(858) 255-5959

Exhibits to the filings will not be sent, however, unless those exhibits have specifically been incorporated by reference in this prospectus and any accompanying prospectus supplement.

Table of Contents

THE COMPANY

We are a precision oncology biotechnology company dedicated to discovering or acquiring, then developing and commercializing, targeted new drugs for cancer patients whose tumors harbor specific molecular alterations, as well as novel chemotherapeutics that can potentially provide additional benefit to cancer patients. We are pursuing an integrated therapeutic and diagnostic, or Rx/Dx, strategy, where we anticipate pairing our product candidates with biomarker-based companion diagnostics, developed by us or by third parties with which we may partner, that are designed to identify the patients who are most likely to benefit from the precisely targeted drugs we develop.

Our current development plans focus on our pipeline of product candidates:

- entrectinib, formerly called RXDX-101, a small molecule tyrosine kinase inhibitor directed to the Trk family tyrosine kinase receptors (TrkA, TrkB and TrkC), ROS1 and ALK proteins, which is in two Phase I clinical studies and one Phase II clinical study in molecularly defined patient populations for the treatment of solid tumors;

- RXDX-105, a small molecule inhibitor of RET, BRAF and EGFR kinases that is currently in a Phase I/II clinical trial for the treatment of solid tumors;

- RXDX-107, a small molecule nanoformulation of a modified bendamustine that is currently in a Phase I/Ib clinical study for the treatment of solid tumors;

- RXDX-106, a small molecule, pseudo-irreversible inhibitor of TAM (Tyro-3, Axl and Mer) and cMET kinases that is in late preclinical development;

- RXDX-103, a small molecule inhibitor of the cell division cycle 7-related, or Cdc7, protein kinase that is currently at the development candidate stage; and

- RXDX-108, a small molecule inhibitor of the atypical kinase PKCiota that is in preclinical studies. We also have rights to next generation PKCiota inhibitors in addition to the lead compound.

A kinase is a type of enzyme that catalyzes the transfer of phosphate groups from high-energy, phosphate-donating molecules to specific other molecules, called substrates. Tyrosine kinases transfer phosphate groups from adenosine triphosphate, or ATP, to cellular proteins and can function as an on/off switch for cellular functions, including cancer signaling. Cell division is partly driven by protein kinases that regulate progression through the various phases of the cell division cycle.

We acquired exclusive global development and marketing rights to entrectinib under a license agreement with Nerviano Medical Sciences S.r.l., or NMS, that became effective in November 2013, we acquired exclusive global development and marketing rights to RXDX-103 under a license agreement with NMS that became effective in August 2014, and we acquired our RXDX-105, RXDX-107, RXDX-106 and RXDX-108 development programs in an asset purchase transaction with Cephalon, Inc., an indirect wholly-owned subsidiary of Teva Pharmaceutical

Industries Ltd., or Teva, in March 2015. We are also pursuing our Spark discovery-stage programs, which are programs directed to emerging oncology targets identified through the mining of proprietary and publicly available tumor samples.

We currently pursue a two-pronged strategy to leverage the biomarker insights that we have gained, as well as the knowledge of cancer biology of our management and drug discovery team. In the first case, when we identify a molecular alteration that is driving the growth of tumors in cancers of interest and if there is already a company(ies) developing a product candidate(s) that targets that specific driver, we plan to seek to in-license what we believe to be the most promising or most advanced product candidate(s) available for licensing. This approach is exemplified by our in-licenses of entrectinib from NMS in November 2013 and RXDX-103 from NMS in August 2014. We believe that entrectinib is one of the most clinically advanced inhibitors of TrkA, TrkB and TrkC, three targets that we believe to be activating alterations in several cancers with a substantial unmet

medical need. Entrectinib also has been observed to have potent activity against ROS1, another cancer target against which there are no approved products, and ALK, a clinically and commercially validated oncology target. A variation on this approach would be to in-license a promising product candidate that has not been developed as a specifically-targeted agent, and then utilize the expertise of our team to identify specific patient-selection hypotheses using biomarkers.

In the second case, when we identify an activating molecular alteration that drives the growth of tumors in cancers of interest and there is no known company(ies) developing a suitable product candidate(s) that targets that specific driver, we plan to seek to initiate target validation and drug discovery activities against that molecular target. This approach is exemplified by our Spark programs. To date, we have identified multiple molecular targets that appear to be commonly altered in different cancer tissues. We have prioritized several of these targets and have initiated target validation and drug discovery activities against some of them.

We may also, from time to time, become aware of available oncology assets that we believe we could optimally position using our Rx/Dx expertise. These assets may have been developed without a biomarker strategy, failed in clinical trials due to lack of sufficient efficacy or been deprioritized for strategic reasons. This approach is exemplified by the acquisition of our RXDX-105, RXDX-107, RXDX-106 and RXDX-108 development programs from Teva in March 2015.

Our ability to identify innovative cancer targets and develop drugs against them is enabled by, and dependent on, a set of essential capabilities and the experience of our drug discovery and management team. Key aspects of our core drug discovery capabilities include the ability to perform x-ray crystallography on protein targets, conduct in silico structure-based drug design and run virtual chemistry screens. Once compounds with activity against our target have been identified by those or other tests and procedures, our drug discovery and scientific team further pursues the drug development process. The members of our team have significant experience in medicinal chemistry, lead optimization, ADME & PK (the study of absorption, distribution, metabolism, excretion, and pharmacokinetics), preclinical development and clinical development, and have collectively led or contributed to the development of multiple drugs approved by the U.S. Food and Drug Administration, including several cancer therapeutics. In addition, we have a laboratory registered under the Clinical Laboratory Improvement Amendments of 1988. Our personnel can use their expertise and our laboratory facilities to develop biomarker-based molecular assays to precisely define the patient populations in which we would test our product candidates, screen patients for enrollment in our clinical trials and potentially perform commercial companion diagnostic testing should any of our product candidates obtain marketing approval.

Since inception, our operations have focused on organizing and staffing our company, business planning, raising capital, assembling our core capabilities in genetic and epigenetic based biomarker and drug target discovery, identifying potential product candidates and developing such candidates. Our product candidate development operations include preparing, managing and conducting preclinical and clinical studies and trials, preparing regulatory submissions relating to those product candidates and establishing and managing relationships with third parties in connection with all of those activities. We expect that in the future our operations may also, if regulatory approval is obtained, include pursuing the commercialization of our product candidates.

We were incorporated under the laws of the State of Delaware on August 29, 2011 with the name NexDx, Inc. We changed our name to Ignyta, Inc. on October 8, 2012. On October 31, 2013, we merged with and into a wholly-owned subsidiary of Ignyta, Inc., or Parent, a Nevada corporation previously named Infinity Oil & Gas Company We changed our name to Ignyta Operating, Inc. in connection with the closing of the merger. On October 31, 2013, prior to the closing of the merger, (i) all then-outstanding shares of each series of our preferred stock were voluntarily converted by the holders thereof into shares of our common stock in accordance with our certificate of incorporation,

and (ii) we effected a three-to-one reverse stock split of our issued and outstanding shares of capital stock. On May 20, 2013, we completed our acquisition of Actagene Oncology, Inc., or Actagene, which merged with and into our company on that date.

Table of Contents

On June 12, 2014, we merged with and into Parent, with Ignyta surviving the merger, resulting in our reincorporation from Nevada to Delaware. In connection with this merger, each share of Parent common stock was converted into one share of Ignyta common stock, and we changed our name to Ignyta, Inc. Our principal executive offices are located at 11111 Flintkote Avenue, San Diego, California 92121, and our telephone number is (858) 255-5959.

Table of Contents

THE OFFERING

Common stock offered by the selling stockholder	3,000,000 shares.
Use of proceeds	We will not receive any proceeds from the sale or other disposition of the shares of common stock offered hereby.
Risk Factors	Investing in our common stock involves a high degree of risk. See Risk Factors beginning on page 8 of this prospectus.
Nasdaq Capital Market symbol	RXDX

Table of Contents

RISK FACTORS

Investment in any securities offered pursuant to this prospectus, any applicable prospectus supplement and any related free writing prospectus involves risks. You should carefully consider the risk factors incorporated by reference to our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K we file after the date of this prospectus, and all other information contained or incorporated by reference into this prospectus, as updated by our subsequent filings under the Exchange Act, and the risk factors and other information contained in any applicable prospectus supplement and any related free writing prospectus before acquiring any of such securities. The occurrence of any of these risks might cause you to lose all or part of your investment in the offered securities.

Table of Contents

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain forward-looking statements. All statements other than statements of historical facts contained in this prospectus and the documents incorporated by reference herein are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. This prospectus and the documents incorporated by reference herein also contain estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

In some cases, you can identify forward-looking statements by terms such as may, will, should, expect, plan, anticipate, could, intend, target, project, contemplates, believes, estimates, predicts, potential or negative of these terms or other similar expressions. The forward-looking statements in this prospectus and the documents incorporated by reference herein are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward- looking statements speak only as of the date of this prospectus and are subject to a number of risks, uncertainties and assumptions, including those under Risk Factors and elsewhere in this prospectus. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained in this prospectus or the documents incorporated by reference herein, whether as a result of any new information, future events, changed circumstances or otherwise.

Table of Contents

DESCRIPTION OF ASSET PURCHASE AGREEMENT AND SUBSCRIPTION AGREEMENT

Asset Purchase Agreement

On March 17, 2015, we entered into an Asset Purchase Agreement with Cephalon, Inc., an indirect wholly- owned subsidiary of Teva Pharmaceutical Industries Ltd., pursuant to which we purchased certain assets relating to four oncology research and development programs:

- RXDX-105, a small molecule inhibitor of RET, BRAF and EGFR kinases that is currently in a Phase I/II clinical trial for the treatment of solid tumors;
- RXDX-107, a small molecule nanoformulation of a modified bendamustine with potential activity in solid tumors that is in late preclinical development;
- RXDX-106, a small molecule, pseudo-irreversible inhibitor of TAM (Tyro-3, Axl and Mer) and cMET kinases that is in late preclinical development; and
- RXDX-108, a small molecule inhibitor of the atypical kinase PKCiota that is in preclinical studies. We also have rights to next generation PKCiota inhibitors in addition to the lead compound.

Under the Asset Purchase Agreement, we acquired Cephalon s right, title and interest in and to certain intellectual property, compounds, products, contracts, books and records, data and inventory related to these programs, and assumed related liabilities. In partial consideration for assets purchased under the Asset Purchase Agreement, we issued to Cephalon 1,500,000 unregistered shares of our common stock, paid to Cephalon approximately $852,000 in cash for product inventory, and assumed the related liabilities.

Subscription Agreement

In March 2015 we issued an aggregate of 4,158,750 shares of our common stock in a registered direct offering to certain investors. Pursuant to the registered direct offering, we entered into a subscription agreement with Cephalon, pursuant to which we agreed to sell to Cephalon an aggregate of 1,500,000 shares of our common stock. The closing of the offering occurred on March 17, 2015. The offer and sale of the shares sold to Cephalon in the registered direct offering was made pursuant to our shelf registration statement on Form S-3 (SEC File No. 333-202403), which became effective on March 13, 2015, and a prospectus supplement thereto dated March 17, 2015.

Registration Rights Agreement

In connection with the Asset Purchase Agreement and registered direct offering, we also entered into a Registration Rights Agreement with Cephalon pursuant to which we agreed to register the shares of our common stock issued to Cephalon. Under the terms of the Registration Rights Agreement, we are required to use best efforts to file a registration statement with the SEC on or before December 17, 2015 and to cause such registration statement to be declared effective by the SEC within 90 days after the date the registration statement is filed. We have agreed to other customary obligations regarding registration, including matters relating to indemnification, maintenance of the registration statement and payment of certain expenses.

Market Stand-Off

The Asset Purchase Agreement provides that Cephalon will not, without our prior written consent, offer, pledge, 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, lend or otherwise transfer or dispose of any of shares of our common stock, until the earlier of March 17, 2016 and our change of control. Thus, unless we waive this restriction, the shares offered by this prospectus by the selling stockholder cannot be sold until the earlier of March 17, 2016 and our change of control, which we refer to as the restricted period. In addition, under the Asset Purchase Agreement, during the restricted period Cephalon may not, without our consent, purchase or otherwise acquire any additional shares of our common stock or our other equity securities, other than those acquired directly from us or in any future underwritten offerings we may conduct.

Table of Contents

USE OF PROCEEDS

We are registering the shares of our common stock covered by this prospectus pursuant to registration rights granted to the selling stockholder in the Registration Rights Agreement. We are not selling any securities under this prospectus and will not receive any proceeds from the sale or other disposition of the shares covered hereby.

We have agreed to pay all costs relating to the registration of the shares of our common stock covered by this prospectus.

Table of Contents

SELLING STOCKHOLDER

We have prepared this prospectus to allow the selling stockholder or its pledgees, donees, transferees or other successors-in-interest to sell or otherwise dispose of, from time to time, up to an aggregate of 3,000,000 shares of our common stock. The table below presents information regarding the selling stockholder, the shares of common stock beneficially owned by it, the shares of common stock that it may sell or otherwise dispose of from time to time under this prospectus and the number and percentage of our common stock the selling stockholder will own assuming all of the shares covered by this prospectus are sold by the selling stockholder.

We do not know whether, when or in what amounts the selling stockholder may sell or otherwise dispose of the shares of common stock covered hereby. However, without our consent, the selling stockholder may not sell any shares offered in the prospectus until the earlier of March 17, 2016 and our change of control. The selling stockholder might not sell or dispose of any or all of the shares covered by this prospectus or, subject to the foregoing restrictions, may sell or dispose of some or all of the shares other than pursuant to this prospectus. Because the selling stockholder may not sell or otherwise dispose of some or all of the shares covered by this prospectus and because there are currently no agreements, arrangements or understandings with respect to the sale or other disposition of any of the shares, we cannot estimate the number of the shares that will be held by the selling stockholder after completion of the offering. However, for purposes of this table, we have assumed that all of the shares of common stock covered by this prospectus will be sold by the selling stockholder and that any other shares of our common stock beneficially owned by the selling stockholder will continue to be beneficially owned.

The information in the table is based on 29,619,706 shares outstanding as of September 30, 2015 and was prepared based on information supplied to us by the selling stockholder. Beneficial ownership is determined in accordance with Section 13(d) of the Exchange Act and generally includes voting or investment power with respect to securities and including any securities that grant the selling stockholder the right to acquire shares of common stock within 60 days of September 30, 2015. Other than the transactions referred to herein and in documents filed by us with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, the selling stockholder has not within the past three years had any position, office or other material relationship with us or any of our subsidiaries other than as a holder of our securities.

Name of Selling Stockholder[1]	Number of Shares Beneficially Owned Prior to the Offering	Number of Shares Offered Hereby	Number of Shares Beneficially Owned After the Offering	Percent of Class Beneficially Owned After the Offering
Cephalon, Inc.[2]	3,000,000	3,000,000		

(1) Additional information concerning the named selling stockholder or pledgees, donees, transferees or other successors-in-interest of the stockholder may be set forth in a prospectus supplement to this prospectus.

(2) The address of Cephalon, Inc. is 1090 Horsham Road, North Wales, PA 19454. We issued 1,500,000 shares of our common stock to Cephalon in partial consideration of the assets purchased under the Asset Purchase Agreement, and an additional 1,500,000 shares of our common stock to Cephalon in a registered direct offering of shares of our common stock. See Description of Asset Purchase Agreement and Subscription Agreement.

Table of Contents

PLAN OF DISTRIBUTION

The selling stockholder, including its pledgees, donees, transferees or other successors-in-interest, may from time to time offer some or all of the shares of common stock covered by this prospectus, subject to the restrictions set forth in Description of Asset Purchase Agreement and Registration Rights Agreement Market Stand-Off. To the extent required, this prospectus and any free writing prospectus may be amended and supplemented from time to time to describe a specific plan of distribution.

The selling stockholder will not pay any of the costs, expenses and fees in connection with the registration and sale of the shares covered by this prospectus, but it will pay any and all underwriting discounts, selling commissions and stock transfer taxes, if any, attributable to sales of the shares. We will not receive any proceeds from the sale of the shares of our common stock covered hereby.

The selling stockholder may sell the shares of common stock covered by this prospectus from time to time, and may also decide not to sell all or any of the shares of common stock that it is allowed to sell under this prospectus. The selling stockholder will act independently of us in making decisions regarding the timing, manner and size of each sale. These dispositions may be at prevailing market prices, at prices related to prevailing market prices, or at privately negotiated prices. Sales may be made by the selling stockholder in one or more types of transactions, which may include:

- purchases by underwriters, dealers and agents who may receive compensation in the form of underwriting discounts, concessions or commissions from the selling stockholder and/or the purchasers of the shares of common stock for whom they may act as agent;

- one or more block transactions, including transactions in which the broker-dealer so engaged will attempt to sell the shares of common stock as agent but may position and resell a portion of the block as principal to facilitate the transaction, or in crosses, in which the same broker acts as an agent on both sides of the trade;

- ordinary brokerage transactions or transactions in which a broker-dealer solicits purchasers;

- purchases by a broker-dealer or market maker, as principal, and resale by the broker-dealer for its account;

- the pledge of shares of common stock for any loan or obligation, including pledges to brokers or dealers who may from time to time effect distributions of shares of common stock;

- short sales or transactions to cover short sales relating to the shares of common stock;

- one or more exchanges or over-the-counter market transactions;

through distribution by a selling stockholder or its successor in interest to its members, general or limited partners or shareholders (or their respective members, general or limited partners or shareholders);

public or privately negotiated transactions;

the writing of options or other hedging transactions, whether the options are listed on an options exchange or otherwise;

distributions to creditors and equity holders of the selling stockholders;

trading plans entered into by the selling stockholder pursuant to Rule 10b5-1 under the Exchange Act; and

any combination of the foregoing, or any other available means allowable under applicable law.

The selling stockholder may also resell all or a portion of its common stock in open market transactions in reliance upon Rule 144 under the Securities Act provided it meets the criteria and conforms to the requirements of Rule 144.

Table of Contents

The selling stockholder may enter into sale, forward-sale and derivative transactions with third parties, or may sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement or related free writing prospectus indicates, in connection with those sale, forward-sale or derivative transactions, the third parties may sell securities covered by this prospectus, the applicable prospectus supplement or any related free writing prospectus, including in short sale transactions and by issuing securities that are not covered by this prospectus but are exchangeable for or represent beneficial interests in the common stock. The third parties also may use shares received under those sale, forward-sale or derivative arrangements or shares pledged by the selling stockholder or borrowed from the selling stockholders or others to settle such third-party sales or to close out any related open borrowings of common stock. The third parties may deliver this prospectus in connection with any such transactions. Any third party in such sale transactions will be an underwriter and will be identified in the applicable prospectus supplement (or a post-effective amendment to the registration statement of which this prospectus is a part).

In addition, the selling stockholder may engage in hedging transactions with broker-dealers in connection with distributions of common stock or otherwise. In those transactions, broker-dealers may engage in short sales of securities in the course of hedging the positions they assume with the selling stockholder. The selling stockholder may also sell securities short and redeliver securities to close out such short positions. The selling stockholder may also enter into option or other transactions with broker-dealers which require the delivery of securities to the broker-dealer. The broker-dealer may then resell or otherwise transfer such securities pursuant to this prospectus. The selling stockholder also may loan or pledge shares, and the borrower or pledgee may sell or otherwise transfer the common stock so loaned or pledged pursuant to this prospectus. Such borrower or pledgee also may transfer those shares of common stock to investors in our securities or the selling stockholder s securities or in connection with the offering of other securities not covered by this prospectus.

The selling stockholder also may transfer or donate the shares of common stock in other circumstances, in which case the transferees, donees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus and may, subject to the transfer restrictions, sell the shares of common stock from time to time under this prospectus after we have filed a post-effective amendment to the registration statement, of which this prospectus forms a part, or a prospectus supplement under applicable provisions of the Securities Act supplementing or amending this list of selling stockholders to include the pledgee, donee, transferee or other successors in interest as selling stockholders under this prospectus.

To the extent necessary, we may amend or supplement this prospectus from time to time to describe a specific plan of distribution. We will file a supplement to this prospectus, if required, upon being notified by the selling stockholder that any material arrangement has been entered into with a broker-dealer for the sale of shares through a block trade, offering or a purchase by a broker or dealer. The applicable prospectus supplement will set forth the specific terms of the offering of securities, including:

- the number of shares of common stock offered;
- the price of such common stock;
- the proceeds to the selling stockholders from the sale of such common stock;

the names of the underwriters or agents, if any;

any underwriting discounts, agency fees or other compensation to underwriters or agents; and

any discounts or concessions allowed or paid to dealers.

In connection with sales of common stock covered hereby, any underwriter, broker-dealer or agent and any other participating broker-dealer that executes sales for the selling stockholder may be deemed to be an underwriter within the meaning of the Securities Act. Accordingly, any compensation earned by such underwriter, broker-dealer or agent may be deemed to be underwriting discounts and commissions.

Table of Contents

We and the selling stockholder have agreed to indemnify each other against certain liabilities, including liabilities under the Securities Act. In addition, we or the selling stockholder may agree to indemnify any underwriters, broker-dealers and agents against or contribute to any payments the underwriters, broker-dealers or agents may be required to make with respect to, civil liabilities, including liabilities under the Securities Act. Underwriters, broker-dealers and agents and their affiliates are permitted to be customers of, engage in transactions with, or perform services for us and our affiliates or the selling stockholder or its affiliates in the ordinary course of business.

We are required to pay certain fees and expenses incident to the registration of the shares of common stock. See Use of Proceeds. We have also agreed to indemnify the selling stockholder against certain losses, claims, damages and liabilities, including liabilities under the Securities Act, relating to the registration statement and prospectus and any supplements or amendments thereof.

If the selling stockholder uses this prospectus for any sale of the shares of common stock, it will be subject to the prospectus delivery requirements of the Securities Act.

We have agreed with the selling stockholder to use our best efforts to keep the registration statement, of which this prospectus constitutes a part, effective until the sale of all shares of common stock registered in the registration statement, of which this prospectus is a part. There can be no assurance that the selling stockholder will sell any or all of the shares of common stock registered pursuant to the registration statement.

The provisions of Regulation M of the Exchange Act and the rules and regulations thereunder, which provisions may limit the timing of purchases and sales of any of the common stock by the selling stockholder may also apply to sales of shares of all common stock by and the activities of the selling stockholder. Regulation M may also restrict the ability of any person engaged in the distribution of the common stock to engage in market-making activities with respect to the common stock. These restrictions may affect the marketability of such common stock.

To the extent permitted by applicable law, this plan of distribution may be modified in a prospectus supplement or otherwise.

Table of Contents

LEGAL MATTERS

Latham & Watkins LLP, San Diego, California, has passed upon certain legal matters relating to the issuance and sale of the securities offered hereby on behalf of Ignyta, Inc. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The financial statements of Ignyta, Inc. incorporated by reference in Ignyta, Inc. s Annual Report on Form 10-K for the year ended December 31, 2014 have been audited by Mayer Hoffman McCann P.C., independent registered public accounting firm, as set forth in their report thereon incorporated by reference therein, and incorporated herein by reference. Such financial statements are, and audited financial statements to be included in subsequently filed documents will be, incorporated herein in reliance upon the reports of Mayer Hoffman McCann P.C. pertaining to such financial statements as of the respective dates (to the extent covered by consents filed with the Securities and Exchange Commission) given on the authority of such firm as experts in accounting and auditing.