

DELCATH SYSTEMS, INC.

Form 424B5

February 12, 2015

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**Filed Pursuant to Rule 424(b)(5)
Registration No. 333-183675**

PROSPECTUS SUPPLEMENT

(To Prospectus dated October 9, 2012)

2,460,000 Shares of Common Stock

Warrants to Purchase up to 1,107,000 Shares of Common Stock

We are offering 2,460,000 shares of our common stock and warrants to purchase 1,107,000 shares of our common stock in this offering (and the shares of common stock issuable from time to time upon exercise of these warrants). Each share of common stock is being sold together with 0.45 of a warrant to purchase a share of common stock at an exercise price of \$1.38 per share of common stock (as may be adjusted from time to time). Each whole warrant will entitle the holder to purchase one share of our common stock. The warrants can be exercised during the period commencing on the date six months after the date of issuance and ending on February 17, 2020. The shares of common stock and warrants will be issued separately. The shares of common stock, warrants and shares of common stock underlying the warrants are sometimes collectively referred to herein as the securities. See Description of Securities We Are Offering for a more complete description of the securities.

Our common stock is listed on The NASDAQ Capital Market under the symbol DCTH. The last reported sale price of our common stock on February 9, 2015 was \$1.32 per share. There is no established public trading market for the warrants and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange or other nationally recognized trading system.

As of January 9, 2015, the aggregate market value of our outstanding common stock held by non-affiliates was approximately \$15,085,344, based on 9,708,841 shares of outstanding common stock, of which 9,670,092 shares were held by non-affiliates, and a per share price of \$1.56 based on the closing price of our common stock on January 9, 2015. During the prior twelve-calendar-month period that ends on, and includes, the date of this prospectus supplement, and including this offering, we offered and sold securities with an aggregate market value of approximately \$5,017,750 pursuant to General Instruction I.B.6 of Form S-3.

Investing in our securities involves risks, including those described in the Risk Factors section beginning on page S-4 of this prospectus supplement and the section entitled Risk Factors beginning on page 16 of our most recent annual report on Form 10-K for the fiscal year ended December 31, 2013, which is incorporated by reference into this prospectus supplement and the accompanying prospectus.

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 the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

| | Per Share and corresponding Warrant | Total |
|--------------------------------------|--|--------------|
| Public offering price ⁽¹⁾ | \$ 1.15 | \$ 2,829,000 |
| Underwriting discount ⁽²⁾ | \$ 0.0805 | \$ 198,030 |
| Proceeds, before expenses, to us | \$ 1.0695 | \$ 2,630,970 |

(1) The public offering price is \$1.14 per share of common stock and \$0.01 per warrant to purchase shares of common stock.

(2) Excludes the underwriter's out of pocket expenses we have agreed to reimburse. See the section entitled Underwriting in this prospectus supplement for additional information.

Delivery of the securities is expected to be made on or about February 17, 2015.

Roth Capital Partners

February 11, 2015

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, using a shelf registration process. Under the shelf registration process, we may offer from time to time common stock, preferred stock, warrants, debt securities and stock purchase contracts. In the accompanying prospectus, we provide you with a general description of the securities we may offer from time to time under our shelf registration statement. In this prospectus supplement, we provide you with specific information about the securities that we are selling in this offering. Both this prospectus supplement and the accompanying prospectus include important information about us, our securities and other information you should know before investing. This prospectus supplement also adds, updates and changes information contained in the accompanying prospectus. You should read both this prospectus supplement and the accompanying prospectus as well as additional information described under **Where You Can Find Additional Information** in this prospectus supplement and the accompanying prospectus before investing in our securities.

You should rely only on the information incorporated by reference or provided in this prospectus supplement and the accompanying prospectus or any free writing prospectus prepared by or on behalf of us. Neither we nor the underwriter have authorized anyone to provide you with additional or different information. If anyone provided you with additional or different information, you should not rely on it. Neither we nor the underwriter are making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference is accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates.

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DISCLOSURE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference into this prospectus supplement contain certain forward-looking statements within the meaning of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 with respect to our business, financial condition, liquidity and results of operations. Words such as anticipates, expects, intends, plans, predicts, believes, seeks, estimates, would, will, may, can, continue, potential, should, and the negative of these terms or other comparable terms often identify forward-looking statements. Statements in this prospectus supplement, the accompanying prospectus and the other documents incorporated by reference that are not historical facts are hereby identified as

forward-looking statements for the purpose of the safe harbor provided by Section 21E of the Exchange Act and Section 27A of the Securities Act. These forward-looking statements are not guarantees of future performance and are subject to risks and uncertainties that could cause actual results to differ materially from the results contemplated by the forward-looking statements, including the risks discussed in this prospectus supplement, the accompanying prospectus, in our Annual Report on Form 10-K for the fiscal year ended December 31, 2013 in Item 1A under Risk Factors as well as in Item 7A Quantitative and Qualitative Disclosures About Market Risk, our Quarterly Reports on Form 10-Q for the periods ended March 31, 2014, June 30, 2014 and September 30, 2014 in Part I, Item 3

Quantitative and Qualitative Disclosures About Market Risk and the risks detailed from time to time in our future SEC reports. These forward-looking statements include, but are not limited to, statements about:

our estimates regarding sufficiency of our cash resources, anticipated capital requirements and our need for additional financing;

the timing and results of our clinical trials;

our ability to successfully commercialize CHEMOSAT/Melphalan/HDS, generate revenue and successfully obtain reimbursement for the procedure and System;

the progress and results of our research and development programs;

submission and timing of applications for regulatory approval and approval thereof;

our ability to successfully source certain components of the system and enter into supplier contracts;

our ability to successfully manufacture CHEMOSAT/Melphalan/HDS;

our ability to successfully negotiate and enter into agreements with distribution, strategic and corporate partners; and

our estimates of potential market opportunities and our ability to successfully realize these opportunities. Many of the important factors that will determine these results are beyond our ability to control or predict. You are cautioned not to put undue reliance on any forward-looking statements, which speak only as of the date of this prospectus supplement, the date of the accompanying prospectus or, in the case of documents incorporated by reference, as of the date of such documents. Except as otherwise required by law, we do not assume any obligation to publicly update or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this prospectus supplement or to reflect the occurrence of unanticipated events.

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Table of Contents**WHERE YOU CAN FIND ADDITIONAL INFORMATION**

We file reports, proxy statements and other information with the SEC. You may read and copy any reports, proxy statements or other information filed by us at the SEC's Public Reference Room at 100 F Street NE, Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at (800) SEC-0330. The SEC maintains a website that contains reports, proxy statements and other information regarding issuers that file electronically with the SEC, including Delcath Systems, Inc. The address of the SEC website is <http://www.sec.gov>.

Important Information Incorporated 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 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:

| SEC Filing (File No. 001-16133) | Date of Filing(s) |
|---|--|
| Definitive Proxy Statement on Schedule 14A for our 2014 Meeting of Stockholders | April 30, 2014 |
| Annual Report on Form 10-K for year ended December 31, 2013 | March 12, 2014 |
| Quarterly Report on Form 10-Q for quarter ended March 31, 2014 | May 7, 2014 |
| Quarterly Report on Form 10-Q for quarter ended June 30, 2014 | August 6, 2014 |
| Quarterly Report on Form 10-Q for quarter ended September 30, 2014 | November 5, 2014 |
| Current Reports on Form 8-K | February 25, 2014; March 20, 2014; April 8, 2014; April 25, 2014; May 28, 2014; June 12, 2014; July 9, 2014; September 15, 2014; September 30, 2014; December 15, 2014 and February 10, 2015 |

We also incorporate by reference into this prospectus supplement 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 Section 13(a), 13(c), 14 or 15(d) of the Exchange Act (i) after the date of the initial registration statement and prior to effectiveness of the registration statement, or (ii) from 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.

We will provide to each person, including any beneficial owner, to whom a prospectus supplement and the accompanying prospectus is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus supplement, other than exhibits which are specifically incorporated by reference into such documents. Requests should be directed to Controller at Delcath Systems, Inc., 1301 Avenue of the Americas, 43rd Floor, New York, New York 10019 or by calling us at

212-489-2100.

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SUMMARY

This summary highlights selected information more fully described elsewhere in this prospectus supplement and the accompanying prospectus. This summary does not contain all of the information you should consider before investing in our securities. You should read this prospectus supplement, the accompanying prospectus, any free writing prospectus and the documents incorporated by reference herein and therein carefully, especially the risks of investing in our securities discussed in Risk Factors below and the other risks described in the incorporated documents.

In this prospectus supplement, except as otherwise indicated, Delcath, Delcath Systems, we, our, and us refer to Delcath Systems, Inc., a Delaware corporation and its subsidiaries. Delcath is our registered United States trademark.

Overview

Delcath is a late stage clinical company with early commercial activity in Europe focused on cancers of the liver. Our proprietary product Melphalan Hydrochloride for Injection for use with the Delcath Hepatic Delivery System (Melphalan/HDS) is designed to administer high dose chemotherapy to the liver, while controlling the systemic exposure to those agents. Our principal focus is on the treatment of primary and metastatic liver cancers.

In the United States, Melphalan/HDS is considered a combination drug and device product, and is regulated as a drug by the U.S. Food and Drug Administration. Melphalan/HDS has not been approved for sale in the U.S. In Europe, our proprietary system to deliver and filter melphalan hydrochloride is marketed as a device under the trade name Delcath Hepatic CHEMOSAT[®] Delivery System for Melphalan (CHEMOSAT). In April 2012, we obtained authorization to affix a CE Mark for Generation Two CHEMOSAT. The right to affix the CE Mark allows us to market and sell CHEMOSAT in Europe.

We have commenced a Global Phase 2 clinical trial in Europe and the United States to investigate the Melphalan/HDS system for primary liver cancer and are initiating plans to evaluate intrahepatic cholangiocarcinoma. We are also in the process of initiating a Global Phase 3 trial in ocular melanoma liver metastases in 2015.

Risks of Investing

Investing in our securities involves risks. Potential investors are urged to read and consider the risk factors relating to an investment in the common stock set forth under Risk Factors in this prospectus supplement and the accompanying prospectus and those described in our Annual Report on Form 10-K for the year ended December 31, 2013 filed with the SEC and incorporated by reference in this prospectus supplement and the accompanying prospectus as well as other information we include or incorporate by reference in this prospectus supplement and the accompanying prospectus.

Corporate Information

We were incorporated in the State of Delaware in August 1988. Our principal executive offices are located at 1301 Avenue of the Americas, 43rd Floor, New York, New York 10019. Our telephone number is (212) 489-2100. Our website address is <http://www.delcath.com>. Information contained in our website is not a part of this prospectus supplement or the accompanying prospectus.

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THE OFFERING

| | |
|--|--|
| Common stock offered by us | 2,460,000 shares, plus 1,107,000 shares of common stock underlying the warrants offered hereby |
| Warrants offered by us | Warrants to purchase up to 1,107,000 shares of common stock. The warrants can be exercised during the period commencing on the date six months after the date of issuance and ending on February 17, 2020 at an exercise price of \$1.38 per share of common stock (as may be adjusted from time to time). |
| Common stock to be outstanding after this offering | 12,168,841 shares ⁽¹⁾⁽²⁾ |
| Use of proceeds | We intend to use the net proceeds from this offering (including any resulting from the exercise of the warrants, if any) for general corporate purposes, including, but not limited to, funding of our clinical trials, commercialization of our products, obtaining regulatory approvals, research, capital expenditures and working capital. See Use of Proceeds. |
| Dividend policy | We have never declared or paid any dividends to the holders of our common stock and we do not expect to pay cash dividends in the foreseeable future. We currently intend to retain any earnings for use in connection with the expansion of our business and for general corporate purposes. |
| NASDAQ Capital Market symbol for common stock | DCTH |
| Risk factors | See Risk Factors and other information included or incorporated by reference in this prospectus supplement and the accompanying prospectus, including the section entitled Risk Factors beginning on page 16 of our most recent annual report on Form 10-K for the fiscal year ended December 31, 2013, for a discussion of the factors you should carefully consider before deciding to invest in our securities. |
| Transfer agent and registrar | American Stock Transfer and Trust Company, LLC |

- (1) The number of shares of common stock to be outstanding after this offering is based on 9,708,841 shares of common stock outstanding on February 6, 2015.

- (2) The number of shares of common stock to be outstanding after this offering excludes, as of February 6, 2015:

56,277 shares issuable upon the exercise of stock options at a weighted average exercise price of \$98.34 per share;

850,139 shares issuable upon the exercise of outstanding warrants or options to purchase warrants at a weighted average exercise price of \$5.42 per share; and

1,107,000 shares issuable upon the exercise of the warrants issued hereunder.

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You should read the summary of historical financial data set forth below in conjunction with Management's Discussion and Analysis of Financial Condition and Results of Operation and the consolidated financial statements and the related notes included in our Annual Report on Form 10-K for the year ended December 31, 2013 and our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2014, June 30, 2014 and September 30, 2014, each of which is incorporated by reference herein. We derived the following summary historical financial statement of operations data and other data for each of the three years in the period ended December 31, 2013 and the summary historical balance sheet data as of December 31, 2013 from our audited financial statements. We derived the summary historical financial data as of and for the nine months ended September 30, 2014 and 2013 from our unaudited financial statements. In our opinion, the unaudited financial statements have been prepared on the same basis as our audited financial statements and include all adjustments (consisting of only normal recurring adjustments) necessary for a fair presentation of the information set forth therein. The results for any interim period are not necessarily indicative of the results that may be expected for a full fiscal year.

(in thousands, except share and per share data)

| | Nine Months Ended September 30, | | Year Ended December 31, | | |
|---|---------------------------------|-------------|-------------------------|-------------|-------------|
| | 2014 | 2013 | 2013 | 2012 | 2011 |
| STATEMENT OF OPERATIONS DATA: | | | | | |
| Total revenue | \$ 778 | \$ 452 | \$ 790 | \$ 346 | \$ |
| Cost of goods sold | (209) | (386) | (464) | (39) | |
| Gross profit | 569 | 66 | 326 | 307 | |
| General and administrative expenses | \$ 12,956 | \$ 16,919 | \$ 20,657 | \$ 27,963 | \$ 21,283 |
| Research and development expenses | 3,632 | 10,639 | 12,688 | 26,215 | 25,173 |
| Total costs and expenses | \$ 16,588 | \$ 27,558 | \$ 33,345 | \$ 54,178 | \$ 46,456 |
| Operating loss | (16,019) | (27,492) | (33,019) | (53,871) | (46,456) |
| Change in fair value of warrant liability, net | 1,612 | 2,345 | 2,756 | 2,159 | 15,566 |
| Interest income | 4 | 18 | 20 | 19 | 5 |
| Other expense and interest expense | (33) | (404) | (81) | (175) | |
| Net loss | \$ (14,436) | \$ (25,533) | \$ (30,324) | \$ (51,868) | \$ (30,885) |
| Common share data: | | | | | |
| Basic loss per share(1) | \$ (1.54) | \$ (4.35) | \$ 4.81 | \$ 13.54 | \$ 10.92 |
| Diluted loss per share(1) | \$ (1.54) | \$ (4.35) | \$ 4.62 | \$ 13.54 | \$ 10.92 |
| Weighted average number of basic common shares outstanding(1) | 9,391,793 | 5,875,490 | 6,300,614 | 3,829,721 | 2,827,308 |

| | | | | | |
|---|-----------|-----------|-----------|-----------|-----------|
| Weighted average number of diluted common shares outstanding(1) | 9,391,793 | 5,875,490 | 6,569,011 | 3,829,721 | 2,827,308 |
|---|-----------|-----------|-----------|-----------|-----------|

(1) Reflects a one-for-sixteen (1:16) reverse stock split effected on April 8, 2014.

| | As of September 30, 2014 | As of December 31, 2013 |
|----------------------------|---|--|
| BALANCE SHEET DATA: | | |
| Cash and cash equivalents | \$ 23,323 | \$ 31,249 |
| Total assets | 26,868 | 37,097 |
| Total current liabilities | 5,095 | 6,632 |
| Accumulated deficit | (243,568) | (229,132) |
| Stockholders equity | 20,685 | 30,099 |

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RISK FACTORS

Any investment in our securities involves a high degree of risk. You should carefully consider the risks described below and all of the information contained in this prospectus supplement and the accompanying prospectus before deciding whether to purchase our securities. In addition, you should carefully consider, among other things, the matters discussed under Risk Factors and Quantitative and Qualitative Disclosures About Market Risk in our Annual Report on Form 10-K for the year ended December 31, 2013, in our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2014, June 30, 2014 and September 30, 2014, and in other documents that we subsequently file with the Securities and Exchange Commission that are incorporated by reference. The risks and uncertainties described below and incorporated by reference are not the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. If any of these risks actually occur, our business, financial condition and results of operations would suffer. In that event, the trading price of our common stock and the market value of the warrants offered hereby could decline, and you may lose all or part of your investment. This prospectus supplement, the accompanying prospectus and the incorporated documents also include forward-looking statements and our actual results may differ substantially from those discussed in these forward-looking statements. See Disclosure Regarding Forward-Looking Statements.

Risks Related to This Offering

Our management team will have broad discretion over the use of the net proceeds from this offering.

Our management will use its discretion to direct the net proceeds from this offering. We intend to use the net proceeds from the sale of the securities for general corporate purposes, including, but not limited to, funding of our clinical trials, commercialization of our products, obtaining regulatory approvals, research, capital expenditures and working capital. Our management's judgments may not result in positive returns on your investment and you will not have an opportunity to evaluate the economic, financial or other information upon which our management bases its decisions.

The warrants are a new issue of securities with no established trading market.

The warrants are a new issue of securities with no established trading market. The warrants will not be listed on any securities exchange or quotation system. A trading market for the warrants may not develop and even if a market develops it may not provide meaningful liquidity. The absence of a trading market or liquidity for the warrants may adversely affect their value.

The exercise price and number of certain warrants will be adjusted in connection with this and possibly other offerings.

The warrants issued in our May 2012 are subject to an exercise price adjustment upon certain equity issuances below \$1.75 per share (as may be further adjusted). In addition to the potential dilutive effect of these provisions, there is the potential that a large number of the shares may be sold in the public market at any given time, which could place additional downward pressure on the trading price of our common stock. The warrants sold in the offering by this prospectus supplement also contain an adjustment of only the exercise price thereof in the event of issuances or deemed issuances of our common stock at a price below the exercise price thereof.

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USE OF PROCEEDS

We estimate that the net proceeds from this offering, after deducting the underwriting discount, estimated offering expenses of approximately \$225,000 and excluding any exercise of the warrants by the holder thereof, will be approximately \$2.4 million. We intend to use the net proceeds from this offering (including any resulting from the exercise of the warrants, if any) for general corporate purposes, including, but not limited to, funding of our clinical trials, commercialization of our products, obtaining regulatory approvals, research, capital expenditures and working capital.

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DIVIDEND POLICY

We have never declared or paid any dividends to the holders of our common stock and we do not expect to pay cash dividends in the foreseeable future. We currently intend to retain all earnings for use in connection with the expansion of our business and for general corporate purposes.

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The following table sets forth our cash and cash equivalents and our capitalization as of September 30, 2014 on a historical basis and as adjusted to give effect to this offering and the application of the estimated net proceeds of this offering as described under Use of Proceeds. This table should be read in conjunction with Management's Discussion and Analysis of Results of Operations and Financial Condition and the consolidated financial statements and notes thereto included in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, which is incorporated by reference herein.

| (in thousands, except share data) | As of September 30, 2014 | |
|--|---------------------------------|--------------------|
| | Historical | As Adjusted |
| Cash and cash equivalents | \$ 23,323 | \$ 25,729 |
| Warrant liability | \$ 555 | \$ 555 |
| Stockholders equity: | | |
| Preferred stock, \$0.01 par value: 10,000,000 shares authorized; no shares issued and outstanding | \$ | \$ |
| Common stock, \$0.01 par value: 170,000,000 shares authorized; 9,515,175 shares issued and 9,448,903 shares outstanding at September 30, 2014; 11,975,175 shares issued and 11,908,903 shares outstanding as adjusted ⁽¹⁾ | 95 | 120 |
| Additional paid-in capital | 264,140 | 266,521 |
| Accumulated deficit | (243,568) | (243,568) |
| Treasury stock, at cost; 1,757 shares at September 30, 2014 | (51) | (51) |
| Total stockholders equity | \$ 20,685 | \$ 23,091 |
| Total capitalization | \$ 26,868 | \$ 29,274 |

- (1) Outstanding shares of common stock as of September 30, 2014 excludes the warrants offered hereby and the shares of our common stock issuable upon exercise of the warrants.

Table of Contents**PRICE RANGE OF COMMON STOCK**

Our common stock is listed and traded on The NASDAQ Capital Market under the ticker symbol DCTH. The following table sets forth the high and low last reported sales prices of our common stock for the fiscal quarters indicated as reported on The NASDAQ Capital Market:

Common Stock Price Range^(a)

| | 2015 | |
|---|-------------|------------|
| | High | Low |
| Quarter ended March 31, 2015 (through February 9, 2015) | \$ 1.56 | \$ 1.23 |

| | 2014 | |
|----------------------------------|-------------|------------|
| | High | Low |
| Quarter ended March 31, 2014 | \$ 6.24 | \$ 4.08 |
| Quarter ended June 30, 2014 | 4.88 | 2.53 |
| Quarter ended September 30, 2014 | 2.68 | 1.93 |
| Quarter ended December 31, 2014 | 1.96 | 1.11 |

| | 2013 | |
|----------------------------------|-------------|------------|
| | High | Low |
| Quarter ended March 31, 2013 | \$ 34.08 | \$ 20.80 |
| Quarter ended June 30, 2013 | 30.56 | 5.92 |
| Quarter ended September 30, 2013 | 6.88 | 4.74 |
| Quarter ended December 31, 2013 | 9.44 | 3.68 |

| | 2012 | |
|----------------------------------|-------------|------------|
| | High | Low |
| Quarter ended March 31, 2012 | \$ 73.60 | \$ 47.68 |
| Quarter ended June 30, 2012 | 51.20 | 22.56 |
| Quarter ended September 30, 2012 | 34.72 | 25.92 |
| Quarter ended December 31, 2012 | 36.96 | 17.76 |

(a) The historical stock prices reflect a one-for-sixteen (1:16) reverse stock split effected on April 8, 2014. The reported last sale price of our common stock on The NASDAQ Capital Market on February 9, 2015 was \$1.32 per share. On February 6, 2015 there were 47 stockholders of record of our common stock.

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DESCRIPTION OF THE SECURITIES WE ARE OFFERING

In this offering, we are offering 2,460,000 shares and warrants to purchase 1,107,000 shares of common stock at a price of \$1.15 per share of common stock. The shares of common stock and warrants are immediately separable and will be issued separately. This prospectus supplement also relates to the offering of 1,107,000 shares of our common stock underlying the warrants.

Common Stock

The material terms and provisions of our common stock and each other class of our securities which qualifies or limits our common stock are described under the caption "Description of Common Stock" starting on page 9 of the accompanying prospectus.

Warrants

This summary of certain terms and conditions of the warrants being offered hereby is qualified in its entirety by reference to the warrants, the form of which will be included as an exhibit to a Current Report on Form 8-K that will be filed with the SEC in connection with this offering. Prospective investors should carefully review the terms and conditions set forth in the form of warrant.

The warrants can be exercised during the period commencing on the date six months after the date of issuance and ending on February 17, 2020. The warrants will be exercisable, at the option of each holder, upon the surrender of the warrants to us and at an exercise price equal to \$1.38, which, except as described below, must be paid in cash at the time of exercise. The exercise price is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock. The exercise price of the warrants is subject to anti-dilution adjustments for any issuance of common stock or rights to acquire common stock for consideration per share less than the exercise price of the warrants. For purposes of these adjustments, dilutive issuances do not include securities issued under existing instruments, under board-approved equity incentive plans or in certain strategic transactions. The warrant holders must surrender payment in cash of the exercise price of the shares being acquired upon exercise of the warrants; provided, however, that if the warrant is exercised at a time when the registration statement of which this prospectus supplement is a part is not effective, then the warrants may only be exercised on a net or cashless basis. In no event is the warrant holder entitled to a cash settlement from us upon exercise.

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We have entered into an underwriting agreement with Roth Capital Partners, LLC. Our common stock is listed on The NASDAQ Capital Market under the trading symbol DCTH.

Under the terms and subject to the conditions contained in the underwriting agreement, we have agreed to sell to the underwriter, and the underwriter has agreed to purchase, the number of shares of our common stock and warrants set forth opposite its name below:

| Underwriter | Number of Shares of Common Stock | Number of Warrants |
|----------------------------|---|---------------------------|
| Roth Capital Partners, LLC | 2,460,000 | 1,107,000 |
| Total | 2,460,000 | 1,107,000 |

The underwriter is offering the securities subject to its acceptance of the securities from us and subject to prior sale. The underwriting agreement provides that the obligation of the underwriter to purchase the securities offered hereby is subject to certain conditions and that the underwriter is obligated to purchase all of the securities offered hereby if it purchases any of the securities.

The underwriter initially proposes to offer to the public the securities pursuant to the underwriting agreement at the public offering price on the cover page of this prospectus supplement. After the securities are released for sale to the public, the underwriter may change the offering price and other selling terms at various times.

The following table summarizes the compensation we will pay and proceeds, before expenses, to us:

| | Per Share of Common Stock and corresponding Warrants | Total |
|--|---|--------------|
| Public offering price | \$ 1.15 | \$ 2,829,000 |
| Underwriting discounts and commissions | \$ 0.0805 | \$ 198,030 |
| Proceeds, before expenses, to us | \$ 1.0695 | \$ 2,630,970 |

We also have agreed to provide the underwriter with an expense reimbursement of up to \$35,000.

The expenses of this offering payable by us, not including underwriting discounts and commissions, are estimated to be approximately \$225,000, which includes legal, accounting and printing costs, giving effect to the reimbursement of certain expenses which have been agreed to by the underwriter.

Pursuant to the underwriting agreement, we have agreed to indemnify the underwriter against certain liabilities, including liabilities under the Securities Act, or to contribute to payments that the underwriter or such other indemnified parties may be required to make in respect of any such liabilities.

We and all of our directors and executive officers have agreed that, subject to certain exceptions, without the prior written consent of Roth Capital Partners, LLC, we and they will not, (i) during the period ending 60 days with respect to us and 120 days with respect to our officers and directors, subject to an 18-day extension under certain

circumstances (subject to clause (ii) below), following the date of this prospectus supplement, offer, pledge, transfer, assign, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant for the sale of, lend or otherwise dispose of any shares of our common stock or any securities convertible into or exchangeable or exercisable for our common stock or file, or cause to be filed, any registration statement under the Securities Act with respect to any of the foregoing, or (ii) during the period ending the sooner of (x) 60 days following the date of this prospectus supplement and (y) the date on which the closing price of our common stock as reported on The NASDAQ Capital Market equals or exceeds 120% of the per share offering price set forth on the cover page of this prospectus supplement on any day that is 30 or more days from the date of this prospectus supplement, directly or indirectly offer, sell, assign, transfer, pledge, contract to sell, or otherwise dispose of, any shares of Common Stock pursuant to that certain Sales Agreement dated as of March 13, 2013 between us and Cowen and Company, LLC.

The restrictions described above do not apply to certain transactions, including:

with respect to us:

the securities to be sold in this offering; and

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with respect to our directors and executive officers:

the transfer of shares of common stock or any securities convertible into shares of common stock to us upon a vesting event of our securities or upon the exercise of options to purchase our securities, in each case on a cashless or net exercise basis or to cover tax withholding obligations and sales of shares of common stock to cover the exercise price of options and to fund tax obligations arising upon the exercise of options on the vesting of restricted stock; and

transactions effected pursuant to any trading plan established pursuant to Rule 10b-5 of the Securities and Exchange Act of 1934.

In connection with the offering, the underwriter may engage in stabilizing transactions, syndicate covering transactions and penalty bids in accordance with Regulation M under the Exchange Act.

Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum.

Syndicate covering transactions involve purchases of securities in the open market after the distribution has been completed in order to cover syndicate short positions. This position can only be closed out by buying securities in the open market. A naked short position is more likely to be created if the underwriter is concerned that there could be downward pressure on the price of the securities in the open market after pricing that could adversely affect investors who purchase in the offering.

Penalty bids permit the underwriter to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member is purchased in a stabilizing or syndicate covering transaction to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our common stock and warrants or preventing or retarding a decline in the market price of the common stock and warrants. As a result, the price of our common stock and warrants may be higher than the price that might otherwise exist in the open market. These transactions may be discontinued at any time. The underwriter makes no representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of the common stock and warrants. In addition, the underwriter makes no representation that they will engage in these stabilizing transactions or that any transaction, once commenced, will not be discontinued without notice.

In connection with this offering, underwriter may engage in passive market making transactions in our common stock on the NASDAQ Stock Market in accordance with Rule 103 of Regulation M under the Securities Exchange Act of 1934, as amended, during a period before the commencement of offers or sales of common stock and extending through the completion of the distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, that bid must then be lowered when specified purchase limits are exceeded.

This prospectus supplement and the related prospectus may be made available in electronic format on internet sites or through other online services maintained by the underwriter or by its affiliates. In those cases, prospective investors may view offering terms online and prospective investors may be allowed to place orders online. Other than the prospectus in electronic format, the information on the underwriter's or our website and any information contained in any other website maintained by the underwriter or by us is not part of this prospectus supplement or the registration statement of which this prospectus forms a part, has not been approved or endorsed by us or the underwriter and should not be relied upon by investors.

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

We retained Lake Street Capital Partners, LLC, or Lake Street, a FINRA member, to provide certain financial consulting services in connection with this offering. We agreed to pay Lake Street, only upon successful completion of this offering, a fee of \$19,803, for Lake Street's services in connection with this offering.

Notice to Prospective Investors in the EEA

In relation to each Member State of the European Economic Area (EEA) which has implemented the Prospectus Directive (each, a Relevant Member State) an offer to the public of any of the securities which are the subject of the offering contemplated by this prospectus supplement and the accompanying prospectus may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any such securities 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 legal entities which are authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities;
- (b) to any legal entity which has two or more of (1) an average of at least 250 employees during the last financial year, (2) a total balance sheet of more than 43,000,000, and (3) an annual net turnover of more than 50,000,000, as shown in its last annual or consolidated accounts;
- (c) by the underwriter to fewer than 100 natural or legal persons (other than qualified investors as defined in the Prospectus Directive); or
- (d) in any other circumstances falling within Article 3(2) of the Prospectus Directive; provided that no such offer of these securities shall result in a requirement for the publication by us or the underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

Any person making or intending to make any offer of securities within the EEA should only do so in circumstances in which no obligation arises for us or the underwriter to produce a prospectus for such offer. Neither we nor the underwriter has authorized, nor does the underwriter authorize, the making of any offer of securities through any financial intermediary, other than offers made by the underwriter which constitute the final offering of securities contemplated in this prospectus supplement and the accompanying prospectus.

For the purposes of this provision, and your representation below, the expression an offer to the public in relation to any of the securities 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 such securities to be offered so as to enable an investor to decide to purchase any of the securities, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State and the expression Prospectus Directive means Directive 2003/71/EC and includes any relevant implementing measure in each Relevant Member State. Each person in a Relevant Member State who receives any communication in respect of, or who acquires any securities under, the

offer of securities contemplated by this prospectus supplement and the accompanying prospectus will be deemed to have represented, warranted and agreed to and with us and the underwriter that:

(A) it is a qualified investor within the meaning of the law in that Relevant Member State implementing Article 2(1)(e) of the Prospectus Directive; and

(B) in the case of any securities acquired by it as a financial intermediary, as that term is used in Article 3(2) of the Prospectus Directive, (i) the securities acquired by it in the offering have not been acquired on behalf of, nor have they been acquired with a view to their offer or resale to, persons in any Relevant Member State other than qualified investors (as defined in the Prospectus Directive), or in circumstances in which the prior consent of the representatives has been given to the offer or resale, or (ii) where securities have been acquired by it on behalf of persons in any Relevant Member State other than qualified investors, the offer of those securities to it is not treated under the Prospectus Directive as having been made to such persons.

In addition, in the United Kingdom, this document is being distributed only to, and is directed only at, and any offer subsequently made may only be directed at persons who are qualified investors (as defined in the Prospectus Directive) (i) who have professional experience in matters relating to investments falling within Article 19 (5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the Order) and/or (ii) who are high net worth companies (or persons to whom it may otherwise be lawfully communicated) falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as relevant persons). This document must not be acted on or relied on in the United Kingdom by persons who are not relevant persons. In the United Kingdom, any investment or investment activity to which this document relates is only available to, and will be engaged in with, relevant persons.

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LEGAL MATTERS

The validity of the securities offered in this offering and certain other legal matters will be passed upon for us by Skadden, Arps, Slate, Meagher & Flom LLP, New York, New York. Certain legal matters will be passed upon for the underwriter by LeClairRyan, A Professional Corporation, Newark, New Jersey.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2013, as set forth in their report, which is incorporated by reference in this prospectus supplement and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

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PROSPECTUS

\$100,000,000

Common Stock

Preferred Stock

Warrants

Debt Securities

Stock Purchase Contracts

Delcath Systems, Inc. (the Company) may offer to sell from time to time common stock, preferred stock, warrants, debt securities and stock purchase contracts. The preferred stock of the Company may be convertible into common stock or preferred stock of another series.

In addition, selling stockholders to be named in a prospectus supplement may offer, from time to time, shares of our common stock. To the extent that any selling stockholder resells any securities, the selling stockholder may be required to provide you with this prospectus and a prospectus supplement identifying and containing specific information about the selling stockholder and the terms of the securities being offered.

The Company may offer securities and selling stockholders may offer shares of our common stock at an aggregate offering price of up to \$100,000,000. The common stock, preferred stock, warrants, debt securities and stock purchase contracts of the Company may be offered separately or together, in multiple series, in amounts, at prices and on terms that will be set forth in one or more prospectus supplements to this prospectus.

This prospectus describes some of the general terms that may apply to these securities and the general manner in which they may be offered. Each time the Company sells securities, a prospectus supplement will be provided that will contain specific information about the terms of any securities offered and the specific manner in which the securities will be offered. The prospectus supplement will also contain information, where appropriate, about material United States federal income tax consequences relating to, and any listing on a securities exchange of, the securities covered by the prospectus supplement. The prospectus supplement may add to, update or change the information in this prospectus. You should read this prospectus and any prospectus supplement carefully before you invest in our securities. This prospectus may not be used to sell securities unless accompanied by a prospectus supplement.

The Company may offer the securities directly to investors, through agents designated from time to time by the Company, or to or through underwriters or dealers. If any agents, underwriters, or dealers are involved in the sale of any of the securities, their names, and any applicable purchase price, fee, commission or discount arrangement with, between or among them will be set forth, or will be calculable from the information set forth, in an accompanying prospectus supplement. For more detailed information, see Plan of Distribution.

Our common stock is traded on the NASDAQ Capital Market under the symbol DCTH. On September 26, 2012, the last reported sale price of our common stock on the NASDAQ Capital Market was \$1.66.

Investing in our common stock involves a high degree of risk. You should review carefully the risks and uncertainties referenced under the heading Risk Factors on page 3 of this prospectus.

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

The date of this prospectus is October 9, 2012.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission using a shelf registration process. Under this shelf process, we may sell any combination of the securities described in this prospectus in one or more offerings and selling stockholders to be named in a prospectus supplement may, from time to time, sell our common stock up to a total aggregate dollar amount of \$100,000,000. This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about 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 together with additional information described under the heading Where You Can Find Additional Information.

You should rely only on the information contained in this prospectus and the accompanying prospectus supplement or incorporated by reference in these documents. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained or incorporated by reference in this prospectus or the accompanying prospectus supplement. If anyone provides you with different, inconsistent or unauthorized information or representations, you must not rely on them. This prospectus and the accompanying prospectus supplement are an offer to sell only the securities offered by these documents, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus or any prospectus supplement is current only as of the date on the front of those documents.

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PROSPECTUS SUMMARY

This summary highlights information contained elsewhere or incorporated by reference into this prospectus. Because it is a summary, it does not contain all of the information that you should consider before investing in our securities. You should read this entire prospectus carefully, including the section entitled Risk Factors, any applicable prospectus supplement and the documents that we incorporate by reference into this prospectus and the prospectus supplement, before making an investment decision.

DELCATH SYSTEMS, INC.

We are a specialty pharmaceutical and medical device company focused on oncology. Our proprietary system for chemosaturation is designed to administer high dose chemotherapy and other therapeutic agents to diseased organs or regions of the body, while controlling the systemic exposure of those agents. Our initial focus is on the treatment of primary and metastatic liver cancers.

The Delcath system for hepatic chemosaturation allows the administration of concentrated regional chemotherapy to the liver. This whole organ therapy is administered by first isolating the circulatory system of the liver, saturating the entire organ with chemotherapeutic agent, and filtering the blood prior to returning it to the patient. The Delcath system involves three catheters placed percutaneously through standard interventional radiology techniques. The catheters temporarily isolate the liver from the body's circulatory system, deliver a 30 minute infusion of chemotherapeutic agent (currently melphalan hydrochloride) directly to the liver, and collect drug-laden blood exiting the liver for filtration by proprietary filters. The filters reduce the concentration of chemotherapeutic agent in the blood, thereby minimizing systemic exposure to the drug and related side-effects before the filtered blood is returned to the patient's circulatory system.

The procedure is minimally invasive and repeatable, allowing for multiple courses of treatment with chemotherapeutic drugs and the potential for concomitant use in conjunction with other cancer therapies. We believe that the Delcath chemosaturation system may play an important role in the management of cancers in the liver, potentially providing time and additional options for treatment of a patient's primary disease. We also believe that the Delcath system is a platform technology that in the future may include the use of other drugs to treat cancers in the liver, as well as for the treatment of cancers in other organs and regions of the body.

We obtained authorization to affix a CE Mark for our Hepatic CHEMOSAT Delivery System (CHEMOSAT System) in April 2011 and for the second generation hemofiltration cartridge for our CHEMOSAT System in April 2012. The right to affix the CE mark allows us to market and sell the CHEMOSAT System in Europe. On August 15, 2012, we submitted our new drug application (NDA) to the United States Food and Drug Administration (FDA) seeking approval for our proprietary chemosaturation system for use with melphalan hydrochloride in the treatment of patients with unresectable metastatic melanoma in the liver. We included our Generation 2 filter in our NDA submission as a technical change to the Chemistry, Manufacturing, and Control (CMC) module.

We have financed our operations primarily through public and private placements of equity securities. We have incurred net losses since we were founded and we expect to continue to incur significant net losses throughout 2012. We expect that the average amount of capital required for operations to increase in the foreseeable future, as we commercialize the Delcath chemosaturation system in Europe, continue research and development activities, continue the submission process with the FDA and prepare for potential US commercialization.

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Our principal executive office is located at 810 Seventh Avenue, 35th Floor, New York, NY 10019. Our telephone number is (212) 489-2100. Our website address is <http://www.delcath.com>. Information contained in, or accessible through, our website does not constitute a part of this prospectus.

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RISK FACTORS

Investing in our securities involves a high degree of risk. You should consider carefully the risk factors set forth in the documents and reports filed by us with the Securities and Exchange Commission, which we refer to as the SEC, that are incorporated by reference into this prospectus, as well as any risks described in any applicable prospectus supplement, before deciding whether to buy our securities. Additional risks not known to us or that we believe are immaterial may also significantly impair our business operations and could result in a complete loss of your investment.

DISCLOSURE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, any prospectus supplement and the documents incorporated by reference into this prospectus contain certain forward-looking statements within the meaning of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 with respect to our business, financial condition, liquidity and results of operations. Words such as anticipates, expects, intends, plans, predicts, believes, seeks, estimates, could, would, will, may, can, continue, potential, should, and the negative of these terms or other comparable terminology often identify forward-looking statements. Statements in this prospectus and the other documents incorporated by reference that are not historical facts are hereby identified as forward-looking statements for the purpose of the safe harbor provided by Section 21E of the Securities Exchange Act of 1934, as amended, and Section 27A of the Securities Act of 1933, as amended. These forward-looking statements are not guarantees of future performance and are subject to risks and uncertainties that could cause actual results to differ materially from the results contemplated by the forward-looking statements, including the risks discussed in this prospectus, in our Annual Report on Form 10-K for the fiscal year ended December 31, 2011 in Item 1A under Risk Factors as well as in Item 7A Quantitative and Qualitative Disclosures About Market Risk, our Quarterly Report on Form 10-Q for the period ended June 30, 2012 and our Quarterly Report on Form 10-Q for the period ended March 31, 2012 in Part I, Item 3 Quantitative and Qualitative Disclosures About Market Risk, and the risks detailed from time to time in our future SEC reports. These forward-looking statements include, but are not limited to, statements about:

the progress and results of our research and development programs;

our estimates regarding sufficiency of our cash resources, anticipated capital requirements and our need for additional financing;

the commencement of future clinical trials and the results and timing of those clinical trials;

submission and timing of applications for regulatory approval and approval thereof;

our ability to successfully source certain components of the system and enter into supplier contracts;

our ability to successfully manufacture the Delcath chemosaturation system;

our ability to successfully commercialize the Delcath chemosaturation system; and

our ability to successfully negotiate and enter into agreements with strategic and corporate partners.

Many of the important factors that will determine these results are beyond our ability to control or predict. You are cautioned not to put undue reliance on any forward-looking statements, which speak only as of the date of this prospectus or, in the case of documents incorporated by reference, as of the date of such documents. Except as otherwise required by law, we do not assume any obligation to publicly update or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events.

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WHERE YOU CAN FIND ADDITIONAL INFORMATION

This prospectus is part of a registration statement we filed with the SEC. You should rely only on the information contained in this prospectus, any applicable prospectus supplement or documents incorporated by reference into this prospectus. 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 is accurate as of any date other than the date on the front page of this prospectus, regardless of the time of delivery of this prospectus or any sale of securities.

We file reports, proxy statements and other information with the SEC. You may read and copy any reports, proxy statements or other information filed by us at the SEC's Public Reference Room at 100 F Street NE, Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at (800) SEC-0330. The SEC maintains a website that contains reports, proxy statements and other information regarding issuers that file electronically with the SEC, including Delcath Systems, Inc. The address of the SEC website is <http://www.sec.gov>.

Important Information Incorporated By Reference

The SEC allows 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 documents incorporated by reference into this prospectus contain important information that you should read about us.

The following documents are incorporated by reference into this document:

| SEC Filing (File No. 001-16133) | Date of Filing |
|--|-----------------------|
| Quarterly Report on Form 10-Q for quarter ended March 31, 2012 | May 9, 2012 |
| Quarterly Report on Form 10-Q for quarter ended June 30, 2012 | August 8, 2012 |
| Proxy Statement on Schedule 14A for our 2011 Meeting of Stockholders | April 27, 2012 |
| Annual Report on Form 10-K for year ended December 31, 2011 | March 3, 2012 |
| Current Reports on Form 8-K and 8-K/A | January 13, 2012 |
| | January 13, 2012 |
| | January 31, 2012 |
| | February 2, 2012 |
| | March 26, 2012 |
| | April 18, 2012 |
| | April 24, 2012 |
| | May 30, 2012 |
| | May 31, 2012 |
| | (excluding that |
| | information that is |
| | expressly not filed) |
| | July 9, 2012 |
| | July 19, 2012 |
| | August 15, 2012 |

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 Section 13(a), 13(c), 14 or 15(d) of the Exchange Act (i) after the date of the

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initial registration statement and prior to effectiveness of the registration statement, or (ii) from the date of this prospectus 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.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus, other than exhibits which are specifically incorporated by reference into such documents. Requests should be directed to Controller at Delcath Systems, Inc., 810 Seventh Avenue, 35th Floor, New York, New York 10019 or by calling us at 212-489-2100.

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USE OF PROCEEDS

Unless we provide otherwise in a supplement to this prospectus, we intend to use the net proceeds from the sale of our securities covered by this prospectus for general corporate purposes, including, but not limited to, obtaining regulatory approvals, commercialization of our products, funding of our clinical trials, capital expenditures and working capital. We will not receive any proceeds from the sale of shares of our common stock by any selling stockholder.

SELLING STOCKHOLDERS

This prospectus relates in part to the possible sale by certain of our stockholders, or the selling stockholders, who own shares of common stock granted under, or resulting from exercise of options issued under our 2009 Stock Incentive Plan, as amended. As of August 31, 2012, 833,700 shares of common stock had been issued to such officers and directors pursuant to the 2009 Stock Incentive Plan. The selling stockholders may from time to time offer and sell these shares of common stock pursuant to this prospectus and any applicable prospectus supplement.

The applicable prospectus supplement will set forth the name of each of the selling stockholders, the amount of common stock owned by each selling stockholder prior to the offering, the number of shares of our common stock to be offered by each selling stockholder and the amount of the common stock to be owned by each selling stockholder after completion of the offering. The applicable prospectus supplement will also disclose whether any of the selling stockholders has held any position or office with, has been employed by or otherwise has had a material relationship with us during the three years prior to the date of the prospectus supplement.

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DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we may include in any applicable prospectus supplement and in any related free writing prospectuses, summarizes the material terms and provisions of the debt securities that we may offer under this prospectus. While the terms summarized below will apply generally to any debt securities that we may offer, we will describe the particular terms of any debt securities in more detail in the applicable prospectus supplement. The terms of any debt securities offered under a prospectus supplement may differ from the terms described below.

We may issue debt securities from time to time in one or more distinct series. The debt securities may be senior debt securities or subordinated debt securities. Senior debt securities may be issued under a senior indenture and subordinated debt securities may be issued under a subordinated indenture. If we issue debt securities pursuant to an indenture, in the applicable prospectus supplement we will specify the trustee under such indenture. We will include in a supplement to this prospectus the specific terms of debt securities being offered, including the terms, if any, on which debt securities may be convertible into or exchangeable for common stock, preferred stock or other debt securities. The statements and descriptions in this prospectus or in any prospectus supplement regarding provisions of debt securities and any indentures are summaries of these provisions, do not purport to be complete and are subject to, and are qualified in their entirety by reference to, all of the provisions of the debt securities and the indentures (including any amendments or supplements we may enter into from time to time which are permitted under the debt securities or any indenture).

Unless otherwise specified in a prospectus supplement, the debt securities will be direct unsecured obligations of the Company. Any debt securities designated as senior will rank equally with any of our other senior and unsubordinated debt. Any debt securities designated as subordinated will be subordinate and junior in right of payment to any senior indebtedness. There may be subordinated debt securities that are senior or junior to other series of subordinated debt securities.

The applicable prospectus supplement will set forth the terms of the debt securities or any series thereof, including, if applicable:

the title of the debt securities and whether the debt securities will be senior debt securities or subordinated debt securities;

any limit upon the aggregate principal amount of the debt securities;

whether the debt securities will be issued as registered securities, bearer securities or both, and any restrictions on the exchange of one form of debt securities for another and on the offer, sale and delivery of the debt securities in either form;

the date or dates on which the principal amount of the debt securities will mature;

if the debt securities bear interest, the rate or rates at which the debt securities bear interest, or the method for determining the interest rate, and the date or dates from which interest will accrue;

if the debt securities bear interest, the dates on which interest will be payable, or the method for determining such dates, and the regular record dates for interest payments;

the place or places where the payment of principal, any premium and interest will be made, where the debt securities may be surrendered for transfer or exchange and where notices or demands to or upon us may be served;

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any optional redemption provisions, which would allow us to redeem the debt securities in whole or in part;

any sinking fund or other provisions that would obligate us to redeem, repay or purchase the debt securities;

if the currency in which the debt securities will be issuable is United States dollars, the denominations in which any registered securities will be issuable, if other than denominations of \$1,000 and any integral multiple thereof, and the denominations in which any bearer securities will be issuable, if other than the denomination of \$5,000;

if other than the entire principal amount, the portion of the principal amount of debt securities which will be payable upon a declaration of acceleration of the maturity of the debt securities;

the events of default and covenants relevant to the debt securities, including, the inapplicability of any event of default or covenant set forth in the indenture relating to the debt securities, or the applicability of any other events of defaults or covenants in addition to the events of default or covenants set forth in the indenture relating to the debt securities;

the name and location of the corporate trust office of the applicable trustee under the indenture for such series of notes;

if other than United States dollars, the currency in which the debt securities will be paid or denominated;

if the debt securities are to be payable, at our election or the election of a holder of the debt securities, in a currency other than that in which the debt securities are denominated or stated to be payable, the terms and conditions upon which that election may be made, and the time and manner of determining the exchange rate between the currency in which the debt securities are denominated or stated to be payable and the currency in which the debt securities are to be so payable;

the designation of the original currency determination agent, if any;

if the debt securities are issuable as indexed securities, the manner in which the amount of payments of principal, any premium and interest will be determined;

if the debt securities do not bear interest, the dates on which we will furnish to the applicable trustee the names and addresses of the holders of the debt securities;

if other than as set forth in an indenture, provisions for the satisfaction and discharge or defeasance or covenant defeasance of that indenture with respect to the debt securities issued under that indenture;

the date as of which any bearer securities and any global security will be dated if other than the date of original issuance of the first debt security of a particular series to be issued;

whether and under what circumstances we will pay additional amounts to non-United States holders in respect of any tax assessment or government charge;

whether the debt securities will be issued in whole or in part in the form of a global security or securities and, in that case, any depositary and global exchange agent for the global security or securities, whether the global form shall be permanent or temporary and, if applicable, the exchange date;

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if debt securities are to be issuable initially in the form of a temporary global security, the circumstances under which the temporary global security can be exchanged for definitive debt securities and whether the definitive debt securities will be registered securities, bearer securities or will be in global form and provisions relating to the payment of interest in respect of any portion of a global security payable in respect of an interest payment date prior to the exchange date;

the extent and manner to which payment on or in respect of debt securities will be subordinated to the prior payment of our other liabilities and obligations;

whether payment of any amount due under the debt securities will be guaranteed by one or more guarantors, including one or more of our subsidiaries;

whether the debt securities will be convertible and the terms of any conversion provisions;

the forms of the debt securities; and

any other terms of the debt securities, which terms shall not be inconsistent with the requirements of the Trust Indenture Act of 1939, as amended.

This prospectus is part of a registration statement that does not limit the aggregate principal amount of debt securities that we may issue and provides that we may issue debt securities from time to time in one or more series under one or more indentures, in each case with the same or various maturities, at par or at a discount. Unless indicated in a prospectus supplement, we may issue additional debt securities of a particular series without the consent of the holders of the debt securities of such series outstanding at the time of the issuance. Any such additional debt securities, together with all other outstanding debt securities of that series, will constitute a single series of debt securities under the applicable indenture.

We intend to disclose any restrictive covenants for any issuance or series of debt securities in the applicable prospectus supplement.

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DESCRIPTION OF CAPITAL STOCK

The following description of our common stock and preferred stock, together with the additional information we include in any applicable prospectus supplement and in any related free writing prospectuses, summarizes the material terms and provisions of the common stock and preferred stock that we may offer under this prospectus. The following description of our capital stock does not purport to be complete and is subject to, and qualified in its entirety by, our Amended and Restated Certificate of Incorporation, as amended, and our Amended and Restated By-Laws, which are exhibits to the registration statement of which this prospectus forms a part, and by applicable law. We refer in this section to our Amended and Restated Certificate of Incorporation, as amended, as our certificate of incorporation, and we refer to our Amended and Restated By-Laws as our by-laws. The terms of our common stock and preferred stock may also be affected by Delaware law.

Authorized Capital Stock

Our authorized capital stock consists of 170,000,000 shares of our common stock, \$0.01 par value per share, and 10,000,000 shares of undesignated preferred stock, \$0.01 par value per share. As of August 31, 2012, we had 67,510,123 shares of common stock outstanding and no shares of preferred stock outstanding.

Common Stock

Voting

Holders of our common stock are entitled to one vote per share on matters to be voted on by stockholders and also are entitled to receive such dividends, if any, as may be declared from time to time by our board of directors in its discretion out of funds legally available therefor. Holders of our common stock have exclusive voting rights for the election of our directors and all other matters requiring stockholder action, except with respect to amendments to our certificate of incorporation that alter or change the powers, preferences, rights or other terms of any outstanding preferred stock if the holders of such affected series of preferred stock are entitled to vote on such an amendment or filling vacancies on the board of directors.

Dividends

Holders of common stock are entitled to share ratably in any dividends declared by our board of directors, subject to any preferential dividend rights of any outstanding preferred stock. Dividends consisting of shares of common stock may be paid to holders of shares of common stock. We do not intend to pay cash dividends in the foreseeable future.

Liquidation and Dissolution

Upon our liquidation or dissolution, the holders of our common stock will be entitled to receive pro rata all assets remaining available for distribution to stockholders after payment of all liabilities and provision for the liquidation of any shares of preferred stock at the time outstanding.

Other Rights and Restrictions

Our common stock has no preemptive or other subscription rights, and there are no conversion rights or redemption or sinking fund provisions with respect to such stock. Our common stock is not subject to redemption by us. Our certificate of incorporation and bylaws do not restrict the ability of a holder of common stock to transfer the stockholder's shares of common stock. If we issue shares of common stock under this prospectus, the shares will be fully paid and non-assessable and will not have, or be subject to, any preemptive or similar rights.

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Listing

Our common stock is listed on The NASDAQ Capital Market under the symbol DCTH.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company.

Preferred Stock

Our board of directors has the authority to issue up to 10,000,000 shares of preferred stock in one or more series and to determine the rights and preferences of the shares of any such series without stockholder approval, none of which are outstanding. Our board of directors may issue preferred stock in one or more series and has the authority to fix the designation and powers, rights and preferences and the qualifications, limitations, or restrictions with respect to each class or series of such class without further vote or action by the stockholders. The ability of our board of directors to issue preferred stock without stockholder approval could have the effect of delaying, deferring or preventing a change of control of us or the removal of existing management.

If we decide to issue any preferred stock pursuant to this prospectus, we will describe in a prospectus supplement the terms of the preferred stock, including, if applicable, the following:

the title of the series and stated value;

the number of shares of the series of preferred stock offered, the liquidation preference per share, if applicable, and the offering price;

the applicable dividend rate(s) or amount(s), period(s) and payment date(s) or method(s) of calculation thereof;

the date from which dividends on the preferred stock will accumulate, if applicable;

any procedures for auction and remarketing;

any provisions for a sinking fund;

any applicable provision for redemption and the price or prices, terms and conditions on which preferred stock may be redeemed;

any securities exchange listing;

any voting rights and powers;

whether interests in the preferred stock will be represented by depository shares;

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the terms and conditions, if applicable, of conversion into shares of our common stock, including the conversion price or rate or manner of calculation thereof;

a discussion of any material U.S. federal income tax considerations;

the relative ranking and preference as to dividend rights and rights upon our liquidation, dissolution or the winding up of our affairs;

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any limitations on issuance of any series of preferred stock ranking senior to or on a parity with such series of preferred stock as to dividend rights and rights upon our liquidation, dissolution or the winding up of our affairs; and

any other specific terms, preferences, rights, limitations or restrictions of such series of preferred stock.

Certain Anti-Takeover Provisions of Delaware Law and our Certificate of Incorporation and Bylaws

We are not subject to Section 203 of the Delaware General Corporation Law, which prohibits Delaware corporations from engaging in a wide range of specified transactions with any interested stockholder, defined to include, among others, any person other than such corporation and any of its majority owned subsidiaries who own 15% or more of any class or series of stock entitled to vote generally in the election of directors, unless, among other exceptions, the transaction is approved by (i) our board of directors prior to the date the interested stockholder obtained such status or (ii) the holders of two thirds of the outstanding shares of each class or series of stock entitled to vote generally in the election of directors, not including those shares owned by the interested stockholder.

Staggered Board of Directors

Our certificate of incorporation and by-laws provide that our board of directors be classified into three classes of directors of approximately equal size. As a result, in most circumstances, a person can gain control of our board only by successfully engaging in a proxy contest at two or more annual meetings.

Authorized But Unissued Shares

Our authorized but unissued shares of common stock and preferred stock are available for future issuances without stockholder approval and could be utilized for a variety of corporate purposes, including future offerings to raise additional capital, corporate acquisitions, employee benefit plans and stockholder rights plans. The existence of authorized but unissued and unreserved common stock and preferred stock could render more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise.

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DESCRIPTION OF STOCK PURCHASE CONTRACTS

The following description, together with the additional information that we include in any applicable prospectus supplement and in any related free writing prospectuses, summarizes the material terms and provisions of the stock purchase contracts that we may offer under this prospectus. While the terms we have summarized below will apply generally to any stock purchase contracts that we may offer under this prospectus, we will describe the particular terms of any series of stock purchase contracts in more detail in the applicable prospectus supplement. The terms of any stock purchase contracts offered under a prospectus supplement may differ from the terms described below.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of stock purchase contract that describes the terms of the particular stock purchase contract we are offering before the issuance of the related stock purchase contract. The following summaries of material provisions of the stock purchase contracts are subject to, and qualified in their entirety by reference to, all the provisions of the stock purchase contracts applicable to the stock purchase contracts that we may offer under this prospectus. We urge you to read the applicable prospectus supplements related to the stock purchase contracts that we may offer under this prospectus, as well as any related free writing prospectuses, and the complete stock purchase contracts that contain the terms of the stock purchase contracts.

We may issue stock purchase contracts, including contracts obligating holders to purchase from us and us to sell to the holders, a specified number of shares of common stock or preferred stock at a future date or dates. Alternatively, the stock purchase contracts may obligate us to purchase from holders, and obligate holders to sell to us, a specified or varying number of shares of common stock or preferred stock. The consideration per share of common stock or preferred stock may be fixed at the time the stock purchase contracts are issued or may be determined by a specific reference to a formula set forth in the stock purchase contracts. The stock purchase contracts may provide for settlement by delivery by us or on our behalf of shares of the underlying security, or they may provide for settlement by reference or linkage to the value, performance or trading price of the underlying security. The stock purchase contracts may require us to make periodic payments to the holders of the certain of our securities or vice versa, and such payments may be unsecured or prefunded on some basis and may be paid on a current or on a deferred basis. The stock purchase contracts may require holders to secure their obligations thereunder in a specified manner and may provide for the prepayment of all or part of the consideration payable by holders in connection with the purchase of the underlying security or other property pursuant to the stock purchase contracts.

The securities related to the stock purchase contracts may be pledged to a collateral agent for our benefit pursuant to a pledge agreement to secure the obligations of holders of stock purchase contracts to purchase the underlying security or property under the related stock purchase contracts. The rights of holders of stock purchase contracts to the related pledged securities will be subject to our security interest therein created by the pledge agreement. No holder of stock purchase contracts will be permitted to withdraw the pledged securities related to such stock purchase contracts from the pledge arrangement.

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DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplement, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. The terms of any warrants offered under a prospectus supplement may differ from the terms described below.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of warrant agreement, including a form of warrant certificate, that describes the terms of the particular warrants we are offering before the issuance of the related warrants. The following summaries of material provisions of the warrants and the warrant agreements are subject to, and qualified in their entirety by reference to, all the provisions of the warrant agreement and warrant certificate applicable to the warrants that we may offer under this prospectus. We urge you to read the applicable prospectus supplements related to the warrants that we may offer under this prospectus, as well as any related free writing prospectuses, and the complete warrant agreements and warrant certificates that contain the terms of the warrants.

General

We may issue warrants for the purchase of common stock or preferred stock in one or more series. We may issue warrants independently or together with common stock and preferred stock, and the warrants may be attached to or separate from these securities.

We may evidence each series of warrants by warrant certificates that we will issue under a separate agreement. We may enter into a warrant agreement with a warrant agent. We will indicate the name and address and other information regarding the warrant agent in the applicable prospectus supplement relating to a particular warrants.

If we decide to issue warrants pursuant to this prospectus, we will specify in a prospectus supplement the terms of the warrants, including, if applicable, the following:

the offering price and aggregate number of warrants offered;

the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;

the date on and after which the warrants and the related securities will be separately transferable;

the number of shares of stock purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;

the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;

the terms of any rights to redeem or call the warrants;

any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;

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the dates on which the right to exercise the warrants will commence and expire;

the manner in which the warrant agreement and warrants may be modified;

a discussion of any material U.S. federal income tax considerations of holding or exercising the warrants;

the terms of the securities issuable upon exercise of the warrants; and

any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Before exercising their warrants, holders of warrants may have no rights of holders of the securities purchasable upon such exercise, including, in the case of warrants to purchase common stock or preferred stock, the right to receive dividends, if any, or payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Exercise of Warrants

Each warrant will entitle the holder to purchase shares of our stock at the exercise price that we describe in the applicable prospectus supplement. Holders of the warrants may exercise the warrants at any time up to the specified time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. If we so indicate in the applicable prospectus supplement, the warrants may also provide that they may be exercised on a cashless or net basis. We will set forth on the reverse side of the warrant certificate, if applicable, and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to us or a warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at our offices, the corporate trust office of a warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the common stock or preferred stock purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender shares of common stock or preferred stock as all or part of the exercise price for warrants.

Enforceability of Rights by Holders of Warrants

Any warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

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PLAN OF DISTRIBUTION

We may sell the securities offered by this prospectus from time to time in one or more transactions, including without limitation:

directly to one or more purchasers;

through agents;

to or through underwriters, brokers or dealers;

through a combination of any of these methods.

A distribution of the securities offered by this prospectus may also be effected through the issuance of derivative securities, including without limitation, warrants, subscriptions, exchangeable securities, forward delivery contracts and the writing of options.

In addition, the manner in which we may sell some or all of the securities covered by this prospectus includes, without limitation, through:

a block trade in which a broker-dealer will attempt to sell as agent, but may position or resell a portion of the block, as principal, in order to facilitate the transaction;

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

ordinary brokerage transactions and transactions in which a broker solicits purchasers; or

privately negotiated transactions.

We may also enter into hedging transactions. For example, we may:

enter into transactions with a broker-dealer or affiliate thereof in connection with which such broker-dealer or affiliate will engage in short sales of the common stock pursuant to this prospectus, in which case such broker-dealer or affiliate may use shares of common stock received from us to close out its short positions;

sell securities short and redeliver such shares to close out our short positions;

enter into option or other types of transactions that require us to deliver common stock to a broker-dealer or an affiliate thereof, who will then resell or transfer the common stock under this prospectus; or

loan or pledge the common stock to a broker-dealer or an affiliate thereof, who may sell the loaned shares or, in an event of default in the case of a pledge, sell the pledged shares pursuant to this prospectus.

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In addition, we may enter into derivative or hedging transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. In connection with such a transaction, the third parties may sell securities covered by and pursuant to this prospectus and an applicable prospectus supplement or pricing supplement, as the case may be. If so, the third party may use securities borrowed from us or

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others to settle such sales and may use securities received from us to close out any related short positions. We may also loan or pledge securities covered by this prospectus and an applicable prospectus supplement to third parties, who may sell the loaned securities or, in an event of default in the case of a pledge, sell the pledged securities pursuant to this prospectus and the applicable prospectus supplement or pricing supplement, as the case may be.

A prospectus supplement with respect to each offering of securities will state the terms of the offering of the securities, including:

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

the public offering price or purchase price of the securities and the net proceeds to be received by us from the sale;

any delayed delivery arrangements;

any underwriting discounts or agency fees and other items constituting underwriters' or agents' compensation;

any discounts or concessions allowed or reallowed or paid to dealers; and

any securities exchange or markets on which the securities may be listed.

The offer and sale of the securities described in this prospectus by us, the underwriters or the third parties described above may be effected from time to time in one or more transactions, including privately negotiated transactions, either:

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

at market prices prevailing at the time of sale;

at prices related to the prevailing market prices; or

at negotiated prices.

General

Any public offering price and any discounts, commissions, concessions or other items constituting compensation allowed or reallowed or paid to underwriters, dealers, agents or remarketing firms may be changed from time to time. Underwriters, dealers, agents and remarketing firms that participate in the distribution of the offered securities may be underwriters as defined in the Securities Act. Any discounts or commissions they receive from us and any profits they receive on the resale of the offered securities may be treated as underwriting discounts and commissions under the Securities Act. We will identify any underwriters, agents or dealers and describe their commissions, fees or discounts in the applicable prospectus supplement or pricing supplement, as the case may be.

Underwriters and Agents

If underwriters are used in a sale, they will acquire the offered securities for their own account. The underwriters may resell the offered securities in one or more transactions, including negotiated transactions. These sales may be made at a fixed public offering price or prices,

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which may be changed, at market prices prevailing at the time of the sale, at prices related to such prevailing market price or at negotiated prices. We may offer the securities to the public through an underwriting syndicate or through a single underwriter. The underwriters in any particular offering will be mentioned in the applicable prospectus supplement or pricing supplement, as the case may be.

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Unless otherwise specified in connection with any particular offering of securities, the obligations of the underwriters to purchase the offered securities will be subject to certain conditions contained in an underwriting agreement that we will enter into with the underwriters at the time of the sale to them. The underwriters will be obligated to purchase all of the securities of the series offered if any of the securities are purchased, unless otherwise specified in connection with any particular offering of securities. Any initial offering price and any discounts or concessions allowed, reallocated or paid to dealers may be changed from time to time.

We may designate agents to sell the offered securities. Unless otherwise specified in connection with any particular offering of securities, the agents will agree to use their best efforts to solicit purchases for the period of their appointment. We may also sell the offered securities to one or more remarketing firms, acting as principals for their own accounts or as agents for us. These firms will remarket the offered securities upon purchasing them in accordance with a redemption or repayment pursuant to the terms of the offered securities. A prospectus supplement or pricing supplement, as the case may be, will identify any remarketing firm and will describe the terms of its agreement, if any, with us and its compensation.

In connection with offerings made through underwriters or agents, we may enter into agreements with such underwriters or agents pursuant to which we receive our outstanding securities in consideration for the securities being offered to the public for cash. In connection with these arrangements, the underwriters or agents may also sell securities covered by this prospectus to hedge their positions in these outstanding securities, including in short sale transactions. If so, the underwriters or agents may use the securities received from us under these arrangements to close out any related open borrowings of securities.

Dealers

We may sell the offered securities to dealers as principals. We may negotiate and pay dealers commissions, discounts or concessions for their services. The dealer may then resell such securities to the public either at varying prices to be determined by the dealer or at a fixed offering price agreed to with us at the time of resale. Dealers engaged by us may allow other dealers to participate in resales.

Direct Sales

We may choose to sell the offered securities directly. In this case, no underwriters or agents would be involved.

Institutional Purchasers

We may authorize agents, dealers or underwriters to solicit certain institutional investors to purchase offered securities on a delayed delivery basis pursuant to delayed delivery contracts providing for payment and delivery on a specified future date. The applicable prospectus supplement or pricing supplement, as the case may be, will provide the details of any such arrangement, including the offering price and commissions payable on the solicitations.

We will enter into such delayed contracts only with institutional purchasers that we approve. These institutions may include commercial and savings banks, insurance companies, pension funds, investment companies and educational and charitable institutions.

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Indemnification; Other Relationships

We may have agreements with agents, underwriters, dealers and remarketing firms to indemnify them against certain civil liabilities, including liabilities under the Securities Act. Agents, underwriters, dealers and remarketing firms, and their affiliates, may engage in transactions with, or perform services for, us in the ordinary course of business. This includes commercial banking and investment banking transactions.

Market-Making, Stabilization and Other Transactions

There is currently no market for any of the offered securities, other than the common stock which is listed on the NASDAQ Capital Market. If the offered securities are traded after their initial issuance, they may trade at a discount from their initial offering price, depending upon prevailing interest rates, the market for similar securities and other factors. While it is possible that an underwriter could inform us that it intends to make a market in the offered securities, such underwriter would not be obligated to do so, and any such market-making could be discontinued at any time without notice. Therefore, no assurance can be given as to whether an active trading market will develop for the offered securities. We have no current plans for listing of the debt securities, preferred stock or warrants on any securities exchange or on the National Association of Securities Dealers, Inc. automated quotation system; any such listing with respect to any particular debt securities, preferred stock or warrants will be described in the applicable prospectus supplement or pricing supplement, as the case may be.

In connection with any offering of common stock, the underwriters may purchase and sell shares of common stock in the open market. These transactions may include short sales, syndicate covering transactions and stabilizing transactions. Short sales involve syndicate sales of common stock in excess of the number of shares to be purchased by the underwriters in the offering, which creates a syndicate short position. Covered short sales are sales of shares made in an amount up to the number of shares represented by the underwriters' over-allotment option. In determining the source of shares to close out the covered syndicate short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the over-allotment option. Transactions to close out the covered syndicate short involve either purchases of the common stock in the open market after the distribution has been completed or the exercise of the over-allotment option. The underwriters may also make naked short sales of shares in excess of the over-allotment option. The underwriters must close out any naked short position by purchasing shares of common stock in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of bids for or purchases of shares in the open market while the offering is in progress for the purpose of pegging, fixing or maintaining the price of the securities.

In connection with any offering, the underwriters may also engage in penalty bids. Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a syndicate covering transaction to cover syndicate short positions. Stabilizing transactions, syndicate covering transactions and penalty bids may cause the price of the securities to be higher than it would be in the absence of the transactions. The underwriters may, if they commence these transactions, discontinue them at any time.

Fees and Commissions

In compliance with the guidelines of the Financial Industry Regulatory Authority (the "FINRA"), the aggregate maximum discount, commission or agency fees or other items constituting underwriting compensation to be received by any FINRA member or independent broker-dealer will not exceed 8% of any offering pursuant to this prospectus and any applicable prospectus supplement or pricing supplement, as the case may be; however, it is anticipated that the maximum commission or discount to be received in any particular offering of securities will be significantly less than this amount.

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LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement, Skadden, Arps, Slate, Meagher & Flom LLP, New York, New York will provide opinions regarding the authorization and validity of the securities. Skadden, Arps, Slate, Meagher & Flom LLP may also provide opinions regarding certain other matters. Any underwriters will also be advised about legal matters by their own counsel, which will be named in the prospectus supplement.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements as of and for the years ended December 31, 2011 and 2010 included in our Annual Report on Form 10-K for the year ended December 31, 2011 and the effectiveness of our internal control over financial reporting as of December 31, 2011, as set forth in their reports, which are incorporated by reference in the registration statement. Our financial statements as of and for the years ended December 31, 2011 and December 31, 2010 are incorporated by reference in reliance on Ernst & Young LLP's reports given on their authority as experts in accounting and auditing.

The consolidated financial statements of Delcath Systems, Inc. for the year ended December 31, 2009 incorporated by reference in this prospectus and elsewhere in the registration statement from our Annual Report on Form 10-K for the year ended December 31, 2011 have been so incorporated by reference in reliance upon the report of Grant Thornton LLP, independent registered public accountants and successor to the practice of CCR LLP, upon the authority of said firm as experts in auditing and accounting in giving said report.

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2,460,000 Shares of Common Stock

Warrants to Purchase up to 1,107,000 Shares of Common Stock

PROSPECTUS SUPPLEMENT

Roth Capital Partners

February 11, 2015