Cardiovascular Systems Inc
Form 424B5
March 19, 2013
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Filed Pursuant to Rule 424(b)(5)
Registration No. 333-174681

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

Subject to Completion, Dated March 19, 2013

PRELIMINARY PROSPECTUS SUPPLEMENT

(To Prospectus dated June 17, 2011)

Shares

Common Stock

We are offering shares of our common stock.

Our common stock trades on the Nasdaq Global Market under the symbol CSII. On March 18, 2013, the last reported sale price of our common stock was $18.68 per share.

Investing in our common stock involves risks that are described in the Risk Factors section beginning on page S-9 of this prospectus supplement.

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

The underwriters may also purchase up to an additional shares of common stock from us at the public offering price, less the underwriting discounts and commissions, to cover over-allotments, if any, within 30 days of the date of this prospectus supplement. If the underwriters exercise their option in full, the total underwriting discounts and commissions payable by us will be $ and the total proceeds, before expenses, to us will be $.

You should carefully read this prospectus supplement and the accompanying prospectus, together with the documents we incorporated by reference, before you invest in our stock.

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.

The shares of common stock will be ready for delivery on or about March , 2013.

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The date of this prospectus supplement is March , 2013.

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Prospectus Supplement

Prospectus

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About this Prospectus Supplement

We provide information to you about our common stock in two separate documents. This prospectus supplement describes the specific terms of this offering of our common stock and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into the accompanying prospectus. The accompanying prospectus provides more general information about the securities we may offer from time to time, some of which may not apply to the securities we are offering. In addition, we incorporate important information into this prospectus supplement and the accompanying prospectus by reference. You may obtain the information incorporated by reference into this prospectus supplement and the accompanying prospectus without charge by following the instructions under the section entitled Where You Can Find More Information in this prospectus supplement. To the extent information in this prospectus supplement is inconsistent with statements made in the accompanying prospectus or any documents incorporated by reference herein or therein, the statements made in this prospectus supplement shall be deemed to modify or supersede those made in the accompanying prospectus and the documents incorporated by reference herein or therein.

Neither we nor the underwriters have authorized anyone to provide you with information that is different from that contained or incorporated by reference in this prospectus supplement and the accompanying prospectus and any relevant free writing prospectus we have prepared or to which we have referred you. We and the underwriters take no responsibility for, and provide no assurance as to the reliability of, any other information that any party may give you. We are not, and the underwriters are not, making an offer to sell the common stock in any jurisdiction where the offer or sale is not permitted. You should not assume that the information contained or incorporated by reference in this prospectus supplement or the accompanying prospectus or any relevant free writing prospectus is accurate as of any date other than its respective date. Our business, financial condition, results of operations and prospects may have changed since those dates.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference into this prospectus supplement or the accompanying prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

It is important for you to read and consider all of the information contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein in making your investment decision. We include cross-references in this prospectus supplement and the accompanying prospectus to captions in these materials where you can find additional related discussions. The table of contents in this prospectus supplement provides the pages on which these captions are located.

In this prospectus, CSI, we, our, ours, and us refer to Cardiovascular Systems, Inc., except where the context otherwise requires or as otherw indicated.

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Prospectus Supplement Summary

This summary highlights information contained in this prospectus supplement and the accompanying prospectus. Because it is a summary, it does not contain all the information you should consider before investing in our common stock. You should carefully read this entire prospectus supplement and the accompanying prospectus, including the Risk Factors section and the documents incorporated by reference, before making an investment decision.

Our Business

We are a medical device company focused on developing and commercializing minimally invasive treatment solutions for vascular disease. Interventional endovascular treatment of peripheral artery disease, or PAD, is our initial area of focus. PAD is caused by the accumulation of plaque in peripheral arteries, most commonly occurring in the pelvis and legs. PAD is a progressive disease, and, if left untreated, can lead to limb amputation or death.

Our primary products, the Stealth 360° PAD System (Stealth 360°), Diamondback 360° PAD System (Diamondback 360°), and Diamondback Predator 360° PAD System (Predator 360°) are catheter-based platforms capable of treating a broad range of plaque types in leg arteries both above and below the knee and address many of the limitations associated with existing treatment alternatives. We refer to the Stealth 360°, the Diamondback 360°, and the Predator 360° collectively in this prospectus supplement as the PAD Systems. In August 2007, the U.S. Food and Drug Administration, or FDA, granted us 510(k) clearance for the use of the Diamondback 360° as a therapy in patients with PAD. We commenced commercial introduction of the Diamondback 360° in the United States in September 2007. We received 510(k) clearance of the Predator 360° in March 2009 and commenced a commercial launch in April 2009. We received 510(k) clearance of the Stealth 360° in March 2011 and commenced a commercial launch that same month. The Stealth 360° contains additional ease of use and physician control features while incorporating the orbital mechanism of action, optimal shaft and crown configurations of the Diamondback 360° and Predator 360°. As of December 31, 2012, over 100,000 of our devices had been sold to institutions across the United States.

We intend to expand into the interventional coronary market, though we need to receive FDA approval to do so. In May 2011, we received approval from the FDA to complete enrollment of 429 patients in our ORBIT II clinical trial for a coronary application for the Diamondback 360°, which followed the FDA s review of data from the first 50 cases in the trial. In July 2012, we received approval from the FDA to include in the trial our new electric coronary device (similar to Stealth 360° technology used in PAD and customized specifically for the coronary application), which improves ease of use. The FDA required 100 enrollments with the new electric coronary device and allowed up to 50 additional patients in the trial, as needed, to achieve that enrollment level, bringing the maximum trial enrollment to 479.

During our second quarter of fiscal 2013, we completed enrollment in our ORBIT II trial, enrolling 443 patients. Our ORBIT II trial evaluated the safety and effectiveness of our orbital atherectomy technology in treating severely calcified coronary arteries. The primary endpoints of ORBIT II were based on a patient follow-up 30-days post procedure. Statistical analysis shows that the study met its primary endpoints. In March 2013, we presented data from our ORBIT II trial at the 2013 American College of Cardiology conference. We and the FDA agreed to a modular pre-market approval, or PMA, submission. Modules 1 (preclinical) and 2 (manufacturing/quality system) were submitted to the FDA in late 2012, and our PMA application was final upon submission on March 15, 2013 of module 3, which includes ORBIT II clinical data and proposed labeling. It is estimated that moderate to severe arterial calcium is present in approximately 38% of those treated annually for coronary artery disease. ORBIT II is the first investigational device exemption, or IDE, trial designed to study these difficult-to-treat patients.

In addition to the PAD Systems, we have expanded our product portfolio through internal product development and establishment of business relationships with other medical device companies. We offer multiple accessory products designed to complement the use of the PAD Systems, and we have an exclusive distribution agreement with Asahi-Intecc Co., Ltd. to market its peripheral guidewire line in the United States.

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Our Markets

Peripheral Artery Disease

PAD is a circulatory problem in which plaque deposits build up on the walls of the arteries, resulting in inadequate blood flow to the limbs. Arteries above the knee are generally long, straight and relatively wide, while arteries below the knee are shorter and branch into arteries that are progressively smaller in diameter. The most common early symptoms of PAD are pain, cramping or fatigue in the leg or hip muscles while walking. Symptoms may progress to include numbness, tingling or weakness in the leg and, in severe cases, burning or aching pain in the leg, foot or toes while resting. As PAD progresses, additional signs and symptoms occur, including cooling or color changes in the skin of the legs or feet, and wounds or sores on the legs or feet that will not heal. If left untreated, PAD may continue to progress and lead to a condition called Critical Limb Ischemia (CLI), a condition in which the amount of oxygenated blood being delivered to the limb is insufficient to keep the tissue alive. CLI may lead to large non-healing ulcers, infections, gangrene and limb amputation or death.

There are two primary bases for estimating PAD prevalence: the patient Ankle Brachial Index (ABI) or diabetes rates. The most recent comprehensive study based on ABI estimates the US prevalence at 8.5 million (Allison et al, Ethnic-Specific Prevalence of Peripheral Arterial Disease in the United States, Circulation, 2007). Podiatry Today, in a 2006 article, estimated the prevalence of PAD in the United States at 12 million people. Alternatively, the diabetes method by The SAGE Group estimates prevalence at 17.6 Million in 2010. An aging population, coupled with increasing incidence of diabetes and obesity, is likely to continue to increase the prevalence of PAD. In many older PAD patients, particularly those with diabetes, PAD is characterized by fibrotic (moderately hard) or calcified (extremely hard) plaque deposits that cannot be successfully treated with existing non-invasive treatment techniques. Although we believe the rate of diagnosis of PAD is increasing, under-diagnosis continues due to patients failing to display symptoms or physicians misinterpreting symptoms as normal aging. Emphasis on PAD education from medical associations, insurance companies and other groups, coupled with publications in medical journals, is increasing physician and patient awareness of PAD risk factors, symptoms and treatment options. As a result of additional clinical trial results, new 2011 guidelines of the American College of Cardiology Foundation/American Heart Association lowered the recommended age for testing for PAD from 70 to 65, or 50 if patient has a history of smoking or diabetes.

Physicians treat a significant portion of the PAD diagnosed population using medical management, which includes lifestyle changes, such as diet and exercise and drug treatment. For instance, within a reference group of more than 1,000 patients from the 2001 AMA PARTNERS study, 54% of the patients with a prior diagnosis of PAD were receiving antiplatelet medication treatment. While medications, diet and exercise may improve blood flow, they do not treat the underlying obstruction and many patients have difficulty maintaining lifestyle changes. Additionally, many prescribed medications are contraindicated, or inadvisable, for patients with heart disease, which often exists in PAD patients. As a result of these challenges, many medically managed patients develop more severe symptoms that require procedural intervention.

Coronary Artery Disease

Based on data from the Millennium Research Group s U.S. Markets for Interventional Cardiology Devices 2011 Report, approximately 1.1 million percutaneous coronary interventions, or PCI, procedures were projected to occur in the United States in 2012. Based on the Mintz et al article in *Circulation* entitled Patterns of Calcification in Coronary Artery Disease, 38% of PCI procedures involve moderate to severe levels of calcified coronary arteries. These patients may benefit from the use of our device if approved for commercial use. In addition, based on Millennium Research Group s Coronary Bypass Graft 2010 Report, approximately 288,620 coronary artery bypass graft surgeries were performed in the United States in 2010. These patients generally have higher rates of calcification and we believe they may benefit from the use of our device if approved for commercial use.

Our Solution

The PAD Systems represent an innovative approach to the treatment of PAD that provides physicians and patients with a procedure that addresses many of the limitations of traditional treatment alternatives. Each of the

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PAD Systems uses single-use catheters that incorporate a flexible drive shaft with an offset diamond grit coated crown. Physicians position the crown at the site of an arterial plaque-containing lesion and remove the plaque by positioning the crown to orbit against it, creating a smooth lumen, or channel, in the vessel. The PAD Systems are designed to differentiate between hard plaque and soft, compliant arterial tissue, a concept that we refer to as differential sanding.

Normal arteries are compliant and have the ability to expand and contract as needed to supply blood flow. Arteries burdened with fibrotic and/or calcified plaque due to PAD lose their compliance, which makes other therapies such as angioplasty, stenting, surgical bypass and atherectomy problematic. The PAD Systems sand plaque into small particles and restore both blood flow and vessel compliance. The particles created by the PAD Systems are generally smaller than red blood cells and are carried away by the bloodstream. The small size of the particles avoids the need for plaque collection reservoirs. The PAD Systems can typically treat the diseased arteries with less than two to three minutes of sanding time, potentially reducing the overall procedure time.

We believe that the PAD Systems offer the following key benefits:

Strong Safety Profile. The differential sanding of the device reduces the risk of arterial perforation and damage to the arterial wall. Moreover, the plaque particles sanded away by the device are so small that they reduce the risk of distal embolization and the orbital motion allows continuous blood flow during the entire procedure, which reduces the risk of complications such as excessive heat and tissue damage.

Proven Efficacy. The orbital motion of the device enables the continuous removal of plaque in both soft and difficult-to-treat calcified lesions, increasing blood flow through the resulting smooth lumen. The efficacy of the device was demonstrated in our pivotal OASIS trial.

Ease of Use. Utilizing familiar techniques, a physician trained in endovascular surgery can complete the treatment with a single insertion while utilizing limited amounts of fluoroscopy during plaque removal.

Treatment Area. The PAD Systems have the ability to treat the entire leg, including small vessels below the knee.

Cost and Time Efficient Procedure. The PAD Systems can create various lumen sizes using a single sized crown, which limits hospital inventory costs and allows a physician to complete a procedure with a single insertion, potentially reducing procedural time. Use of the PAD Systems may also require less expensive capital equipment than some other atherectomy procedures.

Our coronary device is based on the same core orbital technology as the PAD Systems, including the differential sanding feature, and, if approved for commercial use, we expect it will have the same functionality and benefits as the PAD Systems.

Our Strategy

Our goal is to be the leading provider of minimally invasive solutions for the treatment of vascular disease. The key elements of our strategy include:

driving device adoption through our direct sales organization and key opinion leaders;

collecting additional clinical evidence of the benefits of the PAD Systems;

expanding our product portfolio within the market for the treatment of peripheral arteries;

leveraging our core technology into the coronary market;

expanding internationally; and

pursuing strategic acquisitions and partnerships.

Recent Developments

Results from our ORBIT II trial were presented at the 2013 American College of Cardiology conference in San Francisco on March 9, 2013 by Dr. Jeffrey Chambers of Metropolitan Heart and Vascular Institute,

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Minneapolis. The primary endpoints of ORBIT II were based on patient follow-up 30-days post procedure and consisted of performance goals of freedom from 30-day major adverse coronary events, or MACE, of 83% and procedural success (defined as successful stent delivery, less than 50% residual stenosis, and lack of in-hospital MACE) of 82%. Statistical analysis showed that the ORBIT II trial met its primary endpoints, with a freedom from 30-day MACE of 89.8% (95% CI = 87%, 92.7%) and a procedural success rate of 89.1% (95% CI = 85.8%, 91.8%). All of the patients in the ORBIT II trial had severe coronary calcification, one of the most difficult conditions for physicians to treat. We know of no other IDE study treating this difficult subgroup of patients.

Corporate Information

We were incorporated as Replidyne, Inc. in Delaware in 2000. On February 25, 2009, Replidyne, Inc. completed its business combination with Cardiovascular Systems, Inc., a Minnesota corporation (CSI-MN), in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated as of November 3, 2008, by and among Replidyne, Responder Merger Sub, Inc., a wholly-owned subsidiary of Replidyne (Merger Sub), and CSI-MN (the Merger Agreement). Pursuant to the Merger Agreement, Merger Sub merged with and into CSI-MN, with CSI-MN continuing after the merger as the surviving corporation and a wholly-owned subsidiary of Replidyne. At the effective time of the merger, Replidyne changed its name to Cardiovascular Systems, Inc. and CSI-MN changed its name to CSI Minnesota, Inc. Following the merger of Merger Sub with CSI-MN, CSI-MN merged with and into CSI, with CSI continuing after the merger as the surviving corporation.

Our principal executive office is located at 651 Campus Drive, St. Paul, Minnesota 55112. Our telephone number is (651) 259-1600, and our website is www.csi360.com. The information contained on or accessible through our website is not incorporated by reference into, and should not be considered part of, this prospectus supplement, the accompanying prospectus or the information incorporated herein by reference.

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The Offering

Common stock offered by us	shares (or shares if the over-allotment option is exercised in full)
Common stock to be outstanding after this offering	shares (or shares if the over-allotment option is exercised in full)
Use of proceeds	We estimate that the net proceeds to us from this offering, after deducting underwriting discounts and commissions and estimated offering expenses, will be approximately $ million, or approximately $ million if the underwriters exercise in full their over-allotment option. We intend to use the net proceeds from this offering for working capital and general corporate purposes, which may include the funding of clinical trials and studies, expanding our sales and marketing organization in preparation for commercialization of our coronary application, funding the commercialization of our coronary application if approved by the FDA, physician education and awareness programs, expansion into international markets, development of new products, and service of outstanding debt obligations. See Use of Proceeds on page S-21 of this prospectus supplement.
Risk Factors	Investing in our common stock involves a high degree of risk. You should carefully consider the information set forth in the section of this prospectus supplement entitled Risk Factors beginning on page S-9 as well as other information included in this prospectus supplement, the accompanying prospectus and the documents incorporated herein or therein by reference, including our 2012 Form 10-K and our second quarter 2013 Form 10-Q, before deciding to invest in our common stock.
Nasdaq Global Market symbol	CSII

The number of shares of our common stock to be outstanding after this offering is based on 21,077,637 shares of common stock outstanding as of December 31, 2012. Unless specifically stated otherwise, the information in this prospectus supplement excludes:

- 1,993,368 shares of our common stock issuable upon the exercise of stock options outstanding as of December 31, 2012, at a weighted average exercise price of $9.95 per share, all of which were then exercisable;
- 488,286 shares of our common stock reserved for future grants of restricted stock, stock options or other similar equity instruments under our Amended and Restated 2007 Equity Incentive Plan, as of December 31, 2012;
- 90,709 shares of our common stock reserved for purchase under our Amended and Restated 2006 Employee Stock Purchase Plan, as of December 31, 2012;
- 2,349,661 shares of our common stock issuable upon the exercise of warrants outstanding as of December 31, 2012, at a weighted average exercise price of $8.96 per share, all of which were then exercisable;

363,794 shares of our common stock issuable upon the conversion of senior convertible promissory notes outstanding as of December 31, 2012, at a weighted average conversion price of $13.76 per share; and

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1,766,590 shares of our common stock available for issuance as of December 31, 2012 upon the conversion of senior convertible promissory notes that may be issued under our Loan and Security Agreement with Partners for Growth III, L.P., dated April 14, 2010, as amended.

Shares available for future issuance under our Amended and Restated 2007 Equity Incentive Plan and Amended and Restated 2006 Employee Stock Purchase Plan do not include shares that may become available for issuance pursuant to provisions in these plans that provide for the automatic annual increase in the number of shares reserved thereunder and the re-issuance of shares that are cancelled or forfeited in accordance with such plans.

Unless otherwise indicated, all information in this prospectus supplement assumes:

no exercise by the underwriters of their over-allotment option to purchase additional shares of our common stock;

no exercise of outstanding options or warrants to purchase shares of our common stock, and

no conversion of outstanding senior convertible promissory notes into shares of our common stock.

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Summary Consolidated Financial Information

The following table summarizes our consolidated financial data. The following summary of our consolidated statements of operations data for the years ended June 30, 2010, 2011 and 2012 has been derived from, and should be read together with, our audited consolidated financial statements and related notes included in our Annual Report on Form 10-K for the fiscal year ended June 30, 2012 filed with the SEC on September 10, 2012 and incorporated by reference into this prospectus supplement, referred to in this prospectus supplement as the 2012 Form 10-K. The consolidated statements of operations data for the six months ended December 31, 2011 and 2012 and the balance sheet data as of December 31, 2012 has been derived from our unaudited financial statements included in our Quarterly Report on Form 10-Q for the quarter ended December 31, 2012 filed with the SEC on February 8, 2013 and incorporated by reference into this prospectus supplement, referred to in this prospectus supplement as the second quarter 2013 Form 10-Q. The unaudited interim financial information set forth below has been prepared on the same basis as our audited financial statements and we have included all adjustments, consisting only of normal recurring adjustments, that we consider necessary for a fair statement of our financial position and operating results for such periods. Our historical results are not necessarily indicative of the results to be expected in any future period and the results for the six months ended December 31, 2012 are not necessarily indicative of the results to be expected for the full fiscal year. You should read the summary financial data set forth below in conjunction with Management s Discussion and Analysis of Financial Condition and Results of Operations and our consolidated financial statements and related notes included in our 2012 Form 10-K and second quarter 2013 Form 10-Q.

	Year Ended June 30,			Six Months Ended December 31,	
	2010	2011	2012	2011	2012
	(In thousands, except per share and share amounts)				
				(Unaudited)	
Consolidated Statements of Operations Data:					
Revenues	$ 64,829	$ 78,780	$ 82,490	$ 38,378	$ 48,602
Cost of goods sold	15,003	16,277	19,216	8,906	11,212
Gross profit	49,826	62,503	63,274	29,472	37,390
Expenses:					
Selling, general and administrative	62,447	62,372	66,366	31,083	40,441
Research and development	10,278	8,940	11,374	5,148	7,277
Total expenses	72,725	71,312	77,740	36,231	47,718
Loss from operations	(22,899)	(8,809)	(14,466)	(6,759)	(10,328)
Interest and other, net	(1,005)	(2,316)	(2,324)	(1,235)	(649)
Net loss	(23,904)	(11,125)	(16,790)	(7,994)	(10,977)
Net loss per common share:					
Basic and diluted[1]	$ (1.62)	$ (0.70)	$ (0.93)	$ (0.45)	(0.53)
Weighted average common shares used in computation:					
Basic and diluted[1]	14,748,293	15,915,800	18,035,635	17,634,134	20,548,113

(1) See Note 13 of the notes to our audited consolidated financial statements included in our 2012 Form 10-K and Note 8 of the notes to our unaudited consolidated financial statements included in our second quarter 2013 Form 10-Q for a description of the method used to compute basic and diluted net loss per common share and basic and diluted weighted-average number of shares used in per common share calculations.

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	As of December 31, 2012	
	Actual	As Adjusted[1]
	(In thousands) (Unaudited)	
Consolidated Balance Sheet Data:		
Cash and cash equivalents	$ 29,223	$
Working capital[2]	33,590	
Total current assets	50,528	
Total assets	56,647	
Long-term debt, net of current maturities	10,400	
Total liabilities	27,489	
Total stockholders equity	29,158	

(1) On an adjusted basis to reflect the receipt of the estimated net proceeds from the sale of shares of common stock in this offering at the public offering price of $ per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

(2) Working capital is calculated as total current assets less total current liabilities as of the balance sheet date indicated.

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Risk Factors

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, along with the other information in this prospectus supplement and the accompanying prospectus and the other information incorporated herein or therein by reference. If any of these risks occur, our business could be materially harmed, and our financial condition and results of operations could be materially and adversely affected. As a result, the price of our common stock could decline, and you could lose all or part of your investment.

Risks Relating to Our Business and Operations

We have a history of net losses and a short commercialization experience, and we are likely to continue to incur losses.

We are not profitable and have incurred net losses in each fiscal year since our formation in 1989. In particular, we had net losses of $11.0 million in the six months ended December 31, 2012, $16.8 million in fiscal 2012, $11.1 million in fiscal 2011, and $23.9 million in fiscal 2010. As of December 31, 2012, we had an accumulated deficit of approximately $190.2 million. We commenced commercial sales of the Diamondback 360° in September 2007, and our short commercialization experience makes it difficult for us to predict future performance. We also expect to incur significant additional expenses for sales and marketing and manufacturing as we continue to commercialize the PAD Systems and additional expenses as we seek to develop and commercialize future versions of the PAD Systems, including a coronary application for our technology, and other products. Additionally, we expect that our general and administrative expenses will increase as our business grows. As a result, our operating losses are likely to continue.

We may be unable to sustain our revenue growth.

Our revenue has grown in each of the fiscal years since we commenced commercial sales of the Diamondback 360° in September 2007. Our ability to continue to increase our revenues in future periods will depend on our ability to increase sales of the PAD Systems and new and improved products we introduce, including growing our customer base and reorders from those customers, and obtaining new applications for our technology. The extent of our future success will also depend on our ability to successfully obtain regulatory approval for and successfully commercialize our technology for coronary applications. We may not be able to generate, sustain or increase revenues on a quarterly or annual basis. If we cannot achieve or sustain revenue growth for an extended period, our financial results will be adversely affected and our stock price may decline.

Economic conditions may adversely affect our business.

Adverse worldwide economic conditions may have adverse implications on our business. A significant change in the liquidity or financial condition of our customers could cause unfavorable trends in our receivable collections and additional allowances may be required, which could adversely affect our operating results. Adverse worldwide economic conditions may also adversely impact our suppliers ability to provide us with materials and components, which could adversely affect our business and operating results.

The PAD Systems and future products may never achieve broad market acceptance.

The PAD Systems and future products we may develop may never gain broad market acceptance among physicians, patients and the medical community. The degree of market acceptance of any of our products will depend on a number of factors, including:

- the actual and perceived effectiveness and reliability of our products;
- the prevalence and severity of any adverse patient events involving our products;
- the results of any clinical trials relating to use of our products, including our ORBIT II clinical trial for coronary applications;

the availability, relative cost and perceived advantages and disadvantages of alternative technologies or treatment methods for conditions treated by our products;

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the degree to which treatments using our products are approved for reimbursement by public and private insurers;

the degree to which physicians adopt the PAD Systems;

the extent to which we are successful in educating physicians about PAD in general and the existence of the PAD Systems in particular;

the strength of our marketing and distribution infrastructure; and

the level of education and awareness among physicians and hospitals concerning our products.

Failure of the PAD Systems to significantly penetrate current or new markets would negatively impact our business, financial condition and results of operations.

Our customers may not be able to achieve adequate reimbursement for using the PAD Systems, which could affect the acceptance of our products and cause our business to suffer.

The availability of insurance coverage and reimbursement for newly approved medical devices and procedures is uncertain. The commercial success of our products is substantially dependent on whether third-party insurance coverage and reimbursement for the use of such products and related services are available. We expect the PAD Systems to continue to be purchased by hospitals and other providers who will then seek reimbursement from various public and private third-party payors, such as Medicare, Medicaid and private insurers, for the services provided to patients. While third-party payors are currently providing reimbursement for use of the PAD Systems, we can give no assurance that these third-party payors will continue to provide adequate reimbursement for use of the PAD Systems to permit hospitals and doctors to consider the products cost-effective for patients requiring PAD treatment, or that current reimbursement levels for the PAD Systems will continue. In addition, the overall amount of reimbursement available for PAD treatment could decrease in the future. Failure by hospitals and other users of our products to obtain sufficient reimbursement could cause our business to suffer.

Medicare, Medicaid, health maintenance organizations and other third-party payors are increasingly attempting to contain healthcare costs by limiting both coverage and the level of reimbursement, and, as a result, they may not cover or provide adequate payment for use of the PAD Systems. In order to position the PAD Systems for acceptance by third-party payors, we may have to agree to lower prices than we might otherwise charge.

Governmental and private sector payors have instituted initiatives to limit the growth of healthcare costs using, for example, price regulation or controls and competitive pricing programs. Some third-party payors also require demonstrated superiority, on the basis of randomized clinical trials, or pre-approval of coverage, for new or innovative devices or procedures before they will reimburse healthcare providers who use such devices or procedures. It is uncertain whether the PAD Systems or any future products we may develop will be viewed as sufficiently cost-effective to warrant adequate coverage and reimbursement levels.

If third-party coverage and reimbursement for the PAD Systems is limited or not available, the acceptance of the PAD Systems and, consequently, our business will be substantially harmed.

Healthcare reform legislation could adversely affect our operating results and financial condition.

There have been and continue to be proposals by the federal government, state governments, regulators and third-party payors to control healthcare costs and, more generally, to reform the U.S. healthcare system, some of which have been enacted into law, such as the Patient Protection and Affordable Care Act, or the Patient Act. The Patient Act imposes significant new taxes on medical device makers and these taxes will adversely affect our financial results. The Patient Act and any additional healthcare proposals and laws that may be enacted in the future could also limit the prices we are able to charge for our products or the amounts of reimbursement available for our products and could limit the acceptance and availability of our products. The Patient Act and future healthcare legislation could adversely affect our revenue and financial condition.

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Our financial performance may be adversely affected by medical device tax provisions in the health care reform legislation.

The imposition of the 2.3% medical device excise tax enacted as part of the Patient Act may require us to identify ways to reduce spending in other areas or raise additional capital to offset the expected increased expense. We do not expect to be able to pass along the cost of the tax to our customers or to be able to offset the cost of the tax through higher sales volumes resulting from the expansion of health insurance coverage because of the demographics of the current uninsured population. The level of difficulty in terms of complying with the medical device tax will depend on the regulations put forth by the U.S. Department of Treasury. Accordingly, while it is still too early to fully understand and predict the ultimate impact of the law on our business, ongoing implementation of this legislation could have a material adverse effect on our results of operations and cash flows.

We have limited data and experience regarding the safety and efficacy of the PAD Systems. Any long-term data that is generated may not be positive or consistent with our limited short-term data, which would affect market acceptance of these products.

Because our technology is relatively new in the treatment of PAD, we have performed clinical trials only with limited patient populations. The long-term effects of using the PAD Systems in a large number of patients are not known and the results of short-term clinical use of the PAD Systems do not necessarily predict long-term clinical benefit or reveal long-term adverse effects.

Clinical trials conducted with the PAD Systems have involved procedures performed by physicians who are very technically proficient. Consequently, both short and long-term results reported in these studies may be significantly more favorable than typical results achieved by physicians, which could negatively impact market acceptance of the PAD Systems.

We face significant competition, must innovate to stay competitive, and may be unable to sell the PAD Systems at profitable levels.

The market for medical devices is highly competitive, dynamic and marked by rapid and substantial technological development and product innovation. Our ability to compete depends on our ability to innovate successfully, and while certain barriers exist to entry into our market we cannot assure that new entrants or existing competitors will not be able to develop products that compete directly with our products. We compete against very large and well-known stent and balloon angioplasty device manufacturers, atherectomy catheter manufacturers, pharmaceutical companies, and companies that provide products used by surgeons in peripheral bypass procedures. We may have difficulty competing effectively with these competitors because of their well-established positions in the marketplace, significant financial and human capital resources, established reputations and worldwide distribution channels.

Our competitors may:

develop and patent processes or products earlier than we will;

obtain regulatory clearances or approvals for competing medical device products more rapidly than we will;

market their products more effectively than we will; or

develop more effective or less expensive products or technologies that render our technology or products obsolete or non-competitive.

We have encountered and expect to continue to encounter potential customers who, due to existing relationships with our competitors, are committed to or prefer the products offered by these competitors. If we are unable to compete successfully, our revenue will suffer. Increased competition might lead to price reductions and other concessions that might adversely affect our operating results. Competitive pressures may decrease the demand for our products and could adversely affect our financial results.

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We have limited commercial manufacturing experience and could experience difficulty in producing the PAD Systems or may need to depend on third parties to manufacture the products.

We have limited experience in commercially manufacturing the PAD Systems and have no experience manufacturing these products in the volume that we anticipate will be required if we achieve planned levels of commercial sales. As a result, we may not be able to develop and implement efficient, low-cost manufacturing capabilities and processes that will enable us to manufacture the PAD Systems or future products in significant volumes, while meeting the legal, regulatory, quality, price, durability, engineering, design and production standards required to market our products successfully.

The forecasts of demand we use to determine order quantities and lead times for components purchased from outside suppliers may be incorrect. Our failure to obtain required components or subassemblies when needed and at a reasonable cost would adversely affect our business.

In addition, we may in the future need to depend upon third parties to manufacture the PAD Systems and future products. Any difficulties in locating and hiring third-party manufacturers, or in the ability of third-party manufacturers to supply quantities of our products at the times and in the quantities we need, could have a material adverse effect on our business.

We depend upon third-party suppliers, including single source suppliers to us and our customers, making us vulnerable to supply problems and price fluctuations.

We rely on third-party suppliers to provide us with certain components of our products and to provide key components or supplies to our customers for use with our products. We rely on single source suppliers for certain components of the PAD Systems. We depend on our suppliers to provide us and our customers with materials in a timely manner that meet our and their quality, quantity and cost requirements. These suppliers may encounter problems during manufacturing for a variety of reasons, any of which could delay or impede their ability to meet our demand and our customers demands.

Any supply interruption from our suppliers or failure to obtain additional suppliers for any of the components used in our products would limit our ability to manufacture our products and could have a material adverse effect on our business, financial condition and results of operations.

We may need to increase the size of our organization and we may experience difficulties managing growth. If we are unable to manage the anticipated growth of our business, our future revenue and operating results may be adversely affected.

The growth we may experience in the future may provide challenges to our organization, requiring us to rapidly expand our sales and marketing personnel and manufacturing operations. Rapid expansion in personnel may result in less experienced people producing and selling our products, which could result in unanticipated costs and disruptions to our operations. If we cannot scale and manage our business appropriately, our anticipated growth may be impaired and our financial results will suffer.

We may require additional financing, and our failure to obtain additional financing when needed could force us to delay, reduce or eliminate our product development programs or commercialization efforts.

We may be dependent on additional financing to execute our business plan. Additional funds may not be available when we need them on terms that are acceptable to us, or at all. In the event we need or desire additional financing, we may be unable to obtain it by borrowing money in the credit markets or raising money in the capital markets. If adequate funds are not available on a timely basis, we may terminate or delay the development of one or more of our products, or delay establishment of sales and marketing capabilities or other activities necessary to commercialize our products.

We face a risk of non-compliance with the financial covenants in our loan and security agreements with Silicon Valley Bank and Partners for Growth.

We are party to loan and security agreements with Silicon Valley Bank and Partners for Growth. These agreements require us to maintain, among other things, a monthly specified liquidity ratio and a monthly adjusted

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earnings before interest, taxes, depreciation and amortization, or EBITDA, level. The agreements contain customary events of default, including, among others, the failure to comply with certain covenants or other agreements. Upon the occurrence and during the continuation of an event of default, amounts due under the agreements may be accelerated by Silicon Valley Bank or Partners for Growth. If we are unable to meet the financial or other covenants under the current loan and security agreements or negotiate future waivers or amendments of such covenants, events of default could occur under the agreements. Upon the occurrence and during the continuance of an event of default under the agreements, Silicon Valley Bank and Partners for Growth have available a range of remedies customary in these circumstances, including declaring all outstanding debt, together with accrued and unpaid interest thereon, to be due and payable, foreclosing on the assets securing the agreements and/or ceasing to provide additional loans, which could have a material adverse effect on us.

The restrictive covenants under these agreements could limit our ability to obtain future financing, withstand a future downturn in our business or the economy in general or otherwise conduct necessary corporate activities. The financial and restrictive covenants contained in the agreements could also adversely affect our ability to respond to changing economic and business conditions and place us at a competitive disadvantage relative to other companies that may be subject to fewer restrictions. Transactions that we may view as important opportunities, such as acquisitions, may be subject to the consent of Silicon Valley Bank and Partners for Growth, which consents may be withheld or granted subject to conditions specified at the time that may affect the attractiveness or viability of the transaction.

We are dependent on our senior management team and highly skilled personnel, and our business could be harmed if we are unable to attract and retain personnel necessary for our success.

We are highly dependent on our senior management. Our success will depend on our ability to retain senior management and to attract and retain qualified personnel in the future, including scientists, clinicians, engineers and other highly skilled personnel and to integrate current and additional personnel in all departments. The loss of members of our senior management, scientists, clinical and regulatory specialists, engineers and sales personnel could prevent us from achieving our objectives of continuing to grow our company. We do not carry key person life insurance on any of our employees.

Our ability to use our net operating loss carryforwards and certain other tax attributes may be limited.

Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended (the Internal Revenue Code or Code), if a corporation undergoes an ownership change, the corporation s ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes, such as research tax credits, to offset its post-change income may be limited. In general, an ownership change will occur if there is a cumulative change in our ownership by 5-percent shareholders that exceeds 50 percentage points over a rolling three-year period. Similar rules may apply under state tax laws. We may have experienced an ownership change in the past and we may also experience ownership changes in the future as a result of this issuance or future transactions in our stock, some of which may be outside our control. As a result, if we earn net taxable income, our ability to use our pre-change net operating loss carryforwards or other pre-change tax attributes to offset United States federal and state taxable income may be subject to limitations.

Risks Related to Government Regulation

Our ability to market the PAD Systems in the United States is limited to use as a therapy in patients with PAD, and if we want to expand our marketing claims, we will need to file for additional FDA clearances or approvals and conduct further clinical trials, which would be expensive and time consuming and may not be successful.

The PAD Systems received FDA 510(k) clearances in the United States for use as a therapy in patients with PAD. This general clearance restricts our ability to market or advertise the PAD Systems beyond this use and could affect our growth.

If we determine to market our orbital technology in the United States for other uses, we would need to conduct further clinical trials and obtain premarket approval from the FDA. For example, we recently completed

clinical trials for use of our devices in the coronary arteries. Clinical trials are complex, expensive, time consuming, uncertain and subject to substantial and unanticipated delays. There is no assurance that we will be able to obtain FDA approval to use our orbital atherectomy technology for the treatment of coronary artery disease or for applications other than the treatment of PAD.

We are or will be subject to an extensive set of post-market controls that apply to us as we commercialize our products, including annual PMA reports, Medical Device Reports (MDRs) on serious adverse events, complaint handling and analysis under the FDA s Quality System Regulation, or QSR, export controls, advertising and promotion requirements, and potential post-market studies required by the FDA.

We and our suppliers are also subject to regulation by various state authorities, which may inspect our or our suppliers facilities and manufacturing processes and enforce state regulations. Failure to comply with applicable state regulations may result in seizures, injunctions or other types of enforcement actions.

Our promotion of the PAD Systems is closely controlled by the FDA and enforcement activities could limit our ability to inform potential customers of the features of the products.

We may not receive FDA approval to market our orbital atherectomy technology for use in coronary arteries or we may be significantly delayed in obtaining such approval or such approval may be subject to limitations or other requirements.

We are required to file a PMA application with the FDA and obtain the FDA s approval before we are permitted to begin marketing our orbital atherectomy technology for use in treating coronary artery disease. We and the FDA agreed to a modular PMA submission. Modules 1 (preclinical) and 2 (manufacturing/quality system) were submitted to the FDA in late 2012, and our PMA application was final upon submission on March 15, 2013 of module 3, which includes ORBIT II clinical data and proposed labeling. The FDA will review our PMA submission to evaluate the safety and effectiveness of our device in treating coronary artery disease. The FDA may conclude that our device does not meet appropriate standards of safety and effectiveness and may not grant the approval necessary to market our device for use in coronary arteries in the United States. Our business will be adversely affected if we are unable to obtain such FDA approval.

The length of time required for the FDA s review will depend upon factors over which we have no control, including whether the FDA submits the review to a panel of independent experts in which case the review is likely to take longer than if the review is not submitted to a panel. We cannot predict when the FDA will complete its review, and even if approval is ultimately granted, such approval may be significantly delayed. Any delay in obtaining such FDA approval would delay the commercialization of our coronary application, which would adversely affect our business.

If the FDA approves our orbital atherectomy product for treatment of coronary artery disease, we will be subject to all the postmarket requirements for PMA products, such as an annual report. Our manufacturing processes, post-approval clinical data and promotional activities for such product will be subject to continual review and periodic inspections by the FDA and other regulatory bodies. Even if FDA approval is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or contain requirements for costly post-marketing testing and surveillance to monitor the safety or effectiveness of the product. Later discovery of previously unknown problems with the use of orbital atherectomy in coronary arteries, including unanticipated adverse events or adverse events of unanticipated severity or frequency, manufacturer or manufacturing processes, or failure to comply with regulatory requirements, may result in restrictions on such products or manufacturing processes, withdrawal of the product from the market, voluntary or mandatory recall, fines, suspension of regulatory approvals, product seizures, injunctions or the imposition of civil or criminal penalties.

The PAD Systems may in the future be subject to product recalls that could harm our reputation and product liability claims that could exceed the limits of available insurance coverage.

The FDA and similar governmental authorities in other countries have the authority to require the recall of commercialized products in the event of material regulatory deficiencies or defects in design or manufacture. For

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example, since commercialization, we have had minor instances of recall involving a single lot of Diamondback 360° devices, two boxes of ViperWires, and 70 lots of Stealth 360º devices, related to Use By date labeling issues; a recall of unused ViperSheaths, which we formerly distributed for Thomas Medical Products; and a recall involving six lots of Stealth 360º micro crown devices due to the potential for an insufficient solder bond. Any recalls of our products or products that we distribute would divert managerial and financial resources, harm our reputation with customers and have an adverse effect on our financial condition and results of operations.

Also, if the PAD Systems are defectively designed, manufactured or labeled, contain defective components or are misused, we may become subject to costly litigation by our customers or their patients. The use, misuse or off-label use of the PAD Systems may result in injuries that lead to product liability suits, which could be costly to our business. We cannot prevent a physician from using the PAD Systems for off-label applications. While we have product liability insurance coverage for our products and intend to maintain such insurance coverage in the future, there can be no assurance that we will be adequately protected from claims that are brought against us.

We are subject to many laws and governmental regulations and any adverse regulatory action may materially adversely affect our financial condition and business operations.

The PAD Systems and related manufacturing processes, clinical data, adverse events, recalls or corrections and promotional activities are subject to extensive regulation by the FDA and other regulatory bodies. In particular, we are required to comply with QSR, and other regulations, which cover the methods and documentation of the design, testing, production, control, quality assurance, labeling, packaging, storage and shipping of any product for which we obtain marketing clearance or approval. We are also responsible for the quality of components received by our suppliers. Failure to comply with the QSR requirements or other statutes and regulations administered by the FDA and other regulatory bodies, or failure to adequately respond to any observations, could result in, among other things:

- warning or other letters from the FDA;
- fines, injunctions and civil penalties;
- product recall or seizure;
- unanticipated expenditures;
- delays in clearing or approving or refusal to clear or approve products;
- withdrawal or suspension of approval or clearance by the FDA or other regulatory bodies;
- orders for physician notification or device repair, replacement or refund;
- operating restrictions, partial suspension or total shutdown of production or clinical trials; and
- criminal prosecution.

If any of these actions were to occur, it would harm our reputation and cause our product sales to suffer.

Our operations are also subject to regulatory requirements relating to the environment, waste management and health and safety matters, including measures relating to the release, use, storage, treatment, transportation, discharge, disposal and remediation of hazardous substances.

Environmental laws and regulations could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations.

In addition, our relationships with physicians, hospitals and the marketers of our products are subject to scrutiny under various federal anti-kickback, self-referral, false claims and similar laws, often referred to collectively as healthcare fraud and abuse laws, as further described below.

If our operations are found to be in violation of these laws, we, as well as our employees, may be subject to penalties, including monetary fines, civil and criminal penalties, exclusion from federal and state healthcare programs, including Medicare, Medicaid, Veterans Administration health programs, workers compensation programs and TRICARE (the healthcare system administered by or on behalf of the U.S. Department of Defense for uniformed services beneficiaries, including active duty and their dependents, retirees and their dependents), and forfeiture of amounts collected in violation of such prohibitions, which could materially adversely affect our financial condition and business operations.

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We are subject to federal and state laws prohibiting kickbacks and false and fraudulent claims which, if violated, could subject us to substantial penalties. Additionally, any challenges to or investigations into our practices under these laws could cause adverse publicity and be costly to respond to, and thus could harm our business.

The federal healthcare program Anti-Kickback Statute, and similar state laws, prohibit payments that are intended to induce health care professionals or others either to refer patients or to purchase, lease, order or arrange for or recommend the purchase, lease or order of healthcare products or services. A number of states have enacted laws that require pharmaceutical and medical device companies to monitor and report payments, gifts and other remuneration made to physicians and other health care professionals and health care organizations. In addition, some state statutes, most notably laws in Massachusetts and Vermont, impose outright bans on certain gifts to physicians. Some of these laws, referred to as aggregate spend or gift laws, carry substantial fines if they are violated. The federal Physician Payments Sunshine Act, or the Sunshine Act, was enacted by Congress in 2010 as part of the comprehensive health care reform legislation, and the implementing regulations, released in February 2013, will require us to begin collecting certain data on payments and other transfers of value to physicians and teaching hospitals beginning in August 2013 for public reporting by the end of March 2014.

It is widely anticipated that public reporting under the Sunshine Act will result in increased scrutiny of the financial relationships between industry, physicians and teaching hospitals. These anti-kickback, public reporting and aggregate spend laws affect our sales, marketing and other promotional activities by limiting the kinds of financial arrangements, including sales programs, we may have with hospitals, physicians or other potential purchasers or users of medical devices. They also impose additional administrative and compliance burdens on us. In particular, these laws influence, among other things, how we structure our sales offerings, including discount practices, customer support, education and training programs and physician consulting and other service arrangements. If we were to offer or pay inappropriate inducements to purchase our products, we could be subject to a claim under the federal healthcare program Anti-Kickback Statute or similar state laws. If we fail to comply with particular reporting requirements, we could be subject to penalties under applicable federal or state laws. Other federal and state laws generally prohibit individuals or entities from knowingly presenting, or causing to be presented, claims for payments to Medicare, Medicaid or other third-party payors that are false or fraudulent, or for items or services that were not provided as claimed. Although we do not submit claims directly to government healthcare programs or other payors, manufacturers can be held liable under these laws if they are deemed to cause the submission of false or fraudulent claims by providing inaccurate billing or coding information to customers, by providing improper financial inducements, or through certain other activities.

In providing billing and coding information to customers, we make every effort to ensure that the billing and coding information furnished is accurate and that treating physicians understand that they are responsible for all treatment decisions. Nevertheless, we cannot provide assurance that the government will regard any billing errors that may be made as inadvertent or that the government will not examine our role in providing information to our customers and physicians concerning the benefits of therapy with our devices. Likewise, our financial relationships with customers, physicians, or others in a position to influence the purchase or use of our products may be subject to government scrutiny or be alleged or found to violate applicable fraud and abuse laws. False claims laws prescribe civil, criminal and administrative penalties for noncompliance, which can be substantial. Moreover, an unsuccessful challenge or investigation into our practices could cause adverse publicity, and be costly to respond to, and thus could harm our business and results of operations.

New regulations related to conflict minerals may force us to incur additional expenses, may result in damage to our business reputation and may adversely impact our ability to conduct our business.

Pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act, the SEC promulgated final rules regarding disclosure of the use of certain minerals, known as conflict minerals, which are mined from the Democratic Republic of the Congo and adjoining countries, as well as procedures regarding a manufacturer s efforts to prevent the sourcing of such minerals and metals produced from those minerals. These new requirements will require due diligence efforts for the 2013 calendar year, with initial disclosure requirements effective in May 2014. There will be costs associated with complying with these disclosure requirements,

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including for diligence in regards to the sources of any conflict minerals used in our products, in addition to the cost of remediation and other changes to products, processes, or sources of supply as a consequence of such verification activities. In addition, the implementation of these rules could adversely affect the sourcing, supply, and pricing of materials used in our products.

Risks Relating to Our Intellectual Property

Our inability to adequately protect our intellectual property could allow our competitors and others to produce products based on our technology, which could substantially impair our ability to compete.

Our success and ability to compete depends, in part, upon our ability to maintain the proprietary nature of our technologies. We rely on a combination of patents, copyrights and trademarks, as well as trade secrets and nondisclosure agreements, to protect our intellectual property. Our issued patents and related intellectual property may not be adequate to protect us or permit us to gain or maintain a competitive advantage. Also, we cannot assure you that any of our pending patent applications will result in the issuance of patents to us. Further, if any patents we obtain or license are deemed invalid and unenforceable, or have their scope narrowed, it could impact our ability to commercialize or license our technology and achieve competitive advantages.

Changes in either the patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property. In addition, the laws of some foreign countries may not protect our intellectual property rights to the same extent as the laws of the United States, if at all.

We may, in the future, need to assert claims of infringement against third parties to protect our intellectual property. The outcome of litigation to enforce our intellectual property rights in patents, copyrights, trade secrets or trademarks is highly unpredictable, could result in substantial costs and diversion of resources, and could have a material adverse effect on our financial condition, reputation and results of operations regardless of the final outcome of such litigation.

Despite our efforts to safeguard our unpatented and unregistered intellectual property rights, we may not be successful in doing so or the steps taken by us in this regard may not be adequate to detect or deter misappropriation of our technology or to prevent an unauthorized third party from copying or otherwise obtaining and using our products, technology or other information that we regard as proprietary. In addition, we may not have sufficient resources to litigate, enforce or defend our intellectual property rights. Additionally, third parties may be able to design around our patents.

We also rely on trade secrets, technical know-how and continuing innovation to develop and maintain our competitive position. In this regard, we seek to protect our proprietary information and other intellectual property by having a policy that our employees, consultants, contractors, outside scientific collaborators and other advisors execute non-disclosure and assignment of invention agreements on commencement of their employment or engagement. We cannot provide any assurance that employees and third parties will abide by the confidentiality or assignment terms of these agreements, or that we will be effective in securing necessary assignments from these third parties.

Claims of infringement or misappropriation of the intellectual property rights of others could prohibit us from commercializing products, require us to obtain licenses from third parties or require us to develop non-infringing alternatives, and subject us to substantial monetary damages and injunctive relief.

The medical technology industry is characterized by extensive litigation and administrative proceedings over patent and other intellectual property rights. The likelihood that patent infringement or misappropriation claims may be brought against us increases as we achieve more visibility in the marketplace and introduce products to market. We are aware of numerous patents issued to third parties that relate to the manufacture and use of medical devices for interventional cardiology. The owners of each of these patents could assert that the manufacture, use or sale of our products infringes one or more claims of their patents. There could also be existing patents of which we are unaware that one or more aspects of our technology may inadvertently infringe. In some cases, litigation may be threatened or brought by a patent-holding company or other adverse patent owner who has no relevant product revenues and against whom our patents may provide little or no deterrence.

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Any infringement or misappropriation claim could cause us to incur significant costs, place significant strain on our financial resources, divert management s attention from our business and harm our reputation. If the relevant patents were upheld in litigation as valid and enforceable and we were found to infringe, we could be prohibited from commercializing any infringing products unless we could obtain licenses to use the technology covered by the patent or are able to design around the patent. We may be unable to obtain a license on terms acceptable to us, if at all, and we may not be able to redesign any infringing products to avoid infringement.

Risks Relating to this Offering and Ownership of Our Common Stock

Future sales and issuances of our common stock could cause our stock price to fall.

Sales of a substantial number of shares of our common stock by our existing stockholders in the public market or the perception that these sales might occur, could depress the market price of our common stock and could impair our ability to raise additional capital through the issuance of additional equity securities. We are unable to predict the effect that such sales may have on the prevailing market price of our common stock.

To the extent we raise additional capital by issuing additional shares of our common stock, or securities convertible into or exchangeable or exercisable for common stock, our existing stockholders may experience substantial dilution. In addition, future investors could gain rights superior to existing stockholders, such as liquidation and other preferences. We have stock options and warrants outstanding to purchase shares of our capital stock. Our stockholders may incur dilution upon exercise of any outstanding stock options or warrants.

We have broad discretion in the use of the proceeds of this offering and may apply the proceeds in ways with which you do not agree.

Our net proceeds from this offering will be used primarily for working capital and general corporate purposes, which may include the funding of clinical trials and studies, expanding our sales and marketing organization in preparation for commercialization of our coronary application, funding the commercialization of our coronary application if approved by the FDA, physician education and awareness programs, expansion into international markets, development of new products, and service of outstanding debt obligations. We may also use a portion of the proceeds for the potential acquisition of businesses, technologies and products, although we have no current understandings, commitments or agreements to do so. Our management will have broad discretion over the use and investment of these net proceeds, and, accordingly, you will have to rely upon the judgment of our management with respect to our use of these net proceeds, with only limited information concerning management s specific intentions. You will not have the opportunity, as part of your investment decision, to assess whether we used the net proceeds from this offering appropriately. We may place the net proceeds in investments that do not produce income or that lose value, which may cause our stock price to decline.

Our directors and executive officers will continue to have substantial control over us after this offering and could limit your ability to influence the outcome of key transactions, including changes of control.

We anticipate that our executive officers and directors and entities affiliated with them will, in the aggregate, beneficially own % of our outstanding common stock following the completion of this offering, assuming the underwriters do not exercise their over-allotment option. Our executive officers, directors and affiliated entities, if acting together, would be able to control or significantly influence all matters requiring approval by our stockholders, including the election of directors and the approval of mergers or other significant corporate transactions. These stockholders may have interests that differ from yours, and they may vote in a way with which you disagree and that may be adverse to your interests. The concentration of ownership of our common stock may have the effect of delaying, preventing or deterring a change of control of our company, could deprive our stockholders of an opportunity to receive a premium for their common stock as part of a sale of our company, and may affect the market price of our common stock. This concentration of ownership of our common stock may also have the effect of influencing the completion of a change in control that may not necessarily be in the best interests of all of our stockholders.

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Our stock price is volatile and you may not be able to resell your shares at or above the price at which you purchased your shares.

The market price of our common stock could be subject to significant fluctuations. Market prices for securities of early-stage pharmaceutical, medical device, biotechnology and other life sciences companies have historically been particularly volatile. Our common stock traded as low as $8.60 and as high as $20.39 per share during the last 12 months. In addition to the risk factors described in this section, factors that may cause the market price of our common stock to fluctuate include, but are not limited to:

- announcements regarding developments in our ORBIT II clinical trial for a coronary application;
- announcements regarding regulatory approval or disapproval of our coronary application;
- announcements of technological or medical innovations for the treatment of vascular disease;
- quarterly variations in our or our competitors results of operations;
- failure to meet estimates or recommendations by securities analysts who cover our stock;
- accusations that we have violated a law or regulation or are subject to a product recall;
- sales of large blocks of our common stock, including sales by our executive officers, directors and significant stockholders;
- changes in accounting principles; and
- general market conditions and other factors, including factors unrelated to our operating performance or the operating performance of our competitors.

All of these factors could cause the price of our common stock to decline, and you may lose some or all of your investment.

Moreover, the stock markets in general have experienced substantial volatility that has often been unrelated to the operating performance of individual companies. These broad market fluctuations may also adversely affect the trading price of our common stock.

In the past, following periods of volatility in the market price of a company s securities, stockholders have often instituted class action securities litigation against such company. Such litigation, if instituted, could result in substantial costs and diversion of management attention and resources, which could significantly harm our profitability and reputation.

We do not expect to pay cash dividends for the foreseeable future, and accordingly, stockholders must rely on stock appreciation for any return on their investment in the company.

We anticipate that we will retain our earnings, if any, for future growth and therefore do not anticipate that we will pay cash dividends for the foreseeable future. As a result, appreciation of the price of our common stock is the only potential source of return to stockholders. Investors seeking cash dividends should not invest in our common stock.

If equity research analysts cease to publish research or reports about our business or if they issue unfavorable research or downgrade our common stock, the price of our common stock could decline.

Investors look to reports of equity research analysts for additional information regarding our industry and operations and rely in part on the research and reports that equity research analysts publish about us and our business. We do not control these analysts. Equity research analysts may elect to cease research coverage of our common stock, which may adversely affect the market price of our common stock. The price of our common stock could decline if one or more of these analysts downgrade our common stock or if they issue other unfavorable commentary about us or our business.

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Some provisions of our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would be beneficial to our stockholders.

Provisions in our restated certificate of incorporation and bylaws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us, even if doing so would benefit our stockholders. These provisions include:

- providing that special meetings of stockholders may be called only by the Chairman of the Board, the Chief Executive Officer, or by a majority of our board of directors;
- requiring a classified board of directors, with three separate classes of directors each serving a three-year term;
- requiring that only business brought before an annual meeting by our board of directors or by a stockholder who complies with the procedures set forth in the bylaws may be transacted at an annual meeting of stockholders;
- requiring advance notice of specified stockholder actions, such as the nomination of directors and stockholder proposals; and
- authorizing the issuance of, without stockholder approval, up to 5,000,000 shares of preferred stock that could adversely affect the rights and powers of the holders of our common stock.

In addition, we are subject to Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with an interested stockholder for a period of three years following the date on which the stockholder became an interested stockholder, unless such transactions are approved by such corporation s board of directors. This provision could have the effect of delaying or preventing a change of control, whether or not it is desired by or beneficial to our stockholders.

Special Note Regarding Forward-Looking Statements

This prospectus supplement and the accompanying prospectus contain and incorporate by reference forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the Securities Act), and Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act), which are subject to the safe harbor created by those sections. Forward-looking statements are based on our management s beliefs and assumptions and on information currently available to our management. In some cases, you can identify forward-looking statements by terms such as may, will, should, could, would, expect, plans, anticipates, believes, estimates, potential and similar expressions intended to identify forward-looking statements. Examples of these statements include, but are not limited to, any statements regarding our future financial and stock performance, product development and product sales distribution, clinical trial and regulatory approval expectations, dividend expectations, industry and market expectations, the benefits and uses of our products, effect of regulations, use of proceeds, results of operations or sufficiency of capital resources to fund our operating requirements, and other statements that are other than statements of historical fact. Our actual results could differ materially from those expressed or implied in these forward-looking statements due to a number of factors, including the risks and uncertainties described more fully by us in the section entitled Risk Factors above and in our other filings with the SEC.

You should read this prospectus supplement, the accompanying prospectus and the documents that we incorporate by reference herein and therein completely and with the understanding that our actual future results may be materially different from what we expect. You should not place undue reliance on these forward-looking statements. You should assume that the information contained in or incorporated by reference in this prospectus supplement, and the accompanying prospectus is accurate only as of the date on the front cover of this prospectus supplement, and the accompanying prospectus, or as of the date of the documents incorporated by reference herein or therein, as applicable. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future. We qualify all of the information presented in this prospectus supplement and the accompanying prospectus, and particularly our forward-looking statements, by these cautionary statements.

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Use of Proceeds

We estimate that the net proceeds to us from this offering will be approximately $ million, or approximately $ million if the underwriters exercise in full their over-allotment option, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds from this offering for working capital and general corporate purposes, which may include, but not be limited to:

- the funding of clinical trials and studies;
- expanding our sales and marketing organization in preparation for commercialization of our coronary application;
- physician education and awareness programs;
- funding the commercialization of our coronary application if approved by the FDA;
- expansion into international markets;
- development of new products; and
- service of outstanding debt obligations to Silicon Valley Bank and Partners for Growth described below.

We may also use a portion of the net proceeds from this offering for the potential acquisition of businesses, technologies and products, although we have no current understandings, commitments or arrangements to do so.

As of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. Accordingly, we will retain broad discretion over the use of these proceeds. Pending these uses, we intend to invest the net proceeds in investment-grade, interest-bearing securities.

Description of Indebtedness Outstanding

Loan and Security Agreement with Silicon Valley Bank

On March 29, 2010, we entered into an amended and restated loan and security agreement with Silicon Valley Bank, which was subsequently amended on December 27, 2011 and June 29, 2012. The agreement, as amended, includes a $12.0 million term loan and a $15.0 million line of credit. The $12.0 million term loan has an initial interest rate of 8.0%, which can be reduced to 7.0% based on the achievement of positive EBITDA for the trailing six month period. The term loan has a 36 month maturity, with repayment terms that include interest only payments during the first six months, followed by 30 equal principal payments of $400,000 plus interest, and a final payment of $100,000 due at maturity. The balance outstanding on the term loan at December 31, 2012 was $9.6 million. The $15.0 million line of credit expires on June 30, 2014 and has a floating interest rate equal to the Wall Street Journal s prime rate, plus 1.25%, with an interest rate floor of 4.5%. Interest on borrowings is due monthly and the principal balance is due at maturity. There was not an outstanding balance on the line of credit at December 31, 2012. The amounts we have borrowed under the agreement were used for working capital and general corporate purposes.

Loan and Security Agreement with Partners for Growth

On April 14, 2010, we entered into a loan and security agreement with Partners for Growth III, L.P. (PFG), which was subsequently amended on August 23, 2011, December 27, 2011 and June 30, 2012. The agreement, as amended, provides that PFG will make loans to us up to $5.0 million. The agreement has a maturity date of April 14, 2015. The loans bear interest at a floating per annum rate equal to 2.75% above Silicon Valley Bank s prime rate, and such interest is payable monthly. The principal balance of and any accrued and unpaid interest on any notes are due on the maturity date and may not be prepaid by us at any time in whole or in part. The balance outstanding under the loan and security agreement at December 31, 2012 was $5.0 million. The amounts we have borrowed under the agreement were used for working capital and general corporate purposes.

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Dividend Policy

We have never declared or paid any cash dividends on our common stock and currently do not anticipate paying any cash dividends for the foreseeable future. We have historically retained earnings, and expect to continue to retain future earnings, to finance the operation and expansion of our business. Any future determination relating to dividend policy will be made at the discretion of our board of directors and will depend on our future earnings, capital requirements, financial condition, future prospects, applicable law and other factors that our board of directors deems relevant. In addition, we are restricted from paying dividends under our loan and security agreements with Silicon Valley Bank and Partners for Growth.

Price Range of Common Stock

Our common stock is publicly traded on the Nasdaq Global Market under the symbol CSII. The table below sets forth, for the periods indicated, the high and low closing sales prices per share of our common stock as reported on the Nasdaq Global Market.

	Low	High
Fiscal 2011		
First Quarter	3.85	5.46
Second Quarter	5.06	11.75
Third Quarter	8.90	13.28
Fourth Quarter	10.59	15.43
Fiscal 2012		
First Quarter	11.10	16.25
Second Quarter	7.26	11.39
Third Quarter	8.54	10.55
Fourth Quarter	8.24	10.20
Fiscal 2013		
First Quarter	8.60	11.64
Second Quarter	10.38	12.95
Third Quarter (Through March 18, 2013)	12.70	20.30

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Capitalization

The following table sets forth our cash and cash equivalents and capitalization as of December 31, 2012 on:

- an actual basis; and
- an as adjusted basis to reflect the receipt of the estimated net proceeds from the sale of shares of common stock in this offering at the public offering price of $ per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this capitalization table together with our consolidated financial statements and the related notes included in our second quarter 2013 Form 10-Q and 2012 Form 10-K, as well as Management s Discussion and Analysis of Financial Condition and Results of Operations and other financial information set forth in our second quarter 2013 Form 10-Q and 2012 Form 10-K and incorporated by reference into this prospectus supplement, and other reports we have filed with the SEC.

	As of December 31, 2012	
	Actual	As Adjusted
	(In thousands, except share and per share data)	
Cash and cash equivalents	$ 29,223	$
Long-term debt, net of current maturities	10,400	
Stockholders equity:		
Common stock, $0.001 par value; 100,000,000 authorized, 21,077,637 issued and outstanding, actual; 100,000,000 authorized, issued and outstanding, as adjusted	21	
Additional paid in capital	210,119	
Common stock warrants	9,233	
Accumulated deficit	(190,215)	
Total stockholders equity	29,158	
Total capitalization	$ 39,558	$

The outstanding shares set forth in the table above excludes, as of December 31, 2012:

- 1,993,368 shares of our common stock issuable upon the exercise of stock options outstanding as of December 31, 2012, at a weighted average exercise price of $9.95 per share, all of which were then exercisable;
- 488,286 shares of our common stock reserved for future grants of restricted stock, stock options or other similar equity instruments under our Amended and Restated 2007 Equity Incentive Plan, as of December 31, 2012;
- 90,709 shares of our common stock reserved for purchase under our Amended and Restated 2006 Employee Stock Purchase Plan, as of December 31, 2012;

2,349,661 shares of our common stock issuable upon the exercise of warrants outstanding as of December 31, 2012, at a weighted average exercise price of $8.96 per share, all of which were then exercisable;

363,794 shares of our common stock issuable upon the conversion of senior convertible promissory notes outstanding as of December 31, 2012, at a weighted average conversion price of $13.76 per share; and

1,766,590 shares of our common stock available for issuance as of December 31, 2012 upon the conversion of senior convertible promissory notes that may be issued under our Loan and Security Agreement with Partners for Growth III, L.P., dated April 14, 2010, as amended.

Shares available for future issuance under our Amended and Restated 2007 Equity Incentive Plan and Amended and Restated 2006 Employee Stock Purchase Plan do not include shares that may become available for issuance pursuant to provisions in these plans that provide for the automatic annual increase in the number of shares reserved thereunder and the re-issuance of shares that are cancelled or forfeited in accordance with such plans.

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Description of Common Stock

The following summary of the terms of our common stock is subject to and qualified in its entirety by reference to our Restated Certificate of Incorporation, as amended, and Amended and Restated Bylaws, copies of which are on file with the SEC as exhibits to previous SEC filings. Please refer to Where You Can Find More Information below for directions on obtaining these documents.

As of December 31, 2012, we were authorized to issue 100,000,000 shares of common stock, par value $0.001 per share. As of December 31, 2012, we had 21,077,637 shares of common stock outstanding.

General

The holders of our common stock are entitled to one vote for each share on all matters voted on by stockholders, including elections of directors, and, except as otherwise required by law or provided in any resolution adopted by our board with respect to any series of preferred stock, the holders of such shares possess all voting power. Our certificate of incorporation does not provide for cumulative voting in the election of directors. No cash dividends have been previously paid on our common stock and none are anticipated during the remainder of fiscal year 2013. We are restricted from paying dividends under our loan and security agreements with Silicon Valley Bank and Partners for Growth. Our common stock is not redeemable.

The holders of our common stock have no preemptive rights. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock which we may designate and issue in the future.

Transfer Agent and Registrar

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

Nasdaq Global Market

Our common stock is listed for quotation on the Nasdaq Global Market under the symbol CSII.

Anti-Takeover Effect of Delaware Law and Certain Charter and Bylaw Provisions

Our certificate of incorporation and bylaws contain provisions that could have the effect of discouraging potential acquisition proposals or tender offers or delaying or preventing a change of control of our company. These provisions are as follows:

- they provide that special meetings of stockholders may be called only by the Chairman of the Board, the Chief Executive Officer, or by a majority of our board of directors;
- they provide for a classified board of directors, with three separate classes of directors each serving a three-year term;
- they provide that only business brought before an annual meeting by our board of directors or by a stockholder who complies with the procedures set forth in the bylaws may be transacted at an annual meeting of stockholders;
- they provide for advance notice of specified stockholder actions, such as the nomination of directors and stockholder proposals; and
- they allow us to issue, without stockholder approval, up to 5,000,000 shares of preferred stock that could adversely affect the rights and powers of the holders of our common stock.

We are subject to the provisions of Section 203 of the General Corporation Law of the State of Delaware, an anti-takeover law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. For purposes of Section 203, a business combination includes a merger, asset sale or

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other transaction resulting in a financial benefit to the interested stockholder, and an interested stockholder is a person who, together with affiliates and associates, owns, or within three years prior did own, 15% or more of the voting stock of a corporation.

Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law provides that a corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, other than an action by or in the right of the corporation, by reason of the fact that the person is or was a director, officer, employee or agent of the corporation or is or was serving at the corporation s request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses, including attorneys fees, judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with the action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person s conduct was unlawful. The power to indemnify applies to actions brought by or in the right of the corporation as well, but only to the extent of expenses, including attorneys fees but excluding judgments, fines and amounts paid in settlement, actually and reasonably incurred by the person in connection with the defense or settlement of the action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that a court of competent jurisdiction shall determine that such indemnity is proper.

Section 145(g) of the Delaware General Corporation Law provides that a corporation shall have the power to purchase and maintain insurance on behalf of its officers, directors, employees and agents, against any liability asserted against and incurred by such persons in any such capacity.

Section 102(b)(7) of the Delaware General Corporation Law provides that a corporation may eliminate or limit the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, provided that such provision shall not eliminate or limit the liability of a director (i) for any breach of the director s duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the Delaware General Corporation Law, or (iv) for any transaction from which the director derived an improper personal benefit. No such provision shall eliminate or limit the liability of a director for any act or omission occurring prior to the date when such provision becomes effective.

Our Amended and Restated Bylaws provide that we shall indemnify our directors and officers to the fullest extent permitted by the laws of the State of Delaware or any other applicable law. As permitted by our Amended and Restated Bylaws, we have additionally entered into indemnification agreements with each of our non-employee directors that provide for indemnification and expense advancement to the fullest extent permitted by the laws of the State of Delaware.

Our Amended and Restated Bylaws provide that we may purchase and maintain insurance policies on behalf of our directors and officers against specified liabilities for actions taken in their capacities as such, including liabilities under the Securities Act. We have obtained directors and officers liability insurance to cover liabilities our directors and officers may incur in connection with their services to us.

Our Restated Certificate of Incorporation, as amended, provides that the liability of our directors for monetary damages shall be eliminated to the fullest extent under applicable law.

SEC Position on Indemnification for Securities Act Liabilities

Insofar as indemnification for liabilities arising under the Securities Act may be permitted for directors, officers and persons controlling our company, we understand that it is the SEC s opinion that such indemnification is against public policy as expressed in the Securities Act and may therefore be unenforceable.

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Material United States Federal Income Tax Considerations

for Non-U.S. Holders of Common Stock

This section summarizes material U.S. federal income and estate tax considerations relating to the ownership and disposition of our common stock by certain non-U.S. holders who hold our common stock as a capital asset within the meaning of Section 1221 of the Internal Revenue Code (the Code). This summary does not provide a complete analysis of all potential tax considerations (including the Medicare contribution tax). The information provided below is based on provisions of the Code, the U.S. treasury regulations adopted thereunder, rulings and judicial decisions as of the date of this prospectus. These authorities may change, possibly with retroactive effect, or the Internal Revenue Service (the IRS), might interpret the existing authorities differently. In either case, the tax considerations of owning or disposing of our common stock could differ from those described below. For purposes of this summary, a non-U.S. holder means a beneficial owner of our common stock that is for U.S. federal income tax purposes:

- an individual who is neither a citizen nor a resident of the United States;
- a corporation that is not created or organized in or under the laws of the United States, any state thereof, or the District of Columbia;
- an estate that is not subject to U.S. federal income tax on income from non-U.S. sources which is not effectively connected with the conduct of a trade or business within the United States; or
- a trust unless (i) it is subject to the primary supervision of a court within the United States and one or more United States persons have the authority to control all of its substantial decisions or (ii) it has in effect a valid election under applicable U.S. Treasury regulations to be treated as a United States person.

If a partnership or an entity treated as a partnership for U.S. federal income tax purposes is the owner of our common stock, the tax treatment of a partner in the partnership or an owner of the entity will depend upon the status of the partner or other owner and the activities of the partnership or other entity. If you are treated as a partner in such entity holding our common stock, you should consult your tax advisor as to the particular U.S. federal income and estate tax consequences applicable to you.

This summary does not represent a description of the U.S. federal income and estate tax consequences applicable to you if you are subject to special treatment under the U.S. federal income tax laws (including if you are a U.S. expatriate or former long-term resident of the U.S, controlled foreign corporation, passive foreign investment company, bank, insurance company or other financial institution, dealer or trader in securities, a person who holds our common stock as a position in a hedging transaction, straddle or conversion transaction, or other person subject to special tax treatment). We cannot assure you that a change in law will not alter significantly the tax considerations that we describe in this summary. Finally, this summary does not describe the effects of any applicable foreign, state, or local laws.

PERSONS CONSIDERING AN INVESTMENT IN OUR COMMON STOCK SHOULD CONSULT THEIR OWN TAX ADVISORS REGARDING THE U.S. FEDERAL, STATE AND LOCAL AND NON-U.S. INCOME, ESTATE, GIFT AND OTHER TAX CONSIDERATIONS RELATING TO THE PURCHASE, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK IN LIGHT OF THEIR PARTICULAR CIRCUMSTANCES.

Dividends

As discussed under in the Dividend Policy section above, we do not currently expect to make distributions on our stock. If we do make a distribution of cash or other property (other than certain distributions of our stock) in respect of our common stock, the distribution generally will be treated as a dividend to the extent of our current or accumulated earnings and profits as determined under U.S. federal income tax principles. If the amount of a distribution exceeds our current and accumulated earnings and profits, such excess generally will be treated first as a tax-free return of capital, on a share-by-share basis, to the extent of the non-U.S. holder s tax basis in our common stock, and thereafter as capital gain.

In the event we do pay dividends, any dividend paid to a non-U.S. holder in respect of our common stock generally will be subject to U.S. withholding tax at a 30% rate. The withholding tax might apply at a reduced rate

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under the terms of an applicable income tax treaty between the United States and the non-U.S. holder s country of residence. To obtain a reduced rate of withholding under a treaty, a non-U.S. holder must certify its entitlement to treaty benefits by providing a properly completed IRS Form W-8BEN or other applicable form to us or our paying agent prior to payment of the dividends. If the non-U.S. holder holds the stock through a financial institution or other agent acting on the holder s behalf, the holder will be required to provide appropriate documentation to the agent. The holder s agent will then be required to provide certification to us or our paying agent, either directly or through other intermediaries. For payments made to a foreign partnership (or other foreign entity treated as a partnerships for U.S. federal income tax purposes), the certification requirements generally apply to the partners or other owners rather than to the partnership or other entity, and the partnership or other entity must provide the partners or other owners documentation to us or our paying agent. Special rules, described below, apply if a dividend is effectively connected with a U.S. trade or business conducted by a non-U.S. holder. A non-U.S. holder eligible for a reduced rate of U.S. withholding tax pursuant to an income tax treaty generally may obtain a refund of any excess amounts withheld from the IRS by filing an appropriate claim for refund with the IRS.

Sale of Common Stock

Subject to the discussion below under Backup Withholding and Information Reporting and New Legislation Relating to Foreign Accounts, non-U.S. holders generally will not be subject to U.S. federal income tax on any gains realized on the sale, exchange, or other disposition of our common stock. This general rule, however, is subject to several additional exceptions. For example, the gain would be subject to U.S. federal income tax if:

- the gain is effectively connected with the conduct by the non-U.S. holder of a U.S. trade or business and, if a treaty applies, is attributable to a permanent establishment of the non-U.S. holder in the United States, in which case the special rules described below apply;

- the non-U.S. holder is an individual who holds our common stock as a capital asset and who is present in the United States for 183 days or more in the taxable year of the sale, exchange, or other disposition, and certain other requirements are met; or

- the rules of the Foreign Investment in Real Property Tax Act, or FIRPTA (described below), treat the gain as effectively connected with a U.S. trade or business.

A non-U.S. holder described in the first bullet point immediately above will be subject to tax on the net gain derived from the sale under regular graduated U.S. federal income tax rates in the same manner as if such holder were a resident of the United States, and if such non-U.S. holder is a corporation, it may also be subject to the branch profits tax generally equal to 30% of its effectively connected earnings and profits or at such lower rate as may be specified by an applicable income tax treaty.

Unless an applicable income tax treaty provides otherwise, gain described in the second bullet point above will be subject to a flat rate of 30% tax on the gain derived from the sale, which may be offset by U.S. source capital losses, even though the non-U.S. holder individual is not considered a resident of the United States.

The FIRPTA rules may apply to a sale, exchange or other disposition of our common stock if we are, or were within five years before the transaction, a U.S. real property holding corporation, or USRPHC. In general, we would be a USRPHC if the fair market value of our United States real property interests equals or exceeds 50% of the sum of the fair market value of our worldwide real property interests and our other assets used or held for use in a trade or business (all as determined for U.S. federal income tax purposes). We do not believe that we are currently a USRPHC or that we will become one in the future. Even if we become a USRPHC, if our common stock is regularly traded on an established securities market, such common stock will be treated as United States real property interests only if the non-U.S. holder actually or constructively held more than five percent of such regularly traded common stock any time during the shorter of (i) the five-year period preceding the date of a disposition of our common stock or (ii) the non-U.S. holder s holding period for our common stock.

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Dividends Effectively Connected With a U.S. Trade or Business

If any dividend on our common stock is effectively connected with a U.S. trade or business conducted by the non-U.S. holder, then the dividend will be subject to U.S. federal income tax at the regular graduated rates as if such holder were a resident of the United States. If the non-U.S. holder is eligible for the benefits of a tax treaty between the United States and the holder s country of residence, any effectively connected dividend would generally be subject to U.S. federal income tax only if it is also attributable to a permanent establishment or fixed base maintained by the holder in the United States. Payments of dividends that are effectively connected with a U.S. trade or business (and, if a treaty applies, are attributable to a permanent establishment or fixed base in the United States) will not be subject to the 30% withholding tax if the holder claims exemption from withholding by providing a properly completed IRS Form W-8ECI. If the non-U.S. holder is a corporation, that portion of its earnings and profits that is effectively connected with its U.S. trade or business would generally be subject to a branch profits tax. The branch profits tax rate is generally 30%, although an applicable income tax treaty might provide for a lower rate.

U.S. Federal Estate Tax

The estates of non-U.S. holder individuals (as specifically determined for U.S. federal estate purposes) generally are subject to U.S. federal estate tax on property with a U.S. situs. Because we are a U.S. corporation, our common stock will be U.S. situs property and therefore will be included for U.S. federal estate tax purposes in the taxable estate of a non-U.S. holder individual. The U.S. federal estate tax liability of the estate of a non-U.S. holder individual may be affected by a treaty between the United States and the non-U.S. holder individual s country of residence.

Backup Withholding and Information Reporting

The Code and the regulations adopted thereunder require those who make specified payments to report the payments to the IRS. Among the specified payments are dividends and proceeds paid by brokers to their customers. The required information returns enable the IRS to determine whether the recipient properly included the payments in income. This reporting regime is reinforced by backup withholding rules. These rules require the payors to withhold tax from payments subject to information reporting if the recipient fails to provide his taxpayer identification number to the payer, furnishes an incorrect identification number, or repeatedly fails to report interest or dividends on his returns. The withholding tax rate is currently 28%. The backup withholding rules do not apply to payments to corporations, whether domestic or foreign.

Payments to non-U.S. holders of dividends on our common stock will generally not be subject to backup withholding, and payments of proceeds made to non-U.S. holders by a broker upon a sale of our common stock will not be subject to backup withholding, in each case so long as the non-U.S. holder certifies its nonresident status and the payer does not have actual knowledge or reason to know that such holder is a U.S. person as defined under the Code or such holder otherwise establishes an exemption. We must report annually to the IRS any dividends paid to each non-U.S. holder and the tax withheld, if any, with respect to such dividends. Information returns may also be filed with the IRS in connection with the proceeds from a sale or other disposition of our common stock. Copies of these reports may be made available to tax authorities in the country where the non-U.S. holder resides.

Backup withholding is not an additional tax. Any amounts withheld from a payment to a holder of our common stock under the backup withholding rules generally may be credited against any U.S. federal income tax liability of the holder.

New Legislation Relating to Foreign Accounts

Newly enacted legislation may impose withholding taxes on certain types of payments made to foreign financial institutions (as specifically defined for this purpose) and certain other non-U.S. entities. Under this legislation, the failure to comply with additional certification, information reporting and other specified requirements could result in withholding tax being imposed on payments of dividends and gross sales proceeds to foreign intermediaries and certain non-U.S. holders. The legislation imposes a 30% withholding tax on dividends on, or

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gross proceeds from the sale or other disposition of, our common stock paid to a foreign financial institution or to a foreign non-financial entity, unless (i) the foreign financial institution undertakes certain diligence and reporting obligations, (ii) the foreign non-financial entity either certifies it does not have any substantial U.S. owners or furnishes identifying information regarding each substantial U.S. owner or (iii) the foreign financial institution or foreign financial entity qualifies for an exemption. If the payee is a foreign financial institution, it generally must enter into an agreement with the U.S. Treasury requiring, among other things, that it undertake to identify accounts held by certain U.S. persons or U.S.-owned foreign entities, annually report certain information about such accounts and withhold 30% on payments to account holders whose actions prevent it from complying with these reporting and other requirements. The IRS recently issued guidance that, among other things, defers the implementation of the 30% U.S. federal withholding tax with respect to dividends until 2014 and with respect to gross proceeds on a disposition of stock until 2017.

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Underwriting

Subject to the terms and conditions set forth in an underwriting agreement between us and the underwriters named below, for whom Leerink Swann LLC is acting as representative, we have agreed to sell to the underwriters, and the underwriters have severally agreed to purchase from us the number of shares of common stock listed next to its name in the following table:

Name	Number of Shares
Leerink Swann LLC	
Total	

The underwriters are committed to purchase all the shares of common stock offered by us (other than those shares of common stock covered by the underwriters over-allotment option) if they purchase any shares. The underwriting agreement also provides that if an underwriter defaults, the purchase commitments of non-defaulting underwriters may also be increased or the offering may be terminated.

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

Commissions and Discounts

The underwriters propose initially to offer the shares to the public at the public offering price set forth on the cover page of this prospectus supplement and to dealers at that price less a concession not in excess of $ per share. After the public offering, the public offering price, concession and discount may be changed.

The following table shows the public offering price, underwriting discount and proceeds before expenses to us. The information assumes either no exercise or full exercise by the underwriters of their over-allotment option.

	Per Share	Without Option	With Option
Public offering price	$	$	$
Underwriting discount	$	$	$
Proceeds, before expenses, to us	$	$	$

The total expenses of the offering, including registration, filing and listing fees, printing fees and our legal and accounting expenses, but excluding the underwriting discount, are estimated at approximately $ and are payable by us.

Over-allotment Option

We have granted an option to the underwriters to purchase up to additional shares at the public offering price, less the underwriting discount. The underwriters may exercise this option for 30 days from the date of this prospectus supplement solely to cover any over-allotments. If any shares are purchased with this over-allotment option, the underwriters will purchase shares in approximately the same proportion as shown in the table above. If any additional shares of common stock are purchased, the underwriters will offer the additional shares on the same terms as those on which the shares are being offered.

No Sales of Similar Securities

We and each of our executive officers and directors have agreed that, subject to certain exceptions, without the prior written consent of Leerink Swann LLC, we and such executive officers and directors will not, during the period ending 90 days after the date of this prospectus supplement:

offer, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or

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indirectly, any shares of common stock or securities convertible into or exercisable or exchangeable for common stock; or

enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock;

whether any such transaction described above is to be settled by delivery of common stock or such other securities, in cash or otherwise.

In addition, during such 90-day restricted period, we have agreed not to file a registration statement (other than registration statements on Form S-8 and registration statements filed upon the demand or request of certain stockholders pursuant to the Registration Rights Agreement dated March 16, 2009 entered into by us with such stockholders) with the Securities and Exchange Commission relating to the common stock.

The lock-up restrictions described in the immediately preceding paragraph do not apply to:

with respect to us:

the shares of our common stock to be sold in this offering;

the issuance of shares of common stock upon the exercise of outstanding stock options or warrants or grants of stock options or other stock-based awards under our equity plans, or the conversion of convertible promissory notes issued to Partners for Growth III, L.P., or any security outstanding on the date of this prospectus supplement described in this prospectus supplement, the accompanying prospectus or the documents incorporated by reference herein or therein or of which the underwriters have been advised in writing, or the issuance of up to $1,027,400 in shares of common stock upon the exercise of warrants to be granted to our lenders under our existing or future credit facilities, or

the establishment of a trading plan pursuant to Rule 10b5-1 under the Exchange Act, provided that such 10b5-1 plan does not provide for the transfer of common stock during the 90-day restricted period; or

with respect to our directors and executive officers:

transfers of shares of common stock or any security convertible into common stock as a bona fide gift;

distributions of shares of common stock to limited partners, members, stockholders or wholly-owned subsidiaries of the director or officer;

transfers of shares of common stock or any security convertible into common stock pursuant to any order or settlement agreement not involving any public sale of shares of common stock or other securities and approved by any court of competent jurisdiction;

sales of shares of common stock, transfers of shares of common stock to us, or withholding of shares of common stock by us, upon a vesting event of outstanding restricted stock awards to cover tax withholding obligations of the director or executive officer in connection with such vesting event;

transfers of shares of common stock under a trading plan pursuant to Rule 10b5-1 under the Exchange Act existing on the date of this prospectus supplement;

pledges of shares of our common stock in margin accounts solely for the purpose of obtaining funds to exercise options to purchase common stock granted pursuant to our equity plans and/or to pay the related taxes on such exercise, provided that any transfers or sales of common stock from such accounts are made under a trading plan pursuant to Rule 10b5-1 under the Exchange Act;

the establishment of a new trading plan pursuant to Rule 10b5-1 under the Exchange Act, provided that such plan does not permit transfers or sales of shares of common stock or any security convertible into common stock during the 90-day restricted period and, except as required by applicable law, no public announcement or filing under the Exchange Act regarding the establishment of such plan shall be voluntarily made during the 90-day restricted period; or

transfers of shares of common stock or any security convertible into common stock held by venture capital, private equity or managed investment funds with which a director is affiliated.

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provided that in the case of any transfer or distribution described above in the first, second and third bullets, (i) each donee, transferee or distributee agrees in writing to the same restrictions set forth above, and (ii) no filing under section 16(a) of the Exchange Act shall be required or shall be voluntarily made during the 90-day restricted period.

The 90-day restricted period in all of the agreements is subject to extension if (i) during the last 17 days of the restricted period we issue an earnings release or material news or a material event relating to us occurs or (ii) prior to the expiration of the restricted period, we announce that we will release earnings results during the 16-day period beginning on the last day of the lock-up period, in which case the restrictions imposed in these lock-up agreements shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the occurrence of the material news or material event.

Indemnification

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the underwriters may be required to make for these liabilities.

Price Stabilization, Short Positions and Penalty Bids

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

In connection with the offering, the underwriters may purchase and sell our common stock in the open market. These transactions may include short sales, purchases on the open market to cover positions created by short sales and stabilizing transactions. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in the offering. Covered short sales are sales made in an amount not greater than the underwriters option to purchase additional shares in the offering. The underwriters may close out any covered short position by either exercising their over-allotment option or purchasing shares in the open market. In determining the source of shares to close out the covered 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 overallotment option. Naked short sales are sales in excess of the over-allotment option. The underwriters must close out any naked short position by purchasing shares 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 our common stock in the open market after pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of various bids for or purchases of shares of common stock made by the underwriters in the open market prior to the completion of the offering.

Similar to other purchase transactions, the underwriters purchases to cover syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market.

The underwriters have advised us that, pursuant to Regulation M of the Securities Act, they may also engage in other activities that stabilize, maintain or otherwise affect the price of the common stock, including the imposition of penalty bids. This means that if the representative of the underwriters purchases common stock in the open market in stabilizing transactions or to cover short sales, the representative can require the underwriters that sold those shares as part of this offering to repay the underwriting discount received by them.

The underwriters make no representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. In addition, neither we nor the underwriters make any representation that the representatives will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

Passive Market Making

In connection with the offering, the underwriters may engage in passive market-making transactions in the common stock on the Nasdaq Global Market in accordance with Rule 103 of Regulation M under the Exchange Act during the period before the commencement of offers or sales of common stock and extending through the

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completion and distribution. A passive market-maker must display its bids at a price not in excess of the highest independent bid of the security. However, if all independent bids are lowered below the passive market-maker s bid, that bid must be lowered when specified purchase limits are exceeded.

Electronic Offer, Sale and Distribution of Shares

A prospectus supplement and prospectus in electronic format may be made available on the websites maintained by one or more underwriters or selling group members, if any, participating in the offering. The underwriters may agree to allocate a number of shares to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the representatives to underwriters and selling group members that may make Internet distributions on the same basis as other allocations. Other than the prospectus supplement and prospectus in electronic format, the information on the underwriters websites and any information contained in any other website maintained by the underwriters is not part of this prospectus supplement and the accompanying prospectus or the registration statement of which they form a part.

Notice to Non-U.S. Investors

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

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a Relevant Member State), each underwriter has represented and agreed that with effect from and including the date on which the European Union Prospectus Directive (the EU Prospectus Directive) is implemented in that Relevant Member State (the Relevant Implementation Date) it has not made and will not make an offer of common stock to the public in that Relevant Member State prior to the publication of a prospectus in relation to the shares which has been approved by the competent authority in that Relevant Member State or, where appropriate, approved in another Relevant Member State and notified to the competent authority in that Relevant Member State, all in accordance with the EU Prospectus Directive, except that it may, with effect from and including the Relevant Implementation Date, make an offer of shares to the public in that Relevant Member State at any time:

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;

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;

to fewer than 100 natural or legal persons (other than qualified investors as defined in the EU Prospectus Directive) subject to obtaining the prior consent of the book-running managers for any such offer; or

in any other circumstances which do not require the publication of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an offer of shares to the public in relation to any shares 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 the shares to be offered so as to enable an investor to decide to purchase or subscribe for the shares, as the same may be varied in that Member State by any measure implementing the EU Prospectus Directive in that Member State and the expression EU Prospectus Directive means Directive 2003/71/EC and includes any relevant implementing measure in each Relevant Member State.

Other Relationships

In addition, certain of the underwriters and their affiliates have provided from time to time, and may provide in the future, investment and commercial banking and financial advisory services to us in the ordinary course of business, for which they have received and may continue to receive customary fees and commissions. In

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addition, from time to time, certain of the underwriters and their affiliates may effect transactions for their own account or the account of customers, and hold on behalf of themselves or their customers, long or short positions in our debt or equity securities or loans, and may do so in the future.

Legal Matters

The validity of the shares of common stock we are offering will be passed upon for us by Fredrikson & Byron, P.A., Minneapolis, Minnesota. Davis Polk & Wardwell LLP, Menlo Park, California, is counsel for the underwriters.

Experts

The financial statements and management s assessment of the effectiveness of internal control over financial reporting (which is included in Management s Report on Internal Control Over Financial Reporting) incorporated in this prospectus supplement by reference to the Annual Report on Form 10-K for the year ended June 30, 2012 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

Where You Can Find More Information

The SEC allows us to incorporate by reference into this prospectus supplement the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus supplement, and information in documents that we file later with the SEC will automatically update and supersede information in this prospectus supplement. We incorporate by reference into this prospectus supplement the documents listed below and any future filings made by us with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act until we close this offering, including all filings made after the date of the initial registration statement and prior to the effectiveness of the registration statement. We hereby incorporate by reference the following documents:

- our Annual Report on Form 10-K for the year ended June 30, 2012;
- our Quarterly Reports on Form 10-Q for the quarters ended September 30, 2012 and December 31, 2012;
- our Current Reports on Form 8-K filed on July 6, 2012, July 25, 2012, September 7, 2012, November 1, 2012, January 3, 2013, February 15, 2013, February 27, 2013 and March 6, 2013 (excluding any information furnished in such reports under Item 2.02, Item 7.01 or Item 9.01);
- the description of our common stock contained in our registration statement on Form 8-A filed June 26, 2006, under the Securities Act, including any amendment or report filed for the purpose of updating such description; and
- the portions of our definitive Proxy Statement on Schedule 14A filed on September 19, 2012 incorporated by reference into our Annual Report on Form 10-K for the year ended June 30, 2012.

You may request a copy of these filings, at no cost, by writing or telephoning us at the following address:

Cardiovascular Systems, Inc.

651 Campus Drive

St. Paul, Minnesota 55112-3495

Attention: Investor Relations

Phone: (651) 259-1600

Copies of these filings are also available, without charge, through the Investors section of our website (www.csi360.com) as soon as reasonably practicable after they are filed electronically with the SEC. The information contained on or accessible through our website is not a part of this prospectus supplement.

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Incorporation of Documents By Reference

We have filed a registration statement on Form S-3 with the SEC for the securities we are offering by this prospectus supplement. This prospectus supplement and the accompanying prospectus do not include all of the information contained in the registration statement. You should refer to the registration statement and its exhibits for additional information.

We are required to file annual and quarterly reports, special reports, proxy statements, and other information with the SEC. You can read our SEC filings, including the registration statement, on the SEC s website at http://www.sec.gov. You also may read and copy any document we file with the SEC at its public reference facility at:

Public Reference Room

100 F Street N.E.

Washington, DC 20549.

Please call the SEC at 1-800-732-0330 for further information on the operation of the public reference facilities.

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PROSPECTUS

CARDIOVASCULAR SYSTEMS, INC.

$75,000,000

Common Stock

Preferred Stock

Warrants

Debt Securities

Units

The securities covered by this prospectus may include shares of our common stock; shares of preferred stock; warrants to purchase shares of our common stock, preferred stock and/or debt securities; debt securities consisting of debentures, notes or other evidences of indebtedness; or units consisting of any combination of such securities. We may offer the securities from time to time in one or more series or issuances directly to our stockholders or purchasers, or through agents, underwriters or dealers as designated from time to time.

This prospectus provides a general description of the securities we may offer. Each time we sell securities, we will provide specific terms of the securities offered in a supplement to this prospectus. Such a prospectus supplement may also add, update or change information contained in this prospectus. This prospectus may not be used to consummate a sale of securities unless accompanied by the applicable prospectus supplement. We will sell these securities directly to our stockholders or to purchasers or through agents on our behalf or through underwriters or dealers as designated from time to time. If any agents or underwriters are involved in the sale of any of these securities, the applicable prospectus supplement will provide the names of the agents or underwriters and any applicable fees, commissions or discounts.

Our common stock is traded on the Nasdaq Global Market under the symbol CSII. On May 31, 2011, the closing price of our common stock was $14.83.

Investing in our securities involves risks. See Risk Factors on page 2. You should carefully read this prospectus, the documents incorporated herein, and the applicable prospectus supplement before making any investment decision.

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

The date of this prospectus is June 17, 2011

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ABOUT THIS PROSPECTUS

The securities described in this prospectus are part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a shelf registration process. Under this shelf registration process, we may offer to sell any combination of the securities described in this prospectus in one or more offerings up to a total dollar amount of $75,000,000.00. This prospectus provides you with a general description of the securities we may offer. Each time we sell securities under this shelf registration, we will provide a prospectus supplement that will contain specific information about the terms of such offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any applicable prospectus supplement, including all documents incorporated herein by reference, together with additional information described under Where You Can Find More Information below.

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

Unless the context otherwise requires, CSI, the Company, we, us, our and similar names refer to Cardiovascular Systems, Inc.

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OUR COMPANY

We are a medical device company focused on developing and commercializing minimally invasive treatment solutions for vascular disease. Interventional endovascular treatment of peripheral artery disease, or PAD, was our initial area of focus. PAD is caused by the accumulation of plaque in peripheral arteries, most commonly occurring in the pelvis and legs. PAD is a progressive disease, and, if left untreated, can lead to limb amputation or death.

Our primary products, the Diamondback 360°® PAD System (Diamondback 360°), Diamondback Predator 360° PAD System (Predator 360°) and Stealth 360° Orbital PAD System (Stealth 360°), are catheter-based platforms capable of treating a broad range of plaque types in leg arteries both above and below the knee and address many of the limitations associated with existing treatment alternatives. We refer to the Diamondback 360° and the Predator 360° collectively in this prospectus as the Diamondback Systems. We commenced a limited commercial introduction of the Diamondback 360° in the United States in September 2007 and began a full commercial launch during the quarter ended March 31, 2008. We commenced commercial launch of the Predator 360° in April 2009. We received 510(k) marketing clearance from the U.S. Food and Drug Administration for the Stealth 360° in March 2011 and subsequently begun a limited market release of the Stealth 360°. As of May 31, 2010, the Diamondback Systems had been utilized in over 46,000 procedures. We intend to leverage the capabilities of the Diamondback Systems to expand into the interventional coronary market.

In addition to the Diamondback Systems and the Stealth 360°, we are expanding our product portfolio through internal product development and establishment of business relationships. We now offer multiple accessory products designed to complement the use of the Diamondback Systems, and we have entered into a distribution agreement with Asahi-Intecc, Ltd.

We were incorporated as Replidyne, Inc. in Delaware in 2000. On February 25, 2009, Replidyne, Inc. completed its business combination with Cardiovascular Systems, Inc., a Minnesota corporation (CSI-MN), in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated as of November 3, 2008, by and among Replidyne, Responder Merger Sub, Inc., a wholly-owned subsidiary of Replidyne (Merger Sub), and CSI-MN (the Merger Agreement). Pursuant to the Merger Agreement, Merger Sub merged with and into CSI-MN, with CSI-MN continuing after the merger as the surviving corporation and a wholly-owned subsidiary of Replidyne. At the effective time of the merger, Replidyne changed its name to Cardiovascular Systems, Inc. (CSI) and CSI-MN changed its name to CSI Minnesota, Inc. As of immediately following the effective time of the merger, former CSI-MN stockholders owned approximately 80.2% of the outstanding common stock of the combined company, and Replidyne stockholders owned approximately 19.8% of the outstanding common stock of the combined company. Following the merger of Merger Sub with CSI-MN, CSI-MN merged with and into CSI, with CSI continuing after the merger as the surviving corporation. These transactions are referred to herein as the merger. Unless the context otherwise requires, all references herein to the Company, CSI, we, us and our refer to CSI-MN prior to the completion of the merger and to CSI following the completion of the merger and name change, and all references to Replidyne refer to Replidyne prior to the completion of the merger and the name change.

Replidyne was a biopharmaceutical company focused on discovering, developing, in-licensing and commercializing anti-infective products.

CSI-MN was incorporated in Minnesota in 1989. From 1989 to 1997, we engaged in research and development on several different product concepts that were later abandoned. Since 1997, we have devoted substantially all of our resources to the development of the Diamondback Systems and our Viper line of ancillary products.

Our common stock is traded on the Nasdaq Global Market under the symbol CSII. On May 31, 2011, the closing price of our common stock was $14.83. As of May 31, 2011, the aggregate market value of our outstanding common stock held by non-affiliates was approximately $199,947,758, based on 16,350,698 shares of outstanding common stock, of which approximately 13,482,654 shares are held by non-affiliates, and a per share price of $14.83 based on the closing sale price of our common stock on May 31, 2011.

Our principal executive office is located at 651 Campus Drive, St. Paul, Minnesota 55112. Our telephone number is (651) 259-1600, and our website is www.csi360.com. The information contained in or connected to our website is not incorporated by reference into, and should not be considered part of, this prospectus.

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RISK FACTORS

Investing in our securities involves risk. You should consider the risks, uncertainties and assumptions discussed under the heading Risk Factors in our Annual Report on Form 10-K for the fiscal year ended June 30, 2010 filed on September 28, 2010 with the Securities and Exchange Commission (SEC), which is incorporated herein by reference, and may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations. If any of these risks were to occur, our business, financial condition, and results of operations could be severely harmed. This could cause the trading price of our common stock to decline, and you could lose all or part of your investment.

In addition, any prospectus supplement applicable to each offering of our securities will contain a discussion of the risks applicable to such an investment in us. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed under the heading Risk Factors in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in such prospectus supplement or appearing or incorporated by reference in this prospectus.

FORWARD-LOOKING STATEMENTS

This prospectus, any prospectus supplement and the other documents we have filed with the SEC that are incorporated herein by reference contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause the results of CSI to differ materially from those expressed or implied by such forward-looking statements. All statements other than statements of historical fact are statements that could be deemed forward-looking statements, including any projections of financing needs, revenue, expenses, earnings or losses from operations, or other financial items; any statements of the plans, strategies and objectives of management for future operations; any statements concerning product research, development and commercialization plans and timelines; any statements regarding safety and efficacy of product candidates; any statements of expectation or belief; and any statements of assumptions underlying any of the foregoing. In addition, forward-looking statements may contain the words believe, anticipate, expect, estimate, intend, plan, project, will be, will continue, will result, might, or any variations of such words or other words with similar meanings.

Given these uncertainties, you should not place undue reliance on these forward-looking statements. You should read this prospectus, any supplements to this prospectus and the documents that we reference in this prospectus with the understanding that our actual future results may be materially different from what we expect. Except as required by law, we do not undertake any obligation to update or revise any forward-looking statements contained in this prospectus and any supplements to this prospectus, whether as a result of new information, future events or otherwise.

USE OF PROCEEDS

Except as otherwise provided in the applicable prospectus supplement, we intend to use the net proceeds from the sale of the securities covered by this prospectus for general corporate purposes, which may include working capital, capital expenditures, research and development expenditures, repayment of indebtedness with Silicon Valley Bank and Partners for Growth described below, clinical trial expenditures, commercial expenditures, acquisitions of new technologies or businesses, and investments. Additional information on the use of net proceeds from the sale of securities covered by this prospectus may be set forth in any prospectus supplement relating to the specific offering.

Description of Indebtedness Outstanding

Loan and Security Agreement with Silicon Valley Bank

On March 29, 2010, we entered into an amended and restated loan and security agreement with Silicon Valley Bank. The agreement includes a $10,000,000 term loan and a $15,000,000 line of credit. The $10,000,000

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term loan has a fixed interest rate of 9.0% and a final payment amount equal to 1.0% of the loan amount due at maturity. This term loan has a 36 month maturity, with repayment terms that include interest only payments during the first six months followed by 30 equal principal and interest payments. The $15,000,000 line of credit has a two year maturity and a floating interest rate equal to Silicon Valley Bank s prime rate, plus 2.0%, with an interest rate floor of 6.0%. Interest on borrowings is due monthly and the principal balance is due at maturity.

Loan and Security Agreement with Partners for Growth

On April 14, 2010, we entered into a loan and security agreement with Partners for Growth III, L.P. (PFG). The agreement provides that PFG will make loans to us up to $4,000,000. The agreement has a maturity date of April 14, 2015. The loans bear interest at a floating per annum rate equal to 2.75% above Silicon Valley Bank s prime rate, and such interest is payable monthly.

PLAN OF DISTRIBUTION

We may sell the securities offered through this prospectus (1) to or through underwriters or dealers, (2) directly to purchasers, including our affiliates, (3) through agents, or (4) through a combination of any of these methods. The securities may be distributed at a fixed price or prices, which may be changed, market prices prevailing at the time of sale, prices related to the prevailing market prices, or negotiated prices. The prospectus supplement will include the following information:

- the terms of the offering;
- the names of any underwriters or agents;
- the name or names of any managing underwriter or underwriters;
- the purchase price of the securities;
- the net proceeds from the sale of the securities;
- any delayed delivery arrangements;
- any underwriting discounts, commissions and other items constituting underwriters compensation;
- any initial public offering price;
- any discounts or concessions allowed or reallowed or paid to dealers; and
- any commissions paid to agents.

Sale through underwriters or dealers

If underwriters are used in the sale, the underwriters will acquire the securities for their own account, including through underwriting, purchase, security lending or repurchase agreements with us. The underwriters may resell the securities from time to time in one or more transactions, including negotiated transactions. Underwriters may sell the securities in order to facilitate transactions in any of our other securities (described

in this prospectus or otherwise), including other public or private transactions and short sales. Underwriters may offer securities to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more firms acting as underwriters. Unless otherwise indicated in the prospectus supplement, the obligations of the underwriters to purchase the securities will be subject to certain conditions, and the underwriters will be obligated to purchase all the offered securities if they purchase any of them. The underwriters may change from time to time any initial public offering price and any discounts or concessions allowed or reallowed or paid to dealers. The prospectus supplement will include the names of the principal underwriters, the respective amount of securities underwritten, the nature of the obligation of the underwriters to take the securities and the nature of any material relationship between an underwriter and us.

If dealers are used in the sale of securities offered through this prospectus, we will sell the securities to them as principals. They may then resell those securities to the public at varying prices determined by the dealers at the time of resale. The prospectus supplement will include the names of the dealers and the terms of the transaction.

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Direct sales and sales through agents

We may sell the securities offered through this prospectus directly. In this case, no underwriters or agents would be involved. Such securities may also be sold through agents designated from time to time. The prospectus supplement will name any agent involved in the offer or sale of the offered securities and will describe any commissions payable to the agent by us. Unless otherwise indicated in the prospectus supplement, any agent will agree to use its reasonable best efforts to solicit purchases for the period of its appointment.

We may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act with respect to any sale of those securities. The terms of any such sales will be described in the prospectus supplement.

Delayed delivery contracts

If the prospectus supplement indicates, we may authorize agents, underwriters or dealers to solicit offers from certain types of institutions to purchase securities at the public offering price under delayed delivery contracts. These contracts would provide for payment and delivery on a specified date in the future. The contracts would be subject only to those conditions described in the prospectus supplement. The applicable prospectus supplement will describe the commission payable for solicitation of those contracts.

Market making, stabilization and other transactions

Unless the applicable prospectus supplement states otherwise, each series of securities offered by us will be a new issue and will have no established trading market, other than our common stock, which is listed on the Nasdaq Global Market. We may elect to list any series of offered securities on an exchange. Any underwriters that we use in the sale of offered securities may make a market in such securities, but may discontinue such market making at any time without notice. Therefore, we cannot assure you that the securities will have a liquid trading market.

Any underwriter may also engage in stabilizing transactions, syndicate covering transactions and penalty bids in accordance with Rule 104 under the Securities Exchange Act of 1934, as amended. Stabilizing transactions involve bids to purchase the underlying security in the open market for the purpose of pegging, fixing or maintaining the price of the securities. Syndicate covering transactions involve purchases of the securities in the open market after the distribution has been completed in order to cover syndicate short positions.

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.

Derivative transactions and hedging

We, the underwriters or other agents may engage in derivative transactions involving the securities. These derivatives may consist of short sale transactions and other hedging activities. The underwriters or agents may acquire a long or short position in the securities, hold or resell securities acquired and purchase options or futures on the securities and other derivative instruments with returns linked to or related to changes in the price of the securities. In order to facilitate these derivative transactions, we may enter into security lending or repurchase agreements with the underwriters or agents. The underwriters or agents may effect the derivative transactions through sales of the securities to the public, including short sales, or by lending the securities in order to facilitate short sale transactions by others. The underwriters or agents may also use the securities purchased or borrowed from us or others (or, in the case of derivatives, securities received from us in settlement of those derivatives) to directly or indirectly settle sales of the securities or close out any related open borrowings of the securities.

Electronic auctions

We may also make sales through the Internet or through other electronic means. Since we may from time to time elect to offer securities directly to the public, with or without the involvement of agents, underwriters or

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dealers, utilizing the Internet or other forms of electronic bidding or ordering systems for the pricing and allocation of such securities, you should pay particular attention to the description of that system we will provide in a prospectus supplement.

Such electronic system may allow bidders to directly participate, through electronic access to an auction site, by submitting conditional offers to buy that are subject to acceptance by us, and which may directly affect the price or other terms and conditions at which such securities are sold. These bidding or ordering systems may present to each bidder, on a so-called real-time basis, relevant information to assist in making a bid, such as the clearing spread at which the offering would be sold, based on the bids submitted, and whether a bidder s individual bids would be accepted, prorated or rejected. For example, in the case of a debt security, the clearing spread could be indicated as a number of basis points above an index treasury note. Of course, many pricing methods can and may also be used.

Upon completion of such an electronic auction process, securities will be allocated based on prices bid, terms of bid or other factors. The final offering price at which securities would be sold and the allocation of securities among bidders would be based in whole or in part on the results of the Internet or other electronic bidding process or auction.

General information

Agents, underwriters, and dealers may be entitled, under agreements entered into with us, to indemnification by us against certain liabilities, including liabilities under the Securities Act.

DESCRIPTION OF COMMON STOCK

The following summary of the terms of our common stock is subject to and qualified in its entirety by reference to our Restated Certificate of Incorporation, as amended, and Amended and Restated Bylaws, copies of which are on file with the SEC as exhibits to previous SEC filings. Please refer to Where You Can Find More Information below for directions on obtaining these documents.

As of May 31, 2011, we are authorized to issue 100,000,000 shares of common stock, par value $0.001 per share. As of May 31, 2011, we had 16,350,698 shares of common stock outstanding.

General

The holders of our common stock are entitled to one vote for each share on all matters voted on by stockholders, including elections of directors, and, except as otherwise required by law or provided in any resolution adopted by our board with respect to any series of preferred stock, the holders of such shares possess all voting power. Our certificate of incorporation does not provide for cumulative voting in the election of directors. No cash dividends have been previously paid on our common stock and none are anticipated during fiscal year 2011. We are restricted from paying dividends under our Loan and Security Agreements with Silicon Valley Bank and Partners for Growth. Our common stock is not redeemable.

The holders of our common stock have no preemptive rights. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock which we may designate and issue in the future.

Transfer Agent and Registrar

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

Nasdaq Global Market

Our common stock is listed for quotation on the Nasdaq Global Market under the symbol CSII.

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Anti-Takeover Effect of Delaware Law and Certain Charter and Bylaw Provisions

Our certificate of incorporation and bylaws contain provisions that could have the effect of discouraging potential acquisition proposals or tender offers or delaying or preventing a change of control of our company. These provisions are as follows:

- they provide that special meetings of stockholders may be called only by the Chairman of the Board, the Chief Executive Officer, or by a majority of our board of directors;
- they provide for a classified board of directors, with three separate classes of directors each serving a three-year term;
- they provide that only business brought before an annual meeting by our board of directors or by a stockholder who complies with the procedures set forth in the bylaws may be transacted at an annual meeting of stockholders;
- they provide for advance notice of specified stockholder actions, such as the nomination of directors and stockholder proposals; and
- they allow us to issue, without stockholder approval, up to 5,000,000 shares of preferred stock that could adversely affect the rights and powers of the holders of our common stock.

We are subject to the provisions of Section 203 of the General Corporation Law of the State of Delaware, an anti-takeover law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. For purposes of Section 203, a business combination includes a merger, asset sale or other transaction resulting in a financial benefit to the interested stockholder, and an interested stockholder is a person who, together with affiliates and associates, owns, or within three years prior did own, 15% or more of the voting stock of a corporation.

Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law provides that a corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, other than an action by or in the right of the corporation, by reason of the fact that the person is or was a director, officer, employee or agent of the corporation or is or was serving at the corporation s request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses, including attorneys fees, judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with the action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person s conduct was unlawful. The power to indemnify applies to actions brought by or in the right of the corporation as well, but only to the extent of expenses, including attorneys fees but excluding judgments, fines and amounts paid in settlement, actually and reasonably incurred by the person in connection with the defense or settlement of the action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that a court of competent jurisdiction shall determine that such indemnity is proper.

Section 145(g) of the Delaware General Corporation Law provides that a corporation shall have the power to purchase and maintain insurance on behalf of its officers, directors, employees and agents, against any liability asserted against and incurred by such persons in any such capacity.

Section 102(b)(7) of the General Corporation Law of the State of Delaware provides that a corporation may eliminate or limit the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, provided that such provision shall not eliminate or limit the liability of

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a director (i) for any breach of the director s duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the General Corporation Law of the State of Delaware, or (iv) for any transaction from which the director derived an improper personal benefit. No such provision shall eliminate or limit the liability of a director for any act or omission occurring prior to the date when such provision becomes effective.

Our Amended and Restated Bylaws provide that we shall indemnify our directors and officers to the fullest extent permitted by the laws of the State of Delaware or any other applicable law. As permitted by our Amended and Restated Bylaws, we have additionally entered into indemnification agreements with each of our non-employee directors that provide for indemnification and expense advancement to the fullest extent permitted by the laws of the State of Delaware.

Our Amended and Restated Bylaws provide that we may purchase and maintain insurance policies on behalf of our directors and officers against specified liabilities for actions taken in their capacities as such, including liabilities under the Securities Act. We have obtained directors and officers liability insurance to cover liabilities our directors and officers may incur in connection with their services to the Registrant.

Our Restated Certificate of Incorporation, as amended, provides that the liability of our directors for monetary damages shall be eliminated to the fullest extent under applicable law.

SEC Position on Indemnification for Securities Act Liabilities

Insofar as indemnification for liabilities arising under the Securities Act may be permitted for directors, officers and persons controlling our company, we understand that it is the SEC s opinion that such indemnification is against public policy as expressed in the Securities Act and may therefore be unenforceable.

DESCRIPTION OF PREFERRED STOCK

We are authorized to issue up to 5,000,000 shares of preferred stock, par value $0.001 per share. Our board is authorized to provide for the issue of all or any of the shares of the preferred stock in one or more series, and to fix the number of shares and to determine or alter for each such series, such voting powers, full or limited, or no voting powers, and such designation, preferences, and relative, participating, optional, or other rights and such qualifications, limitations, or restrictions thereof, as stated in our board s resolutions. Our board is also authorized to increase or decrease the number of shares of any series subsequent to the issuance of shares of that series, but not below the number of shares of such series then outstanding. The number of authorized shares of preferred stock may be increased or decreased (but not below the number of shares thereof then outstanding) by the affirmative vote of the holders of a majority of the common stock, without a vote of the holders of the preferred stock, or of any series thereof, unless a vote of any such holders is required pursuant to the terms of any certificate of designation filed with respect to any series of preferred stock.

The authority possessed by our board to issue preferred stock could potentially be used to discourage attempts by third parties to obtain control of us through a merger, tender offer, proxy contest or otherwise by making such attempts more difficult or more costly. Our board may issue preferred stock with voting rights or conversion rights that, if exercised, could adversely affect the voting power of the holders of common stock. There are no current agreements or understandings with respect to the issuance of preferred stock.

If we offer a specific class or series of preferred stock under this prospectus, we will describe the terms of the preferred stock in the prospectus supplement for such offering and will file a copy of the certificate establishing the terms of the preferred stock with the SEC. To the extent required and applicable, this description will include:

- the title and stated value;
- the number of shares offered, the liquidation preference per share and the purchase price;
- the dividend rate(s), period(s) and/or payment date(s), or method(s) of calculation for such dividends;

whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;

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the procedures for any auction and remarketing, if any;

the provisions for a sinking fund, if any;

the provisions for redemption, if applicable;

any listing of the preferred stock on any securities exchange or market;

whether the preferred stock will be convertible into our common stock, and, if applicable, the conversion price (or how it will be calculated) and conversion period;

whether the preferred stock will be exchangeable into debt securities, and, if applicable, the exchange price (or how it will be calculated) and exchange period;

voting rights, if any, of the preferred stock;

a discussion of any material U.S. federal income tax considerations applicable to the preferred stock;

the relative ranking and preferences of the preferred stock as to dividend rights and rights upon liquidation, dissolution or winding up of the affairs of our company; and

any material limitations on issuance of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights upon liquidation, dissolution or winding up of our company.

The preferred stock offered by this prospectus, when issued, will not have, or be subject to, any preemptive or similar rights.

Transfer Agent and Registrar

The transfer agent and registrar for any series or class of preferred stock will be set forth in each applicable prospectus supplement.

DESCRIPTION OF WARRANTS

As of May 31, 2011, we had warrants outstanding to purchase 3,107,469 shares of our common stock. We may issue warrants to purchase shares of our common stock, preferred stock and/or debt securities in one or more series together with other securities or separately, as described in each applicable prospectus supplement. Below is a description of certain general terms and provisions of the warrants that we may offer. Particular terms of the warrants will be described in the applicable warrant agreements and the applicable prospectus supplement for the warrants.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

information with respect to book-entry procedures, if any;

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

any redemption or call provisions;

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

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

Transfer Agent and Registrar

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

DESCRIPTION OF DEBT SECURITIES

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

We may offer under this prospectus up to an aggregate principal amount of $75,000,000 in debt securities, or if debt securities are issued at a discount, or in a foreign currency, foreign currency units or composite currency, the principal amount as may be sold for an initial public offering price of up to $75,000,000. Unless otherwise specified in the applicable prospectus supplement, the debt securities will represent our direct, unsecured obligations and will rank equally with all of our other unsecured indebtedness.

The following statements relating to the debt securities and the indenture are summaries, qualified in their entirety by reference to the detailed provisions of the debt securities we issue and the indenture we enter into with the trustee.

General

We may issue the debt securities in one or more series with the same or various maturities, at par, at a premium, or at a discount. We will describe the particular terms of each series of debt securities in a prospectus supplement relating to that series, which we will file with the SEC.

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

the title of the series;

the aggregate principal amount, and, if a series, the total amount authorized and the total amount outstanding;

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

any limit on the aggregate principal amount;

the date or dates on which principal is payable;

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

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

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

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

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

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

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

the currency of denomination;

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

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

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

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

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

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

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

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

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

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

We may issue debt securities denominated in or payable in a foreign currency or currencies or a foreign currency unit or units. If we do, we will describe the restrictions, elections, and general tax considerations

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relating to the debt securities and the foreign currency or currencies or foreign currency unit or units in the applicable prospectus supplement.

Debt securities offered under this prospectus and any prospectus supplement will be subordinated in right of payment to certain of our outstanding senior indebtedness, including our credit facilities. In addition, we will seek the consent of the holders of any such senior indebtedness prior to issuing any debt securities under this prospectus to the extent required by the agreements evidencing such senior indebtedness.

Exchange and/or Conversion Rights

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

Transfer and Exchange

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

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

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

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

Certificated Debt Securities

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

You may effect the transfer of certificated debt securities and of the right to receive the principal of, premium, and/or interest, if any, on the certificated debt securities only by surrendering the certificate representing the certificated debt securities and having us or the trustee issue a new certificate to the new holder.

Global Securities

If we decide to issue debt securities in the form of one or more global securities, then we will register the global securities in the name of the depositary for the global securities or the nominee of the depositary, and the global securities will be delivered by the trustee to the depositary for credit to the accounts of the holders of beneficial interests in the debt securities.

The prospectus supplement will describe the specific terms of the depositary arrangement for debt securities of a series that are issued in global form. None of us, the trustee, any payment agent or the security registrar will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in a global debt security or for maintaining, supervising or reviewing any records relating to these beneficial ownership interests.

No Protection in the Event of Change of Control

The indenture does not have any covenants or other provisions providing for a put or increased interest or otherwise that would afford holders of our debt securities additional protection in the event of a recapitalization transaction, a change of control, or a highly leveraged transaction. If we offer any covenants or provisions of this type with respect to any debt securities covered by this prospectus, we will describe them in the applicable prospectus supplement.

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Covenants

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

Consolidation, Merger and Sale of Assets

The form of indenture provides that we will not consolidate with or merge into any other person or convey, transfer, sell or lease our properties and assets substantially as an entirety to any person, unless:

- the person formed by the consolidation or into or with which we are merged or the person to which our properties and assets are conveyed, transferred, sold or leased, is a corporation organized and existing under the laws of the U.S., any state or the District of Columbia or a corporation or comparable legal entity organized under the laws of a foreign jurisdiction and, if we are not the surviving person, the surviving person has expressly assumed all of our obligations, including the payment of the principal of and, premium, if any, and interest on the debt securities and the performance of the other covenants under the indenture; and

- immediately before and immediately after giving effect to the transaction, no event of default, and no event which, after notice or lapse of time or both, would become an event of default, has occurred and is continuing under the indenture.

Events of Default

Unless otherwise specified in the applicable prospectus supplement, the following events will be events of default under the indenture with respect to debt securities of any series:

- we fail to pay any principal or premium, if any, when it becomes due;

- we fail to pay any interest within 30 days after it becomes due;

- we fail to observe or perform any other covenant in the debt securities or the indenture for 60 days after written notice specifying the failure from the trustee or the holders of not less than 25% in aggregate principal amount of the outstanding debt securities of that series; and

- certain events involving bankruptcy, insolvency or reorganization of us or any of our significant subsidiaries.

The trustee may withhold notice to the holders of the debt securities of any series of any default, except in payment of principal of or premium, if any, or interest on the debt securities of a series, if the trustee considers it to be in the best interest of the holders of the debt securities of that series to do so.

If an event of default (other than an event of default resulting from certain events of bankruptcy, insolvency or reorganization) occurs, and is continuing, then the trustee or the holders of not less than 25% in aggregate principal amount of the outstanding debt securities of any series may accelerate the maturity of the debt securities. If this happens, the entire principal amount, plus the premium, if any, of all the outstanding debt securities of the affected series plus accrued interest to the date of acceleration will be immediately due and payable. At any time after the acceleration, but before a judgment or decree based on such acceleration is obtained by the trustee, the holders of a majority in aggregate principal amount of outstanding debt securities of such series may rescind and annul such acceleration if:

all events of default (other than nonpayment of accelerated principal, premium or interest) have been cured or waived;

all lawful interest on overdue interest and overdue principal has been paid; and

the rescission would not conflict with any judgment or decree.

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In addition, if the acceleration occurs at any time when we have outstanding indebtedness that is senior to the debt securities, the payment of the principal amount of outstanding debt securities may be subordinated in right of payment to the prior payment of any amounts due under the senior indebtedness, in which case the holders of debt securities will be entitled to payment under the terms prescribed in the instruments evidencing the senior indebtedness and the indenture.

If an event of default resulting from certain events of bankruptcy, insolvency or reorganization occurs, the principal, premium and interest amount with respect to all of the debt securities of any series will be due and payable immediately without any declaration or other act on the part of the trustee or the holders of the debt securities of that series.

The holders of a majority in principal amount of the outstanding debt securities of a series will have the right to waive any existing default or compliance with any provision of the indenture or the debt securities of that series and to direct the time, method and place of conducting any proceeding for any remedy available to the trustee, subject to certain limitations specified in the indenture.

No holder of any debt security of a series will have any right to institute any proceeding with respect to the indenture or for any remedy under the indenture, unless:

- the holder gives to the trustee written notice of a continuing event of default;
- the holders of at least 25% in aggregate principal amount of the outstanding debt securities of the affected series make a written request and offer reasonable indemnity to the trustee to institute a proceeding as trustee;
- the trustee fails to institute a proceeding within 60 days after such request; and
- the holders of a majority in aggregate principal amount of the outstanding debt securities of the affected series do not give the trustee a direction inconsistent with such request during such 60-day period.

These limitations do not, however, apply to a suit instituted for payment on debt securities of any series on or after the due dates expressed in the debt securities.

We will periodically deliver certificates to the trustee regarding our compliance with our obligations under the indenture.

Modification and Waiver

From time to time, we and the trustee may, without the consent of holders of the debt securities of one or more series, amend the indenture or the debt securities of one or more series, or supplement the indenture, for certain specified purposes, including:

- to provide that the surviving entity following a change of control permitted under the indenture will assume all of our obligations under the indenture and debt securities;
- to provide for certificated debt securities in addition to uncertificated debt securities;
- to comply with any requirements of the SEC under the Trust Indenture Act of 1939;

to provide for the issuance of and establish the form and terms and conditions of debt securities of any series as permitted by the indenture;

to cure any ambiguity, defect or inconsistency, or make any other change that does not materially and adversely affect the rights of any holder; and

to appoint a successor trustee under the indenture with respect to one or more series.

From time to time we and the trustee may, with the consent of holders of at least a majority in principal amount of an outstanding series of debt securities, amend or supplement the indenture or the debt securities series, or waive compliance in a particular instance by us with any provision of the indenture or the debt securities. We may not, however, without the consent of each holder affected by such action, modify or

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supplement the indenture or the debt securities or waive compliance with any provision of the indenture or the debt securities in order to:

- reduce the amount of debt securities whose holders must consent to an amendment, supplement, or waiver to the indenture or such debt security;
- reduce the rate of or change the time for payment of interest or reduce the amount of or postpone the date for payment of sinking fund or analogous obligations;
- reduce the principal of or change the stated maturity of the debt securities;
- make any debt security payable in money other than that stated in the debt security;
- change the amount or time of any payment required or reduce the premium payable upon any redemption, or change the time before which no such redemption may be made;
- waive a default in the payment of the principal of, premium, if any, or interest on the debt securities or a redemption payment;
- waive a redemption payment with respect to any debt securities or change any provision with respect to redemption of debt securities; or
- take any other action otherwise prohibited by the indenture to be taken without the consent of each holder affected by the action.

Defeasance of Debt Securities and Certain Covenants in Certain Circumstances

The indenture permits us, at any time, to elect to discharge our obligations with respect to one or more series of debt securities by following certain procedures described in the indenture. These procedures will allow us either:

- to defease and be discharged from any and all of our obligations with respect to any debt securities except for the following obligations (which discharge is referred to as legal defeasance):

(1) to register the transfer or exchange of such debt securities;

(2) to replace temporary or mutilated, destroyed, lost or stolen debt securities;

(3) to compensate and indemnify the trustee; or

(4) to maintain an office or agency in respect of the debt securities and to hold monies for payment in trust; or

- to be released from our obligations with respect to the debt securities under certain covenants contained in the indenture, as well as any additional covenants which may be contained in the applicable supplemental indenture (which release is referred to as covenant defeasance).

In order to exercise either defeasance option, we must deposit with the trustee or other qualifying trustee, in trust for that purpose:

- money;
- U.S. Government Obligations (as described below) or Foreign Government Obligations (as described below) that through the scheduled payment of principal and interest in accordance with their terms will provide money; or
- a combination of money and/or U.S. Government Obligations and/or Foreign Government Obligations sufficient in the written opinion of a nationally-recognized firm of independent accountants to provide money;

that, in each case specified above, provides a sufficient amount to pay the principal of, premium, if any, and interest, if any, on the debt securities of the series, on the scheduled due dates or on a selected date of redemption in accordance with the terms of the indenture.

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In addition, defeasance may be effected only if, among other things:

- in the case of either legal or covenant defeasance, we deliver to the trustee an opinion of counsel, as specified in the indenture, stating that as a result of the defeasance neither the trust nor the trustee will be required to register as an investment company under the Investment Company Act of 1940;

- in the case of legal defeasance, we deliver to the trustee an opinion of counsel stating that we have received from, or there has been published by, the Internal Revenue Service a ruling to the effect that, or there has been a change in any applicable federal income tax law with the effect that (and the opinion shall confirm that), the holders of outstanding debt securities will not recognize income, gain or loss for U.S. federal income tax purposes solely as a result of such legal defeasance and will be subject to U.S. federal income tax on the same amounts, in the same manner, including as a result of prepayment, and at the same times as would have been the case if legal defeasance had not occurred;

- in the case of covenant defeasance, we deliver to the trustee an opinion of counsel to the effect that the holders of the outstanding debt securities will not recognize income, gain or loss for U.S. federal income tax purposes as a result of covenant defeasance and will be subject to U.S. federal income tax on the same amounts, in the same manner and at the same times as would have been the case if covenant defeasance had not occurred; and

- certain other conditions described in the indenture are satisfied.

If we fail to comply with our remaining obligations under the indenture and applicable supplemental indenture after a covenant defeasance of the indenture and applicable supplemental indenture, and the debt securities are declared due and payable because of the occurrence of any undefeased event of default, the amount of money and/or U.S. Government Obligations and/or Foreign Government Obligations on deposit with the trustee could be insufficient to pay amounts due under the debt securities of the affected series at the time of acceleration. We will, however, remain liable in respect of these payments.

The term U.S. Government Obligations as used in the above discussion means securities that are direct obligations of or non-callable obligations guaranteed by the United States of America for the payment of which obligation or guarantee the full faith and credit of the United States of America is pledged.

The term Foreign Government Obligations as used in the above discussion means, with respect to debt securities of any series that are denominated in a currency other than U.S. dollars, (1) direct obligations of the government that issued or caused to be issued such currency for the payment of which obligations its full faith and credit is pledged or (2) obligations of a person controlled or supervised by or acting as an agent or instrumentality of such government the timely payment of which is unconditionally guaranteed as a full faith and credit obligation by that government, which in either case under clauses (1) or (2), are not callable or redeemable at the option of the issuer.

Regarding the Trustee

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

The holders of a majority in principal amount of the then outstanding debt securities of any series may direct the time, method and place of conducting any proceeding for exercising any remedy available to the trustee. If an event of default occurs and is continuing, the trustee, in the exercise of its rights and powers, must use the degree of care and skill of a prudent person in the conduct of his or her own affairs. Subject to that provision, the trustee will be under no obligation to exercise any of its rights or powers under the indenture at the request of any of the holders of the debt securities, unless they have offered to the trustee reasonable indemnity or security.

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WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-3 with the SEC for the securities we are offering by this prospectus. This prospectus does not include all of the information contained in the registration statement. You should refer to the registration statement and its exhibits for additional information.

We are required to file annual and quarterly reports, special reports, proxy statements, and other information with the SEC. We make these documents publicly available, free of charge, on our website at www.csi360.com as soon as reasonably practicable after filing such documents with the SEC. You can read our SEC filings, including the registration statement, on the SEC s website at http://www.sec.gov. You also may read and copy any document we file with the SEC at its public reference facility at:

Public Reference Room

100 F Street N.E.

Washington, DC 20549.

Please call the SEC at 1-800-732-0330 for further information on the operation of the public reference facilities.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information in documents that we file later with the SEC will automatically update and supersede information in this prospectus. We incorporate by reference into this prospectus the documents listed below and any future filings made by us with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act until we close this offering, including all filings made after the date of the initial registration statement and prior to the effectiveness of the registration statement. We hereby incorporate by reference the following documents:

- our Annual Report on Form 10-K for the year ended June 30, 2010;
- our Quarterly Reports on Form 10-Q for the quarters ended September 30, 2010, December 31, 2010 and March 31, 2011;
- our Current Reports on Form 8-K filed on July 2, 2010, September 1, 2010, September 9, 2010, October 8, 2010, November 3, 2010, November 23, 2010, February 22, 2011, March 3, 2011 and April 5, 2011 (excluding any information furnished in such reports under Item 2.02, Item 7.01 or Item 9.01);
- the description of our common stock contained in our registration statement on Form 8-A filed June 26, 2006, under the Securities Act, including any amendment or report filed for the purpose of updating such description; and
- our definitive Proxy Statement on Schedule 14A filed on October 5, 2010.

You may request a copy of these filings, at no cost, by writing or telephoning us at the following address:

Cardiovascular Systems, Inc.

651 Campus Drive

St. Paul, Minnesota 55112-3495

Attention: Investor Relations

Phone: (651) 259-1600

Copies of these filings are also available, without charge, through the Investors section of our website (www.csi360.com) as soon as reasonably practicable after they are filed electronically with the SEC. The information contained on our website is not a part of this prospectus.

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LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Fredrikson & Byron, P.A., Minneapolis, Minnesota. The validity of any securities will be passed upon for any underwriters or agents by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The financial statements incorporated in this Prospectus by reference to the Annual Report on Form 10-K for the year ended June 30, 2010 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

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Shares

Common Stock

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